DME Server Administration Reference 3.6

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EXCITOR

Contents

Introduction

Welcome to the reference manual for the DME server. This manual goes through every feature of the DME Server version 3.6 Service Pack 2, describing how they are used, and making recommendations of best practice. The manual describes the latest minor release (build or service pack) of the DME server - small variations in the user interface may occur between minor releases.

Copyright information

Company information

EXCITOR
12, Spotorno Allé
2630 Taastrup
Denmark

Phone: +45 70 21 68 00
E-mail: mail@excitor.com
Website: ***DME http://www.excitor.com***

Typographical conventions

This guide uses special formating to signify that a text has a special meaning. The following kinds of formatting is used:

Formatting	Type of information
Bold	Interface elements that you can select, such as menu options or command buttons.
Special Bold	Items that can be selected from a list of options, or text that you must type.
Emphasis	Applies emphasis to a point, and is also used for variable expressions such as parameters.
`Key+Key`	Key combinations where the user must press and hold down one key and then press another, for example, **`Ctrl+P`** or **`Alt+F4`**.
	*Caution* - performing the action described may lead to loss of data or involves other risk.

For an explanation of specialized terms used in the documentation, see the Glossary at the end of this document.

About DME

DME (Dynamic Mobile Exchange) offers synchronization of push e-mail, PIM information (calendar, contacts, to-dos), and optionally files, to mobile devices. It fully integrates mobile device management with state-of-the-art security and efficient software deployment. DME is a mobile client/server solution that works with mobile phones, smartphones and PDAs using Android, Apple iOS, Symbian, Windows Mobile, or Windows Phone*) as operating system. DME is developed by Excitor A/S.

The solution enables large and mid-size enterprises to deliver business mobility services to employees and to effectively manage and control mobile devices without compromising security. DME is device, network and operator independent and offers unparalleled TCO, unprecedented data and device security, and a very intuitive interface for users and administrators.

**) Please note that not all server features are supported on all platforms. Contact your DME Partner for specific inquiries.*

Features and benefits

- **Convenient for the user:** *Push e-mail, calendar, contacts and to dos*
  With DME on your mobile phone, smartphone, or PDA, you get your most critical and often used office tools in your pocket wherever you are, whenever you need it. E-mails appear on your phone the moment they hit your office mailbox.
- **Quickly back in the game:** *Instant service recovery*
  Should your phone get lost or stolen, a new DME client can be pushed to a new phone in a few minutes after you purchase a new DME supported phone or borrow one from someone else – no matter where it happens.
- **Fretless security:** *Mobile security policy enforcement*
  E-mails are encrypted over the air and on the device itself using full encryption (AES 128-bit or stronger). Shell protection of the entire phone, requiring domain password to access all features except picking up calls, gives you further security options.
- **Freedom and ease-of-use:** *Effective control of all devices*
  Gain a complete overview of your devices – regardless of make, model, or platform. Information about the device model, versions and programs installed on the device is listed in the web-based DME control center for easy administration. Features, settings and available applications and network connections are all controlled

centrally and can only be changed by the users to the extent this is allowed by centrally applied security policies. Dividing the devices into groups makes it easy to change settings/features for many devices at a time.

- **Ease-of-use comes in many flavors:** *Simple support and administration*
  Push software and upgrades via OMA, Apple MDM, SMS or WAP to the users, permit them to serve themselves, or automatically upgrade software when the users log on. For support purposes, retrieval of device configurations and connection set-up makes it possible for you to help users who cannot connect, and a log of user actions assists you in identifying the problems and solving them. Notification of changes to server status can be sent to the DME administrators to ensure they are alerted to problems quickly.
- **Cost containment:** *Control of ongoing mobile cost*
  Data and voice logging allows you to monitor activity levels real-time, and identify "expensive" behavior which can be reduced. Heavily-used operators can be determined and connection preferences can be set as default. Build advanced reports to get a clear view of your organization's mobile traffic using the integrated BI reporting tools. Link to a third-party Telecom Expense Management provider to build detailed reports, for instance for internal billing.
- **Freedom of choice:** *Versatility*
  Works on any available network (WLAN/Wi-Fi, GSM, GPRS, 3G/UMTS, EDGE...), operator, and on most devices from leading manufacturers. Works on Lotus Domino and/or Microsoft Exchange collaboration systems.

Please note that the above applies to the full DME client. Note also that due to limitations specific to the some client platforms, a few of the features mentioned above are not supported on DME for those platforms. Contact you DME partner for specific inquiries.

About the DME Server

DME is a client/server application. The DME users, who receive secure push e-mail and PIM information on their devices, and the secure connection to the devices, are called the *clients*. The devices and connections are managed on the *server*.

The server provides a secure link between a collaboration system (Microsoft Exchange or IBM Lotus Domino) and the clients.

The server is controlled through the DME Server Web Administration Interface, which is described in this manual. The DME server interface gives you control of all the many features of the DME server:

- Access the interface securely (via HTTPS) from anywhere
- Easy remote control of device functionality
- Theft/loss protection – flush data on mobile device
- Push device clients, software upgrades and other applications to existing or new mobile devices
- Enforce company policies by controlling device settings and blocking applications
- Send out OTA (for example GPRS settings) and SMS messages to any device
- Search and filter information
- View detailed log of all user actions – provide better user support
- Statistics module for monitoring cost of ownership

– and much more.

In this manual, the term *DME server* or just *DME* is used for the DME Server Web Administration Interface.

Supported platforms

For current information about DME requirements in terms of server hardware, connector hardware, operating systems, browsers, collaboration systems, and database systems, please download the **DME System Requirements** document from the Excitor website at ***Excitor - Technical Requirements http://www.excitor.com/Technical_Requirements-31.aspx***.

For current information about supported DME clients, see the ***Excitor - Supported Devices http://www.excitor.com/Supported_Devices-47.aspx*** page at the Excitor website.

The **DME Server Installation Guide** contains information about how to install the server and connect it to various subsystems. The latest installation guides can be found at the ***DME Install site http://install.excitor.dk*** along with related information.

For further information, please contact your DME partner.

DME server architecture

The DME Server is designed to be so flexible that it can be installed into almost any existing IT infrastructure, even when the infrastructure is different at different sites in an enterprise. The price of flexibility is complexity, and the DME Server is a complex system. Reading this section will be helpful to get a deeper understanding of how the DME Server is designed, and how the different components in a DME solution relate to each other.

One server, many connectors

A key feature of the DME server is that it can be installed into enterprises which are geographically separated into many locations and segmented into many networks, possibly using different operating systems and even different collaboration systems. The cause of this flexibility lies in the DME *connector*. This concept of connectors, which was introduced in DME Server 3.0, allows for the installation of a "DME module" wherever the circumstances call for it. The only requirement for installing a DME connector is that the DME users for the connector in question are found in the same LDAP/AD directory as that of the main DME server. There is no such thing as a "stand-alone DME server" - at least one connector must be installed to service the users, but it may be installed on the same machine as the DME server.

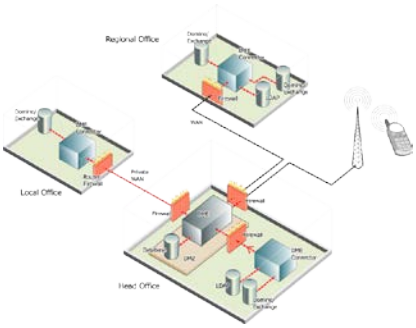
A few examples:

1. The head office is situated in Cape Town, South Africa, and this is also where the DME server is installed. A branch office in Burundi suffers from expensive and unstable international phone lines. A DME connector is installed in the Burundi office, servicing the employees working out of that office only. The connector connects to the DME server at regular intervals, and the connector handles the notification and synchronization using local phone lines.
2. The head office in London, UK, is connected with a branch office across town using a private wide-area network (WAN). However, because the IT security policy restricts the use of firewall rules for incoming traffic from the DME server, a DME connector is installed at the branch office. Since the connector always initiates communication with the DME server, no rules for incoming traffic need to be defined on the head office firewall.

3. A company running Lotus Domino acquires a company which runs MS Exchange. Before the two systems are integrated, a DME connector is set up at the acquired company to service mobile Exchange users.
4. A large company can split the processing load by installing the DME server and database on one machine, and a number of DME connectors on one or more server machines.

So there can be many reasons to set up connectors instead of letting all users run on the same DME server: Cost control, stability, security, compatibility, and performance.

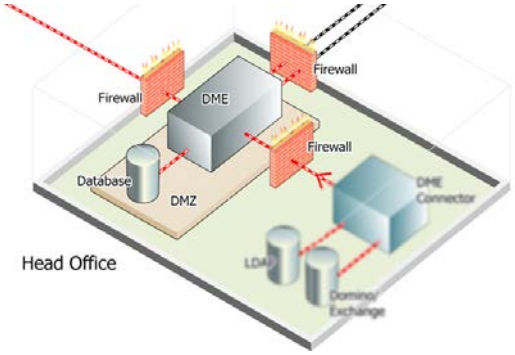
The DME architecture shown by the above examples can be illustrated thus:



The following sections go into more detail about the server and the connector components.

The DME server

The DME server and the DME database are installed into a DMZ section of the company network.

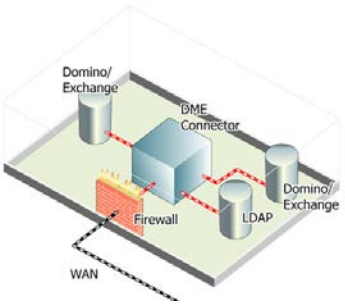


Firewall rules are set up to allow inbound traffic (seen from the perspective of the DME server) for the phones, the DME Administration interface, and any connectors that will be set up. The server and the database can be installed on separate physical servers, using MS Windows or several flavors of Linux as operating system.

The DME server manages all aspects of the DME solution that are the same across all connectors: statistics, device management, logging, and provisioning. Furthermore, it is used to manage the connectors themselves.

The connector

The connector manages the connection to the external collaboration system (or other system). One connector can service any or all users in the system. In order to find out which users are to be serviced by which connector, the DME server issues a *user broadcast*. This means that the first time a user needs to be serviced (for instance the first time the user connects to DME), the server asks all registered connectors if they are able to service the user in question. The server then connects the user to *the first connector* to return with a positive answer. It may be that several connectors are able to service the user in question, but the first one to report back "wins" the right to service that user. In other terms, a *route* has been established to the user. The DME server saves this route and will in future only ask that particular connector to service that particular user - unless the connector is down for some reason. For more information, see ***Main*** on page 311, which describes the connector configuration.



Separate connectors can be set up to service users in different areas.

- Authentication (checking user credentials and reporting the user's directory group memberships to the server).
- Notification and synchronization of any or all of the following resources: e-mail, e-mail folders, out-of-office rules, contacts, calendar information, tasks/to-dos, RSS feeds, and SmartLink URLs. Note that the available resources depend on DME version and license.
- Search any or all of the following: Free time (when booking meetings), contacts (Global Address Book search), and rooms & resources.

Since the same user can be serviced by different connectors, a user may have several routes to several connectors. See ***Users*** on page 309, which describes the routing table overview.

The connector can be installed as a separate process on the DME server machine, or on a separate machine anywhere in the network.

All connectors must retrieve information from the same directory server. The directory "tree" (the group graph) is built by one connector in the system, as described below.

The group graph

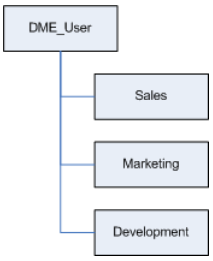
In order for users to be able to synchronize their data using DME, they must be members of a certain group in the directory (LDAP or Active Directory), usually called **DME_User**. The group name can be different, but in the following it will be referred to as **DME_User**.

(A note on terminology: In DME, LDAP and Active Directory are called *directory servers*. Sometimes the term LDAP is used to cover both - AD is just a specific implementation of LDAP.)

Some LDAP servers only return the group of which a particular user is a direct member. In most enterprises, however, the **DME_User** group would consist of other groups, resulting in a nested structure. In order to be able to verify that users belong in the **DME_User** group, even when the group is nested several layers deep, DME system builds a so-called "group graph". The group graph provides an efficient way to evaluate if a subgroup is actually given the right to synchronize or not.

For example: You want to allow the use of DME for the following groups: **Sales**, **Marketing**, **Development**.

You then create a **DME_User** group, and add those subgroups into **DME_User**. This can be represented as follows:



When DME requests user information about user **Tubbs**, the LDAP server might return that **Tubbs** is member of the following groups: **Sales**, **All Users**, **US Users**, **SaaS**.

Using the group graph, DME is able to recognize that the group **Sales** has actually been given **DME_User** rights.

In the **Domain** setup panel of the connector you can specify if the current connector should be used for reading the group graph. For more information, see ***Domain*** on page 314.

Load balancing and failover

If more than one connector is available to service a user, and all those connectors are labeled as primary connectors, connectors will service the users according to a "round robin" principle. Say there are three connectors associated with the same group of users, the system will consider the load on all three connectors and which connector last serviced the user and, all other factors being equal, will select the next server in line to service the user.

This architecture can also be set up to include a failover scenario where a "failover connector" is dedicated to take over for several or all connectors in the occasion that they fail or are taken out of service for any reason. The failover connector is not used until one or more of the connectors are overloaded. Once this happens, the failover connector assumes the entire traffic burden, regardless of whether or not there are other connectors available to help share the processing load.

Multiple domains and directory servers

In several scenarios, it is relevant to set up multiple connectors:

- In a mixed Exchange and Domino environment
- If your AD tree consists of several trusted domains
- If you run DME for multiple companies (hosting only)

The common denominator between these scenarios is that user information is potentially fetched from different sources (different directory servers).

Only *one* connector should serve as group graph builder, even if you have multiple directory servers. If you use more than one, you must make sure that all directory servers have the exact same structure to represent all groups that are related to **DME_User**. This can easily be done within one enterprise, but in case you are working with multiple companies, you cannot easily enforce the same naming convention for all groups.

In that latter case, for multiple companies (domains), you can build a group graph if you have one central LDAP for all companies (such as Hosted Exchange).

When you have distributed LDAP servers, there are two ways to ensure that users are authenticated correctly:

1. Create a **DME_User** group in each LDAP, and add **users** to them (group nesting is not supported).

   or

2. Manually specify which users are serviced by a specific connector. This is of course only feasible and manageable for testing and for companies with a very limited number of users (see also the section ***Connector routing*** on page 22 below).

Connector broadcasting

The default way for a connector to find which users to service is to use *broadcasting*, as mentioned in the section ***The connector*** on page 17 above. By this method, the DME server poses a request to the joint grouped of connectors, asking: "Which of you is able to synchronize e-mail (or calendar, etc.) for user **xxx** ?". As each function (authentication, e-mail, calendar, contacts, etc.) is independent of the others, there could potentially be a different connector for each function, even for the same user.

When a DME connector sends a positive reply, a *route* is saved for this combination of user and function for the connector.

For example, in order to check if the password of a new user is valid, the DME server asks all the connectors for which the "Authentication" function is enabled to check if they are able to authenticate this user.

Since each connector may in principle be configured to a different domain, the DME server sends the user name as entered in the DME client, which is usually the short name for the user.

Then the specific domain name is appended by each connector, and the credentials are tested against the defined Authentication LDAP server.

> **Note**
> In a setup that involves multiple companies, this is a major security risk, since the user name and password are sent to all connectors.

See below for a resolution to this security risk, and see ***Connector routing*** on page 22 for alternative configuration options in multi-company setups.

DME user domain

To avoid broadcasting across companies, users can be set up to authenticate using their *full user domain name*, such as **user@domain.local** or even something that looks like an e-mail address **user@domain.com** - the difference being that **domain.com** is not always an SMTP domain, but can be an AD domain.

The DME user domain is set up in the **Domain** section of the connector setup page.

The **DME user domain** field should only be completed when users log in to DME using the full **user@domain** format.

The **@domain** part is used by the connector to answer authentication requests concerning this specific domain only.

> **Note**
> In 95% of DME installations, there will be only **one** domain, and the field must therefore be left blank.

See ***Domain*** on page 314 for more information.

Connector settings

When multiple connectors are set to **Automatic** in the **Route users** part of the **Supported users** section of the **Domain** connector setup page (meaning that they use *broadcasting*), they must be configured in exactly the same way.

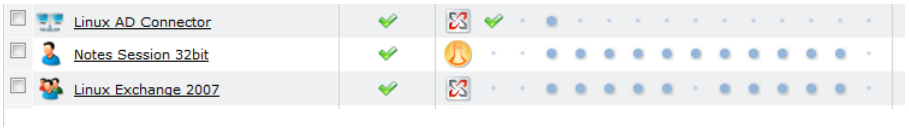
They must all be set to either **Primary** or **Failover** in the **Main** connector setup section, and they must connect to the same backend servers, both LDAP and collaboration servers in order to service the same users.

If you want to specify which connector should service users from an Exchange 2003 environment compared to users from Exchange 2007/10 (which are two different e-mail systems seen from a DME perspective), you must use a specific *routing*. See below.

Connector routing

In order to ensure correct routing between multiple connectors, you must define groups and configure the connectors to service specific groups. This requires that the user/group membership information is known in order for DME to correctly send the request to the appropriate connector.

The following is an example of a mixed configuration:



In this example, the **Linux AD Connector** is doing group graph and Authentication only. Specific users are routed to the **Notes Session 32bit** connector, and a specific group is routed to the **Linux Exchange 2007** connector.

Since there is only one group graph LDAP, the groups that are relevant for Domino users would need to be created in the Active Directory as well.

Group configuration

As an example of configuring connectors for specific groups, consider an example where you need to support both Exchange and Domino users. You want to configure DME in such a way that members of the **DME_Exchange** group are served by the connector named **DME Exchange**, and members of the **DME_Domino** group are served by the connector named **DME Domino**.

In this scenario, you would have two directory servers: Active Directory and Domino Directory.

As explained in the section about the group graph (see ***The group graph*** on page 18), you need to build a group graph "tree" in which **DME_Exchange** and **DME_Domino** are members of the same company, so that users of both groups can synchronize with DME.

In this example, we furthermore want to force a specific connector to service only members of a specific group.

You can configure each connector to be responsible for one or the other group only. However, if you do this, you must understand the following:

- Only one connector must be set up to build the group graph, as the Domino and the AD group structure would differ.
- You must choose one directory (AD or Domino Directory) where groups from both systems must be created (both **DME_Exchange** and **DME_Domino**).
- The user name must be the same on AD and Domino in order to build the user/group relationship.

DME caches the user/group relationship in order to send the request to the correct connector. In the above example, when an unknown user tries to connect to DME, the DME server is not able to verify if the user is member or **DME_Exchange** or **DME_Domino**, because the user has not yet been cached. Therefore you will get an error in the log, saying that "No route for user is available".

The DME server will then ask all connectors that are set to **Automatic** (broadcasting) to check which groups this user is member of.

As only one connector is set to broadcasting, this connector will be responsible to get the information that this user is member of either **DME_Exchange** or **DME_Domino**. Once the group membership has been established, DME will be able to route to the appropriate connector.

Therefore the recommendation is to use *Broadcasting*, and to add **DME_Exchange** and **DME_Domino**, respectively, as the LDAP group in which the connector should look for user information. This is done in the field **Additional DME_User group** in the connector setup panel **Domain** (see ***Domain*** on page 314). This way, the members of **DME_Exchange** would only be served by the connector where **DME_Exchange** is specified as additional **DME_User** group.

Individual user configuration

When you configure a connector to route to a specific list of users, you are not limited by the above mentioned LDAP issues. DME is using the information provided by the DME client, that is the user name, and can match that against the LDAP server defined for the connector.

This way, the DME Server knows that all requests for this user have to be passed to the specific connector. You still need a LDAP server to gather information such as the full user name and e-mail address for the user, as well as group membership to check if the user is member of **DME_User** and thus able to synchronize.

Multiple AD domains

To DME, AD is just a LDAP server. This means that AD-specific concepts such as *child domains*, *trusted domains*, etc. are not used in DME.

If you want to specify one connector for a specific domain (either a child domain or a trusted domain), you use the same method as when mixing Domino/Exchange domains as discussed above:

- You would need **one** central AD that can be used to build the group graph, where groups from *both domains* would be created.
- You would need to create groups to force a specific routing to a specific connector.

Setting both connectors to **Automatic** (broadcasting) would probably work in some cases, as the authentication or connection to the EWS on different domains would fail. You can see which routes have be successfully created by clicking the **Users** subtab on the main **Connector** tab.

Note that this is not a recommended setup - use routing instead. See ***Connector routing*** on page 22.

In this example, the red cross shows routes that are failing:

DME services

The DME Server and the DME connectors are run as *services* on the operating system. If you should need to restart them for any reason, use the following commands.

On *Windows*, the services are stopped, started, and restarted through the Services control panel in Windows, or you can use **`net start <service>`** or **`net stop <service>`** from a command prompt. The service names are the following:

- The DME Server:
  `dmeserver`
- The DME connector:
  `dmeconnector`

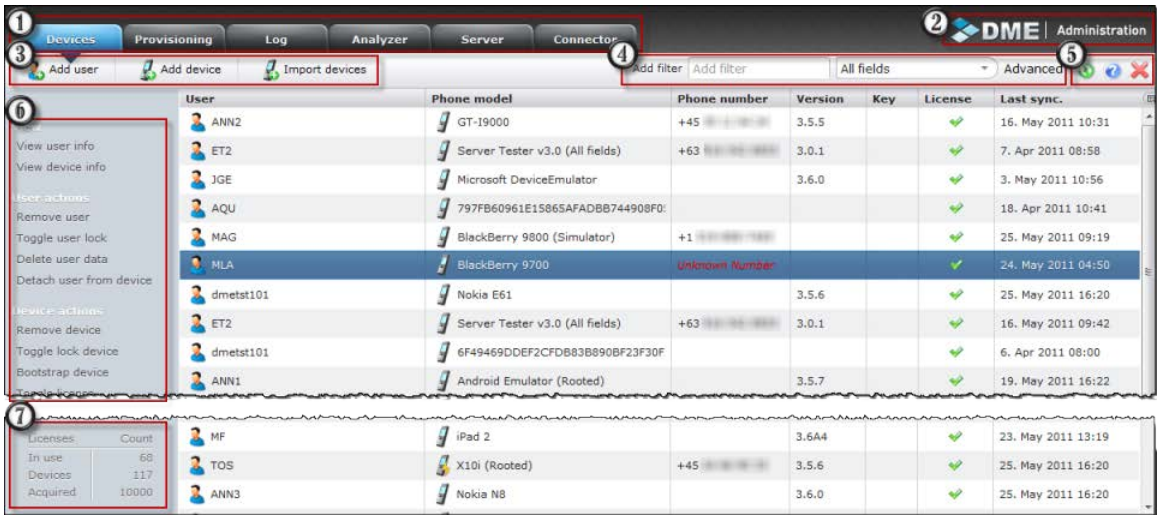
On *Linux*, the installer creates start/stop scripts named after the server instance. The default instance name is **`base`**.

- The DME Server:
  `service dme_<instance_name> start` or
  `service dme_<instance_name> stop`
- The DME connector:
  `sh dmec_<instance>.sh start` or
  `sh dmec_<instance>.sh stop`
  The script must be found in the **`/etc/init.d`** folder.

Navigating the web interface

The information and features in the DME server are presented in a number of browser pages. This section describes each element in the interface. Please note that a number of functions are accessible using keyboard shortcuts. The available keyboard shortcuts are described in the section ***Keyboard shortcuts*** on page 39.

The illustrations below show a number of interface elements in the DME Server Web Administration interface.



The columns of the device table are described in the following sections.

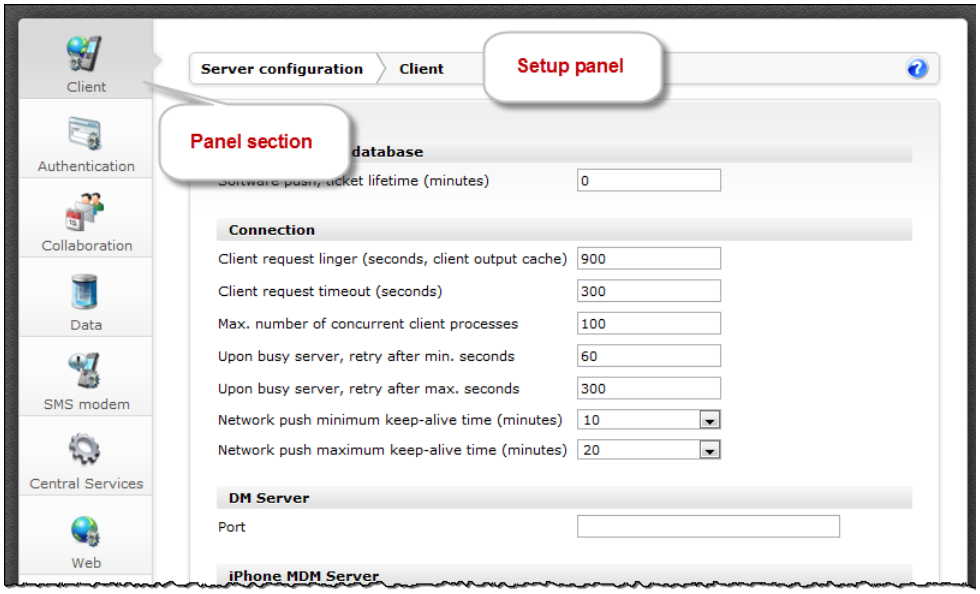
The numbered areas highlighted with a red square are described in these sections:

1. Main tabs - see ***Main tabs*** on page 29.
2. About DME - see ***About DME*** on page 39.
3. The tab toolbar, containing the actions that are available in the current context - see ***Tab toolbar*** on page 32.
4. The filter bar, which lets you filter for relevant information - see ***Filter bar - new style*** on page 33.
5. The DME toolbar with general options - see ***DME toolbar*** on page 38.
6. The page menu with the functions that are available in the current context - see ***Page menu*** on page 53, on page 29.

7. License statistics (**Devices** page only) - At the bottom left on the page, a small table shows license statistics:
   - umber of licenses in use
   - umber of licensed devices
   - umber of acquired licenses

   These figures give you a quick overview to help you decide when to release the license from unused devices (see ***Toggle license*** on page 61) and acquire new licenses.

Some pages give access to editing or setting up an item, for instance a device, a user, or an aspect of the server configuration. Such pages are called *setup panels*, and they contain a number of *panel sections*. The image below shows the server configuration setup panel.



The following sections describe the main elements of the DME web interface.

Logging in to the DME server

The DME server administration interface is web-based, and you log in to the interface from a supported browser (the **DME System Requirements** document from the Excitor website at ***Excitor - Technical Requirements*** ***http://www.excitor.com/Technical_Requirements-31.aspx***).

Your DME partner who installed the DME system will provide you with a URL. Note that access to DME must be secure (must use the HTTPS protocol). A typical URL looks like the following:

```
https://dme.your-domain.com:8080
```

The `:8080` part of the URL example above is the standard port number. By accessing the DME administration interface through this port, which is defined during installation of the DME server, you can be sure to be able to access the interface, even if the server is very busy. The server has set aside special resources for monitoring this port.

Please note that since DME 3.0 SP 3, you cannot access the DME administration interface using `localhost` or `127.0.0.1` as server address.

When you browse to the supplied URL, the following login screen is shown:

To log in to the DME server, you have to be member of either the **DME_Admin** or **DME_Superuser** group. This can be a local DME group or an LDAP/Active Directory (AD) group. For more information about user access and group memberships, please see ***About users*** on page 79.

Enter your user name and password, and click **Login**.

In a default installation, a local system user named **SYSADM** exists. This user is member of the local **DME_Admin** group. This way, it is always possible to log in, even if no connection to LDAP/AD is available.

Main tabs

All DME control options in the DME server are divided into *tabs* along the top edge of the window. The currently selected tab is shown in a contrasting color, as in the example below where the **Server** tab is selected.

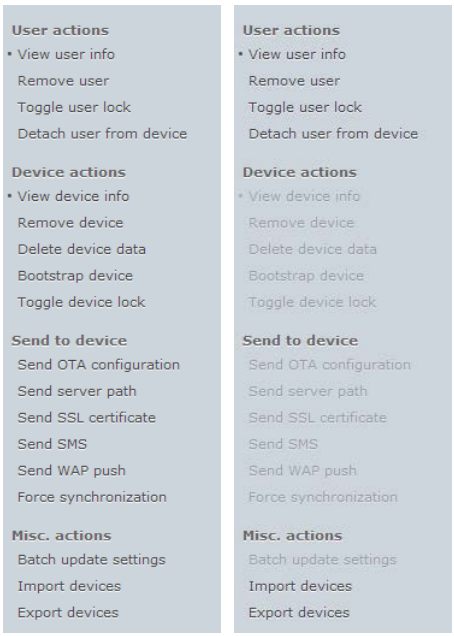
When you open the DME Server Web Administration Interface, the default tab is **Devices**. You can switch to another tab by clicking the name of the tab. To refresh the data shown in a tab, click the tab again.

This manual is structured around tabs, and describes each tab in its order of appearance.

Page menu

To the left on each page, a *page menu* gives access to functions that apply to the current tab. The page menu below is from the **Devices** tab.

In the **Devices** tab, the page menu only enabled the functions that apply to the device or devices currently selected in the table to the right of the menu. In the first version of the page menu below, a device with an associated user has been selected. In the second example, a user with no associated device has been selected. Note the inactive (gray) menu items.



Two items are used more often than the others: **View user info** and **View device info**. They are marked with a small dot to make them stand out more:

Double-clicking a device corresponds to selecting **View device info**.

Some functions are general, and do not apply to any device in particular, for example **Import devices**.

The page menu is divided into categories of related functions, each of which is described in separate sections in this manual.

Table

A tab may contain information in a *table*, for example the table listing all the devices owned by your company. The table is divided into *items* (rows) and columns.

Most tables can be sorted. To sort a table, click the header of the column by which you want to sort the information.

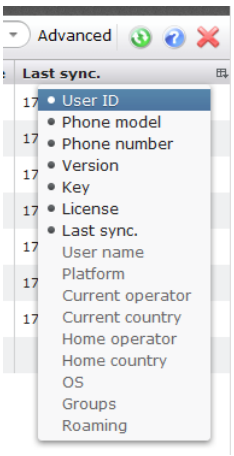
1. Click once to sort in ascending order.
2. Click again to sort in descending order.

The current sort order is shown by a ▲ or a ▼ in the column header.

To select an item in a table, simply click it. Double-click to edit the item.

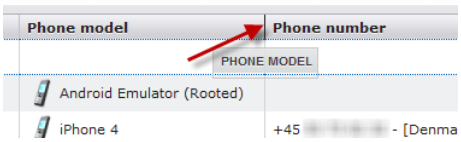
To select multiple items in a table (for instance devices in the **Devices** tab), click one device, and then Ctrl+click other devices to select them individually, or Shift+click to select the devices listed between the last selected device to the device you click on. Selected items are clearly marked in a contrasting blue color.

A number of columns are displayed by default. Click the column selection button to see the available columns and to choose which columns you want displayed:



In this example from the **Devices** tab, you can choose to see eight more columns: **Key**, **Platform**, **Current** and **Home operator**, **Current** and **Home Country**, **OS**, **Groups**, and **Roaming**. Click each one to add it to the list of visible columns. Note that not all tables allow you to select the columns you want to see.

You can also move the columns around. Simply grab a column header and drag it to the new location. The new location is indicated by a fully drawn line between the column headers where the column will be dropped:



The column settings are retained between DME sessions - DME "remembers" your choices when you log out and log back in again.

Toolbars

A number of toolbars may be displayed below the main tabs area.

Tab toolbar

The **Devices** and **Connector** tabs, as well as several setup panels and elsewhere, show a *tab toolbar* along the top of the page, just below the main tabs. This toolbar contains actions that apply to the current tab or item being edited - for instance, creating, deleting, or performing some action on a device. The tab toolbar actions apply to the currently selected item or items, or to the item currently being edited in a setup panel. The tab toolbar shown above is the tab toolbar from the main **Devices** tab.

The tab toolbar will change depending on which function is selected in the page menu or which panel section is opened.

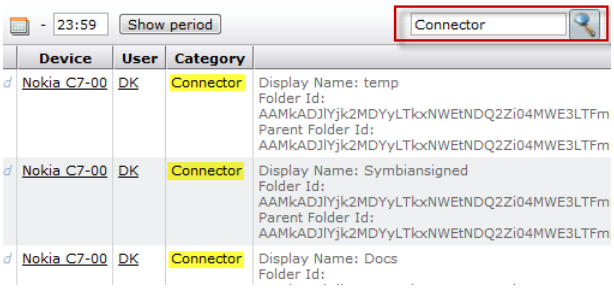
This is the tab toolbar from the main **Devices** tab. It also contains text:

This is the tab toolbar from the device setup panel:

Filter bar - old style

The look-and-feel of the DME web administration interface is undergoing a general brush-up. Until that process is completed, there are two types of **Filter bar** in DME - the old style and the new style.

The old-style filter bar is used in the **Log**, **Provisioning**, **Analyzer**, and **Connector** tabs.



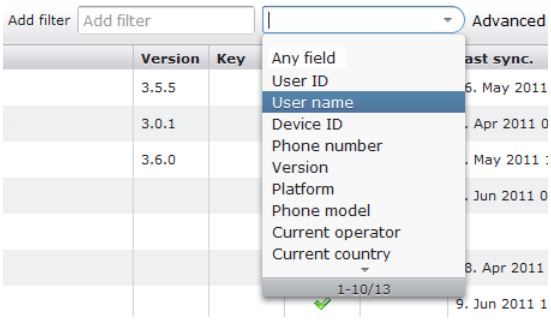
The *filter bar* is located near the middle of the toolbar area. With the filter bar, you can *filter* the items displayed in the current view.

In the text filter box (indicated in red in the graphic above) you can enter a text and click the magnifying glass icon. The table will then only show items that contain the text you entered. The text can be found in any column. For example, in the **Log** tab you can type "Connector" and press **Enter** or click the magnifying glass icon to reduce the list to only show entries that pertain to the **Connector** category. Note that if any of the other rows happen to contain the word "Connector" in any column, then they will be shown as well.

Whenever a filter is applied to a table view, the magnifying glass icon is shown with a recessed background. To turn the filter off, click the magnifying glass icon again.

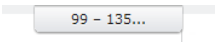
If you switch to another tab that contains a text filter box, any selection in the filter bar will be retained, and the table will be filtered according to your selection.

Filter bar - new style



Another type of *filter bar* is shown in the **Devices** tab. With this filter bar, you can limit your search to just one column, or you can apply advanced filters to the page.

It is important to note that unlike previous versions, there is no *table navigation bar* in the **Devices** tab from version 3.6 (for more information, see ***Table navigation bar*** on page 38). This means that there is no paging mechanism - all devices are shown on the same page. DME reads the devices from the database as you scroll down the page. This is why DME sometimes stops for a moment and displays something like this:

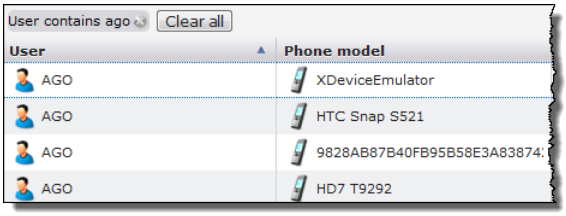


This happens when the page display cannot keep up with the database activity caused by your scrolling.

To apply a filter to the **Devices** tab, enter some text in the **Add filter** box. Then choose which column you want to search in the drop-down selection box next to the **Add filter** text box. The default selection is **Any field**. Note that you can search in fields that are not currently shown - for instance, you can search for a user name even if the **User name** column is not currently shown.

As you type a column to filter by, the list shrinks as you type. For instance, to select **Version**, you just need to type a **V** to reduce the selection to **Version** only.

With the search criterion and the column selected, press **Enter** to execute the search. The **Devices** page now shows only the items that match your filter. The **Add filter** box is cleared, and your search criterion is added as a button along the top edge of the page. In this example, the user has searched for the devices belonging to the user **AGO**:



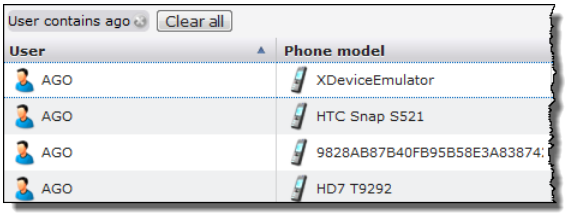
The new, gray button shows the filter criterion used (**User contains**) and the value of the filter (**ago**). To return to the original, unfiltered view, click the small at the right-hand side of the filter button.

If multiple filters are selected (see the next section), you can click the **Clear all** button to return to the unfiltered view.

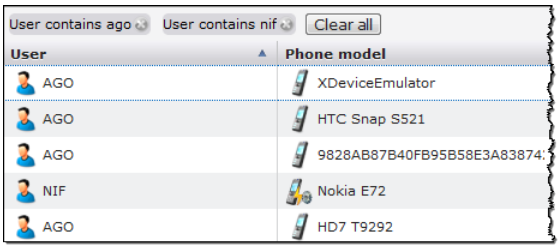
Multiple filters

In the **Devices** tab, it is possible to use the filter bar to apply multiple filters to the default view. When you do this, DME used a built-in logic to decide whether to use the filter criterion to add to the list of displayed devices, or to shrink the list. In technical terms, a list grows if a boolean **OR** is used, and a list shrinks if a boolean **AND** is used between the criteria. This is best illustrated with an example.

In the previous section, the DME administrator searched for devices belonging to the user **AGO**:

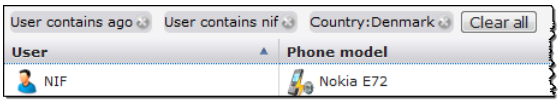


If the DME admin adds the following criterion: User contains nif, the list will look like this:



As you can see, the device belonging to user **NIF** has been *added to* the list.

Now say that the DME admin adds the following criterion:



Now the list is shrunk to only display those among the selected users whose home country is **Denmark**.

This can be expressed like this in boolean terms: **`(User:ago OR User:nif) AND Country:Denmark`**

The logic here is that the administrator would probably *not* want to see devices belonging to user **ago**, user **nif**, and all devices with **Denmark** as home country.

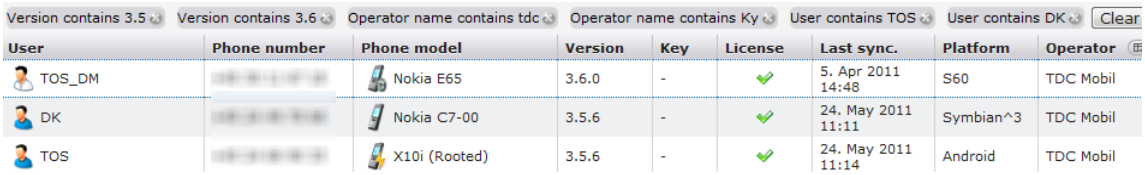
Whenever you use multiple filters with *the same operator*, DME interprets this as an **`OR`**. So if you search for **Denmark** and **Sweden**, DME will find all devices that have Denmark *or* Sweden as home country. However, when you *mix the operators*, DME will add an **`AND`** between the operators that are different. For instance:

`(User OR User) AND Country`

`(Version OR Version) AND (Operator OR Operator)`

`(Version OR Version) AND (Operator OR Operator) AND (User OR User)`

etc. The latter search might yield a result like this:

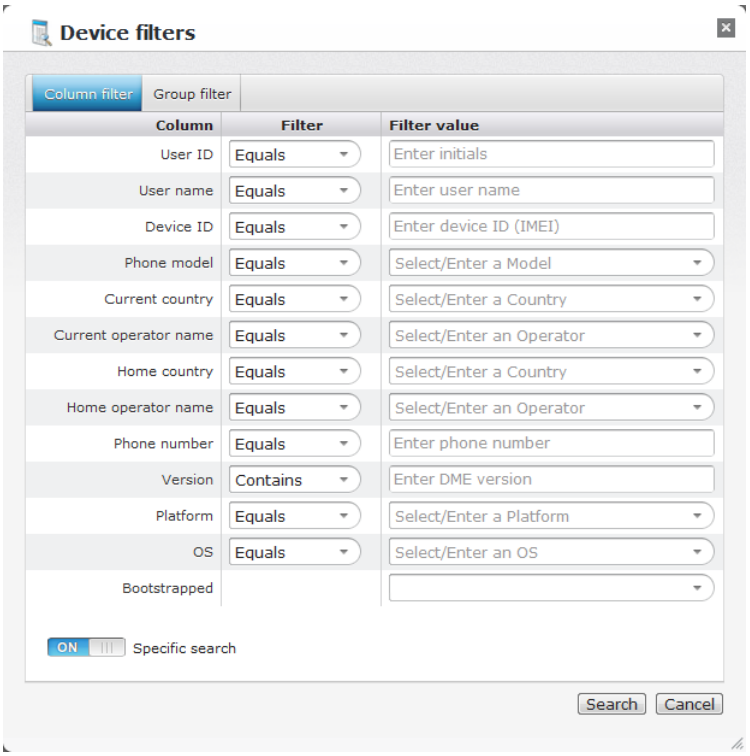


Note that the sequence in which you enter the criteria does not affect these rules.

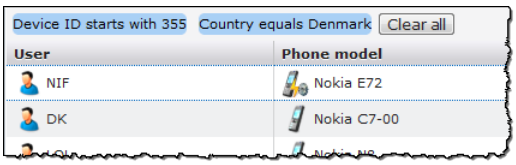
See also the following section about advanced filter criteria.

Advanced filters

If your filtering needs are not sufficiently covered by the standard filter bar, click the **Advanced** button to open the **Device filters** dialog. From here, you can find specific instances of what you are searching for (the standard filter finds whatever *contains* the phrase you are searching for - for instance, searching for **TDC** as **Operator** finds both **TDC** and **TDC Mobil**), you can add other operators (for instance not equal, greater than, smaller than), and you can search for devices that belong to specific groups.



Make your selections in the **Column filter** tab or the **Group filter** tab, and click **Apply**. DME executes the search. Your selection criteria are shown as blue bubbles along the top edge of the page:



You cannot combine advanced and regular filters.

Column filter

In the **Column filter** tab of the **Device filters** dialog, you can search for devices that fulfill the criteria you enter. The tab contains the following columns and fields:

- **Column**

  This column lists the searchable columns in the **Devices** page. For each of these columns, you can select a filter and enter a filter value.

- **Filter**

  In this drop-down list, you can choose the filter operator you want use for the current filter. You can choose among the following operators:

  Not equals: To match the filter, the current column must not match the filter value in the current column. Example: `User Not equals nif` matches all users except **nif**.

  Equals: To match the filter, the current column must match the filter value exactly. Example: `User Equals nif` matches **nif**, but not **nifa** or **enif**.

  Contains: To match the filter, the current column must include the filter value. Example: `User Contains nif` matches **nif** and **nifa** and **enif**. This corresponds to the way the standard filter works.

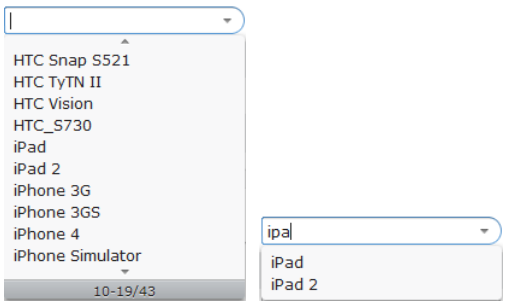
  Starts with: To match the filter, the current column must begin with the filter value. Example: `User Starts with nif` matches **nif** and **nifa**, but not **enif**.

  Ends with: To match the filter, the current column must end with the filter value. Example: `User Ends with nif` matches **nif** and **enif**, but not **nifa**.

  These filter operators can be selected for all columns, except **Version**, which only allows the **Contains** filter, and **Bootstrapped**, to which no filter operator can be applied.

- **Filter value**

  In this field you enter the value you want to match against the device information from the current column. For the **Phone model**, **Platform**, **Country**, and **Operator name** columns, DME generates a list of the existing values in the system.



The list will shrink as you type in the text field.

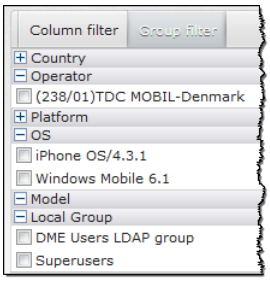
- **Specific search**

  If you mark this checkbox, DME will evaluate all your filters at the same time - only those devices that match *all* the criteria will be shown. If the checkbox is not marked, devices that match *any* of the criteria will be shown.

  In technical terms, marking the checkbox puts an **AND** between the criteria; leaving it unchecked puts an **OR** between the criteria.

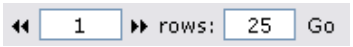
Group filter

The **Group filter** tab shows a list of the manually created groups on your system. For more information about groups, see ***Group management*** on page 279.



Click the plus and minus icons to expand or collapse the available group types (**Country**, **Operator**, **Platform**, **OS**, **Model**, and **Local group**). In each group type, you can select one or more groups. When you click **Apply**, the **Devices** tab will show the devices that are currently assigned to the selected groups.

Table navigation bar



The *table navigation bar* is shown in some of the tabs that show tables, such as **Provisioning** and **Log**. By default, DME shows 25 items (rows) in the table at a time. You can change this number in the second text box in the table navigation bar and click **Go** to see the specified number of rows. Furthermore, you can browse the items in the table one page at a time by clicking Previous (◀◀) or Next (▶▶), or you can go to a specific page by entering the page number in the first text box and clicking **Go**.

DME toolbar

The *DME toolbar* contains actions that apply throughout the Web interface:

Refresh: Refreshes the current tab only. Faster than a full browser refresh.

Note that it is important that you use this button rather than the browser refresh butto
Using this button refreshes the data shown on the page, for instance the device list; usin
standard browser refresh does not necessarily do that.

Online help: Shows a help page for the Web interface. See ***Online help*** on page 40.

Log out: Logs you out of the DME server administration Web interface.

Furthermore, clicking the DME Administration logo opens a popup window showing version and copyright information about the DME server. See ***About DME*** on page 39.

About DME

Clicking the DME Administration logo opens a window showing version number, build number, revision number, copyright information about the DME server, and a link to the Excitor website.

Keyboard shortcuts

The following is a list of keyboard shortcuts available in the DME server Web interface. Please note that the way to invoke a keyboard shortcut is different in different browsers:

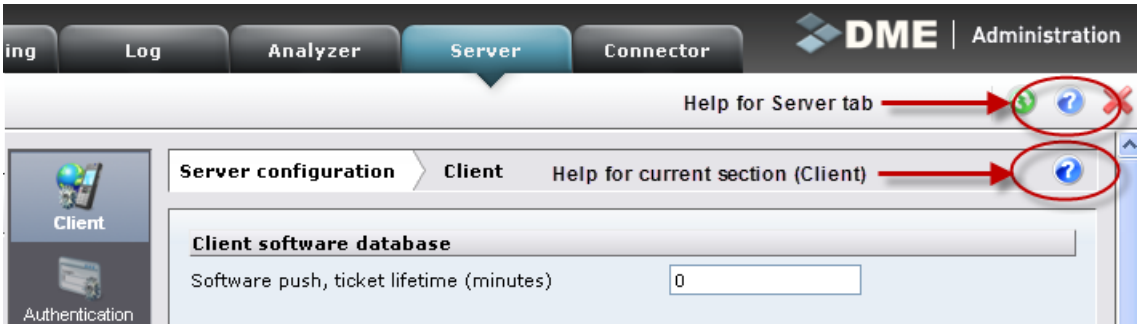
- In Internet Explorer, use **`Alt`** as modifier key.
- In Firefox, use **`Alt+Shift`**.
- In Google Chrome, you can use either **`Alt`** or **`Alt+Shift`** as modifier key.

Action	Shortcut
Browse page back	**`Modifier+Z`**
Browse page forward	**`Modifier+X`**
Enable/disable filter	**`Modifier+F`**
Refresh current tab	**`Modifier+R`**
Expand/Collapse groups	**`Modifier+C`**

Online help

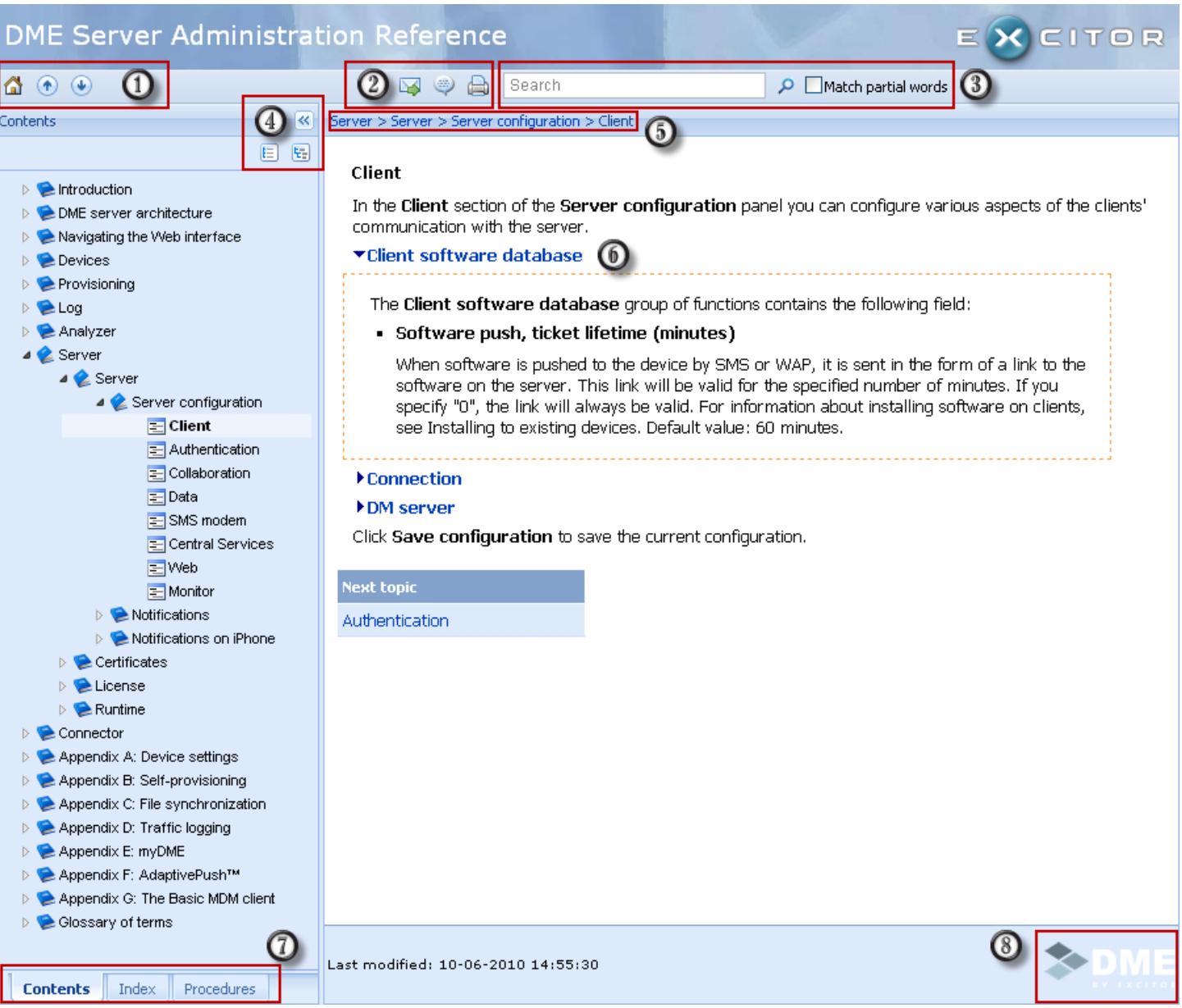
The DME server is delivered with a set of documentation files in HTML format. By default, the files are installed on a server made available for this purpose by Excitor A/S. If you need to host the files yourself (for instance due to firewall restrictions), please contact your DME partner.

To access the documentation, click the  icon in the DME toolbar or in the right-hand side of a panel section header:



The online help is context sensitive, meaning that the help page you see will match the place from which you clicked the help icon. For instance, if you click the help icon from the DME toolbar in the **Server** tab, you will receive help for the **Server** tab. If you click the panel item help icon from the **Client** panel item on the **Server** tab, you will receive help for that topic.

When the help page is open, you can browse to other topics using the table of contents, look up indexed terms, or search for terms anywhere in the documentation. The numbers in the illustration refer to the list below:



1. With these buttons, you can:
   - lick **Home** to go to the documentation home page.
   - lick **Previous** to go the previous topic.
   - lick **Next** to go to the next topic.
2. With these buttons, you can:

- end a link to the current topic to a colleague or client.
- end feedback regarding the current topic to the Excitor documentation department (which is most welcome!).
- rint the current topic.

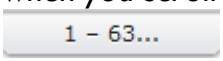
3. Search the entire reference manual. The search currently does not support advanced search criteria, but finds a list of topics containing the word or words entered in the Search box.
4. With these buttons, you can:
   - ollapse the current left pane to the left side of the window. When collapsed, you can click the pane name (for instance **Contents**) to expand it until you click a topic, or click this button again to expand the pane permanently again.
   - ollapse all entries in the **Contents** pane.
   - xpand all entries in the **Contents** pane.
5. Clickable "Breadcrumb" path to your current location in the documentation.
6. Click to expand or collapse subsections in the page.
7. Switch between **Contents**, **Index**, a list of defined **Procedures** in the documentation, and possibly a **Search** pane if you have just conducted a search.
8. Click to visit the Excitor commercial home page.

The path to the online help files is specified in the **Web** panel item on the **Server** tab. See ***Web*** on page 233.

Devices

The **Devices** tab is the default tab, that is the tab which you see first when logging in to the DME server. The tab contains a list of all users and devices known to the DME server, filter functions, tab toolbar actions, and a page menu with further options. Every item in this tab is described in the following sections.

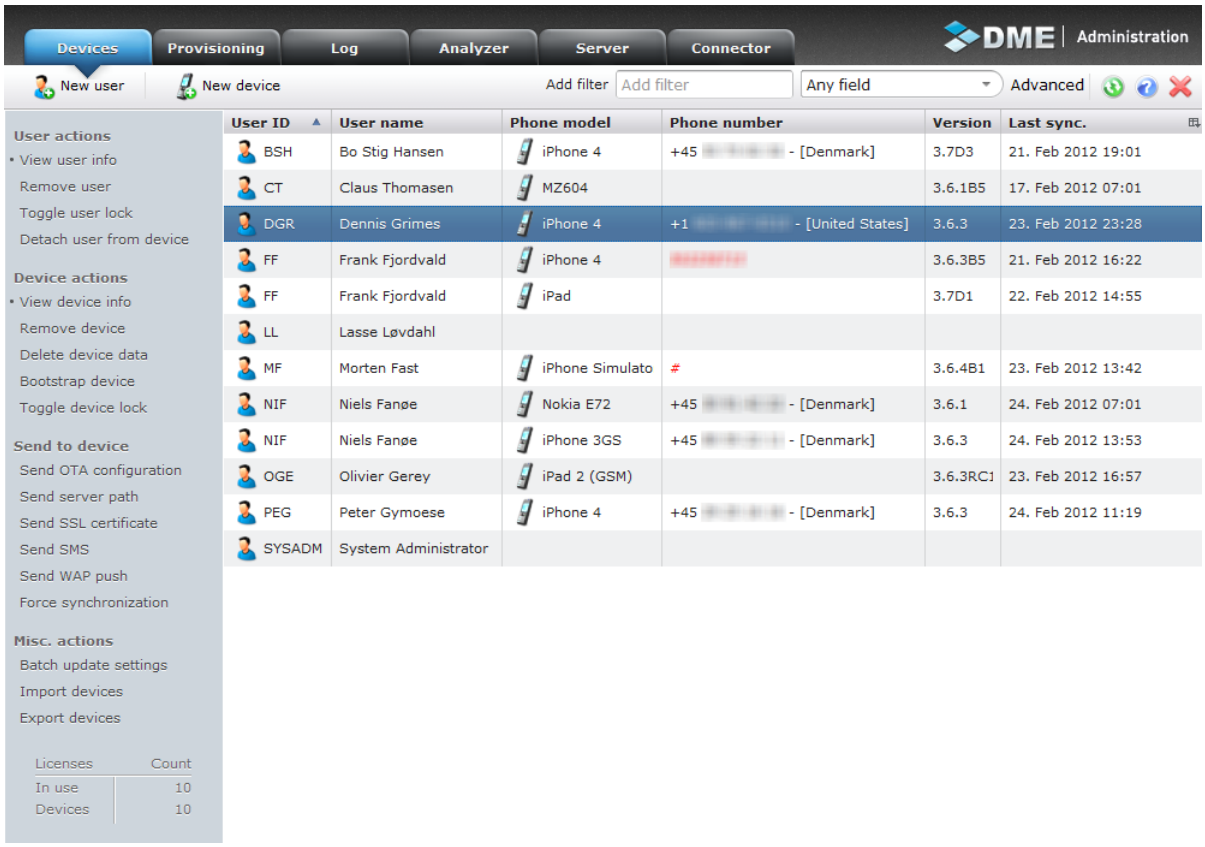
The **Devices** list shows *all devices in the system* on the same page. The devices are loaded on the page as you scroll. This way you do not need to page through the devices. Sometimes there will be a short lag when you scroll down the page, and the browser will display a



or similar as the devices are read into the browser window.

In general, we recommend using the filter facilities for finding specific devices rather than browsing for them. See ***Filter bar - new style*** on page 33.

A typical device overview could look like this:



To select multiple devices, simply click the devices you want to select (or deselect). Selected items are clearly marked in a contrasting blue color. You can use keyboard modifiers when you click - to select a range of devices, click one, press and hold **`Shift`**, and click another device to select all devices between the two. Use **`Ctrl+Click`** to deselect or select one device while retaining the current selection of devices.

Columns

The list contains a number of columns, which are described in the following. By default, DME shows the following columns:

User ID, **User name**, **Phone model**, **Phone number**, **Version**, and **Last sync.**.

However, by clicking the column selection button  you can choose to hide some columns or show other columns. See ***Table*** on page 30 for more information.

User ID

The **User ID** column shows which user is associated with which device(s). A user can be in the list multiple times if he or she owns several devices. The list shows *local users*, *directory users*, and *anonymous users*.

If you let the mouse pointer rest on a user in the list, a box will appear showing the full name of the user. This information derives from the DME database and can be edited in the **User** setup panel.

1. **Local users**

    *Local users* are manually created users, whose credentials are stored in the DME database only. When the DME system is installed, a user called **SYSADM** is created locally. This user must be able to log on to the DME interface, even if the directory system (LDAP or Active Directory) is down or misconfigured.

   Local users can be configured to be able to synchronize their device with the collaboration system. They are created by clicking the **Add user** action. See Add user for more information about local users and where they apply.

2. **Directory users**

Directory users are users who are authenticated against the directory (LDAP or Active Directory). The bulk of users will typically be directory users.

3. **Anonymous users**

   Anonymous users are users of the Basic MDM client. This type of client has no interaction with the collaboration system and is for device management purposes only. The user initials are generated automatically by DME, but can be changed by clicking the user icon (or on the client). For more information, see ***Appendix G: The Basic MDM client*** on page 425.

4. **Locked users**

   Locked users are users for whom access to DME has been denied. See ***Toggle user lock*** on page 54 for more information.

To see more user details and to edit a user, select the user in the list, and click **View user info** in the page menu. For more information about users, see ***Setting up users*** on page 75.

User name

The **User name** column shows the name of the user associated with the current device. See the **User** column.

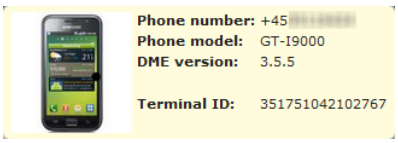
This column is hidden by default, but can be selected by clicking the column selection button .

Phone model

The **Phone model** column shows information about the devices that are managed by DME. Each device is named by the make and model of the device.

If you let the mouse pointer rest on a device link, a box will appear with more information about the current device:

- Device phone number
- Device model
- DME version installed on device
- Device ID (terminal ID)
- Possibly a picture of the device:



The information derives from the DME database, and can be edited in the **Device setup** panel. To edit the device, double-click the line in which the device is displayed, or select the device and click **View device info** in the page menu. For more information, see Setting up devices.

Each device is identified by a unique ID, which is the IMEI number of the device. If the device does not contain a phone module, the ID will be the MAC address of the device. Please also note that due to Apple API restrictions, iOS devices do not report their IMEI number. Instead, a unique ID is shown.

The **Phone model** column may contain the following icons:


If the icon is followed by a model name, this is a device being managed by DME. It is associated with the user on the current line (if any).


This device is currently connected using network push.


This device has been bootstrapped. The icon can be combined with the network push icon above as well.


The device is currently synchronizing with the server.


The device is locked. Perhaps the associated user is under notice. See ***Toggle device lock*** on page 61.


If the column shows an icon with not model name, the user on the current line does not currently hold a device.

The icon is followed by the device type. This is the type reported by the device. The DME client may adjust or change the device type. For instance, the client adds **(Jailbroken)** to iPhone devices that have been jailbroken (and thus not formally supported), and adds **(Rooted)** to rooted Android devices. Such devices can be locked automatically by DME - see ***Authentication*** on page 217.

Phone number

The **Phone number** column shows the phone number of the device. The phone number is used for notifications, provisioning, and other information pushed to the device by SMS or WAP. The device user can change the phone number from within the DME client on the device (for instance if a new SIM card is installed in the device).

The phone number is stored in the database as it is reported by the phone, for instance **30116424**. When the phone number is displayed on this page, it is automatically formatted according to the country of the device. If the phone in the example reports that it is a Danish phone, the number will be prepended with the Danish international calling code **+45**, and the number would be formatted according to Danish standards: **+45 30 11 64 24**.

Version

The **Version** column shows the version number of the DME client running on the device on the current line. For more information about provisioning and upgrading software on the devices, see Provisioning.

Last sync.

The date and time shown in this field is the date and time of the last synchronization of the device with the server. For more information about synchronization, see ***Schedule*** on page 246 and Setting up devices.

If a user holds multiple devices, and push mail has been enabled for the user (see ***Collab.conf.*** on page 81), the e-mail push is sent to the device that synchronized last.

Key

This column shows the key exchange status for each device. If **Client signature** is enabled in the **Authentication** > **Security** section of the **Server configuration** panel in the **Server** tab (recommended), a device can only connect to the server if it has the correct certificate (key pair) installed. The symbols in this column have the following meaning:

No key exchange has been performed for this device. Possible reasons: Client signing is not enabled, or a key has never been generated for the device (and **Auto sign** in the server configuration is disabled).

The server has initiated a key exchange process with the device. Either the administrator specifically issued a new device signing key, or **Auto sign** is enabled in the server configuration. The device has not yet synchronized with the server after the key has been issued.

The device has synchronized with the server after the key has been issued. The server is now waiting for the device to return a key for validation. This may never happen if the client does not support key generation, and the server is in compatibility mode. If this is the case, the client is permitted to synchronize.

The key exchange has been performed with success. The client has made a successful connection to the server.

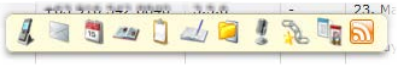
With client signing, you can be absolutely sure that only devices that are known to the system can gain access to DME. For more information, see ***Add client signing key*** on page 71 and ***Authentication*** on page 217, or request the special documentation "Client signing".

This column is hidden by default, but can be selected by clicking the column selection button .

License

This field shows if the current device uses up a license. If the field shows a colored check mark icon , the device is using a license. Otherwise, the device does not use a license. You can see the number of free licenses at the bottom left corner of the page.

If you let the mouse pointer rest on the colored check mark icon, a series of icons show what DME functions the current device is licensed to use, for instance as shown below:



For more information about licenses, see Manage licenses.

This column is hidden by default, but can be selected by clicking the column selection button .

Platform

The **Platform** column shows the name of the platform on which the device on the current line is running. For instance, the platform of a **Nokia E72** device is **S60**.

This column is hidden by default, but can be selected by clicking the column selection button .

Operator

The **Operator** columns show the name of the phone operator used by the device on the current line. It comes in two versions:

The **Home operator** column shows the home operator of the SIM card.

The **Current operator** column shows the operator reported by the device at the latest synchronization. If the device is currently roaming, the current operator will be different from the home operator.

These columns are hidden by default, but can be selected by clicking the column selection button  .

Country

The **Country** column shows the name of the country of the device on the current line. It comes in two versions:

The **Home country** column shows the country registered on the SIM card.

The **Current country** column shows the country reported by the device at the latest synchronization. If the device is currently roaming, the current country will be different from the home country.

These columns are hidden by default, but can be selected by clicking the column selection button  .

OS

The **OS** column shows the name of the OS on which the device on the current line is running. For instance, the OS of a **Nokia E72** device is **SymbianOS/9.3**.

This column is hidden by default, but can be selected by clicking the column selection button  .

Groups

The **Groups** column shows if the device on the current line is member of any manually created groups based on directory (LDAP/AD) groups. Such groups are created in the **Server** tab. For more information, see ***Group management*** on page 279.

This column is hidden by default, but can be selected by clicking the column selection button  .

Roaming

The **Roaming** column shows a special icon -  - if the device on the current line is currently *roaming*. Roaming devices are using a different operator than their home operator, resulting in higher voice and data costs.

This column is hidden by default, but can be selected by clicking the column selection button  .

Tab actions

The selection of actions on the tab toolbar depends on context - whether the main **Devices** table is shown, or whether you have first selected a function in the page menu. In many cases the tab toolbar is not available after a function has been selected.

The main **Devices** tab toolbar contains the following actions.

New user

Click the **New user** action from the main Devices tab or from the **User** setup panel to create a new user manually. DME usually retrieves the users from the AD/LDAP directory system to which DME is connected. However, you may want to add users manually in the following cases:

1. *To ensure availability*

   If, for some reason, DME is not connected properly to the LDAP system, you need to have a user in the system with access to the DME server. Otherwise you will not be able to correct any connection setup errors in the DME interface.

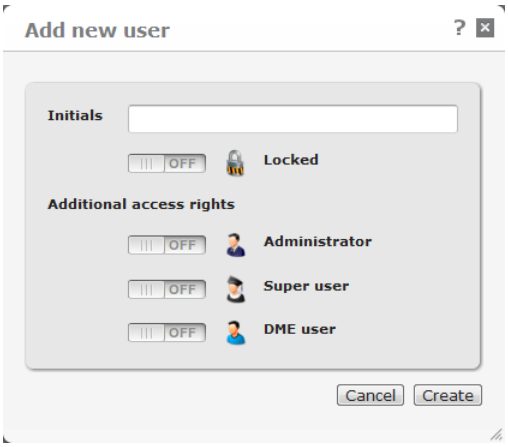
2. *To add external users*

   If you need to add users who have not been created in the LDAP system to DME for device management purposes. This could for example be a third-party consultant who has been given a mobile phone but has not been created in the mail system.

3. *To host users*

   If you host users that are not part of your collaboration system and therefore not members of your directory.

When you click the **New user** action, DME shows the following popup window:



In the **Initials** field enter a unique user ID. If you do choose the ID of an existing user, no harm is done - when you click **Create**, DME simply opens the setup panel for the existing user with those initials. The initials could also be for instance an e-mail address if you want to make sure the initials are unique.

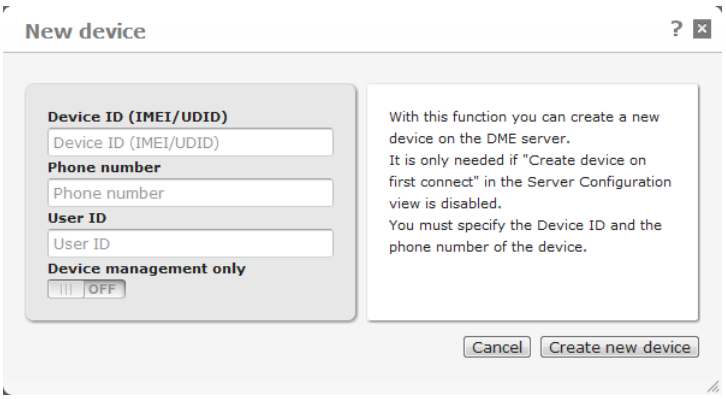
Choose **Locked** if you want the new user to be locked out of DME to begin with, and specify the role of the user in DME - **Administrator**, **Superuser**, or regular **DME user**. For more information about these options, see ***Setting up users*** on page 75.

Click **Create** to add the new user to the list.

New device

Click the **New device** action to create a new device in the list manually.

This action should normally only be used if "Create device on first connect" in the **Authentication** section of the **Server configuration** panel is *disabled*. If that setting is *enabled*, you can simply push the DME client by SMS/WAP or OMA DM to the new devices, and they will be created automatically in DME the first time they connect to the DME server. For more information about this, see ***Authentication*** on page 217. If this is not possible, you can create the device manually by selecting the **New device** action. DME shows the following page:



- **Device ID**

  Enter the IMEI number of the device in this field. The IMEI (International Mobile Equipment Identity) number is the unique 15-digit serial number on your phone, and this is what uniquely identifies the device on the server. There are several ways to find the IMEI number:

  - heck the label underneath the device battery.
  - nter ***#06#*** on your phone's keypad. When the final **#** is entered, a 15-digit number with the title "IMEI number" or "Serial number" will appear.
  - n Motorola devices, you may have to enter #,*,[menu] and then the right arrow very quickly.
  - pple iOS devices do not have IMEI numbers. Instead, use the UDID (Unique Device Identifier), which you can find printed on the box it came in, or through iTunes.

- **Phone number**

  The phone number is used when you push information to the device.

- **User ID**

  If you specify a user ID while creating the device, the device will be assigned to the user in question as it is created. If the user does

not exist, it will be created as a DME user or a Basic MDM user (see below).

- **Device management only**

  If this field is selected, the user specified in the **User ID** field above is created as a Basic MDM user (see ***Appendix G: The Basic MDM client*** on page 425). The user created is shown with a white shirt. An MDM user can later be converted to a regular DME user.

  If the field is not selected, the user is created as a regular DME user. A regular DME user *cannot* be converted to an MDM user.

Click **Create new device**. DME adds the device to the list, and you can then set up the device as described in the section Setting up devices. To cancel the creation of a new device, click the **Devices** tab.

Se also ***Import devices*** on page 73 for information about creating many devices at a time.

Page menu

The **Devices** tab page menu contains a number of functions, divided into the following groups.

User actions

The **User actions** group of the page menu in the **Devices** tab contains functions related to users.

View user info

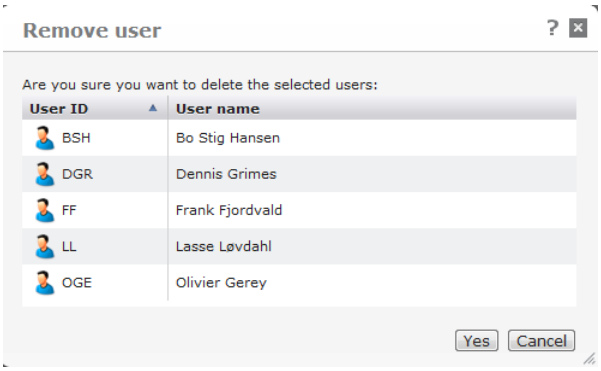
When you click this function, you can view and edit the user selected in the **Devices** page.

For more information, see ***Setting up users*** on page 75.

Remove user

Click **Remove user** to remove the currently selected user(s) from the list. You should only use this action if you are absolutely sure that you want to remove the user from the DME system. Even though you can easily recreate the user, all statistical information about usage, devices, and so on will no longer be associated with the user that you recreate.

DME will ask you to confirm the removal:



Note that a user with **Administrator** role (see ***About roles*** on page 79) cannot delete his own user. Another administrator must do that. This is to prevent a situation where a DME system is left with no administrator users.

Toggle user lock

Click **Toggle user lock** to toggle the locked status of the currently selected user(s). Locking a user can be useful in case the user is suspended or terminated, and the user should not be able to read corporate e-mail.

DME asks you to confirm the action.

Detach user from device

Click **Detach user from device** to break the link between the currently selected user or users and his or her device(s). This means that the connection between the user and the device is severed, and the user and his device will appear on separate lines in the **Devices** tab. Any statistics that affect the user or the device will no longer have any influence on the other.

This action is necessary if users want to switch devices and **Device allowed to switch user** is disabled in the **Authentication** section of the **Server configuration** panel in the **Server** tab (see ***Authentication*** on page 217).

DME asks you to confirm the action.

Device actions

The **Device actions** group of the page menu in the **Devices** tab contains functions related to devices.

View device info

When you click this function, you can view and edit the device selected in the **Devices** page.

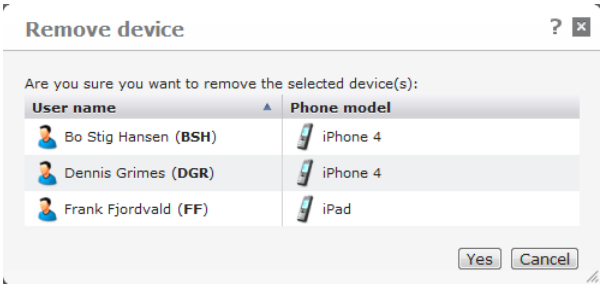
Alternatively, you can double-click an entry in the **Devices** page.

For more information, see Setting up devices.

Remove device

Click **Remove device** to remove the currently selected device(s) from the list. You should only use this action if you are absolutely sure that you want to remove the device. Even though you can easily recreate the device, all statistical information about device usage, voice traffic, and so on will no longer be associated with the device that you recreate.

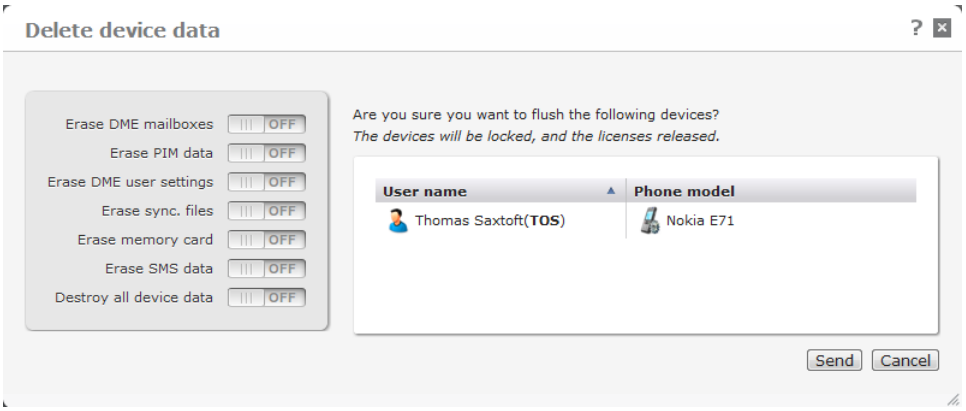
DME asks you to confirm the action:



Delete device data

If a device is stolen or lost, use this function to remotely flush data on the device. This way you can be certain that the data stored on the device cannot be read. You can also use the window in connection with troubleshooting or support.

Select one or more devices, and click **Delete device data** in the page menu. The following window is shown:



First choose the extent to which data on the device should be deleted:

- **Erase DME mailboxes**

  All mail from the DME client.
- **Erase PIM data**

  Calendar information, to-dos/tasks, notes/journals, and contacts.
- **Erase DME user settings**

  All settings related to the DME client (as defined in **Settings** on the client). Restores the default settings, as if the client was launched for the first time.
- **Erase sync. files**

  DME attempts to erase all files synchronized to the device. If a file is open in an application, DME will attempt to close the application before deleting the file.
- **Erase memory card**

  All data on any memory card in the device are wiped, if possible.
- **Erase SMS data**

  All messaging data on the device are erased (SMS, MMS, POP3, ActiveSync messages, etc.).
- **Destroy all device data**

  All that can be deleted from the device is deleted. See below for more information.

  The device must usually be reformatted to work properly again.

When you click **Confirm**, a command is sent to the chosen device(s) to delete all the user data on the device(s) within the selected areas. The data is wiped and zero-wiped if possible (meaning that all available data space is overwritten with zeros, effectively wiping any remains of the original data). This function cannot be reversed and should be used with care. The affected devices will also be locked, and any DME license associated with them will be released.

Whenever one of the wipe commands is completed, for instance the wipe of the DME mailbox, the device is instructed to notify the server that the command has been completed for the device in question. With the **All device data** option, a notification of each completed step is sent to the server. Currently, the server is notified by SMS, and the messages can be seen in the **Log** tab. This way you can see the extent to which the wipe was successful.

This function can be used when one or more device(s) are selected in the device list, or when a device is being edited.

With regard to the **All device data** option, it is usually not possible to delete all data from a device. There are a number of reasons for this. When a command is received by the DME client to delete all device data, the client goes through the following procedure:

1. First, all processes/applications with a user interface are shut down in order to release any locks they may have on files.
2. Then the file system is traversed, and every file is deleted - first in the device memory, then on any memory cards, and the memory will be wiped (filled with zeros). This process can take some time (up to 10 minutes/GB).
3. On *Windows Mobile* devices, all keys in the registry database that can be deleted are deleted.
4. On *Symbian* devices, the process will finish by attempting to factory reset the device.

If any file is locked by an internal process, it will not be deleted. The reason that DME only shuts down external processes is that shutting down an internal process may cause a device reboot. When the device boots up, the DME client will start shutting down the internal process again. This way a reboot loop is started, and the device must be taken to service.

The DME client has access to all public folders, so the entire file system is traversed.

The extent of the deletion varies from platform to platform. The table in the following section shows the result of sending the **Destroy all device data** command to devices on different platforms.

Destroy device data - by platform

The following table shows the extent of the deletion on each platform when selecting the **Destroy all device data** option.

Platform **Data type**	Symbian	WM Smartphone	WM Pocket PC	Java	iOS	Android	BlackBerry
DME data:							
E-mails	✔	✔	✔	✔	✔	✔	N/A
Calendar, incl. native	✔	✔	✔	✔	✔	✔	✔
Contacts, incl. native	✔	✔	✔	✔	✔	✔	✔

To-dos, incl. native	✓	✓	✓	✓	✓1)	✓1)	✓
Files	✓	✓	✓	✓	N/A	✓	N/A
RSS feeds	✓	✓	✓	✗	✓	N/A	✗
Non-DME data:						**5)**	
All accessible files - internal	✓	✓	✓	✓	✓4)	✓	✓
All accessible files - SD Card	✓	✓	✓	✓	N/A	✓	✓
Zero-wipe internal memory	✓	✓	✓	✗	✗	✓	✗
Zero-wipe SD Card	✓	✗	✗	✗	N/A	✓	✗
Call logs	✓	✓	✓	✗	✓4)	✓	✓
SMS/MMS data	✓	✓	✓	✗	✓4)	✓	✗
Factory reset	✓	✗2)	✗2)	✗	✓3)	✓	✗

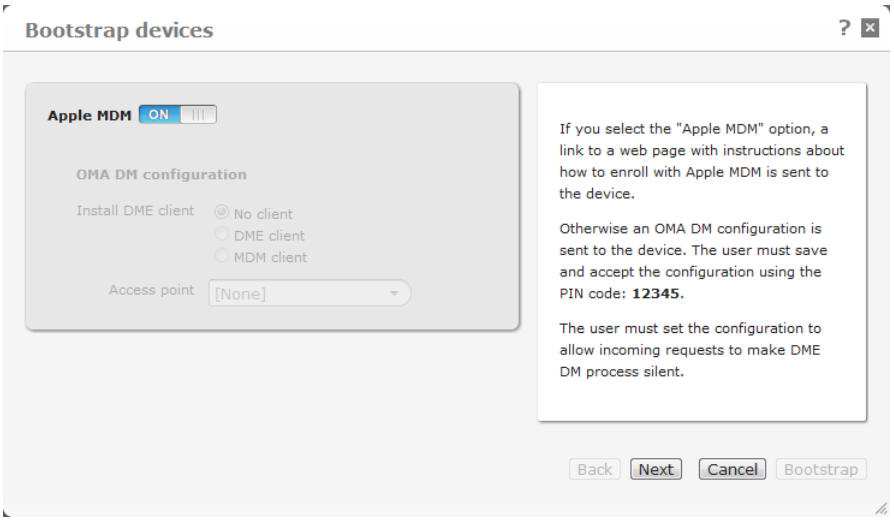
1. Native to-dos (reminders) are not deleted.
2. Windows Mobile devices cannot be factory reset directly. However, they are locked, and in order to unlock them, they must be reset.
3. Enrolled devices can be erased using an Apple MDM action (see Action request).
4. When factory reset.
5. Android devices are by default regarded as Bring-Your-Own Devices (BYOD), and DME will not delete any private (non-DME) data. Non-DME data can only be deleted using DME 3.6 Service Pack 2, and only if the device is designated a "Corporate device" in **Settings**. See ***Device security settings*** on page 380.

Bootstrap device

When you select this function, DME shows a wizard that guides you through the process of bootstrapping one or more devices.

By bootstrapping a device, you allow DME to control the device. You can then use the DME device management functions with the device without end-user interaction.

When you select this function, you must first choose which type of device you are going to bootstrap. DME supports two bootstrapping methods: *Apple MDM enrollment* and *OMA DM bootstrapping*. For more information about these two methods, see ***MDM on Apple iOS*** on page 126 and ***OMA DM installation*** on page 109.

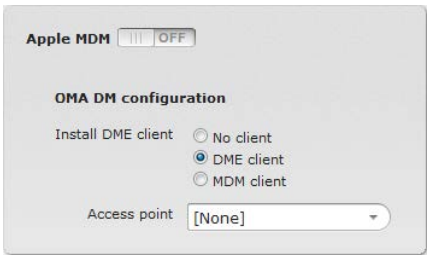


1. Enable **Apple MDM** if you to use this feature to *enroll* iOS 4.x devices. When you finish the wizard, a link to a web page is sent to the phones. The web page contains instructions to the user about how to enroll the device with DME. When the user has completed the instructions, the device can be managed using the Apple Mobile Device Management protocol. This requires that an APNS certificate is installed on the DME server - see ***MDM on Apple iOS*** on page 126 and ***Apple iOS profiles*** on page 172. For more information about the Apple MDM enrollment process, see ***Enrolling devices*** on page 127.

   When you select his field, the other fields in this window become unavailable.

   or

2. Disable **Apple MDM** if you want to bootstrap devices that support the OMA DM protocol - typically Symbian and Windows Mobile devices.



❖

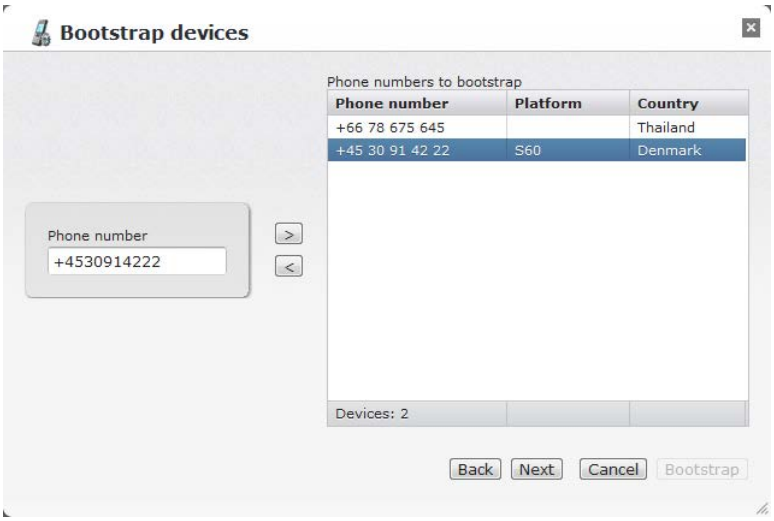
nstall DME client

In this field you can choose an additional action to be performed after the bootstrapping of non-iOS devices. If you select **DME client** or **MDM client**, DME will attempt to install the default DME client or Basic MDM client for the device platform in question after the bootstrap. A client can be marked as **Default** in the **Provisioning** software list. See ***Make default version*** on page 135.

- **pecify access point**

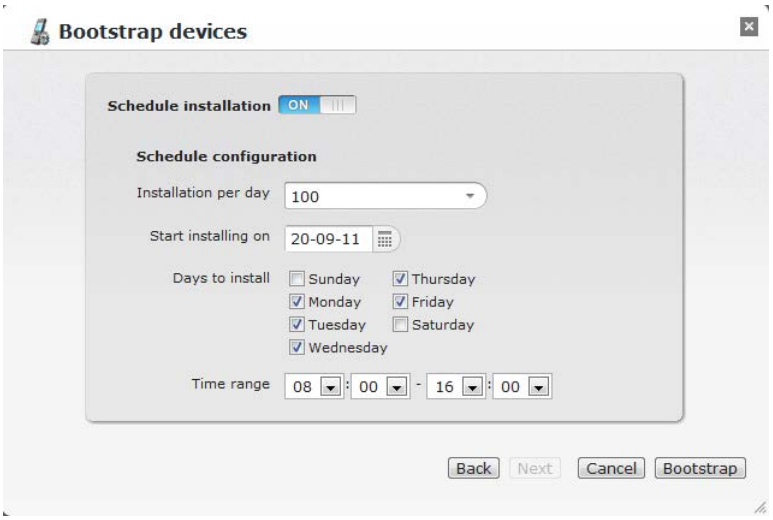
  This field shows a list of Internet access points defined in the **Access points list** page. The access point you pick will be installed on the non-iOS device after the bootstrap, if possible. For more information, see ***Access points*** on page 158.

3. Click **Next**.



You can now add phone numbers for the devices that you want to bootstrap in the **Phone number** field, and click **>** to add the numbers to the box on the right. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). If the phone number already exists in DME (it is found in the **Devices** tab), then the list will show the platform of the device. Otherwise, only the number and country of the device is shown.

4. Click **Next**.



You can now choose to schedule the installation in order to spread the DME server load. This is only relevant when bootstrapping many devices. When you click **Bootstrap** using scheduling, DME will spread out the total number of bootstrap jobs over the specified time range, on the selected days. For instance, if you permit 10 installations a day, and you want to install on 30 devices, DME will initiate 10 installations on the next three selected days starting from the date in the **Start installing on** field, spread evenly over the selected time range.

5. Click **Bootstrap**.

You can now follow the progress of the bootstrap jobs in **Provisioning** > **Status**. See ***Status*** on page 150.

Toggle device lock

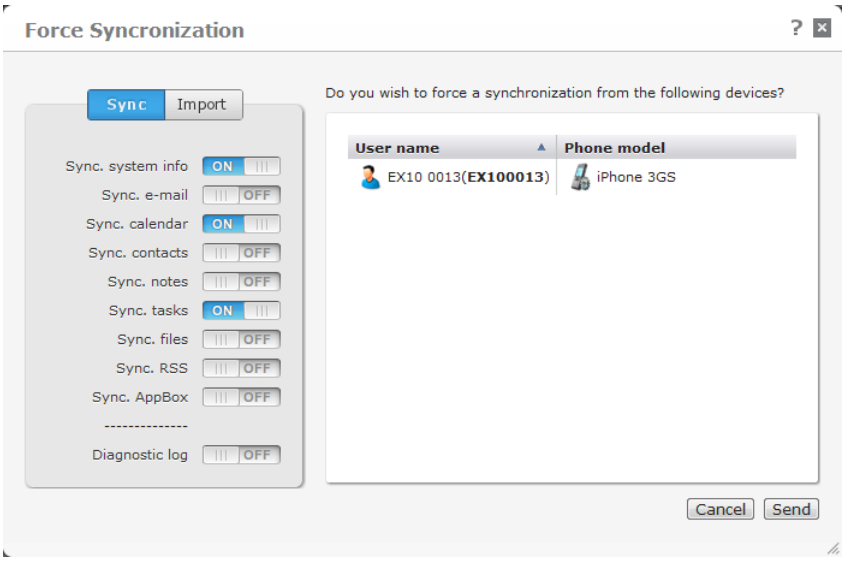
Click **Toggle device lock** to toggle the locked status of the currently selected device(s). You can for instance lock a device if it is temporarily out of service, but you do not wish to revoke its license. If devices are created on first connection, they may be initially locked. For more information, see ***Authentication*** on page 217.

Toggle license

Click this action to grant a license to or revoke a license from the currently selected device(s). In the **License** column you can see if a device occupies a license. For more information about licenses, see License and Manage licenses.

Force synchronization

With this function, you can force the selected device(s) to synchronize immediately and not wait until the next scheduled or manual synchronization. This can for instance be useful for troubleshooting. Note that the screen looks different if you choose this function from the **Device setup** panel, but the functionality is the same.



Select one or more devices from the Devices tab, and click **Force synchronization**. You can choose to send either **Sync** commands or **Import** commands by choosing the appropriate tab at the top of the window.

From the list of options in the window, you can choose what you want synchronized from the device(s). You can select any or all of the following options:

Sync commands

- **Sync. system info**

  Update the device or server with system information such as client version, user information, phone number, access points, operator, applications, version etc. You can use this option for keeping the device up-to-date with settings on the server.

- **Sync. e-mail**

  Synchronize e-mails with the device. Note that an e-mail sync. automatically includes a system information sync.

- **Sync. calendar**

  Synchronize calendar information with the device.

- **Sync. contacts**

  Synchronize contacts with the device.

- **Sync. notes**

  Synchronize Domino notes (journals) with the device.
- **Sync. to-dos**

  Synchronize to-dos (tasks) with the device.
- **Sync. files**

  Synchronize files with the device according to applicable file sync. rules.
- **Sync. RSS**

  Synchronize RSS feeds with the device.

Import commands

- **Import system info**

  Clean all settings from the device, and re-register the device with system information such as client version, user information, phone number, access points, operator, applications, version etc.
- **Import e-mail**

  Delete all e-mails from the device, and import of fresh copy of all e-mail within the e-mail synchronization window.
- **Import calendar**

  Delete all calendar entries from the device, and import all calendar items within the calendar synchronization window.
- **Import contacts**

  Delete all contacts from the local address book on the device, and import all contacts afresh.
- **Import notes**

  Delete all Domino notes (journals) from the device, and import all notes within the notes synchronization window.
- **Import to-dos**

  Delete all to-do (task) entries from the device, and import all to-do items within the to-do synchronization window again.
- **Import files**

  Delete all files that have been synchronized to the device, and import them again according to applicable file sync. rules.
- **Import RSS**

  Delete all RSS feeds from the device, and import all RSS feeds set up for the current device again.

Both the **Sync** and the **Import** tabs allow you to send the following command to the client as well:

- **Diagnostic log**

  Force the device to run a self-diagnostic test and send the result to the DME server. The diagnostic log is sent as an SMS to the server, and can be viewed in the **Log** tab. *Please be aware* that if you are using a web-based SMS service center, and you cannot get SMS feedback from the clients, this feature will not work, and **should not be used** in order to avoid that the client keeps trying to send the log to the server.

Note that this dialog only shows options for functions for which a license exists on the server. For instance, if your company does not own a license for file synchronization, the **Sync. files** option is not shown in this dialog.

Click **Send** to send the command(s) to the selected device(s) as an IP push or SMS, or click **Cancel** to close the dialog without sending any commands.

Send to device

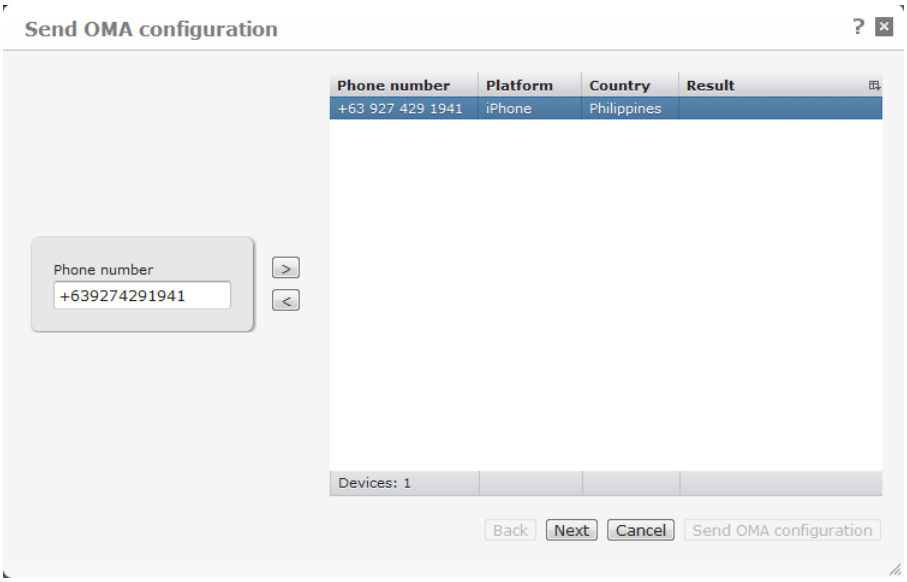
The **Send to device** group of the page menu in the **Devices** tab contains functions related to pushing various items to devices.

Send OMA configuration

Select this function to configure WAP/GPRS/MMS settings on the devices. When a device is new or it needs to be reconfigured, it is a good idea to be able to maintain the GPRS connection parameters on the device. This can be achieved by sending an OMA or OTA message to the device, containing a GPRS configuration. OMA is an open configuration protocol defined by the Open Mobile Alliance. OTA (Over-the-Air) is an earlier, similar protocol defined by Nokia and Ericsson. DME supports version 7 of the OTA protocol. In the following, **OMA** is used as a common name for OMA and OTA configurations.

Note that the screen looks different if you choose this function from the **Provisioning** tab or the **Device setup** panel, but the functionality is the same.

If you wish to send it to one or more existing devices, click the **Devices** tab, select the device(s) in the list, and click **Send OMA configuration**. This launches the **Send OMA configuration** wizard.



You can add more devices to the list by entering their phone numbers in the **Phone number** field and clicking the **>** arrow. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). To remove a device from the list, select it, and click the **<** arrow.

Click **Next**.

Select OMA configuration

This page shows a list of the currently defined OMA configurations, and lets you add and delete configurations.

Add OMA

With this function you can add an OMA/OTA configuration. The configuration window contains a number of fields:

- **Configuration name**

  The name of the configuration. This name will shown in the list of configurations.

- **SMS sode**

  If you define an SMS code, you allow devices to send an SMS to the DME server requesting the current configuration. For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Configuration type**

  Choose either **OMA** or **OTA v7**. The XML specification must of course reflect this choice. Note that DME does not perform any validation.

- **Configuration XML**

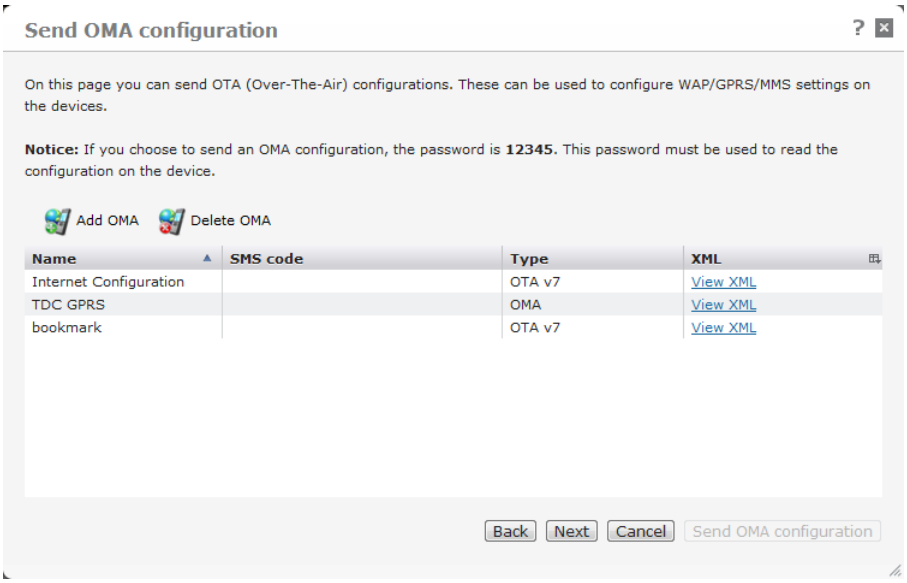
  In this field you enter the XML code required for the configuration. Note that DME does not perform any validation.

Click **Create OMA configuration** to accept your changes, or **Cancel** to exit the window without saving the changes.

Delete OMA

With this function you can delete the configuration(s) currently selected in the list.

To continue, select the configuration(s) you want to send in the list. Note that you can view the content of each configuration by clicking **View XML** for the configuration you want to view.



Select one or more configurations, and click **Next**.

You are asked to confirm that you want to send the selected configuration(s) to the selected device(s).

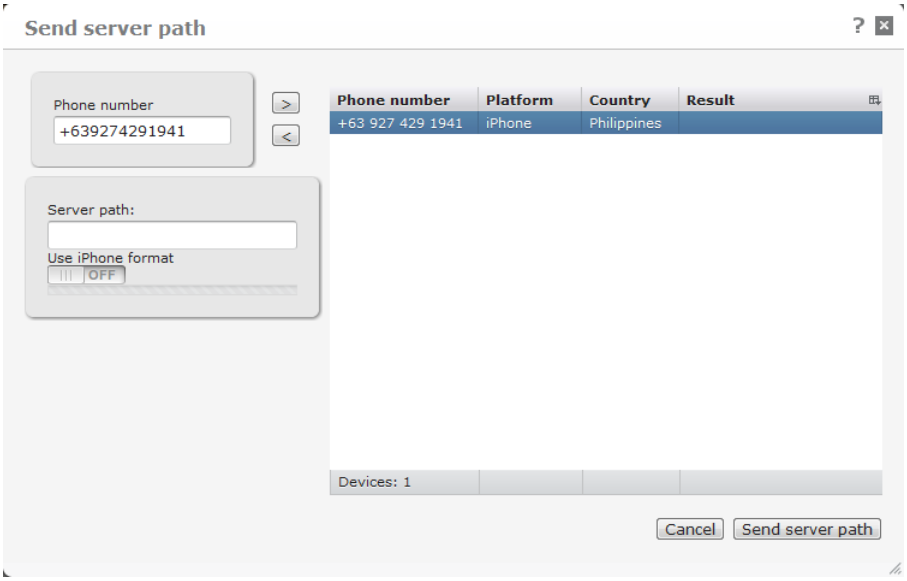
Click **Send OMA configuration**.

The device(s) receiving the configuration are required to enter a password to install them. The password is **12345**.

Send server path

The communication between the device and the server is vital. The device must know the path to the server in order to synchronize. The server path is usually sent from the server to the device the first time DME is installed on the device. With this function, you can send an SMS message to selected devices containing the server path.

Note that the screen looks different if you choose this function from the **Provisioning** tab or the **Device setup** panel, but the functionality is the same.



To send the server path to one or more devices, select the device(s) in the list first and then click **Send server path**. If the device or devices are not yet created in DME and thus do not exist in the **Devices** list, you can add more devices to the list by entering their phone numbers in the **Phone number** field and clicking the **>** arrow. Enter one or more phone numbers. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). To remove a device from the list, select it, and click the **<** arrow.

Then click **Send server path**. The device(s) will now receive an SMS with the server path and phone number. If the DME client is running on the device, the user will be asked if he or she wishes to apply the server path. If the DME client is not running, the user should leave the SMS in the Messaging inbox until the client starts.

Note that the server path setting should be locked on the devices. Therefore you will usually have to unlock the setting **Server path** in ***General settings*** on page 366 before sending the server path to devices.

In order to send the server path to an iOS device, which is not yet created in the **Devices** list, you must mark the field **Use iPhone format**. This will format the SMS in a special way, and the SMS can then only be used by iPhone devices.

Send SSL certificate

If you wish to the server's root certificate to the selected devices as a WAP push, click the **Devices** tab, select the device(s) in the list, and click **Send SSL certificate**.

Note that the screen looks different if you choose this function from the **Provisioning** tab or the **Device setup** panel, but the functionality is the same.

You can add more devices to the list by entering their phone numbers in the **Phone number** field and clicking the **>** arrow. Enter one or more phone numbers. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). To remove a device from the list, select it, and click the **<** arrow.

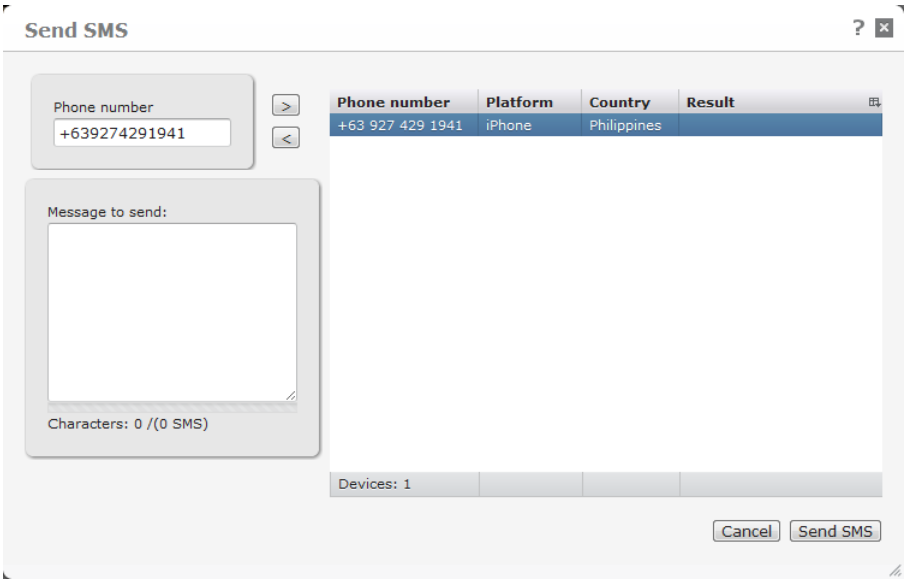
Click **Send SSL certificate**.

Please note that this does not apply to iOS devices, as they cannot receive WAP push.

For information about SSL certificates and DME, see ***SSL certificates*** on page 114.

Send SMS

With this function you can send an SMS (a text message) to the selected device(s). This function can be launched from the **Devices** or **Provisioning** tabs. Note that the screen looks different if you choose this function from the **Provisioning** tab, the **User setup** panel, or the **Device setup** panel, but the functionality is the same.



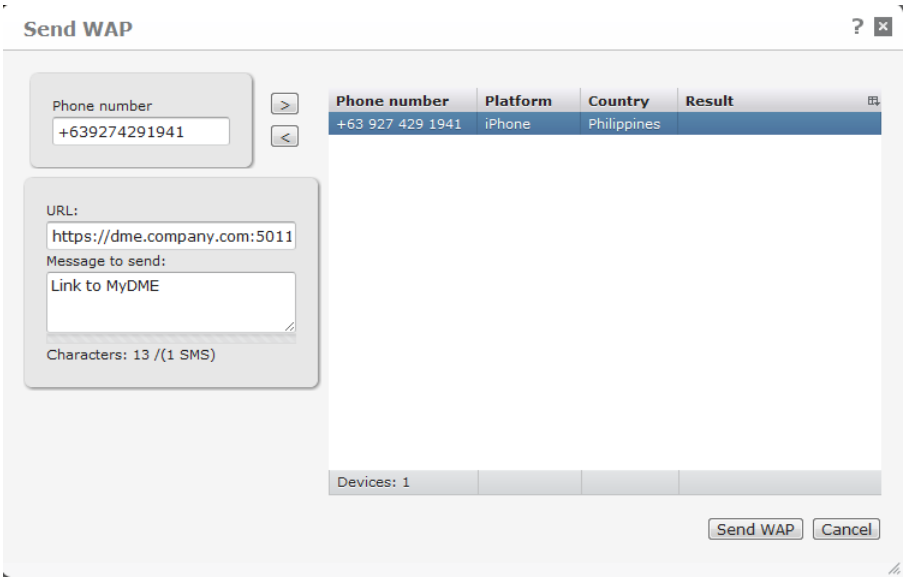
Enter one or more phone numbers (or select one or more devices/users before selecting this function). You can add more devices to the list by entering their phone numbers in the **Phone number** field and clicking the **>** arrow. Enter one or more phone numbers. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). To remove a device from the list, select it, and click the **<** arrow.

Type a message. DME shows the number of characters that are used in the message, and how many individual text messages are required to send the message.

Then click **Send SMS**.

Send WAP push

With this function you can send a WAP push to the selected device(s). You can use this function to give users a link to a URL and at the same time a message with details about what the link is about. Note that the screen looks different if you choose this function from the **Provisioning** tab or the **Device setup** panel, but the functionality is the same.



Enter one or more phone numbers (or select one or more devices/users before selecting this function). You can add more devices to the list by entering their phone numbers in the **Phone number** field and clicking the **>** arrow. Enter one or more phone numbers. The international calling code preceded by a **+** is mandatory. If you do not enter a calling code yourself, DME inserts the code defined in the field **Phone country code** in the SMS modem setup page (see ***SMS modem*** on page 228). To remove a device from the list, select it, and click the **<** arrow.

Type or paste a URL in the **URL** field, and type a message. DME shows the number of characters that are used in the message, and how many individual text messages are required to send the message.

Then click **Send WAP**.

Client signing

The **Client signing** group of the page menu in the **Devices** tab contains functions related to signing devices to this server.

Note that these options are only visible if the server has been set up to use client signing. For more information, see ***Authentication*** on page 217, the user guide for your client, and the special documentation "Client signing" (available upon request).

Remove client signing key

Click this action to remove the client signing key from the currently selected device(s) in the list.

The device will no longer be able to connect to the server until a new signing key has been issued from the server, and the old key has been removed from the device. To remove the signing key from a device, select **Tools** > **Settings** > **Security** in the DME client, and then select **Client certificate**.

On **iOS** devices, you can enter **FLUSHKEYS** in the **User name** field on the DME login screen to clear the client signing key.

Add client signing key

Click this action to generate a new set of keys (a certificate) for the selected device(s) and order the device(s) to pick up the keys the next time it communicates with the server. A certificate, or client signature, is necessary if **Client signature** is enabled in the **Authentication** section of the **Server configuration** panel in the **Server** tab (see ***Authentication*** on page 217).

When you click the button, DME shows a page such as the following:

When you click **Confirm**, the symbol in the **Key** column changes to  , meaning that new keys have been generated, and that the client must pick up the new keys the next time it connects with the server.

If the next request by the client is successful, the **Key** column shows  , signifying that the client was successfully signed.

See also ***Key*** on page 47 for a description of all possible symbols in the **Key** column.

If **Auto sign** is enabled in the **Server configuration** panel, a certificate will be issued automatically to devices that are known to the system but which do not have a certificate. See ***Authentication*** on page 217 and the special documentation "Client signing" (available upon request).

Misc. actions

The **Misc actions** group of the page menu in the **Devices** tab contains miscellaneous functions.

Batch update settings

You can update a selection of devices with new settings. To use this function, select one or more devices from the device list, and click **Batch update settings**. A window similar to the **Settings** section of the **Device defaults** panel is shown, but all settings are disabled (grey).

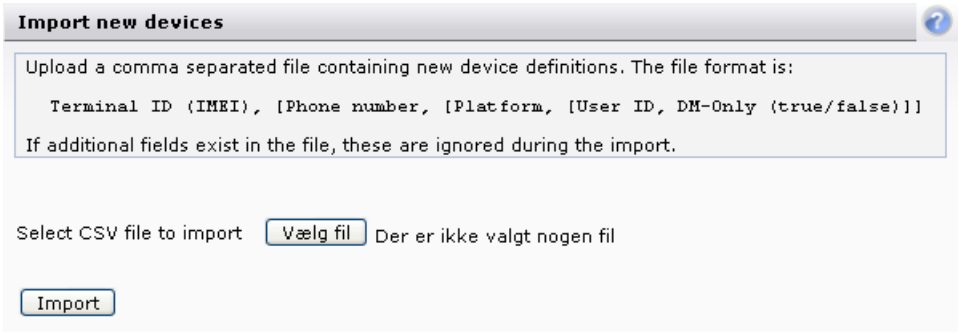
To change settings for the selected device, select the **Override** field for the settings in question. This enables you to change the settings from the default values to the new, desired values.

Change the settings as desired, and click **Save** to save the new settings. A dialog shows the settings you have changed and asks you to confirm that you wish to save the settings and send it to the device(s) at the next synchronization. If you also select the field **Push** in the confirmation dialog, the changes are pushed to the device(s) immediately.

For a description of each of the many device settings, see ***Appendix A: Device settings*** on page 351.

Import devices

You can import new devices into the current list of devices.



To do this, prepare a comma-separated text file with the following format:

```
Device ID, [Phone number, [Platform, Phone model, [User ID, DM-Only ]]]
```

- **`TerminalID`** is either the device IMEI number (usually), *or* the MAC-address (for devices without a phone module), *or* the UDID (Unique Device Identifier) (for Apple iOS devices). This value is the only mandatory value.
- **`Phone number`** is the phone number of the device, if known. Required if **`User ID`** and **`DM-Only`** are set.
- **`Platform`** is any value. The platform specification will be updated by the device the first time it performs a full system information synchronization. Required if **`User ID`** and **`DM-Only`** are set.
- **`User ID`** is used for associating the device with a user, rather than letting DME create the association the first time the user logs on. This way you can prevent mix-ups if users switch phones before logging on to DME.

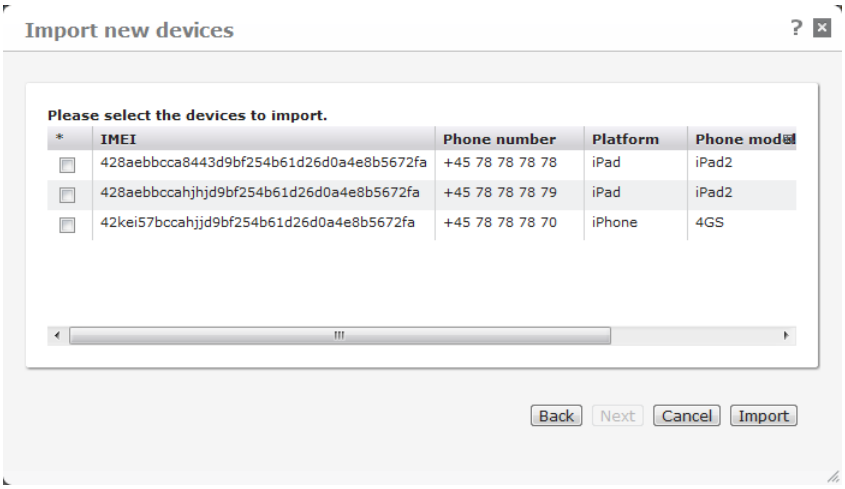
  If you do not specify a user ID, DME will create one for you during the first login (if **Create device on first connect** is enabled). If this is a **`DM-Only`** device, a user will be created on the form **`DMEUSERnnnn`**; if not, the user name will be retrieved from LDAP/AD.
- **`DM-Only`** can be **`DMO_USER`** or **`NORMAL`**. This value is disregarded if **`User ID`** is empty, as DME will find out the first time the user connects.

The first line in the imported CSV file must specify the headers of the data you wish to import. Possible values are (in the order listed above):

`terminalID, phoneNumber, platform, phoneModel, userID, isDMO`

Click **Upload** to locate the text file with comma-separated values. DME checks if the file is valid.

If the file is valid, click **Next** to import the list. You can now select the devices that you want to install:



Select the devices (you can click the * column header to select all), and click **Import**.

Note that the first time a device connects with the server, the values specified in this initial import will be adjusted according to the real values reported by the device.

For information about other ways of creating devices in the list, see New device and the field **Create device on first connect** in the **Security** section of ***Authentication*** on page 217.

Export devices

Select this function to export the current list of devices to a file with semicolon-separated values (CSV).

When you click **Export**, DME will download a CSV file with all the device information to your browser. Note that your browser's pop-up blocker may refuse this. The file is saved as **`devices_export_<currentdate>.csv`**.

The first line in the exported file will contain the names of the exported columns:

`terminalID` - the device ID. Note that any dashes etc. are removed from the device ID.

`dmeVersion` - the version of DME installed on the device.

`inUse` - whether the device is in use - the value of the **License** column in the **Devices** tab.

`lastUsed` - the time of the last synchronization of the device.

`lastUserID` - the ID of the previous user of the device.

`locked` - whether the device is locked.

`phoneModel` - the model name of the device.

phoneNumber - the phone number of the device.

platform - the device platform, for instance **Android** or **Symbian**.

userID - the ID of the current user of the device. May be the same as **lastUserID**.

userType - the user type of the device - **Normal** for users of the full DME client, **DMO_User** for users of the DME Basic MDM client.

Setting up users

To see and edit details about the user in question, select an item with a user ID in the table, and click **View user info** in the page menu.

The following *tab toolbar actions* are available from the user setup panel:

- Delete user (see ***Remove user*** on page 53)
- Toggle user lock (see ***Toggle user lock*** on page 54)

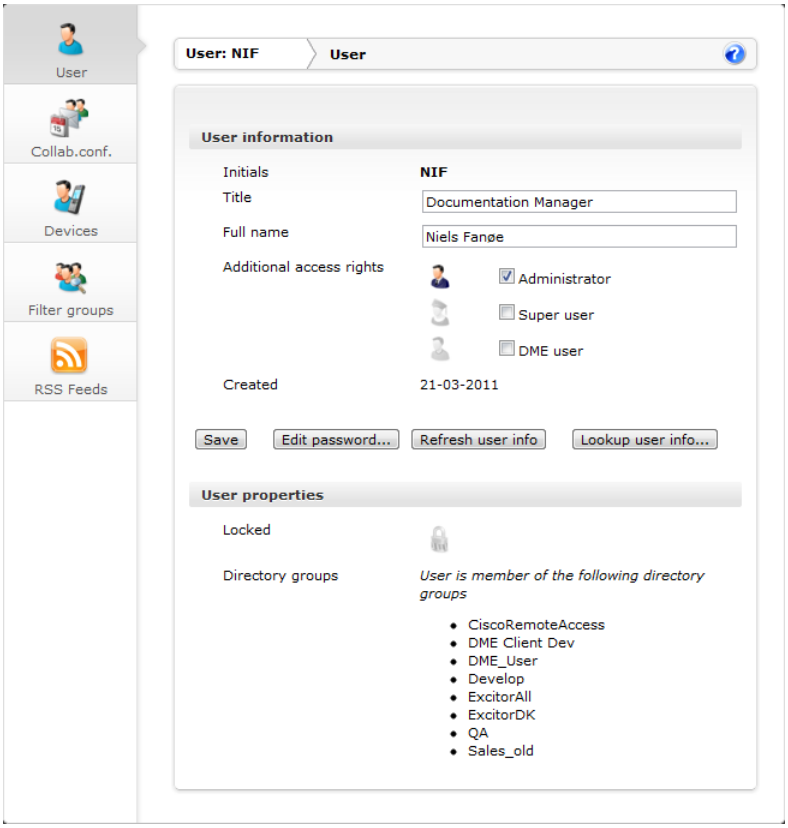
The following *page menu function* is available from the user setup panel:

- Send SMS (see ***Send SMS*** on page 69)

The following sections describe the *user setup panel*.

User

This panel section is a quick overview of the selected user.



This panel section shows information about the current user. The information is retrieved from the LDAP/Active Directory server, and is divided into two sections.

User information

The **User information** group of functions contains the following fields:

- **Initials**

  The user's initials is the unique ID of the user, and cannot be modified.

- **Title**

  Here you can change the user's title or occupation. Note that the changes will be lost when the user values are refreshed from the directory, unless the user is a local user. The values are refreshed by clicking the **Refresh user info** button (see below).

- **Full name**

  Here you can change the name of the current user. Note that the changes will be lost when the user values are refreshed from the directory, unless the user is a local user.

- **Additional access rights**

  In this field you can specify any special DME-specific access rights that you want to grant the current user, by specifying the current user's membership of the local roles available in the DME system. It is not good practise to use a mix of local groups and LDAP/AD groups. However, the local groups can be used to designate some users as administrators or super users, who can log on to the DME server even if the connection to LDAP is broken.

  A user can be given any combination of the following rights: **Administrator**, **Superuser**, and **DME user**. Granting these rights makes the user member of the corresponding user group: **DME_Admin**, **DME_Superuser**, or **DME_User**. Note that the groups are not hierarchical: being an Administrator does not make you a DME user. For more information about users and roles, see ***About users*** on page 79.

- **Created**

  This field shows when the current user was created in the local DME database.

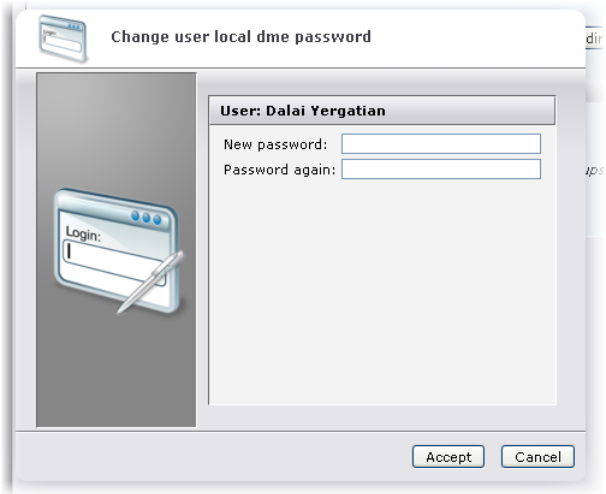
The four buttons along the bottom of this section of the window let you perform actions on the current user:

- **Save**

  When you click **Save**, the title, name and access rights are changed and stored in the local DME database.

- **Edit password...**

  Click this button to change the password of the user. The following window appears:



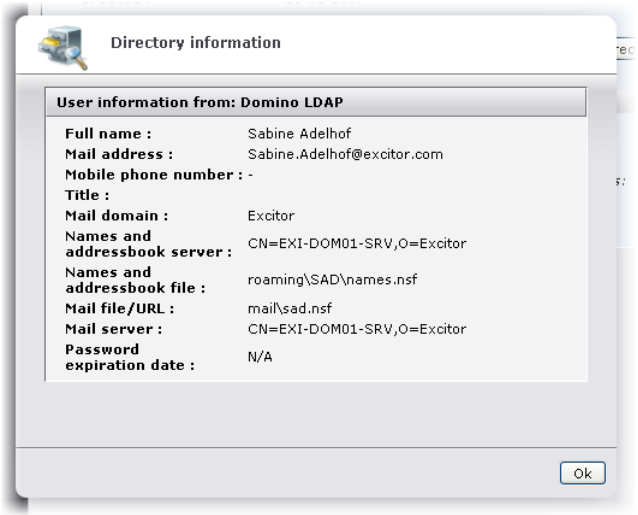
  Enter the new password, repeat it in the field **Password again**, and click **Accept**. This applies to local users only (see ***About users*** on page 79).

- **Refresh user info**

  Click this button to flush the credentials cache on the DME server. The credentials cache consists of user information such as password, group relations etc. The caching is done to prevent the DME server from connecting to the LDAP or AD directory every time it has to validate the user. If the password or the group relationship is changed on the server, you must flush the cache to ensure that the credentials are up-to-date. If the user is listed in the directory, any changes in the title or full name will be replaced by information from the directory server.

- **Lookup user info...**

  Click this button to view the information registered in the directory about the current user, for instance:



  The settings shown reflect the configuration on the Domino LDAP or Active Directory server, including any local configuration of the user. You are able to overwrite this configuration with a manual configuration (see the section **Collab.conf.** below).

User properties

The **User properties** group of functions contains the following fields:

- **Locked**

  This field shows if the current user is locked. To toggle the lock status of a user, click the **Lock user** icon in the tab toolbar. For more information, see ***Toggle user lock*** on page 54.

- **LDAP groups**

  This field shows the groups of which the current LDAP/AD user is a member.

About users

If the DME server is configured to validate the connecting users against LDAP/Active Directory, each user will automatically be created on the DME Server if the validation against LDAP/Active Directory is successful.

If the DME Server does not validate users against an LDAP/Active Directory lookup, all users must be created on the DME Server with the correct passwords and group relations before they can connect.

During installation of the DME Server a user with the name **SYSADM** is created. This is a local user with the local role **DME_Admin**, who can log into the Web Administration Interface.

About roles

Using locally defined roles is different depending on whether or not the DME server is using an LDAP/Active Directory Server to validate the users.

If the DME server is using an LDAP/Active Directory server, it is not advisable to use local roles, because these can make a user's access rights less transparent. Three groups must be created in the LDAP/Active Directory, into which the users of the DME server should be divided.

All users who connect to DME Server from a device should be added to the group **DME_User**, and all users who are allowed to use the Web Administration Interface must be in the group **DME_Admin** or **DME_Superuser**. The members of the **DME_Superuser** group are able to use the Web Administration Interface but with some restrictions. For instance, superusers cannot

- Change server settings.
- Change collaboration system interface settings.
- Assign group privileges to users.
- Upload license files.
- Upload new server software.

The superuser can see all settings but may not be able to change them. The primary role of a superuser is to change settings for groups and devices to which he has access.

Please note that membership of the **DME_Admin**/**DME_Superuser** group does not grant the privileges of the **DME_User** group. An administrator or superuser will normally have to be included in both groups.

It is also advisable to give at least one user the local administrator role. This ensures that this user can log into the Web Administration Interface, even if the LDAP/Active Directory server should become unavailable.

If the DME server is not configured to validate users against an LDAP/Active Directory server, the two groups **DME_User** and **DME_Admin** must be created as local roles on the DME server. The users must then be related to these local roles on the user profile on the DME server - see ***About users*** on page 79.

If you do not wish to use the standard group names (**DME_User**, **DME_Admin** and **DME_Superuser**), you can *impersonate* these in the **Server configuration** panel in the **Server** tab. This means that you can use other groups instead of the DME groups mentioned. You can read more about this in ***Authentication*** on page 217.

Switching users

You can allow users to log in to any device running DME. This requires that the setting **Device allowed to switch users** is enabled in the **Authentication** section of the **Server configuration** panel in the **Server** tab (see ***Authentication*** on page 217). If this setting is enabled, one DME user is able to log in using another user's device. This will result in the following sequence of events:

- All DME information belonging to the previous user will be cleared on the device (including calendar information stored in the device calendar, synchronized files, etc.)
- In the DME Admin interface, the device will be linked to the new user.
- Entries will be made in the device history log for both users.
- New voice and data statistics will be registered for the new user.

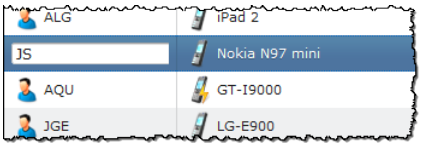
In many organizations, the DME administrator wants to be able to control whether a user can pass his device to another user. This is done by disabling the setting **Device allowed to switch users**. Note that in the regular DME client, a user can attempt to log in on another user's device even if this setting is disabled. This will result in a connection error, but the link to the previous user is lost as described above. In the Basic MDM client, however, the **User name** field in the client is locked if this setting is disabled, preventing even the attempt to change the user name.

If you manually want to register a device as belonging to another user, do the following.

- ***Switching a device to another user***

1. Locate the device in the **Devices** tab.
2. Press **F2** to edit the user initials.

You can now enter the initials of the new user:



3. Press **Enter** to save the new initials, or **Ctrl+Z** to exit without saving the change.

   Note that you should enter the initials of an existing LDAP/AD directory user. If another device is already assigned to the user, this device will be added to the user. If the initials that you enter do not exist in the directory, a local DME user will be created.

If you want to remove the association between a device and a user, without assigning the device to a new user, use the action **Detach user from device** (see ***Detach user from device*** on page 54).

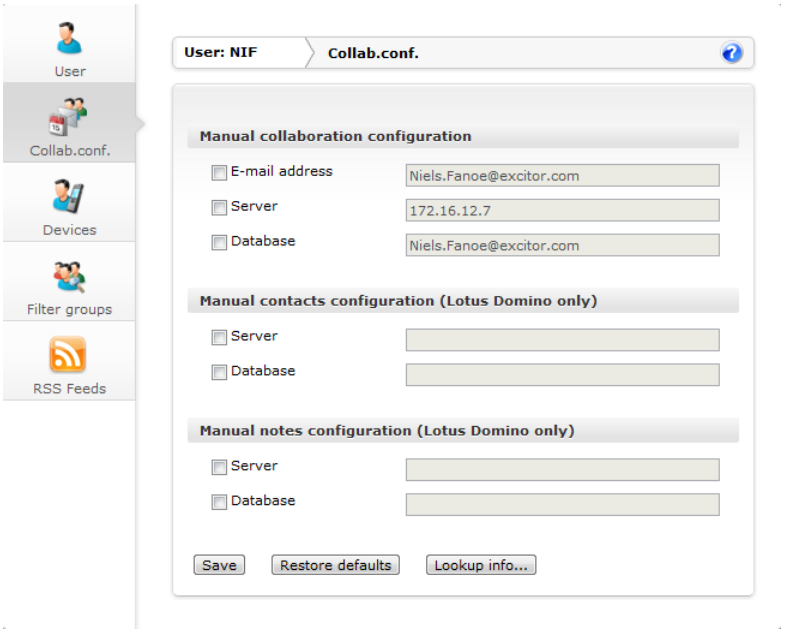
Note that white-shirt user icons signify Basic MDM users, for which special rules apply. For more information, see ***Appendix G: The Basic MDM client*** on page 425.

Collab.conf.

In this panel section you can enable or disable push mail, and you can inspect or change the user's configuration in the collaboration system. The collaboration configuration is a vital part of the user configuration. You can manually change the default configuration of the collaboration system for this user within four areas: SMS push setting, e-mail setup, contacts setup (Domino only), and personal notebook setup (Domino only).

The default values of these settings are retrieved from the setup panels of the connector which services the current user (see ***Setting up connectors*** on page 311). You may need to change the collaboration system configuration for individual users if you are managing users from different domains, for instance in a hosted environment. If this is the case, you may request special documentation from your DME partner: "DME Hosting Setup".

To change a setting, select the checkbox in front of the field you wish to change, and change the value of the setting. Click **Save** when you have made all the required configuration.



The **Manual collaboration configuration** group of functions contains the following fields:

- **E-mail address**

  If a user's e-mail address is not retrieved from the LDAP/AD directory, enter the address here. The e-mail address is used to locate the correct mailbox for the user in question.

- **Server**

  If you need to overwrite the mail server information retrieved from the directory or from the corresponding field in the connector setup (see ***E-mail and PIM*** on page 324), specify the mail server here. Note that on Exchange systems, DME will automatically add **/exchange** in the appropriate place, unless the field **Virtual OWA directory** (see ***E-mail and PIM*** on page 324) is completed.

- **Database**

  If you need to overwrite the mail file path information retrieved from the directory or from the corresponding field in the connector setup (see ***E-mail and PIM*** on page 324), or if no directory is set up, specify the mail file here. This can for instance be necessary if the mail boxes of several DME mail servers are replicated to a server with a different mail box path.

The **Manual contacts configuration** group of functions contains the following fields:

- **Server**

  If you wish to use a contacts server which is different from the one retrieved from the Domino LDAP or the one configured for the connector (see ***E-mail and PIM*** on page 324), specify it with this setting.

- **Database**

  If you wish to use a contacts database which is different from the one retrieved from the Domino LDAP or the one configured for the connector, specify it with this setting.

The **Manual notes configuration** group of functions contains the following fields: 

- **Server**

  If you wish to use a server for personal notebooks (called *Journals* in Domino versions before 8.5) which is different from the one retrieved from the Domino LDAP or the one configured for the connector (see ***E-mail and PIM*** on page 324), specify it with this setting.

- **Database**

  If you wish to use a personal notebook database which is different from the one retrieved from the Domino LDAP or the one configured for the connector, specify it with this setting.

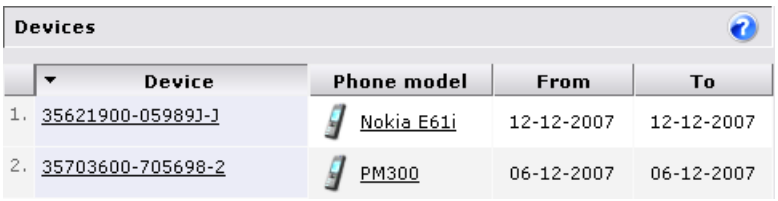
Click **Save** to save the new settings.

If you click **Restore defaults**, any overrides are erased, and the various fields on this page are re-populated from the directory.

If you click **Lookup info...** you can view the information registered in LDAP about the current user. See the previous section **User** for more information.

Devices

This panel section shows a historical list of the devices to which the currently selected user has been connected.



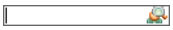
The device in the first line is the device latest held by the user. The list shows which device was used, and the dates between which the device was used.

Filter groups

This panel section enables you to set up a user-specific filter. The filter is defined by assigning one or more LDAP groups to the currently selected user. When the filter is active, the user can only see information pertaining to the users in the selected LDAP groups when he or she is logged in to DME server. The filter works across the entire DME server.

Example: A filter is applied to the user **Support01**, which specifies that **Support01** should only see information pertaining to the LDAP groups **Sales** and **Finance**. Now the **Devices** tab will only show devices belonging to users from these groups, and the log (see section ***Log*** on page 183) will only show information pertaining to users in the selected groups.

You can tell that a group filter has been applied by looking at the text filter box in the toolbar. When the magnifier-and-user icon:



is shown inside the text filter box, the currently shown list or log is filtered in this way.

Apart from filtering by groups, you can select the field **Show system entries**. If this field is selected, system messages which are not associated with any user will also be shown in the log.

RSS feeds

In this panel section, you can define RSS feeds that are specific to the selected user.

The list shows the feeds currently defined for this user. You can set up feeds for groups (see ***View and apply settings*** on page 284) and as default settings (see ***Default settings*** on page 273).

For more information about adding and deleting RSS feeds, see ***RSS feeds*** on page 278.

Setting up devices

When you double-click a device in the table (or select a device and click **View device info** in the page menu), you can see and edit details about the device in question.

When a new device is created in DME, a set of default settings for the device is sent to the client the first time the device connects with the server, or when a new user takes over an existing device. Through a careful use of default settings and locking device settings you can enforce your company's security policies. In the following, a *setting* can be anything found in the **Default settings** setup panel - settings, notification schedules, files, application blocks, preferred operators, subscriptions, and RSS feeds. The applicable settings depend on the capabilities of the device and the DME client for the device platform in question.

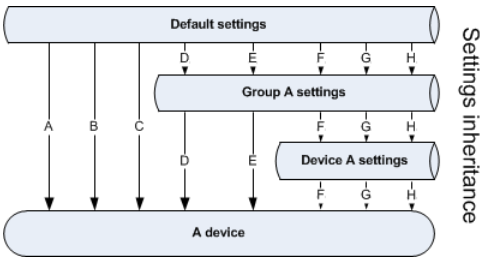
You can specify settings for a device at device at three levels:

1. Using **Server** > **Default settings**
2. Using **Server** > **Group management** > edit a group to which the device belongs
3. Using **Devices** > edit a specific device

DME uses the following order of inheritance when pushing settings etc. to a device:

- *Default settings* are overwritten by *group settings*
- *Group settings* are overwritten by *device settings*

This can be illustrated in the following way:



Settings set in **Default settings** apply to any device, unless the same setting has been changed for a group of which the device is a member, or changed for that device only. In the illustration above, the settings **A**, **B**, and **C** are applied to all devices. Devices that are member of **Group A** do not get default settings for settings **D**, **E**, **F**, **G**, and **H**, but inherit them from **Group A**. Furthermore, the specific device **A** does not inherit settings **F**, **G**, or **H** from the group, but gets the settings from the specific device.

This way you can set up a security policy by specifying strict default settings, and possibly make more relaxed settings for selected groups of devices or individual devices. For more information about default settings, see ***Default settings*** on page 273. For more information about how membership of different groups is handled, see ***Group hierarchy and inheritance*** on page 280.

When you have specified the various categories of settings in this setup panel as desired, remember to click **Save** to commit the settings to the DME server.

The following *tab toolbar actions* are available from the device setup panel:

- Remove device (see ***Remove device*** on page 55)
- Toggle device lock (see ***Toggle device lock*** on page 61)
- Toggle license (see ***Toggle license*** on page 61)
- Detach user from device (see ***Detach user from device*** on page 54)
- New device signing key (see ***Add client signing key*** on page 71)
- Remove device signing key (see ***Remove client signing key*** on page 71)

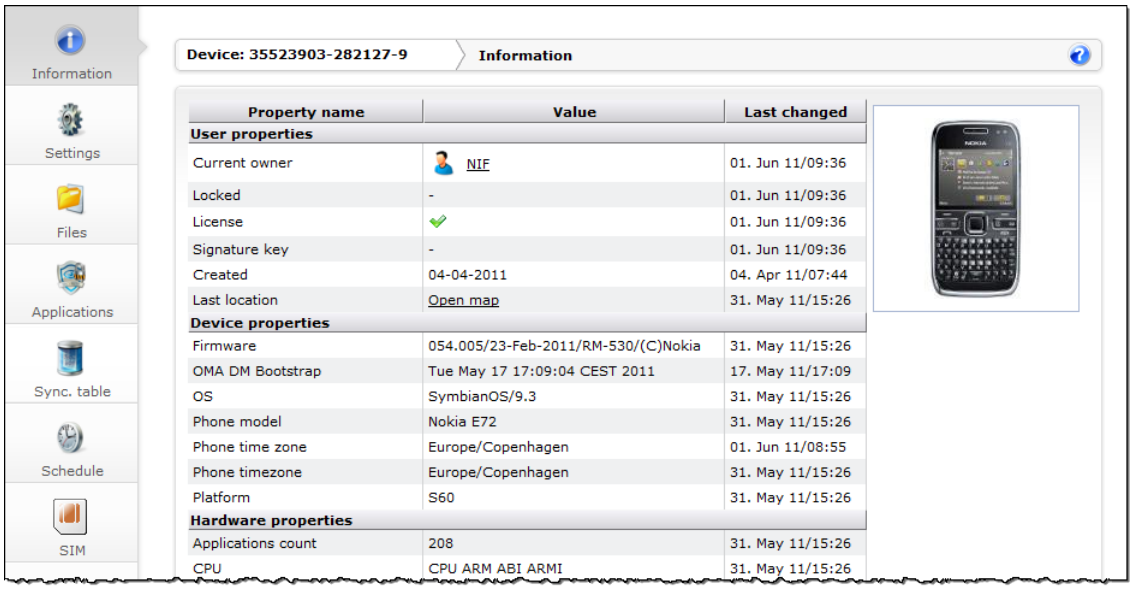
Furthermore, if the current devices is an enrolled Apple iOS device, some Apple-specific actions are available. See ***Apple MDM*** on page 103.

The following *page menu functions* are available from the device setup panel:

- All functions in the **Send to device** page menu section (see ***Send to device*** on page 64)

The following sections describe the *device setup panel*.

Information



This panel section provides an overview of the selected device. The information is updated every time a full system info is transferred from the client, or at least once every three days.

The information is divided into different sections:

- **User properties**: Information about the user — current owner, licensing, client signature status, and possibly location (see ***Location*** on page 88 below).
- **Device properties**: Information about the device - model, platform, operating system, language, number of applications, etc.
- **Hardware properties**: Information about the device hardware — processor, drives, etc.
- **DME properties**: Long version of the DME client information, useful in a support context.
- **Network properties**: Current cell ID and location information of the device. Here you can see if the phone is currently roaming, based on the selection of home operator - see ***Operators*** on page 276.
- **Device servers**: List of servers running on the device (if any).

The information collected from the device in these sections varies according to the type of device and is not described in detail here. For every piece of information, the date of when the property was last changed is shown.

- ***Uploading a picture of the device***

  If a picture of the device has been uploaded to the server, it is shown next to the device properties section. A picture is usually shown if the device has been bootstrapped (see ***Bootstrapping devices*** on page 111). If a picture is not shown, you can upload a picture yourself as described below.

1. Click **Upload device picture** at the bottom of the screen (only available if DME could not find a picture).
2. Browse to the picture.

   You can download a picture from the DME website to your disk by clicking the **Pictures can be downloaded here** link in the dialog.
3. Click **Accept**.

The picture is uploaded to the server and can be seen next to the information table and in the mouse-over info box from the **Devices** tab and elsewhere.

Location

Many companies have a Corporate Social Responsibility strategy, in which they commit themselves to being able to quickly locate traveling employees in case of natural disasters, national unrest, or terrorist attacks in the area in which the employee may be traveling. With DME, the last known location of the device can quickly be shown.

The feature can also simply be used as a help locating a lost device.

Based on the network information sent in by the device with the full system information sync, which is listed in the **Network properties** section of the device information page, DME is able to build a link to Google Maps, pinpointing the approximate location of the device. The link is built using the open source database of cell IDs and locations at http://www.opencellid.org. Please note that in order to use this functionality, the DME server's firewall must allow traffic to that website over HTTP, as specified in the installation documentation.

If the cell ID is found in the Open Cell ID database, a link with the text **Open map** is shown after the **Last location** property in the **User properties** section. If the cell ID could not be found in the database, the location will be based on the **Location area code**. This is not as precise as using the cell ID, as the "location area" may cover an area several miles across. In this case, the text **(Inaccurate positioning based on location area)** is added after the link to Google Maps.

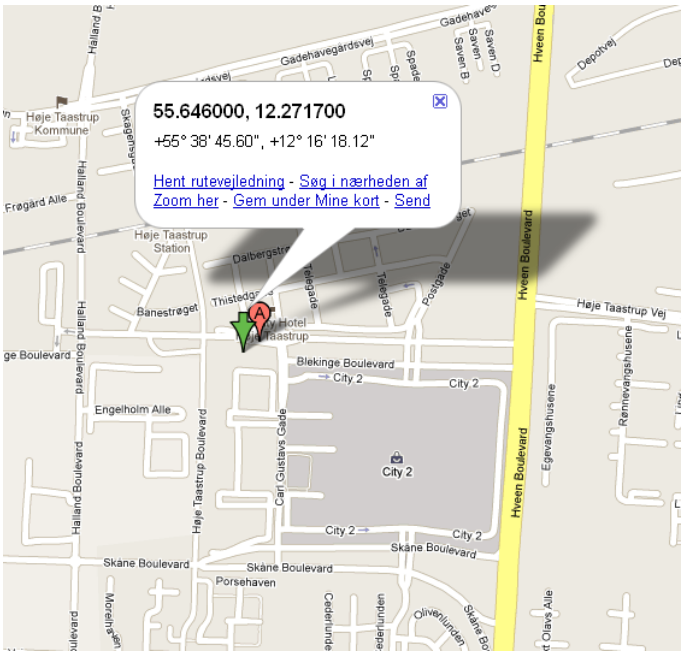
❖ ***Locating a device***

❖ Remember that the cell ID is sent to the server with the full system information sync. As the device only makes a full system sync at intervals, it is recommended to use the **Force synchronization** feature on the device before looking up its location:

1. Select the device in question in the **Devices** tab.
2. Select **Force synchronization** in the page menu.
3. Choose **Import system info**.
4. Click **Send**.

- After synchronizing, click the **Open map** link.

  A web page from Google Maps shows the approximate location of the device, for instance:



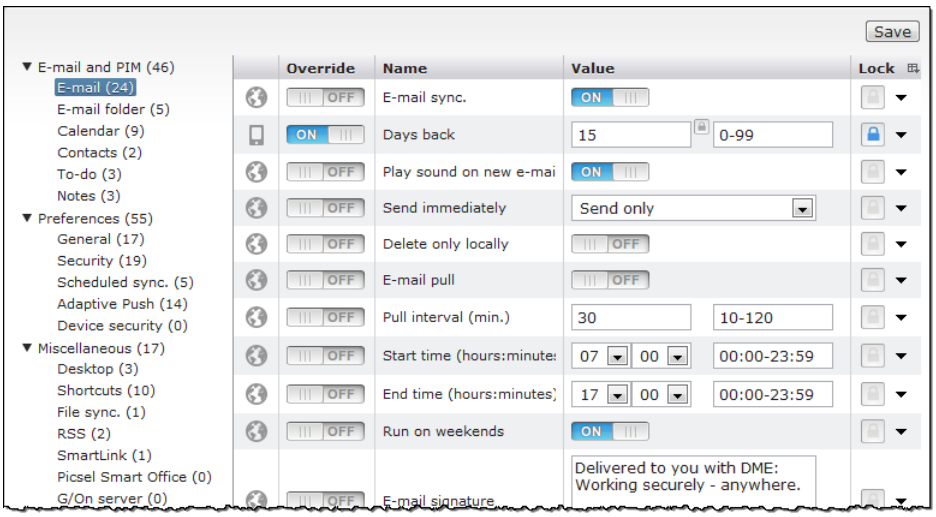
  The green arrow shows the location. Click the arrow to view the exact coordinates and see the usual Google options.

A note on precision: Even using the cell ID, it is not possible to give anything but an **approximate location** of the device, as the location is not based on GPS data. This is also in line with intended usage of this functionality, which is to give you a general idea where the device is rather than the exact location. For instance, you can see "Oh, he's at the airport" or "Oh, she's in New York" rather than "Oh, he's at 7, Horniman Drive".

Settings

In this panel section you can configure the settings of the individual device, if you need to override default or group settings. The settings shown are all the settings available on the device, as well as settings that are only available on the server.

When a new device connects to the server for the first time, it will be set to use the default settings (see the section ***Default settings*** on page 273). These settings can be changed here, and also on the physical device unless they are marked as *locked* in this window. Note also that you can change settings for multiple devices by selecting the devices in the **Devices** tab and clicking **Batch update settings** in the page menu. For more information, see ***Batch update settings*** on page 72.



As mentioned, the **Settings** panel section contains all possible settings for the current device. To the left is a list of groups of settings, arranged in up to four categories: **E-mail and PIM**, **Preferences**, **Miscellaneous**, and possibly **Cost alerts** (if the current device supports cost alerts). These groups and categories are made to make it easier to find each setting. The list is expanded by default, but you can collapse and expand each category by clicking the small triangle before the category name. The number of settings in each group is shown in parentheses after the group name.

Each of the settings groups contains a number of settings, which are shown in the *settings table* when you click the settings group. The settings table contains the following columns:

- **(no header)**

  This column shows where the current setting is derived from:

  The current setting derives from **default settings**. If you double-click the setting, you are taken to the corresponding setting in the **Default settings**.

  The current setting derives from a **group** of which this device is member, overriding the default setting. If you double-click the setting, you are taken to the **Settings** panel section of the group from which the setting is derived.

The current setting has been set for this device specifically, overriding default and group settings.

- **Override**

  By switching this button to **ON**, you can override the current setting on the device. A default or group setting can be overridden to become a device setting. The button switches to **ON** automatically if you change the setting value. If you then switch the button back to **OFF**, the setting will revert to its original value. This is the way to restore a default or group setting.

  When this button is switched on, the icon in the leftmost column may change as well. For instance, if you change a default setting to something else, the icon will change from a globe icon to a device icon.

- **Name**

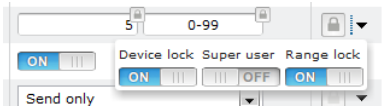
  This is the name of the setting. For information about the meaning of each setting, see ***Appendix A: Device settings*** on page 351.

- **Value**

  This column holds the value or values of the current setting. The value can have the form of an ON/OFF switch, a text field, or numerical field, a range, a time and date field, or a selection box. If the value field contains a small padlock overlay , it means that the value is locked. See below.

- **Lock**

  With the **Lock** button, you can specify if the current setting should be locked:



  Device lock: This lock makes the current setting read-only for the device. This means that the device user will be unable to change the setting from the device. However, anyone with access to the DME web interface can change the setting on this page.

  Super user: This locks the current setting for superusers (see ***About roles*** on page 79). If a setting is locked for superusers, a superuser is unable to change the setting for groups of devices or for individual devices.

  Range lock: This lock makes it impossible for superusers to set the value of the setting beyond the range specified here (if the **Super user** lock is **OFF**).

  When you select either of these locks, a small padlock overlay is shown over the setting's value or range.

- **Changed**

  This column shows the date and time for when the current setting was last changed. This column is hidden by default.

- **Changed by**

  This column shows the initials of the person who last changed the current setting. This column is hidden by default.

Change the settings as desired, and click **Save** to save the new settings. A dialog shows which settings you have changed, and asks you to confirm that you wish to save the settings and send them to the device at the next synchronization.

The available settings are described further in ***Appendix A: Device settings*** on page 351. See also ***View and apply settings*** on page 284 for information about working with group settings.

Files

 With DME you can push files to devices or synchronize files between a server location and the device much the same way as e-mail and calendar information. This feature can be used for distributing different files to the devices of different DME users.

Files can be synchronized with devices at three levels:

1. With *all devices*: Click **Server** > **Default settings** > **Files**
2. With a *group of devices*: Click **Server** > **Group management** > double-click a group > **Files**
3. With one *specific device*: Click **Devices** > double-click a device > **Files**

The method by which files are synchronized is the same in all three cases.

This panel section shows a list of file synchronization rules that apply to the currently edited set of devices (all devices, a group of devices, or a specific device). For more information, see ***Appendix C: File synchronization*** on page 396.

Applications

This panel section contains a list of the applications and network connection types installed on the currently selected device. A network connection type is an access point to a network, controlled by the device - for instance a Bluetooth connection. You can block one or several applications or connections on the device. If an application or connection is blocked, the user will receive the following warning when he or she tries to use the application or network connection:

Select the **Use** field for an application or connection to change the setting for this device - that is, to block or unblock it. The icon in the **Status** field changes to indicate that you are overriding a default or group setting.

To block or remove the blocking of applications and connections for the device, select or deselect the **Block** field for the item(s) in question, and click **Save** to save the new settings. A dialog shows the settings you have changed and asks you to confirm that you wish to save the settings and send it to the device(s) at the next synchronization. If you also select the field **Push** in the confirmation dialog, the changes are pushed to the device(s) immediately.

Note that in order to block application in Apple iOS devices, you must enroll the device and create a configuration profile. See ***MDM on Apple iOS*** on page 126 and ***Apple iOS profiles*** on page 172 for more information.

Some applications cannot be blocked. These are applications which are used by DME, or which are vital for the device to work properly, and it is therefore not possible to block them.

Users are unable to block or unblock applications or connections from the client, and hence there is no **Lock** column as in the **Settings** panel section. The following columns are available:

- **Unique ID**

  This column is the unique identification for the application. The ID can be used to verify the application in case any doubt as to the identity of the application arises.

- **Name**

  This column shows the common name of the application or network connection.

- **Type**

  This column indicates if the current item is an application or a network connection.

- **Last changed**

  Shows the date and time of when the setting was last changed for the current item.

- **Status**

  This column shows the status of each application:

  
  The default value of the **Block** setting of the current application applies to this device.

  
  The **Block** setting of the current application has been set for a group of which this device is a member (the setting applies to all devices in the group that contain this application), overriding default settings.

  
  The **Block** setting has been set for this device (overriding group and default settings).

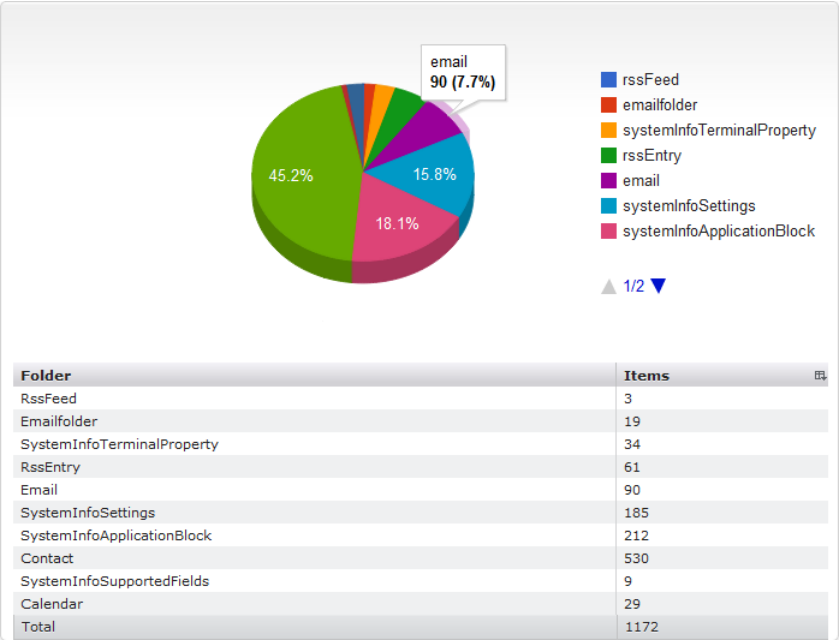
 If the current device is an enrolled Apple iOS device, you can refresh the list of currently installed apps on the device by clicking the **Retrieve application list** action.

Sync. table

 This panel section shows the synchronization table. The sync. table reflects the data that has actually been synchronized on the device. The table shows how many resource items that exist on the device. An item can for example be a calendar item, an e-mail, or a contact person.

If you need to delete the sync. tables, you can send an import command to the device instead. This in effect flushes the sync. table and at the same time ensures that no duplicate entries are created on the device. See ***Force synchronization*** on page 62.

Above the sync. table a graph shows the distribution of the different types of items on the device. If you let the mouse pointer rest on each section in the graph, a tooltip shows the exact percentage of each item type.



Folder	Items
RssFeed	3
Emailfolder	19
SystemInfoTerminalProperty	34
RssEntry	61
Email	90
SystemInfoSettings	185
SystemInfoApplicationBlock	212
Contact	530
SystemInfoSupportedFields	9
Calendar	29
Total	1172

If you delete a device in the device list, the synchronization table for the device is also deleted.

Schedule

This panel section contains three subtabs:

- **Schedule**

  This subtab shows the notification schedule which has been set up for the current device. Initially, it reflects the default settings made in the **Notification** section of the **Server** tab (or settings made for a group of which the current device is member), but you can change it here for the individual device.

- **Pending**

  This subtab shows notifications that are pending for the device, that is notifications that have been found, but not been sent to the device yet. For more information, see ***Pending*** on page 262.

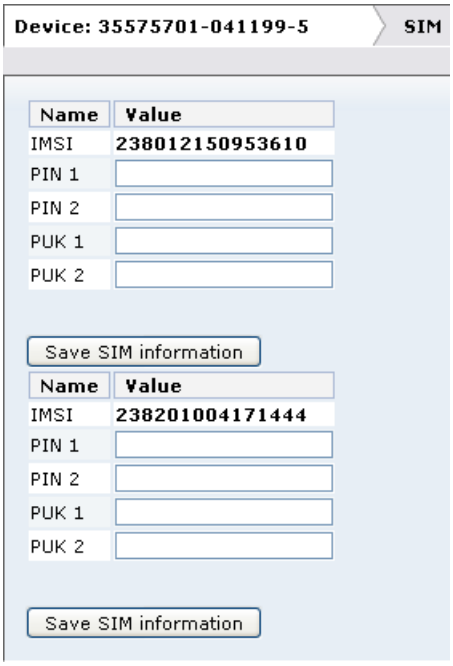
- **Process**

  This subtab shows current scanning tasks for the server. For more information, see ***Process*** on page 256.

For more information about the notification framework, see ***Notifications*** on page 244.

SIM

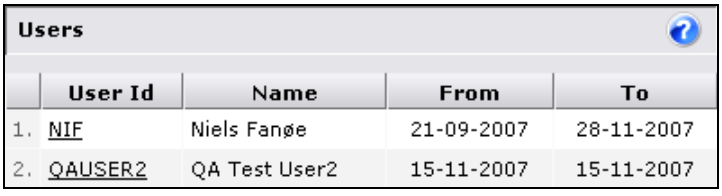
Each device usually contains a SIM card, and sometimes two. For each SIM card there are some codes that you may wish to register and save to remember. In this panel item, you can register PIN 1, PIN 2, PUK 1, and PUK 2 codes for each SIM card. Please note that the codes are stored in the database in clear text.



DME automatically registers the IMSI number of the SIM card. The codes you enter will follow the SIM card, even if it is later switched to another device. Click **Save SIM information** to save the numbers you enter.

Users

This panel section shows who has been using the currently selected device.



The name in the first line is the latest holder of the device. You can click the User ID to view and edit information about the user in question.

Group

 In this panel section you can see if the current device is member of a **Directory group** or any group of the type **Manual group**, and when the device became a member of the group in question.

Furthermore, you can assign the current device to a group of the type **Manual group** by picking the group in the **Manual connected group** drop-down list. To un-assign a device from a group, select the blank value from the drop-down list. You cannot undo this action. Manual groups are groups created for devices that need to be grouped together, but where a *smart group* is not sufficient because the devices are not logically related. For more information about smart groups, see ***Adding groups*** on page 282. If the device is assigned to a group, you can view and edit the group by clicking the group name in the list at the top.

A device can only be member of one directory or manual group. If you choose another group, the device will be assigned to the new group and forget its relation to the old group.

Asset

 In this panel section you can enter more details about the current device. The information is stored in the DME database. You can use the fields in this section to create a history of the device for asset management purposes.

You can store the following data about the current device:

- Purchase date of the current device
- When the warranty expires
- Who you bought from (the supplier)
- The number of the invoice from the supplier
- The numbers of the purchase order and requisition made by you to authorize the purchase of the device
- The original price of the device
- A service log - records of any service or repairs done to the device
- Three dates marking anything according to your policies
- Three short texts recording anything according to your policies
- Three long texts recording anything according to your policies

All *dates* must be entered in the format dd-MM-yyyy (for example 13-01-1990). They are validated when you click **Save**.

Provisioning

 This panel section shows a log of the provisioning jobs that have been sent to the current device over time. If no jobs have ever been sent, the panel section is not visible at all.

This window is similar to the **Provisioning status** window - but it only shows jobs for the current device, making it easy to track the installation history of individual devices.

You can select one of more installation jobs to remove the job records, restart the installation, or send a notification to the DM client on the devices. See ***Provisioning actions*** on page 98.

The following information is shown about each installation job on the current device:

- **Type**

  This column shows if the installation job was an **OMA DM Job** or a download link (**SMS/WAP push** or **Mark for Installation**).

- **Job type**

  Please see the corresponding column in **Provisioning** > **Provisioning status**.

- **Description**

  This column tells the type of installation that was performed - for instance **Bootstrap devices (Default install)** - meaning that the job was a bootstrap with automatic installation of the default client for the device type in question.

- **Status**

  Details about the current installation job. For more information, see the corresponding column in **Provisioning** > **Provisioning status**.

For more information, please see the ***Provisioning status*** on page 180 window.

Provisioning actions

The following actions are available for one or more selected installation job(s) in this list:

-  **Remove provisioning jobs**

  To clean up the provisioning status list, you can remove jobs by selecting them and clicking the **Remove provisioning jobs** action in the tab toolbar. You are prompted to confirm the deletion.

The installation jobs are automatically cleaned out from the list after 7 days.

- **Restart provisioning jobs**

  If something has gone wrong with a provisioning job, for instance if a user did not use the software download link before the link timed out, you can select the job (or multiple jobs) and click the **Restart provisioning job** action in the tab toolbar. This will delete the original provisioning job, create an identical job, and send it again to the selected devices, including any options you have set for the job.

  Note that DME cannot verify provisioning jobs of the type **Other software**.

- **Notify OMA DM jobs**

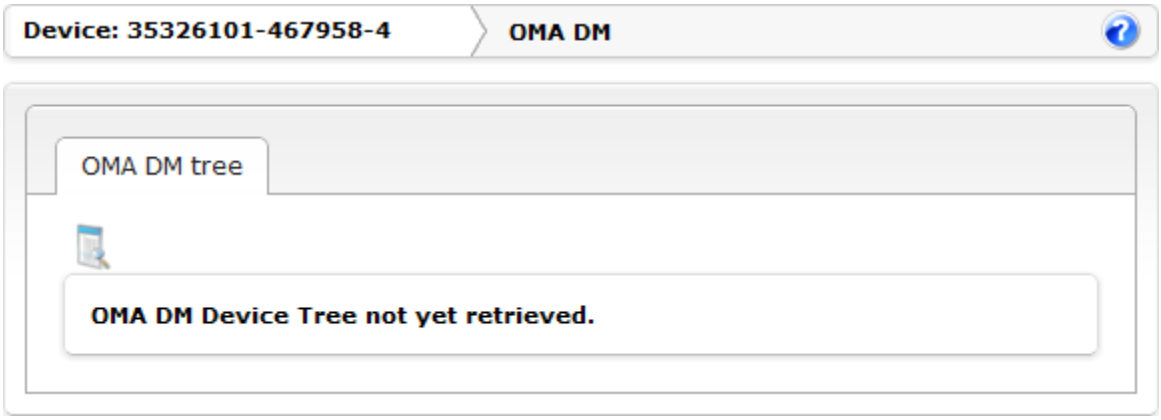
  DME uses the standard push setting for notifying about OMA DM installation jobs. However, if the DME client is not available on the device, the DM engine on the device will never be notified of the installation job. Use this action to send a notification message by SMS directly to the DM engine on the device. Select the jobs that need special notification in this window (or the **Device setup** > **Provisioning** window), select this action, and click **Confirm** in the dialog that is shown.

  This action is only shown if the selected installation job was created using OMA DM.

OMA DM

In this panel section you can order the current device to send in a complete DM tree to the server. The panel section is only available if the current device has been bootstrapped using OMA DM.

When you open the panel section for a device for the first time, the following message is shown:

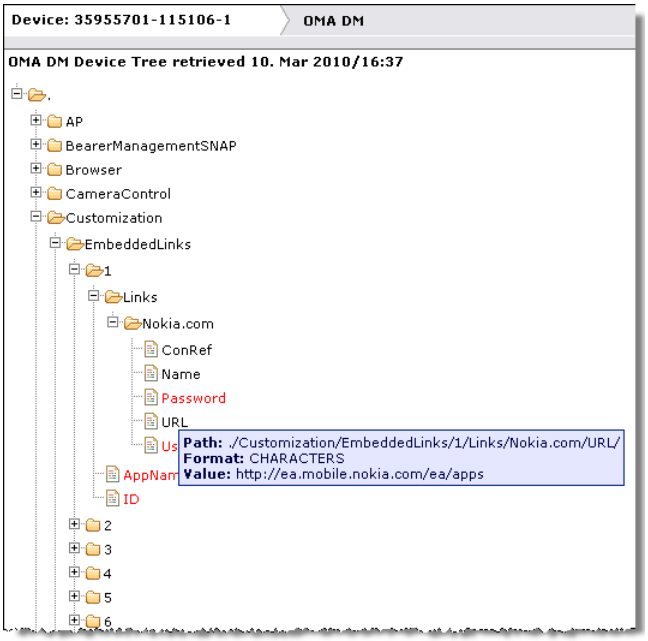


Furthermore, the **Retrieve OMA DM Device Tree** dialog is shown. See the next section for more information.

Being able to see the DM tree of a device can be a great help when developing and troubleshooting OMA DDF configurations and OMA DM provisioning profiles.

For example:
You want to set up a DDF configuration in order to install a bookmark on all Symbian devices. You may find that the location of bookmarks on a device does not match the DDF documentation, because on some devices you get an error when writing to the location specified in the documentation. You can then retrieve the DM tree from one of the devices that returns an error, and see the location of bookmarks on those devices, for instance `./Customization/EmbeddedLinks/1` (in the illustration below). This allows you to adjust the DDF configuration for those devices. For more information, see ***DDF configurations*** on page 164.

When the tree has been retrieved by the server, it is displayed in this panel section. The tree shows all the nodes that are available through OMA DM.



Click through the tree to see the names and content of the DM nodes. If you let the mouse pointer rest on a node or a leaf, a pop-up text shows the full path of the node, the format, and (for a leaf) the value.

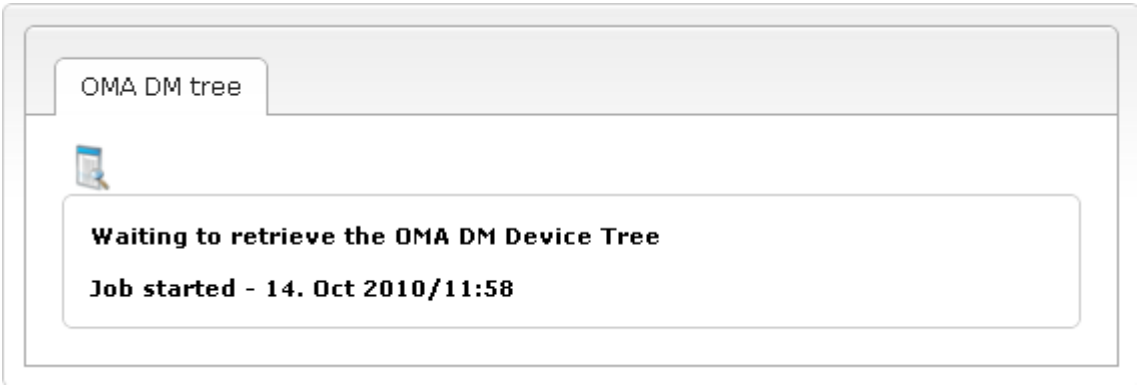
If a leaf is shown in a red font, it means that the DM tree parser was unable or not allowed to read any further nodes from that point. In that case, the pop-up text shows the SyncML status code returned from the device. The status code is roughly equivalent to standard HTTP status codes, for instance with code **404** meaning **Not Found** and **500** meaning **Command Failed** (undefined error). For a list of status codes, see the ***OMA home page http://www.openmobilealliance.org/tech/affiliates/syncml/syncml_dm_represent_v11_20020215.pdf***.

A small disk icon shown next to a leaf means that the value of the leaf is in Binary or XML format. Click the disk icon to download the value of the leaf as a file.

Retrieve device tree

When you click this action, you are asked if you want to retrieve the OMA DM device tree from the current device.

If a message such as the following is shown:



it means that the server has already requested the OMA DM device tree from the device, but the device has not finished supplying it yet.

Retrieving the device DM tree can be a time consuming process. Every node in the tree is parsed all the way to the last leaf, and especially on Windows Mobile phones there is a great number of nodes. You are free to work in other pages or exit the browser while you the process is in progress.

The OMA DM device tree retrieval is similar to a provisioning job in some respects. If the connection fails at one point, the job will be put on hold for the same number of minutes as installation jobs (by default 60 minutes).

Please note

Due to the large amount of nodes contained in Windows Mobile devices (typically in excess of 75,000 nodes), DME excludes part of the tree by default: `./Vendor/MSFT/uninstall`. According to Microsoft documentation, the nodes below this branch of the tree can only be manipulated through OMA-CP anyway (and not OMA-DDF). This typically takes approximately 45,000 nodes out of the tree, and reduces the time it takes to retrieve the tree. It still typically takes a considerable amount of time to complete, however.

If, for any reason, you need to be able to retrieve the excluded part of the tree, you must change a table in the DME database. The table, `dm_path_exclusions`, contains two columns - a unique ID and the column `path`. You can delete the default entry to retrieve the full tree, or you can add more node paths to be excluded in separate rows in the table.

Apple MDM

 Use this panel section to review and delete configuration and provisioning profiles, request phone information, and send certain actions to the phone.

This panel section is only shown for iOS 4+ devices that have been enrolled using Apple MDM as described in ***MDM on Apple iOS*** on page 126.

For more information about provisioning profiles to iOS devices, see ***Apple iOS profiles*** on page 172.

The tab toolbar contains three actions: **Lock device**, **Clear passcode**, and **Erase device**. When you click an action, an Apple Push request is pushed to the device. The command push can be seen in the **Log** tab.

-  **Lock device**

  Click this action to immediately lock the current device. If a passcode is set, the user will need to enter the passcode to open the device.

-  **Clear passcode**

  Click this action to clear the current passcode from the device. This is useful if you have sent a configuration profile to the device which changes the passcode requirements. If you have not sent such a configuration profile, the passcode is simply removed.

-  **Erase device**

  Click this action to erase (wipe) the device completely. This can take a long time. After being erased, the device needs to be connected to a computer with iTunes to work again. No warning is given to the user, and the command is performed immediately even if the device is locked.

The subtabs in this panel section are described in the following.

Configuration profiles

The **Configuration profiles** subtab shows details about the configuration profiles installed on the device. **Configuration name**, **Identifer**, and **Owner** are shown by default. You can expand each configuration to see more details.

An enrolled device always contains the configuration profiles called **DME Mobile Device Management** and **iPhoneCA**. These profiles are installed on the device when they are enrolled into the DME system.

Configuration profiles can be sent to the device using the **Configuration** setup panel of the **Apple iOS profiles** page in the **Provisioning** tab. See ***Apple iOS profiles*** on page 172 for more information. Such profiles can be used for setting security and other settings (Payloads) on the enrolled device.

Two actions are available from this subtab:

- **Remove installed profile**: Select one or more profiles, and click this action to delete them. Note that if you delete the profile called **DME Mobile Device Management**, you will need to re-enroll the phone before you can contact it again. Furthermore, anything that has been installed using the MDM profile will be removed from the device. To update a profile, you must delete it from this panel section and re-send the edited profile from **Provisioning** > **Apple iOS profiles** > **Configuration**.
- **Refresh installed profile list**: Click this action to update the list of profiles on the device. The list is also updated when this page is loaded.

Provisioning profiles

The **Provisioning profiles** subtab shows details about the configuration profiles installed on the device. **Configuration name**, **Application Identifer**, and **Expiration date** are shown by default. You can expand each configuration to see more details.

Provisioning profiles can be sent to the device using the **Provisioning** setup panel of the **Apple iOS profiles** page in the **Provisioning** tab. See ***Apple iOS profiles*** on page 172 for more information.

A provisioning profile is required for running in-house enterprise apps on the device. With Apple MDM, you can deliver up-to-date profiles to users so they do not have to manually install the profiles to run the apps, or upgrade them when they expire.

Two actions are available from this subtab:

- **Remove installed profile**: Select one or more profiles, and click this action to delete them. Anything that has been installed using this profile will be removed from the device.
- **Refresh installed profile list**: Click this action to update the list of profiles on the device. The list is also updated when this page is loaded.

Certificate list

The **Certificate list** subtab shows details about the certificates installed on the device. The **Certificate name** and the **Last updated** datestamp are shown by default. You can expand each certificate to see more details.

The following action is available from this subtab:

- **Refresh certificate list**: Click this action to update the list of certificates on the device. The list is also updated when this page is loaded.

Device restrictions

The **Device restrictions** subtab shows details about any restrictions pushed to the device. The **Restriction name** and the **Last updated** datestamp are shown by default. You can expand each restriction to see more details.

The restriction list includes information about hardware encryption features on the device and about passcode settings.

- *Hardware encryption:* A device can be protected at **Block level**, **File level**, or both (called **Data Protection**, if a passcode is also set).
- *Passcode compliant:* This is **true** if the user's passcode complies with all requirements on the device.
- *Passcode compliant with profiles:* This is **true** if the user's passcode complies with all requirements received from profiles.
- *Passcode present:* This is **true** if the device is protected by a passcode.

The following action is available from this subtab:

- **Refresh restriction list**: Click this action to update the list of certificates on the device. The list is also updated when this page is loaded.

Apple profiles

If the current device is an Apple iOS device, you can use this panel section to send one or more Apple iOS configuration profiles to the device. The profiles are made available in this panel section when they are uploaded them through the **Provisioning** > **Apple iOS profiles** page (see ***Apple iOS profiles*** on page 172).

Note that the Apple iOS device must be enrolled for this to work.

To install or remove profiles on the current device, select the ones you wish to install or remove by switching them **ON** or **OFF**, respectively. Then click **Save**. The profiles will then be installed on or removed from the current device.

Note that the installation or removal process has a separate schedule. The server checks for changes in device profiles every 15 minutes between 08.00 and 16.00 server time. It may therefore take up to 15 minutes for the installation to start, or it will begin at 8 the following morning.

Provisioning

From the **Provisioning** tab, you can manage the *deployment*, or roll-out, of software, access points, configurations, and profiles to your devices - both devices that are already managed in the DME system and devices that you want to start to manage.

DME supports different types of provisioning:

- Provisioning by SMS or WAP push.
- Provisioning using the OMA DM protocol.
- Provisioning using the Apple MDM Protocol.
- Provisioning using Mark for Installation.
- Self-service provisioning.

The type of provisioning that you choose will depend on the capabilities of the device model and device platform that you want to deploy to, and your company policies. In the following sections, a list of supported device platforms will be listed for each type of resource that you want to deploy and for each provisioning method.

The overall process of provisioning – or *deploying* – software to a device is as follows:

1. Upload the software package to the DME server. See ***Upload software*** on page 132.
2. Select one or more software packages, and select the **Install software** icon. See ***Installing software*** on page 108.
3. Monitor the installation status. See ***Status*** on page 150 and ***Provisioning status*** on page 180.

The page menu in this tab contains functions to provision the different types of items. From the page menu, you can also access functions to push information to devices. Those functions (under the **Send to device** heading in the page menu) are described under the **Devices** tab - see ***Send to device*** on page 64.

For a detailed description of how to deploy DME on different device platforms, see ***Software deployment overview by platform*** on page 117.

Installing software

The process of installing software on mobile devices is different from platform to platform, and there may even be differences within the same platform. In order to be able to support a large number of different devices types, DME offers different ways to deploy software to devices.

These methods are:

- Push installation
- OMA DM installation
- Mark for installation
- Other methods of deployment, including self-service

These methods are described in the following sections. For an overview of the installation methods offered per device platform, see ***Software deployment overview by platform*** on page 117.

For step-by-step instructions pertaining to the installation processes, see ***Software*** on page 130.

Push installation

Push installation means that the server sends a message to the device(s) by SMS or WAP, instructing the user to click a unique link to the software. Clicking the link (within a set amount of time) causes a specific DME client to be downloaded to the device, and the installation is initiated. The link is only valid for the amount of time specified in the field **Software push, ticket lifetime** in the **Client** section of the **Server configuration** panel (see ***Client*** on page 215).

After a series of prompts, the DME client is installed on the device.

Whether you should choose WAP or SMS push depends on the device. A WAP push just requires one click to get the DME client download started, but is not supported by all devices (notably many WM devices). Also, Symbian devices tend to attempt to use a WAP access point for downloading the client after a WAP push (which will not succeed). On the other hand, Java devices do not support SMS push. The recommendation, then, is to use WAP for Java devices only, and SMS push for all other devices that support push installation.

Compared with installation by OMA DM, there are some drawbacks to using the push method:

1. It is possible to send the wrong client to the user. By human error, you may for instance send a PocketPC client to a Smartphone device. The OMA DM bootstrap ensures that DME installs the correct client on the device.

2. You have to know the device type and OS before being able to push an appropriate client to a new device. Again, the bootstrap secures this.
3. The user must accept a number of prompts. Even though DME seeks to minimize the number of prompts required, each platform has different requirements when installing applications. The built-in DM engine, on the other hand, usually has sufficient rights to install the DME application without prompts.
4. You can only see that the installation has succeeded when the user actually makes a connection with DME. With the OMA DM installation method, DME keeps track of the entire installation process, which can be monitored in the **Status** panel in the **Software** page of the **Provisioning** tab (see ***Status*** on page 150).

DME Push installation **applies to:**

- **Symbian devices**
- **Symbian UIQ devices**
- **Windows Mobile devices**
- **Java devices**
- **BlackBerry devices**
- **Android devices**

OMA DM installation

DME uses the Device Management (DM) protocol defined by the Open Mobile Alliance (OMA) to acquire a deep knowledge of each device and to make silent installs and upgrades if possible.

With OMA DM, you can send a command to one or more devices to start the built-in DM engine in the device. The DM engine will supply information to DME about the make, model and other details about the device (*bootstrapping*). Based on this information, DME will select a DME client and install it silently on the device.

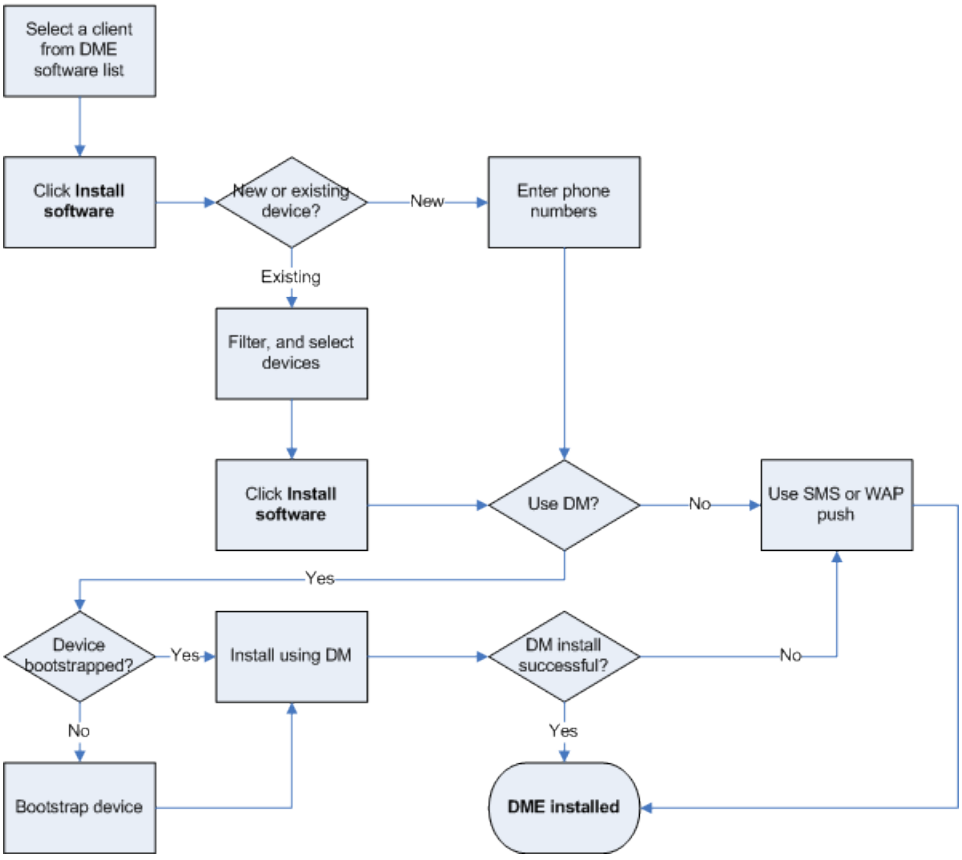
If the device is unknown to DME - that is, it has never been bootstrapped - the user must enter a PIN code (**12345**) to accept the instruction from DME to launch the bootstrapping process.

Not all devices support the use of OMA DM. DME will fall back to SMS-based installation or Mark for Installation as known from previous versions of DME in case the OMA DM method fails.

For OMA DM to work, *SSL certificates* must be in place to allow secure communication between DME and the client. The device management (DM) client built into the devices requires a known root certificate in order to process OMA provisioning commands from the DME server. Therefore, if you want to provision the DME software to the devices using OMA DM, you need to either use a commercial CA from VeriSign or others (recommended), or to send the root certificate to your devices using the **Send SSL certificate** function prior to installing any software using OMA DM. See ***SSL certificates*** on page 114.

The general process of installing a DME client can be seen below. The different steps are described in the subsequent sections.

Installing a DME client



This overall process applies to the installation of other software than the DME client as well.

OMA DM installation **applies to:**

- **Symbian devices**
- **Windows Mobile devices**
- **Java devices**

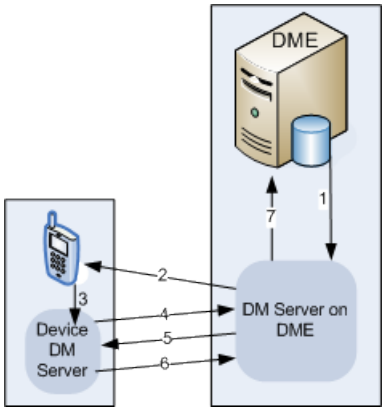
Please note
The level at which the different devices comply with the OMA standard is not uniform across device platforms, device OS versions, or even brands. One Nokia or HTC device may support OMA, whereas another model of the same brand does not. It is therefore sometimes a question of trial and error when distributing DME to many different device models. As described in the flowchart above, DME falls back to an alternative mode of installation if DM fails.

Bootstrapping devices

In order for DME to be able to use OMA DM functions, such as installing DME on a device, the device must be *bootstrapped*.

This is a process where DME sends an OMA DM bootstrap configuration to a device. The user must save and accept the configuration by entering the PIN code defined in the configuration sent by the server.

The device will initialize a connection to the DME DM server, which will investigate the device for DME DM functions. This can be illustrated in the following way, where the numbers in the illustration refer to the items below:



1. The DME administrator chooses to bootstrap a device in the DME web interface, and DME passes the order to the DM server on the DME server machine.

2. The DM server sends an OMA DM bootstrap configuration to the device. The configuration contains the path to the DM server and a password.
3. The user accepts the configuration, and enters the PIN code defined in the field **OMA PIN** in the **SMS modem** section of the **Server configuration** panel (see ***SMS modem*** on page 228). This transfers control to the built-in DM server on the device.
4. The device DM server connects to the DME DM server using the credentials given in item 2, and checks if there are any tasks to do. This tells the DME DM server that the initial bootstrap has been successful.
5. The DME DM server sends a list of tasks to the device.
6. The device DM server returns the results of the tasks to the device. Based on the results, the DME DM server can compile a list of actions that are possible to perform on the device, and how the device needs to perform the actions. This way, the DME DM server for instance knows exactly how to perform a silent upgrade of DME on the device, and if it is possible.
7. The DME DM server reports back to DME, and the DME web interface is updated to reflect the new knowledge about the bootstrapped device.

The bootstrap process will be performed in the following cases:

- When you attempt to install DME or any other software, access points, or DDF configurations using OMA DM on new devices.
- When you attempt to install DME or any other software, access points, or DDF configurations using OMA DM on existing devices which have not been bootstrapped before.
- When you choose to bootstrap one or more devices from the **Devices** tab. When you do this, you can choose to install the DME client at the same time (see ***Bootstrap device*** on page 58).

You can monitor the bootstrapping process in the **Status** panel section of the **Software** page (see ***Status*** on page 150).

For information about bootstrapping (enrolling) Apple iOS devices, see ***Enrolling devices*** on page 127.

DM on different platforms

The OMA DM protocol is supported in different ways on different platforms, and this is reflected in the way DME supports Device Management on the various platforms.

- **Symbian S60**

Bootstrap	Supported.

DME silent install	Supported. Some devices require the existence of an HTTPS certificate.
Install non-DME software	Supported.

- **Symbian UIQ**

  Not supported.

- **Windows Mobile**

Bootstrap	Supported.
DME silent install	Supported on devices running WM 6.*x*. Use the DME client designed for DM installation, called **xx.Silent.CAB**.
Install non-DME software	Supported. Requires that the software is signed, and that a certificate is installed on the client.

- **Java**

Bootstrap	Supported.
DME silent install	DME installation is supported, but it cannot be silent, and will not work on a HTTPS connection. The user receives a link by SMS. After entering the PIN code, the user must execute the software download link, and proceed with a regular installation.
Install non-DME software	Supported, with the same limitations as above.

- **iOS**

  Apple iOS devices do not support OMA DM. However, DME supports the Apple MDM APNS system. For more information, see ***MDM on Apple iOS*** on page 126.

- **Android**

  Does not apply.

- **BlackBerry**

  BlackBerry does not support DM.

Mark for installation

The **Mark for installation** method of deployment applies to DME client upgrades only. The upgrade only involves one question to the end user, and is very suitable for devices that do not support OMA DM.

This is a mechanism by which you tell one or more existing devices that a DME client upgrade is waiting for it. After specifying which devices are to be upgraded using **Mark for install**, the user will be prompted to download and install the upgrade the first time the client connects to the server.

For more information about how to use this method, see ***Installing DME on existing devices*** on page 143.

This upgrade method can be used for devices of all platforms except iOS.

The **Mark for installation** upgrade method **applies to:**

- **Symbian devices**
- **Symbian UIQ devices**
- **Windows Mobile devices**
- **Java devices**
- **BlackBerry devices**
- **Android devices**

SSL certificates

As the connection between the DME server and the devices is run through a secure (SSL) connection, an *SSL certificate* must be installed on the server and on each device, affirming that the data received through the SSL connection is in fact coming from the right server. The certificate is also required for bootstrapping devices.

When the DME server is installed, you can choose to deploy an SSL certificate provided to you by Excitor A/S. This is called a *self-signed* certificate. Or, you can choose to purchase a certificate from a trusted certificate authority (CA), such as VeriSign or Thawte, and deploy that on the server. Excitor recommends using a certificate from a trusted CA, as some issues may arise when deploying the client to devices, if the device does not trust the self-signed certificate. Such issues are outlined below.

OMA DM

The following applies when installing DME clients **using OMA DM**:

- Non-commercial, self-signed certificates from Excitor or others are not native to any mobile devices. The device management (DM) client built into the devices requires a known root certificate in order to process OMA provisioning commands from the DME server. Therefore, if you want to provision the DME software to the devices using OMA DM, you need to either use a commercial CA from VeriSign or others (recommended), or to send the root certificate to your devices using the **Send SSL**

certificate function prior to installing any software using OMA DM. See ***Send SSL certificate*** on page 68 for more information.

OMA DM deployment does not apply to Apple iOS devices, and the **Send SSL certificate** function cannot be used with Apple iOS devices, as they cannot receive WAP push.

The following applies when installing DME clients *using the self-signed Excitor certificate* and **using SMS push**:

- *Symbian (including UIQ) devices:* Installing the DME client will automatically install the Excitor root certificate without user interaction. If you are not using the Excitor certificate, or if the certificate you use cannot be verified, the Symbian device will behave as a Java device (see below).
- *Java devices:* These devices do not allow the automatic installation of root certificates, so the user will need to trust the connection every time he or she connects to the DME server (or every time DME is launched, depending on device model). For a solution to this issue, send the certificate to the devices using the **Send SSL certificate** function as mentioned in the paragraph about OMA DM above.
- *Windows Mobile devices:* When the DME client makes the first connection to the server, the user will be asked if he or she wants to accept the untrusted connection to the server. The device will remember the user's choice.

Apple iOS devices

DME for iPhone and other iOS devices (iPod touch, iPad) cannot be installed using SMS push or OMA DM, but is installed through Apple App Store. When the user launches the client for the first time, and enters the server path, the **DME client 3.5.4** and later silently accepts the self-signed Excitor certificate (and certificates from any trusted CA).

Android devices

it is not possible to install root certificates on Android devices. It might be possible in the future if Google decides to implement it, but until that happens, the DME servers must use SSL certificates signed by a major certificate vendor such as Thawte or VeriSign, which have their root certificates pre-installed on Android devices. This means that no self-signed certificates are valid for connecting with the DME server.

This means that you need to install a certificate from a major certificate vendor on your DME server in order to connect using the DME client for Android. Note that different device vendors pre-install different root certificates, so you should contact your device vendor to make sure that the device you intend to purchase supports the certificate installed on your DME server.

If you already own a device, you can try opening the browser on the device and access a secure SSL website using a certificate from the certificate vendor you intend to use on the DME server. If the browser accepts the certificate, the Android device will also be able to establish a secure connection to DME using that certificate. If the browser issues any kind of security warning, the device will not be able to connect to DME.

To assist you in trying out different certificates from your Android device browser, we have assembled a small collection of URLs for secure sites, using different certificates. See below.

https://www.thawte.com
https://www.verisign.com/
https://www.buypass.no/
https://www.digicert.com/
https://secure.entrust.com/
https://www.geotrust.com/
https://www.globalsign.com/
https://www.verizon.net/
https://www.wellsfargo.com/
https://www.godaddy.com/

This list is not complete. However, we have provided a tool that can help you test this. Go to the ***DME install site http://install.excitor.dk*** to find the utility in the **Database scripts and DME support files** section.

Summary

For all platforms, Excitor recommends using a 3rd party, trusted SSL certificate in order to ensure a smooth roll-out of DME to all supported platforms.

Other modes of deployment

There may be reasons not to use either OMA DM or Push install:

1. Some platforms do no support either method. This applies to the **Apple iPhone** and (in part) to **Android** devices. For more information, see the platform-specific deployment sections later in this guide.
2. In circumstances that call for a less structured installation (such as during a test phase or when installing during a support incident), you can use ad-hoc installation. See ***Ad-hoc installation*** on page 435.
3. For Symbian devices, you can distribute DME on a memory card, which will auto-install DME. See ***Symbian auto-installation*** on page 447 for more information.

4. For Windows Mobile PocketPC devices, you can distribute DME on a memory card, along with custom configuration. For more information, see ***WM configuration tool*** on page 435.
5. You can let the users request a DME client through a self-service system. For more information, see ***Self-provisioning*** on page 449 or ***Web-based self-provisioning*** on page 452.

Installing other items

Apart from software, you can install access points, DDF configurations, and Apple profiles on your devices.

For information about considerations, platforms limitations, and instructions pertaining to these actions, see the following sections:

- ***Access points*** on page 158
- ***DDF configurations*** on page 164
- ***Apple iOS profiles*** on page 172

Software deployment overview by platform

DME supports a wide array of device platforms and device models. Different device platforms, and even different device models using the same platform, may require different deployment methods. As a consequence of this, DME supports a number of different ways of deploying DME and other software, access points, DDF configurations, and profiles to devices. This section provides an overview of these methods, and lists the appropriate methods for each supported device platform.

For all methods, the following infrastructure must be in place prior to deployment:

1. The DME Server must be installed, configured, and working.
2. Licenses for the appropriate number of managed devices must be installed on the DME Server.
3. An Internet connection must be properly configured on the devices. This step can also be automated as part of the installation. Please see Access points and bookmarks.
4. DME includes support for client signing. If this is enabled, a client must be signed, and the signature must be verified by the server

for the client to establish a connection with the server. For more information about the effect of these security features on deployment, see ***Add client signing key*** on page 71.

New devices vs. existing devices

Every time you install software to devices using the DME web interface, a message such as this:

asks you to choose if you want to install on new devices or existing devices. This distinction is especially important if you are using OMA DM for installing the DME client on the devices:

New devices are devices that are not known to the DME system at all - that is, they have never been connected using OMA DM or the DME protocol to the DME server. They are identified by their phone number. In principle, you do not know which phone model is at the receiving end of the installation prompt. Therefore, if you are installing the DME client using OMA DM, it is a good choice to do so by *bootstrapping* the device from the **Devices** tab and including the DME client, instead of picking a DME client first and then ordering an installation. This way, the DM bootstrap mechanism is allowed to select the default DME client for the platform in question. See ***Bootstrap devices http://documentation.excitor.com/server/3_5/index.htm#3877*** for more information.

Existing devices are devices that are known to the DME system. Some version of the DME client has already been installed, and they have reported their characteristics and properties to the DME server. When installing the DME client using OMA DM, DME shows you a list of devices in the system to which the selected DME client applies (for instance Symbian S60 devices if you chose to install the S60 client). You can then choose the specific devices to which you want to install the client.

Client deployment recommendations

The following table shows a brief overview of the recommended method of installation to each platform.

Platform	Recommended installation method (and alternative)
Symbian	OMA DM (SMS, WAP)
Symbian UIQ	SMS (WAP)
Windows Mobile	SMS (WAP)
Java	OMA DM (SMS, WAP)
Apple iOS	Apple App Store
BlackBerry	BES (SMS)
Android	SMS (Google Play)

For more information about each platform, see the subsequent sections.

Deploying to Apple iOS devices

Deployment using OMA DM:

Not supported.

Deployment using SMS/WAP push:

Not supported. However, it is possible to send configuration files created by the Apple tool "iPhone Configuration Utility" to multiple Apple iOS devices using commands on the server. The Apple tool is used for configuring a *configuration profile*, complete with wireless network settings, access points, VPN settings, private certificates, native PIN code activation, etc., or a provisioning profile for installing in-house apps. When the profile has been configured, it can be exported as a file - which can be uploaded to DME and managed there. For more information, see

- ***Apple iOS profiles*** on page 172

Apple MDM Protocol:

DME supports the enrollment and management of Apple iOS devices using the Apple MDM Protocol. This enables Apple iOS 4 devices (iPhone, iPod, iPad) to *enroll with* (enter into a trusted relationship with) DME, which may then issue commands to the devices without user interaction. This resembles the "bootstrap" which applies to Symbian, Windows, and Java devices, which also creates a trust between server and device.

It is recommended to enroll your Apple devices. For more information, see

- ***MDM on Apple iOS*** on page 126

Certificates:

You can set up the DME server to require a trusted certificate. If your server uses a certificate from a trusted root CA such as VeriSign, the Apple iOS device will be able to connect. However, if you are using a self-signed Excitor certificate, you need to provision the certificate to the device.

As of *DME 3.5.1* for Apple iOS, the DME client will guide you through the process of downloading the server certificate, if the client cannot log on due to a certificate error.

As of *DME 3.5.4* for Apple iOS, the DME client will accept both trusted CA certificates and Excitor self-signed certificates silently, without user interaction.

It is important to note that if you use a self-signed certificate (that is, not from a trusted root CA) on Apple iOS devices, you must use the full hostname of the DME server for signing the certificate - not the IP address. For more information, see

- ***SSL certificates*** on page 114,
  http://documentation.excitor.com/server/3_5/index.htm#4910 - for background information and specific instructions that relate to Apple iOS devices.

Other modes of deployment:

The DME client and other software is deployed using Apple Store.

1. Open the Apple Store in iTunes. Search for "DME 3" using the search box.
2. Click the **FREE** button, and then **INSTALL** to transfer the application to your **Applications** folder.
3. Synchronize the application to your Apple iOS device.

To facilitate this, you can send an SMS with the text: **http://itunes.com/app/dme3** by SMS to the user (or send the link by e-mail). This will direct the user to the DME client download page in the Apple Store.

Deploying to Android devices

Deployment using OMA DM:

Not supported.

Deployment using SMS/WAP push:

Only SMS push is supported.

Certificates:

In order for the Android devices to be able to connect to DME, the server needs an SSL certificate from a vendor whose root certificate is pre-installed on the Android device. It is currently not possible to install root certificates on Android devices (self-signed or otherwise).

If you already own a device, you can try opening the browser on the device and access a secure SSL website using a certificate from the certificate vendor you intend to use on the DME server. If the browser accepts the certificate, the Android device will also be able to establish a secure connection to DME using that certificate. If the browser issues any kind of security warning, the device will not be able to connect to DME.

To assist you in trying out different certificates from your Android device browser, we have assembled a small collection of URLs for secure sites, using different certificates. See below.

https://www.thawte.com/
https://www.verisign.com/
https://www.buypass.no/
https://www.digicert.com/
https://secure.entrust.com/
https://www.geotrust.com/
https://www.globalsign.com/
https://www.verizon.net/
https://www.wellsfargo.com/
https://www.godaddy.com/

This list is not complete. Note that different makes of Android devices support different certificates. However, we have provided a tool that can help you test this. Go to the ***DME install site http://install.excitor.dk*** to find the utility in the **Database scripts and DME support files** section.

Other modes of deployment:

The DME client and other software can be installed through Google Play. However, when installing DME from Google Play, the user has to enter the server path himself or herself. Furthermore, the administrator has less control over deployment timing.

Deploying to BlackBerry devices

Deployment using OMA DM:

Not supported by BlackBerry devices.

Deployment using SMS/WAP push:

Only SMS push is supported. When the client is provisioned to the device, the DME server stamps the server path and the device phone number into the `.JAD` file which is downloaded to the device. WAP push is not recommended.

Certificates:

Excitor recommends using an SSL certificate from a commercial certificate authority, such as VeriSign. BlackBerry devices are usually not allowed to connect to untrusted sites over the MDS-CS. If you choose to use the self-signed Excitor certificate, please refer to the Research In Motion documentation or your BlackBerry partner for information about adding the Excitor certificate to the MDS-CS server or adding a direct internet connection for the BlackBerry devices.

Other modes of deployment:

- BES installation: You can install DME using a BlackBerry Enterprise Server (BES) using the DME COD and ALX files. When done this way, the installation of the DME client is completely transparent to the users because device permissions can be set by the BES. See the documentation supplied by Research In Motion Limited for more information.
- Ad-hoc installation (see ***Ad-hoc installation*** on page 435).

Deploying to Java devices

Deployment using OMA DM:

Bootstrapping Java devices is supported, and Java devices should be able to pick the correct DME client for installation.

Installation and upgrade of the DME client is supported. However, it cannot be silent, and will not work on a HTTPS connection. The user receives a link by SMS. After entering the PIN code, the user must execute the software download link, and proceed with a regular installation.

Installation of *non-DME* software is supported, but with the same limitations as above.

Deployment using SMS/WAP push:

Both SMS and WAP push are supported. Note, however, that using WAP push for Nokia Series 40 is not recommended, as it can be difficult for the user to locate the received WAP push message. (Note that DME for Nokia Series 40 has been discontinued. Last versions are 3.5 build 1/2.0 build 16.)

When the client is provisioned to the device, the DME server stamps the server path and the device phone number into the `.JAD` file which is downloaded to the device. A separate server path by SMS is therefore not required (sending the server path by SMS is an option when using WAP push).

Other modes of deployment:

The DME client and other software can be deployed in other ways:

- Ad-hoc installation (see ***Ad-hoc installation*** on page 435).

Deploying to Symbian devices

Deployment using OMA DM:

Bootstrapping Symbian devices is supported, and Symbian devices should be able to pick the correct DME client for installation.

Silent installation and upgrade of the DME client is supported. Note that the root certificate used for signing the DME server's SSL certificate must be present on the device. The root certificates of major commercial providers of SSL certificates, such as VeriSign, Thawte, Entrust.net are normally present on all devices. When using a self-signed SSL certificate, the appropriate root certificate must be installed on the device before bootstrapping can occur.

Note also that in order to be able to upgrade the client using OMA DM, the security setting **Prevent uninstall of DME Client** must be **Disabled** for the device. This is done on the server. This is due to the fact that the client is uninstalled before the upgrade, and the client is unable to tell if it is the user or the DM process that is performing the uninstall. We are working on a resolution to this.

Installation of *non-DME* software is supported.

Deployment using SMS/WAP push:

Both SMS and WAP push are supported. However, when using a WAP push, the device tends to select a WAP access point for downloading the client. This will in some cases fail. When using SMS push, the device uses whichever access point that is already configured for the browser.

Other modes of deployment:

The DME client and other software can be deployed in other ways:

- Ad-hoc installation (see ***Ad-hoc installation*** on page 435).
- Auto-installation from memory card (see ***Symbian auto-installation*** on page 447).

Deploying to UIQ devices

Deployment using OMA DM:

Not supported.

Deployment using SMS/WAP push:

Both SMS and WAP push are supported.

Other modes of deployment:

The DME client and other software can be deployed in other ways:

- Ad-hoc installation (see ***Ad-hoc installation*** on page 435).

Please note that DME support for the Symbian UIQ platform has been discontinued.

Deploying to Windows Mobile devices

Deployment using OMA DM:

Installation using OMA DM is generally supported on WM 6.*x* devices. With WM Smartphone devices, we recommend WM 6.5. WM 5 devices may also work, but they have not been tested extensively.

Note that the phone manufacturer or distributor may apply policies on the phone that make OMA DM installation impossible. In such cases, the policies must be removed (if possible) before an OMA DM installation can be attempted. To do this, you can use a tool that Excitor makes available from the DME Partner site: `ProvisioningHelper.cab`. Copy the file to the device, and run it. This changes some policies on the device, and afterwards you should be able to bootstrap the device. The tool must be run every time you need to bootstrap the device.

It is recommended to test the device types you intend to deploy DME on thoroughly before rolling out DME. Microsoft has created a tool called **MDM Connect Now Tool**, which logs the activities in the DM tree while a DM installation is in progress. This can help you locate any errors, for instance if a connection is not trusted, etc. You can also send the log to DME Support for investigation. The tool is available from the ***Microsoft website http://www.microsoft.com/downloads/details.aspx?FamilyID=61691925-07c8-4d29-bf11-9df43aedae94&displaylang=en***.

When you have verified that OMA DM works on the device, the following applies:

Bootstrapping WM devices is supported, and these devices are able to pick the correct DME client for installation. Note that if you are using a VeriSign certificate, you may find that WM 5 and 6 devices cannot be bootstrapped. In this case, see the *Setup notes* section of the release notes for **DME Server 3.5 SP02** at the ***Excitor release notes site http://install.excitor.dk/documentation/rn/***.

Silent installation and upgrade of the DME client is supported. A special DME client called `xx.Silent.CAB` is used for this purpose.

Installation of *non-DME* software is supported. This requires that the software is signed, and that the corresponding root CA certificate is installed on the client. If the software is signed by a major CA such as VeriSign, this is normally the case.

Deployment using SMS/WAP push:

SMS push is supported. Some WM 6.1 devices (and newer) also support WAP push, but manufacturer differences apply.

Note also that Smartphones can only download `.CAB` files (not `.EXE` or `.ZIP`).

Other modes of deployment:

The DME client and other software can be deployed in other ways:

- Ad-hoc installation (see ***Ad-hoc installation*** on page 435).
- For WM Pocket PC devices, you can distribute the client on a memory card, including custom device settings. For more information, see ***WM configuration tool*** on page 435.

MDM on Apple iOS

DME supports the Apple MDM APNS protocol, which enables Apple iOS 4 and 5 devices (*iDevices* - iPhone, iPod, iPad) to *enroll with* (enter into a trusted relationship with) a server, which may then issue commands to the devices without user interaction. This resembles the "bootstrap" which applies to Symbian, Windows, and Java devices, which also creates a trust between server and device.

Security settings and other settings which the administrator wants to implement on iOS devices are defined in XML *profiles* using the Apple iPhone Configuration Utility and then distributed to the users using the **Apple iOS profiles** window (see ***Apple iOS profiles*** on page 172). Previously - before the introduction of Apple MDM - sending configuration files required that the users accept the installation of the profile. Profiles are now installed silently on enrolled devices. You can also provision links to in-house apps and provisioning profiles this way.

To become enrolled, a device user must accept the installation of a DME MDM Configuration Profile. When that profile is installed, the iDevice completes an enrollment process using the Simple Certificate Enrollment Protocol (SCEP), during which DME validates the device and generates a device certificate. DME can then manage and monitor the iDevice without further user involvement. Device settings profiles can be updated transparently, and device information can be obtained and registered by DME. The Apple Push Notification Service (APNS) is used to enable the communication between devices and DME.

A number of **prerequisites** must be in place before you can reap the benefits of Apple MDM:

1. You need to install an application certificate on the server (see ***Apple MDM*** on page 295).
2. The devices must run at least iOS 4.
3. An SSL certificate from a trusted vendor (such as VeriSign) must be installed on the DME server.

Generating an APNS certificate

To generate an APNS certificate, click **Apple MDM** in the page menu of the **Server** tab.

Generating the APNS certificate is a three-step process:

1. Generate a new certificate signing request (CSR)
2. Upload the CSR to Apple
3. Upload the certificate file (`.pem`) to the server

The **Apple MDM** page guides you through the process. See ***Apple MDM*** on page 295.

When you are done, the DME server has been configured as an Apple MDM server.

Enrolling devices

With the DME server configured as an Apple MDM server, you are ready to start enrolling iOS devices. For a device to be enrolled, the device owner has to accept the installation of a DME MDM Configuration Profile.

To enroll a device, you can choose one of three methods, which are described in the following.

Bootstrapping

1. Click **Bootstrap device** in the page menu of the **Devices** tab.
2. Make sure the **Apple MDM** option is enabled.
3. Enter the phone numbers of the iOS devices you want to enroll.
4. Click **Bootstrap**. See also ***Bootstrap device*** on page 58.

   When you have entered the phone numbers of the iOS devices you want to enroll and initiated the process, a text message (SMS) is sent to each device. The message contains a short text and a link to a web page. The link is bound to an ID generated by DME, ensuring that it can only be used once.

   The user must tap the link to open the **DME Apple MDM Enrollment** web page in Safari. See ***Installing Apple MDM profile*** on page 128 for information about further steps.

Direct link to secure web page

1. Distribute the following web link to the devices that need to be enrolled:

   `<DME_Server>/ios/` (note the trailing slash!)

   You can for instance distribute it by e-mail or by posting the link on your corporate Intranet page. Under some circumstances, you

may need to add the port number (typically `:5011`) for the link to work. The user is required to log in to the web page using his or her LDAP or AD credentials. The user must be member of the **DME_Users** LDAP/AD group. Alternatively, the user can be created as a local user on the DME server and given DME user access rights. For more information, see ***New user*** on page 50.

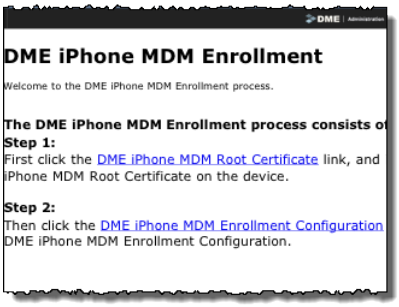
After logging in, the user sees the **DME Apple MDM Enrollment** web page (the same page that the user who received a bootstrap sees). See ***Installing Apple MDM profile*** on page 128 for information about further steps.

Send an Apple iOS profile to the device

1. You can also enroll a device by choosing a profile in the **Apple iOS profiles** window, and sending it to iOS 4 devices using Apple MDM (see ***Apple iOS profiles*** on page 172). This applies to devices that already exist in the DME system, and to new devices. Any devices that have not been enrolled yet will be enrolled, and the user will be directed to the **DME Apple MDM Enrollment** web page. See ***Installing Apple MDM profile*** on page 128 for information about further steps.

Installing Apple MDM profile

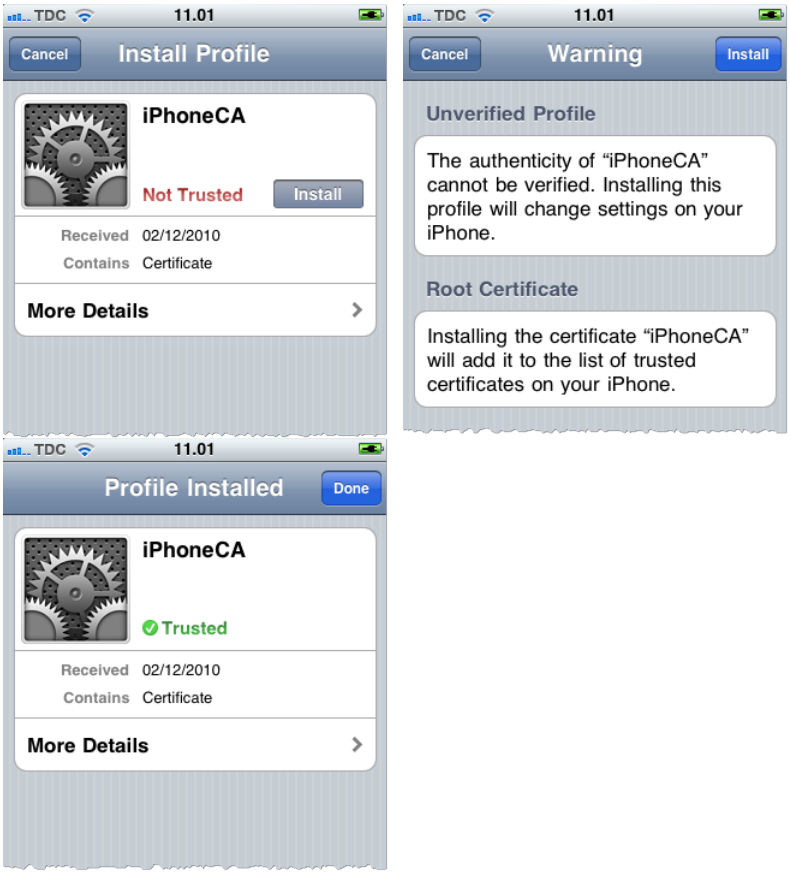
When the user has been directed to the **DME Apple MDM Enrollment** web page, he or she is presented with the following page containing instructions and two links:



1. The user should first tap link no. 1 to install the DME MDM root certificate on the device. This root certificate is self-signed and auto-generated by DME for the purpose of signing any profiles

distributed by DME, including the main MDM profile. If the user omits this step, all profiles distributed by DME will be **Unsigned** (but still valid).

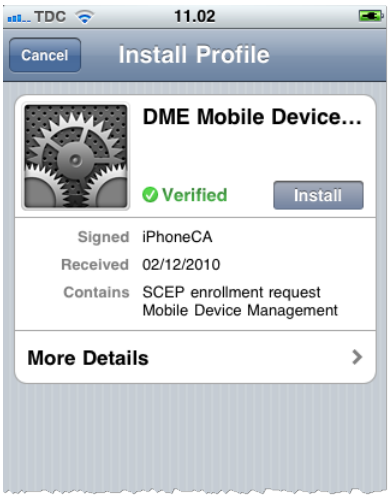
After tapping the link, the user should tap the **Install** button and complete the installation.

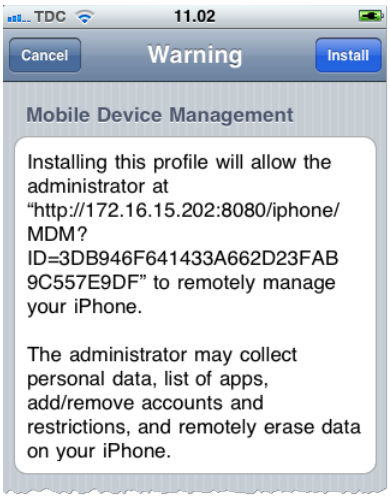


2. To complete the enrollment, the user must now go back to the **DME Apple MDM Enrollment** web page and tap link no. 2 to install the DME Mobile Device Management profile. This will initiate a SCEP communication session, through which the device receives a certificate generated by the DME MDM server. This certificate establishes the trust between server and device, enabling the silent installation of configuration and provisioning profiles and the execution of MDM actions.

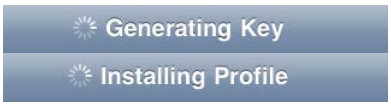
   After tapping the link, the user should complete the installation process.

   Please note: On devices running iOS 5, the certificate appears to be *Not trusted* and *Unsigned*. This is due to a quirk in iOS 5 and has no practical importance for the security of DME.

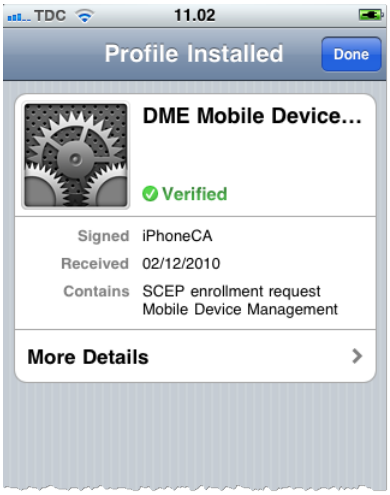




When tapping **Install**, the DME MDM server and the device will communicate using SCEP. It will proceed through the following actions:



Finally, the following screen is shown to indicate that the installation is complete.



Tap **Done**. Profiles can be inspected in **Settings** > **General** > **Profiles** on the device.

Software

The **Software** item in the page menu is the default view in the **Provisioning** tab. It is divided into a number of software setup *panel sections*. Each panel section is described in the following.

DME clients

The **DME clients** panel section is used as a repository for software that you want to make available to clients.

The panel section shows a list of the software which has been uploaded to the DME server.

When you upload *DME client software* to the server, you are asked to select the name of the device type on which the software in question can be installed. The software is divided into groups based on this information - for instance **Android**, **Symbian series 60 - 3rd edition**, or **Windows Mobile Pocket PC**.

If you point to the name of the software, the description of the software package (if specified) will be shown as a tooltip. The list in the **DME clients** subtab consists of the following information:

- **Software**

  This column shows the name of the software package. The software was named at the time of upload to the server. Clicking the software name lets you edit the software properties - see ***Upload software*** on page 132 for more information. You can also click the icon to download the software to your own disk.

- **Version**

  This column shows the version number assigned to the file when it was uploaded to the server.

- **SMS code**

  This column shows the SMS code that gives a user access to downloading the software in question. For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Filename**

  This is the name of the actual file uploaded to the server.

- **File size**

  This is the size of the file uploaded to the server in kilobytes.

- **Upload date**

  This is the date on which the file in question was uploaded to the server.

A star next to the software name indicates that this is the default (favorite) installation package for the client type in question - meaning that this version will be installed on a device when it is bootstrapped with an instruction to also install the default DME client for a device of the type in question. It is also used for auto-upgrading clients. See ***Make default version*** on page 135 for more information.

A magnifying glass icon indicates that this is a test version of a software package. See ***Make test version*** on page 138 for more information.

The following sections describe the available provisioning actions. Most of these actions apply both to **DME clients** and **Other software** (see ***Other software*** on page 149).

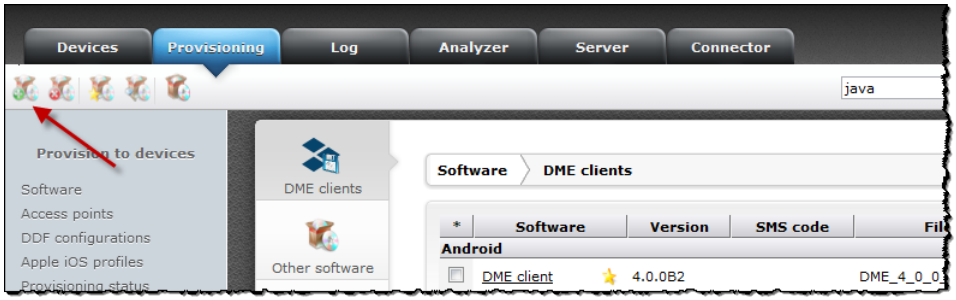
Upload software

When you click the **Upload software** action, you can upload new software to the server - either a DME client or other software. Uploading new software is a two-step process:

1. Choose and upload the file from your computer.
2. Supply some information about the software.

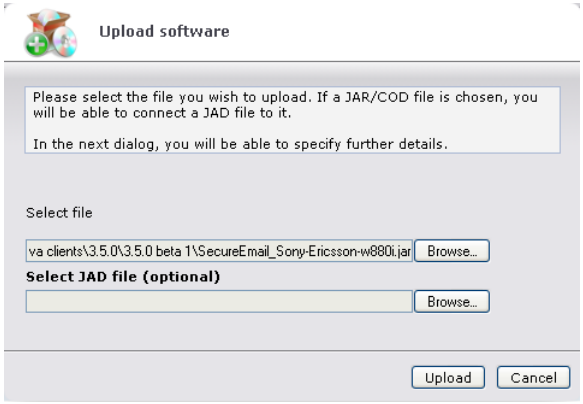
❖ ***Uploading new software***

1. Click the **Upload software** button.



2. Browse for, and select the software or file.

   Note that DME client software for *Java* and for *BlackBerry* devices is made up of two parts: a **`.JAR`** (Java) or **`.COD`** (BlackBerry) file, and a **`.JAD`** file. When browsing for the software, select the **`JAR/COD`** file first. You are then given the option to include a similarly named **`.JAD`** file as illustrated below.



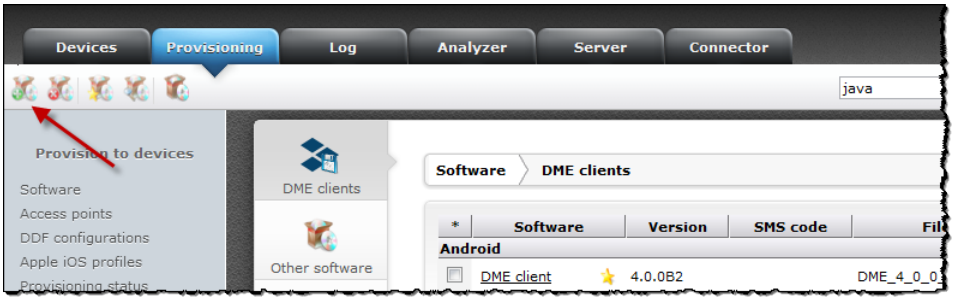
Note that DME also supplies a `.ALX` file for the BlackBerry client. This file is used in connection with installation through a BES server, and should not be uploaded to the DME server.

In-house apps for *iOS devices* consist of the program file (a `.IPA` file) and a picture file for the app icon. This picture should be a 512x512 pixel `.PNG` file. Note that in order for the users to be able to install iOS software, their devices must be enrolled with the DME server, and a provisioning profile allowing the installation of the in-house app must have been installed first. See ***MDM on Apple iOS*** on page 126 and ***Apple MDM*** on page 103.

3. Click **Upload** to place the software on the DME server.

   The DME server automatically selects a location for the software on the server file system.

After the file has been uploaded, the following window is shown (if you chose to upload the file from the **DME clients** panel section):



The window contains the following fields:

- **Filename**

  This is the filename of the file you selected. Please note that if you subsequently edit the software properties, a small icon appears after the filename: By clicking this icon, you can download the software to your own disk.

- **Serial ID**

  The serial number is automatically entered by DME. It ensures that you do not upload the same file several times under different names.

- **SMS code**

  You can specify an SMS code to enable users to send an SMS with a request for the software to be download to the device. After entering a code into the field, you can choose if the software download initiated by the server as a result of a self-provisioning SMS from a user should be pushed by SMS, pushed by WAP, or provisioned using OMA DM (bootstrappable devices only - see ***OMA DM installation*** on page 109). For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Installation type/Category**

  If you chose to upload the file from the **DME clients** panel section, you can select from a list of currently available clients. In the software list, the uploaded software will be entered under the heading you choose in this field. This list is maintained by Excitor, and reflects the device platforms currently supported by a DME client.

  If you chose to upload the file from the **Other software** panel section, you can divide your software into self-defined categories. The list of categories is dynamically extended with any new category you add in the field. In the software list, the software is grouped into the defined categories.

- **Client type/Name**

  If you chose to upload the file from the **DME clients** panel section, you can choose between **DME client** (the regular, full DME client) and **DM client** (the Basic MDM (device management-only) client - see ***Appendix G: The Basic MDM client*** on page 425). The software is placed in the appropriate subcategory in the software list.

  If you chose to upload the file from the **Other software** panel section, you can freely enter a name for the uploaded software in this field.

- **Identifier**

  If you have uploaded software for Apple iOS devices, you must specify an app identifier in this field that matches the identifier registered by the provisioning profile for this app - something like `com.companyname.appname`. Otherwise the device cannot verify (and run) the app.

- **Version**

  For DME clients, it is important to specify the correct version of the software, because the DME server uses these version numbers to compare and update the device(s).

- **Description**

  In this field you should specify the device types on which the application in question can run. The information in this field is shown as a tooltip in the software list.

When you have completed the form, click **Save** to upload the software with the specified information. You are returned to the panel section from which you selected this action.

- ***Editing software properties***

1. To edit the properties of a software package, click the name of the software in the software list.

You can now edit the information you supplied when you uploaded the software.

2. To download the software to your own disk, click the small icon which appears after the filename: .
3. Click **Save** to save the edited software properties.

   You are returned to the software list.

Delete software

Click the **Delete software** action to delete the currently selected software package(s) from the list. You are asked to confirm your action. The software is also removed from the DME server.

Make default version

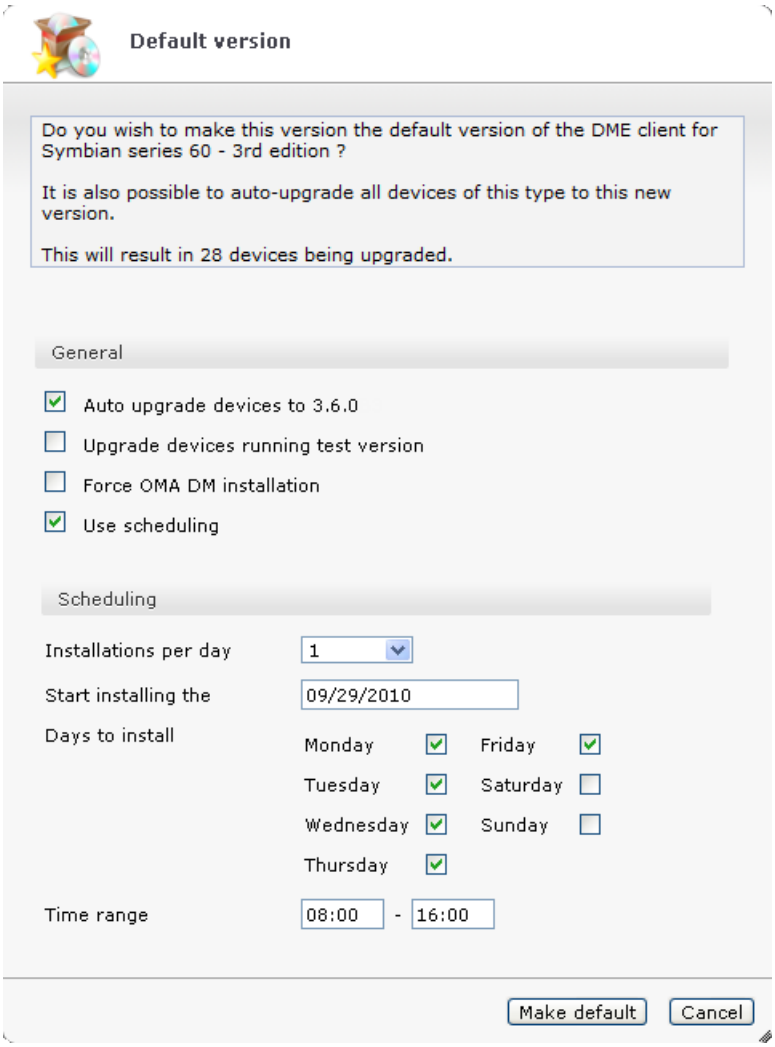
(**DME clients** panel section only.) All clients uploaded to the **DME clients** panel section are divided into groups corresponding to the device platforms supported by DME (**Android**, **Symbian Series 60**, **Windows Mobile Pocket PC**, and so on). In each of these groups of DME clients, one client should be made the *default client*. The status as default client is significant in the following respects:

- The default client is the client that will be installed by default when a bootstrap + client installation request is made (typically the most recent version of the DME client for the platform in question). See ***Bootstrap device*** on page 58 and ***Installing software*** on page 108.
- You can use the default status as an option when choosing devices on which to install a DME client. See Device filter.
- You can make DME upgrade existing devices automatically according to your specifications. See ***Automatic upgrades*** on page 136.

Select a client in a group, and click the **Make default version** icon to make that client the default client. The default client is marked with a star icon: .

Automatic upgrades

In the **DME clients** panel section, you can mark a DME client as *default version* - see ***Make default version*** on page 135. When you do this, you are given options to automatically upgrade a selection of your managed devices.



The **Default version** window shows how many devices will be upgraded if you choose to auto-upgrade. Furthermore, the following options are shown:

General

- **Auto-upgrade devices to [selected DME client version]**

  If you select this field, DME will initiate an installation on devices that run other versions than the selected default version - except devices that run a DME client marked as test version.

  Furthermore, the other fields in the window are made available for selection.

- **Upgrade devices running test version**

  If you select this field, the auto-upgrade will include devices that run a DME client marked as test version. The number of affected devices will be updated accordingly in the header text of this window.

- **Force OMA DM installation**

  If you select this field, DME will attempt an OMA DM installation, even on devices that have not been bootstrapped. This means that DME will attempt to bootstrap the device before installing the new client. See ***Bootstrapping devices*** on page 111. If the OMA DM installation fails, DME will fall back to using SMS push instead.

Scheduling

- **Use scheduling**

  If you select this field, you are able to *schedule* the installation. Installing a new DME client to many devices at the same time can result in a heavy load on the DME server. For this reason, you can spread out the installation over several days, and only at certain times, in order to reduce the load on the server.

- **Installations per day**

  In this drop-down list, you can choose the number of installations the DME server should initiate per day. Default is **100**, but you can choose from **1** to **10000**, or you can choose **Unlimited**. With the unlimited option, the installation job is sent to all clients at the same time, but you can choose when that time should be in the other fields in the **Scheduling** group of fields.

- **Start installing on**

  In this field you can the date of the first installation attempt. Default is today's date. Click the field to open a date picker.

- **Days to install**

  In this group of fields, you can specify the days in the week on which DME should initiate installations on devices. Default is every week day.

- **Time range**

  In these fields you can specify the time interval within which DME should initiate installations on devices. Click each field to open a time picker:

  Drag the sliders to select the hour and minutes for a start time and an ending time, respectively, and click **Done**.

When you click **Install** using scheduling, DME will spread out the total number of installations over the specified time range, on the selected days. For instance, if you permit 10 installations a day, and you want to install on 30 devices, DME will initiate 10 installations on the next three selected days starting from the date in the **Start installing on** field, spread evenly over the selected time range.

Click **Make default** to make the selected version the default version and possibly auto-upgrade existing devices, or click **Cancel** to exit the window.

Make test version

(**DME clients** panel section only.) You can designate one or more software packages in each group of clients in the **DME clients** panel section to be *test clients*. When you for instance upload a new version of a DME client to the DME server, you may want to test it on selected devices before making it generally available. To do this, select one or more clients in the list, and click the **Make test version** action. A Test icon  is applied to the software in question. You can use the test status as an option when choosing devices on which to install a DME client - see Device filter.

A test client cannot also be a default client.

Install software

Click the **Install software** action when you want to install software on one or more new or existing devices. You must select the software package to install before selecting this action. For more information, see ***Installing software*** on page 108 and the sections on installing software on new or existing devices: ***Installing software on new devices*** on page 138 and ***Installing DME on existing devices*** on page 143.

Installing software on new devices

This description covers the installation of both the DME/Basic MDM client and other software on new devices.

It is possible to create devices in DME manually without installing DME (for asset management purposes), but that is not recommended practice and is not described here. See New device for more information.

❖ ***Installing software on one or more new devices***

The recommended way to install DME software on new devices is to use the **Bootstrap devices** function from the **Devices** tab. The reason for this is that this allows DME to choose the correct client for the new (and as such unknown) device. See ***Bootstrap device*** on page 58 for more information. The following method applies when you know which client to install on the new device or when you know that the device type does not support OMA bootstrapping.

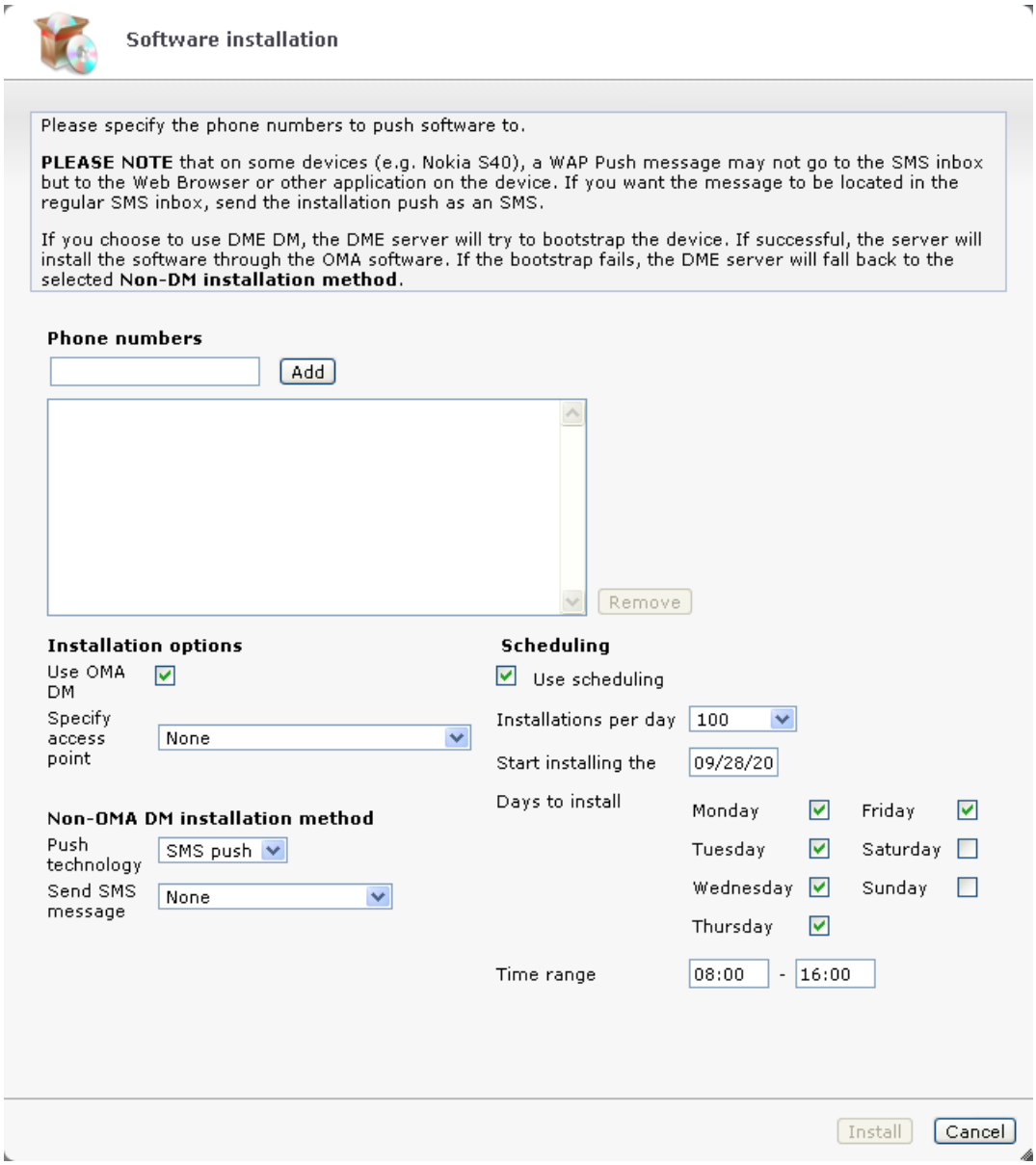
1. Select a DME client in the **DME clients** subtab of the **Software list** panel section in the **Provisioning** tab.

   or

   Select a software package in the **Other software** subtab of the **Software list** panel section in the **Provisioning** tab.

2. Click the **Install software** icon  .
3. Select **Install on new devices**, and click **Confirm**.

The following **Software installation** window is shown:



4. Complete the fields in the window (see below), and click **Install**.
5. Click **OK** to confirm your choice.

DME will now attempt to install the selected software according to your choices in this window. You can monitor the status of the software installation in the **Install status** panel section.

The **Software installation** window contains the following fields:

- **Phone numbers**

  Add recipient devices by entering a phone number in the **Phone numbers** field and clicking **Add**. To remove a phone number

from the list, click the number, and click **Remove**. You can Ctrl+click to select multiple numbers from the list.

Installation options

- **Use DM**

  If you select this field, DME will use the OMA DM engine when installing the DME client or other software on the device. If the device has not already been bootstrapped, this will be done first. See ***Bootstrapping devices*** on page 111. If you do not select this field, or the bootstrapping or the DM installation fails, DME will fall back to the push installation method specified below.

  Note that this field is not shown unless the option is relevant to the type of client you are installing - it is only shown for Symbian and Windows Mobile clients.

  For non-DME software, the option is shown unless the selected software is an in-house iOS app. Such apps are always installed using SMS push. The SMS contains a link to the app and an auto-generated manifest file, which the iOS devices uses for installing the app.

- **Specify access point**

  This drop-down list shows the Internet access points defined in the **Access points list** page. The access point you pick will be installed on the device after the bootstrap (if bootstrapping is required), or else after the installation of the software. For more information, see ***Bootstrapping devices*** on page 111 and ***Access points*** on page 158. The selected access point will be used by the OMA DM server on the phone if you choose to install by OMA DM.

Non-DM installation method

- **Push technology**

  If the DM bootstrap or installation fails, or if the **Use OMA DM** field is not selected, DME will install the selected software by the push technology selected in this drop-down list. This means that the device will receive a message with a unique link to the software. By clicking that link, the user downloads the software in question. The link is only valid for the amount of time specified in the field **Software push, ticket lifetime** in the **Client** section of the **Server configuration** panel (see ***Client*** on page 215).

  In this drop-down list, you can choose between **SMS push** and **WAP push**. **SMS push** is generally recommended, since it does not require a server path, and the users generally find it easier to work with SMS messages than WAP messages.

Note that if you do choose **WAP push**, you must also specify a server path in the field **Send server path**, which is only shown if WAP push is selected.

- **Send SMS message**

  You can send an information SMS to the users with a default message, or you can write your own message. The message should be slightly different depending on the installation method. It should say that a link will be sent to the device by SMS or WAP (if OMA DM is not used), and that it is OK to click the link to download the software.

  - f you choose **Default SMS message**, the window is expanded to include an **SMS message** field, showing the default message that will be sent to the users. You can edit the default message by selecting the field **Create new default message**. This opens the **SMS message** field for editing. When you click **Install**, the edited message is saved as a new default message.
  - f you choose **Write your own**, you can send a custom message, but you cannot save it as a new default message.

- **Send server path**

  This field is only visible if you are installing a DME client, and only if **WAP push** is selected as push technology. If you select this field, DME will send the server path for the DME server to the device. The server path is needed for the client to locate the DME server on the Internet.

  If you use **WAP push**, you should select this field, as the server path cannot be contained in the download link itself when using WAP. In case of **SMS push** and DM installation, the server path is automatically sent along with the DME client software.

Scheduling

- **Use scheduling**

  If you select this field, you are able to *schedule* the installation. Installing a new DME client to many devices at the same time can result in a heavy load on the DME server. For this reason, you can spread out the installation over several days, and only at certain times, in order to reduce the load on the server.

- **Installations per day**

  In this drop-down list, you can choose the number of installations the DME server should initiate per day. Default is **100**, but you can choose from **1** to **10000**, or you can choose **Unlimited**. With the unlimited option, the installation job is sent to all clients at the

same time, but you can choose when that time should be in the other fields in the **Scheduling** group of fields.

- **Start installing on**

  In this field you can the date of the first installation attempt. Default is today's date. Click the field to open a date picker.

- **Days to install**

  In this group of fields, you can specify the days in the week on which DME should initiate installations on devices. Default is every week day.

- **Time range**

  In these fields you can specify the time interval within which DME should initiate installations on devices. Click each field to open a time picker:

  Drag the sliders to select the hour and minutes for a start time and an ending time, respectively, and click **Done**.

  When you click **Install** using scheduling, DME will spread out the total number of installations over the specified time range, on the selected days. For instance, if you permit 10 installations a day, and you want to install on 30 devices, DME will initiate 10 installations on the next three selected days starting from the date in the **Start installing on** field, spread evenly over the selected time range.

Installing DME on existing devices

If you want to upgrade or install the DME client on devices that are already registered in the DME system, follow the guidelines below. Note that the installation of non-DME software listed in the **Other software** subtab is described separately.

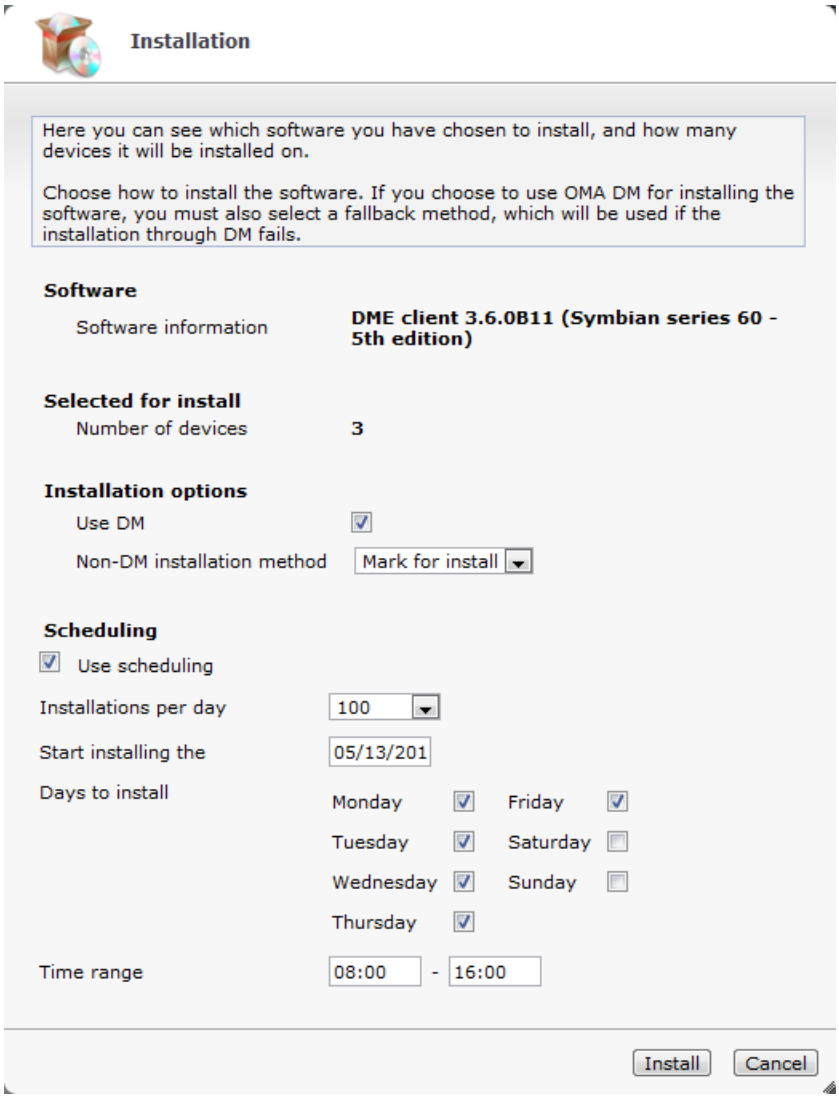
- ***Installing DME on one or more existing devices***

1. Select a DME client in the **DME clients** subtab of the **Software list** panel in the **Provisioning** tab.
2. Click the **Install software** icon  .
3. Select **Install on existing devices**, and click **Confirm**.

   A window is shown in which you can search for and select the devices on which to install the selected software (see Device filter for more information).

4. Choose the devices on which you want to install the client, and click the **Install software** icon .

   DME shows a window similar to the following (see description below):



5. Click **Install** to install the selected client on the selected devices.

Depending on your choices in this window, DME will either bootstrap the device and then install DME, or the DME client will be sent via SMS or WAP push, or the devices will be marked for installation. The **Installation status** window is shown so you can monitor the status of the software installation - see Installation status.

The **Installation** window shows information about the client you are about to install and the number of devices you have selected. Furthermore, you can specify options in the following fields:

Installation options

- **Use DM**

  If you select this field, DME will use the OMA DM engine when installing the DME client or other software on the device. If the device has not already been bootstrapped, this will be done first. See ***Bootstrapping devices*** on page 111. If you do not select this field, or the bootstrapping or the DM installation fails, DME will fall back to the push installation method specified below.

  Note that this field is not shown unless the option is relevant to the type of client you are installing - it is only shown for Symbian and Windows Mobile clients.

  For non-DME software, the option is shown unless the selected software is an in-house iOS app. Such apps are always installed using SMS push. The SMS contains a link to the app and an auto-generated manifest file, which the iOS devices uses for installing the app.

- **Non-DM installation method**

  If the DM bootstrap or installation fails, or if the **Use DM** field is not selected, DME will install the selected software by *push* or *pull* technology.

  Push means that the device will receive a message with a unique link to the software. By clicking that link, the user downloads the software in question. The link is only valid for the amount of time specified in the field **Software push, ticket lifetime** in the **Client** section of the **Server configuration** panel (see ***Client*** on page 215). In this field, you can choose between **SMS push** and **WAP push**. **SMS push** is generally recommended, since it does not require a server path, and the users generally find it easier to work with SMS messages than WAP messages.

  Pull means that the device will be notified of the software download the next time it synchronizes with the server. The user will then be prompted to download and install the software. Choose **Mark for installation** to achieve this. In the **Installation status** window you can monitor when the marked devices receive their new clients.

  Note that **.CAB** files cannot be distributed in this way to Windows Mobile Smartphones; instead, use the corresponding **.EXE** file. See the "Client Deployment Guide" for more information.

Scheduling

- **Use scheduling**

  If you select this field, you are able to *schedule* the installation. Installing a new DME client to many devices at the same time can

result in a heavy load on the DME server. For this reason, you can spread out the installation over several days, and only at certain times, in order to reduce the load on the server.

- **Installations per day**

  In this drop-down list, you can choose the number of installations the DME server should initiate per day. Default is **100**, but you can choose from **1** to **10000**, or you can choose **Unlimited**. With the unlimited option, the installation job is sent to all clients at the same time, but you can choose when that time should be in the other fields in the **Scheduling** group of fields.

- **Start installing on**

  In this field you can the date of the first installation attempt. Default is today's date. Click the field to open a date picker.

- **Days to install**

  In this group of fields, you can specify the days in the week on which DME should initiate installations on devices. Default is every week day.

- **Time range**

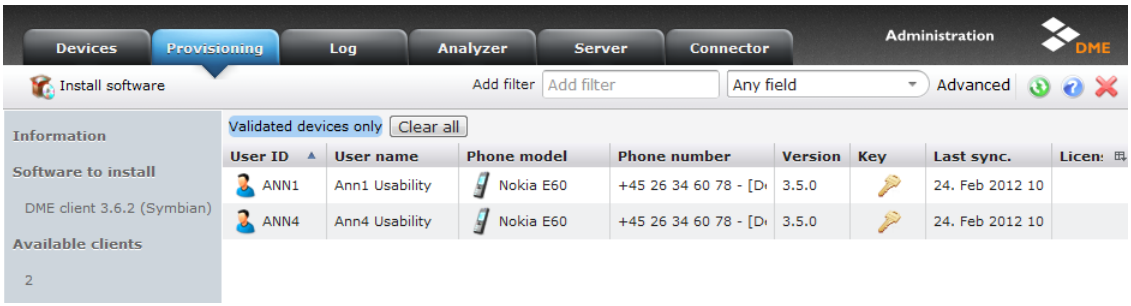
  In these fields you can specify the time interval within which DME should initiate installations on devices. Click each field to open a time picker:

  Drag the sliders to select the hour and minutes for a start time and an ending time, respectively, and click **Done**.

  When you click **Install** using scheduling, DME will spread out the total number of installations over the specified time range, on the selected days. For instance, if you permit 10 installations a day, and you want to install on 30 devices, DME will initiate 10 installations on the next three selected days starting from the date in the **Start installing on** field, spread evenly over the selected time range.

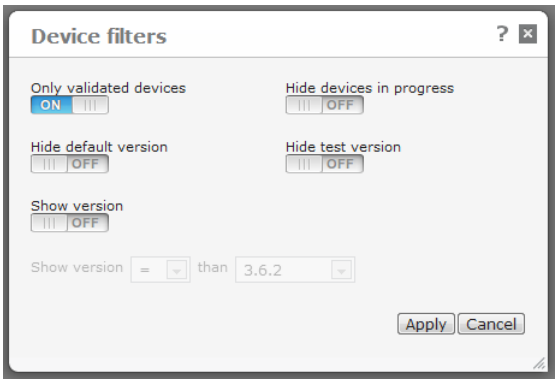
Device filter

When choosing which devices to install DME on, a window similar to the following is shown:



If you chose to install software from the **DME clients** panel section, the device list is by default filtered by the device type and version of the DME software, as specified when it was uploaded to the server. In the illustration above, a Symbian 3.6.2 client was selected. Hence, the list shows all Symbian devices using a version less than the client you want to install. Those devices are called *validated devices*.

You can change the filter criteria by specifying them in the filter boxes at the top. They work in the a similar way to what is described in ***Filter bar - new style*** on page 33, but the **Advanced** filters are different. Note that you cannot choose advanced filters when installing **Other software**.



The **Device filters** box contains the following fields:

- **Only validated devices**

  If this setting is **On**, DME shows only devices where the device model is known to be able to run the currently selected client. This means that they must be listed in the window **Device types** with the currently selected client specified as **DME version type**. See ***Device types*** on page 155 for more information.

  If you do not select this field, DME shows all devices, regardless of device type, if they match the other filtering criteria. Furthermore, the fields **Hide default version** and **Hide test version** are

disabled, as "default" and "test" versions cannot be guaranteed to have the same DME version type as the selected software.

- **Hide default version**

  If this setting is **On**, DME hides all devices where the default version of the selected client software is already installed (indicated with a star ). This is useful if you want to install the default client version on devices that are not already running the default version.

- **Hide test version**

  If this setting is **On**, DME hides all devices where the test version of the selected client software is installed (indicated with a magnifying glass ). This is useful if you want to install the default client version on all devices of a certain type, except those that are currently testing a different client version.

- **Hide devices in progress**

  If this setting is **On**, DME hides those devices in the list where an installation is already in progress. You typically do not want to make a new installation on a client that is already busy with a DME DM task, or which is marked for installation. If you need to cancel a task in progress, you can do so in one of the installation status panel section (see Installation status tab actions).

- **Show version**

  If this setting is **On**, you can choose to only see devices on which a certain range of DME versions is installed. Use the drop-down list boxes to choose an operator (greater than, less than, equal to, or different from) and a version number. This can for instance be useful if you want to upgrade all devices running a client version earlier than the current version.

In addition to the filtering options, you can use the standard filter bar to limit the number of devices in the list. (Note that the filter in the filter bar does not work for all columns.)

The list of devices shows the same information as the device list in the **Devices** tab.

Furthermore, some devices can be marked with a star  (indicating that it is running the default version of the client for its platform), or a magnifying glass  (indicating that it is running a test version of the client for its platform).

The **Information** box contains the following fields:

- **Software to install**

  This is the name of the DME client which you chose to install in the **DME client** list. The name consists of the device type

(platform) the client is intended for, the name of the software (always **DME Client**), and the client version.

or

This is the name and category of the software you chose to install in the **Other software** list.

- **Available devices**

  This is the number of devices in the DME system on which the selected software may be installed, according to your selections in the filter boxes.

When you have selected the devices on which you want to install the selected DME client or other software, click the **Install software** icon  to continue the installation process.

Other software

 The software uploaded to the **Other software** panel section is grouped by categories that you specify yourself while uploading the software.

For more information about how to upload software to the server, see ***Upload software*** on page 132.

If you point to the name of the software, the description of the software package (if specified) will be shown as a tooltip. The list in the **Other software** panel section consists of the following information:

- **Software**

  This column shows the name of the software package. The software was named at the time of upload to the server. Clicking the software name lets you edit the software properties - see ***Upload software*** on page 132 for more information. You can also click the  icon to download the software to your own disk.

- **Version**

  This column shows the version number assigned to the file when it was uploaded to the server.

- **SMS code**

  This column shows the SMS code that gives a user access to downloading the software in question. For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Filename**

  This is the name of the actual file uploaded to the server.

- **File size**

  This is the size of the file uploaded to the server in kilobytes.

- **Upload date**

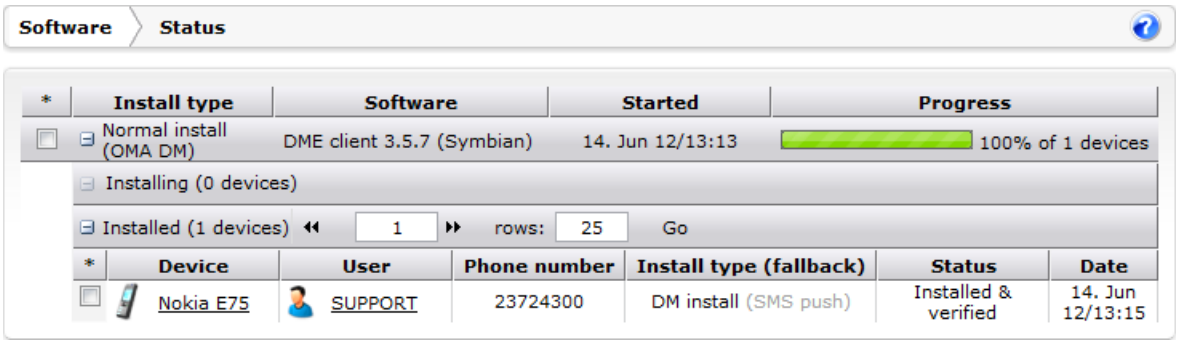
  This is the date on which the file in question was uploaded to the server.

Status

Every time an installation is initiated from the software list (either **DME clients** or **Other software**), an entry is made in this panel section. Each entry is called an *installation job*, and may consist of installations on one or many devices.

For information about the actions that are available in this window, see the **Provisioning status** window (see ***Provisioning actions*** on page 98).

The installation jobs listed are expandable. For each job, you can click a ⊞ button to view details about the current job, and ⊟ to hide the details again.

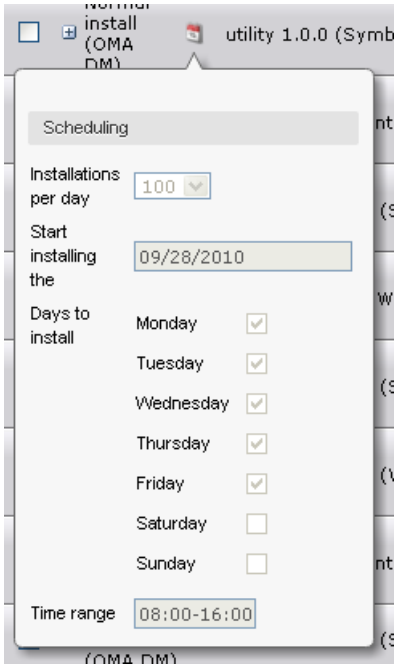


For each installation job, the table shows the following information:

- **Install type**

  This column shows the kind of installation job: **Normal install** or **Bootstrap devices**. The installation type is followed by the installation method in parentheses - **OMA DM**, **WAP/SMS Push** etc. For more information about install types (job types), see ***Provisioning status*** on page 180.

Furthermore, if a schedule icon is shown in this column, it means that a schedule was defined for the current installation job. Point the mouse to the icon to view the schedule, for instance



- **Software**

  This column shows which software was sent for installation, shown with name and device platform.

- **Started**

  This column shows the date and time on which the installation job was initiated.

- **Progress**

  This column shows a progress bar with information about the number of devices that have been installed. This gives you a quick overview of the number of installations in the installation job that have been completed.

Installing and Installed sub-tables

The entry for each installation job is further divided into two sub-tables: **Installing** and **Installed**. To see these two sub-tables, click the button at the left-hand side of the **Install type** column.

The **Installing** sub-table shows how many devices from the installation job are currently being installed, or waiting in the scheduling queue for installation. The **Installed** sub-table shows how many devices from the installation job have already been installed.

The header part of the sub-tables shows how many devices are in each category. Just as the main table, you can limit the amount of rows (devices) you want to see in each sub-table, and browse between pages.

For each sub-table, you can see the following information:

- **Device**

  The device on which the software is being or has been installed. If you let the mouse pointer rest on a device link, a box shows more information about the device. Click the device link to go to the settings page for that device.

- **User**

  This column shows the user name of the user who owns the device. The user name is only shown when the user has made a successful login and system info synchronization - hence, it is not shown in the **Installing** sub-table in case of new installations of the DME client on as yet unknown devices.

- **Phone number**

  The phone number of the device to which the installation job was sent.

- **Install type (fallback)**

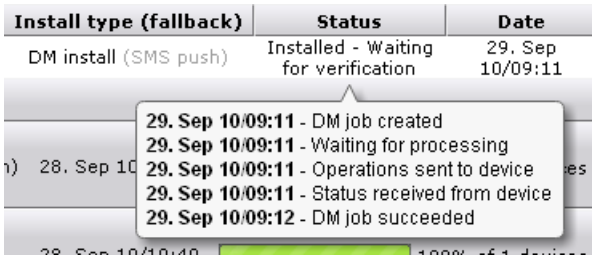
  The type of installation that was attempted on the current device, possibly followed by a fallback installation type in parentheses. The following installation types can be seen:

  - **M install**: If the installation job is sent to the device as an OMA DM installation job. The fallback option will be shown in parentheses after the **DM install** - either **WAP push** or **SMS push** for new or existing devices, or **Mark for install** for existing devices. If the fallback method is written in a grey text, it means that the fallback was not used; otherwise, the fallback method was used because the OMA DM installation failed.
  - **ark for install**: A **Mark for installation** push was sent to the device. This applies to existing devices only. The next time the device synchronizes, the user will be prompted to upgrade the client.
  - **AP/SMS push**: A software download push was sent to the device by SMS or WAP. The link to download software expires after a certain amount of time, which is called the Time To Live (TTL) value. This value can be set in the **Client** section of the **Server configuration** panel (see ***Client*** on page 215). The download link expiry time (TTL) is shown after the installation type. If the TTL is written in red text, it means that the link is now invalid (and the user has not yet used the link to download the software). When this happens, you can use the action **Restart installation jobs** in the tab toolbar to send a new link to the device.

- **ootstrap**: If the installation job is only a bootstrap, and no software will be installed.

- **Status**

  This column shows the status of the installation job on the current device. If you let the mouse pointer rest on a status message to see a detailed, chronological sequence of events in the installation job for the current device.



  These events can also be seen in the **Provisioning status** window. See ***Provisioning status*** on page 180.

  For an overview of the general status messages, see the following section: ***Installation status messages*** on page 153.

- **Date**

  This is the date and time on which the installation job was created. The Time To Live (TTL) value (used with WAP/SMS push) is calculated from this time.

Installation status messages

The **Status** column in the **Installing** and **Installed** sub-tables shows the current status of the installation job for the current device. The following table shows the flow of status messages in connection with the installation of **DME clients** and **Other software**, and an explanation of their meaning. The table shows one column for messages that apply only to installations using OMA DM, and one for *download links*. A download link is an installation using *WAP / SMS push* or *Mark for Installation* - in both cases, the client receives a download link and proceeds from there.

Installing	OMA DM	Download links

Waiting for bootstrap

A client is to be installed on a device which has not been bootstrapped. This message is shown for as long as the client has not been bootstrapped. If the bootstrap fails, the installation job falls back to the download link installation method.

Applies to both *DME clients* and *Other software*.

Waiting for download

A WAP or SMS push has been sent, but not opened by the client, or a Mark for Install notification has been sent but awaits the next sync by the user.

Applies to both *DME clients* and *Other software*.

Installing software

The software is currently being installed.

Applies to both *DME clients* and *Other software*.

Installed – Waiting for verification

The software has been installed by the OMA DM client, but a verification has not been made. A software installation is *verified* when the version of DME reported by the client corresponds to the version installed by the current installation job. If you happen to install a version which already existed on the device, the installation will be verified immediately. Otherwise, the installation will be verified the first time the user performs a system info synchronization.

Applies to *DME clients*.

Downloaded – Waiting for verification

The software has been downloaded, but not yet verified (see to the left).

Applies to *DME clients*.

Installed

Installed

The software has been installed. The software cannot be verified because it is not a DME client.

Applies to *Other software*.

Downloaded

The software has been downloaded. The software cannot be verified because it is not a DME client.

Applies to *Other software*.

	Installed – Verified The software has been installed by the OMA DM client and verified. Applies to *DME clients*.	**Downloaded – Verified** The software has been downloaded by the user and verified. Applies to *DME clients*.

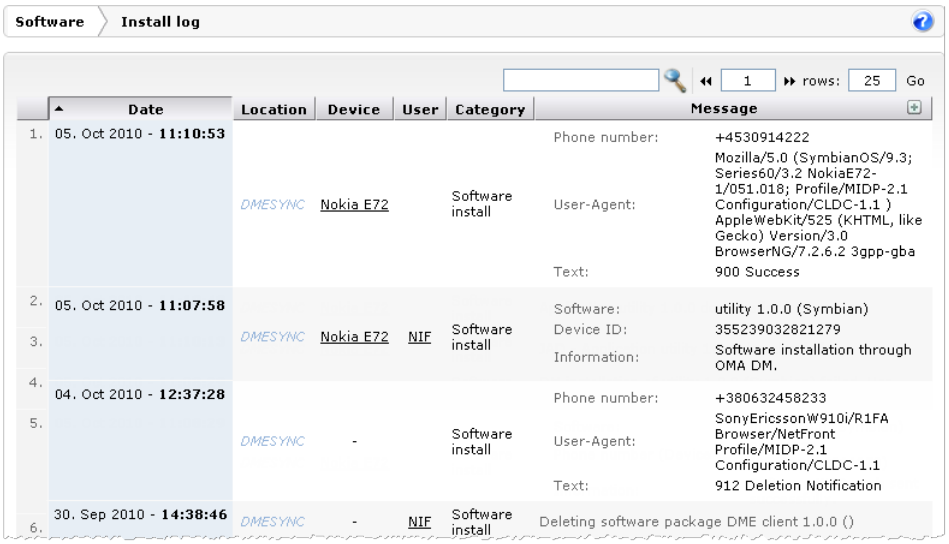
Errors

Installation failed - Unknown status If either of these two messages is shown, an error has occurred. See the log for more information.

Jobs are removed from the **Installed** sub-table after 7 days.

Installation log

The **Installation log** panel section shows a subsection of the information shown in full in the **Log** tab. You only see information related to the installation of software on devices.



For more information about the individual messages, see ***Software install*** on page 194.

Device types

In this window you can see how each device in the DME system is registered with regard to DM and platform details.

DME ships with a list of pre-defined device models. Whenever a device is added to DME, the device model is reported to DME by the DME client installed on the device. The device model is matched against the list of models. If the model is found, the device will be given the settings (including a device image) that apply to the device model, and you cannot change those. If the model is not found, you will be able to specify which type of DME client that fits with the device model in question in this window, and you can assign an image to the device model.

You want to be sure that each device is registered with the correct device model for two reasons:

1. When you choose to bootstrap a device and install the default DME client on the device at the same time, DME needs to know which DME version type to install. Otherwise the client installation will fail.
2. When you install DME software on existing clients, one of the steps is to select the devices on which you want to install the DME client. The window in which you select devices is described in the section Device filter. In that window, you can choose to only see *validated devices*. A device is said to be validated if a value other than **Unknown** is listed in the field **DME version type**.

The device type table contains the following columns:

- **DME phone model**

  This is the device model which is reported to DME by the DME client installed on the device, for instance **Nokia E51**. All phone models are matched against the list of device models built into DME. If found in the list, the other columns in this window are filled in from the device model list, a device image is assigned to the device model, and the device model is locked for changes (the selection boxes in the other columns are disabled).

  If you let the mouse pointer rest on the model in this column, the **DM manufacturer** column, or the **DM model** column, and if the device model is known by DME, a picture of the device model in question is shown.

- **DM manufacturer**

  This is the name of the manufacturer of the DM engine on the current device model, for instance **NOKIA**. If the current device model is locked, this information came from the built-in device model list; otherwise it is derived from the bootstrapping of a device of this model.

- **DM model**

  This is the name of the DM engine model on the current device model, for instance **E51**. If the current device model is locked, this

information came from the built-in device model list; otherwise it is derived from the bootstrapping of a device of this model.

- **Platform**

  This is the hardware platform of the device model in question, for instance **S60 3rd. FP1**. If the current device model is locked, this information came from the built-in device model list; otherwise it is derived from information reported by the DME client. You may change the information in this field, but note that the field is not relevant in this version of DME.

- **OS**

  This is the operating system of the device model in question, for instance **Symbian OS v9.2**. If the current device model is locked, this information came from the built-in device model list; otherwise it is derived from information reported by the DME client. You may change the information in this field, but note that the field is not relevant in this version of DME.

- **DME version type**

  This is the DME client type that would be appropriate for installation on the device model in question, for instance **Symbian series 60**. If the current device model is locked, this information came from the built-in device model list; otherwise it is derived from information reported by the DME client. You may change the information in this field, but note that the field determines which clients can be installed on devices of this model.

Note that the filter bar is disabled in this window.

DME version types

For DME 3.6 Service Pack 2, DME clients are built for the following platforms:

- Android
- Apple iOS devices - iPhone/iPad/iPod touch
- BlackBerry
- Symbian 3rd edition
- Symbian 5th edition
- Symbian^3
- Windows Mobile Pocket PC
- Windows Mobile Smartphone

Each of these clients is called a *DME version type*. For more information about individual devices, see ***Supported Devices http://www.excitor.com/Supported_Mobile__Devices-47.aspx*** (external link).

Tab actions

Two tab actions are associated with the **Device types** window:

- **Remove device type**

  When you click this action, the selected device model is removed from the list. Note that you cannot remove device models that are already identified by DME's built-in list of device models.

- **Upload image for device type**

  When you click this action, you can upload an image of the selected device model. Note that you cannot add or change the image of a device model that is identified in DME's built-in list of device models. For more information about adding an image to a device model, see the procedure **Uploading a picture of the device** in ***Information*** on page 86.

Access points

Select the **Access points** item in the page menu to see the list of GPRS or WLAN access points available for provisioning to the clients.

When installing the DME client on Symbian phones, the installer tries to set up three possible access points in the client settings automatically. This applies to client 3.0.2 and above only. The installation process evaluates any existing internet access points (IAP) on the DME client, and places three access points in the **General settings** page on the device. The IAPs are selected and placed based on their perceived cost, according to the following scheme:

- WLAN IAPs are selected first. A maximum of 2 WLAN IAPs are selected and placed as preferred access points 1 and 2.
- For the remaining access point (or *points*, if less than two WLAN access points were found), the installation process finds one or more IAPs where the name contains the word "internet" or "www", and uses it or them as subsequent access points.
- If no such IAP is found, then the first available IAP is used for the remaining access points.

  With this scheme, the IAP incurring the lowest cost is probably picked first, namely the corporate WLAN, and then possibly the user's home WLAN is picked next. The third access point is then the general GPRS IAP.
- However, the administrator can choose to name a GPRS and/or WLAN access point as "**DME_AP_(something)**". If this access

point is pushed to the phone along with the installation command, it will be installed *as first choice*. If more than one access point starts with "**DME_AP**", they will be selected in random order as first, second, and third access point.

The user can change the selections later.

The list of access points is divided into two *panel sections*, which are described in the following.

GPRS

In this panel section you can manage GPRS access points. You can define them on the DME server, remove them from the server, and distribute them to DME clients - see the following sections for information about this.

The list in the GPRS panel section consists of the following information:

- **Name**

  This column shows the name of the access point. This is the name given to the access point when it was defined on the DME server. Clicking the access point name lets you edit the access point in question, using the same window as when the access point was originally defined.

  See **Access points** above for the special meaning of access points where the name begins with **DME_AP**.

- **APN name**

  This column shows the name of the mobile network to which the current access point gives access.

- **Proxy**

  This column is reserved for future use.

- **Security**

  If you specify Use authentication in the access point, this column will say PAP (which is the currently supported security model). Otherwise, this column will say None.

- **Last changed**

  This column shows date of when the current access point was last changed.

New GPRS access point

When you click the **New GPRS access point** action, you can define a new GPRS access point to be stored the server. Please note that you should not define a WAP access point, as these will not work on the clients. Only define those with which a client can successfully access the Web. The access point definition window consists of the following fields:

- **Name**

  In this field enter a descriptive name for the access point you are defining. This field is shown in the list of GPRS access points. See **Access points list** above for the special meaning of access points where the name begins with **DME_AP**.

- **APN name**

  In this field enter the APN (access point name) supplied by the mobile operator. The APN could for instance be **internet**. This field is shown in the list of GPRS access points.

- **Use authentication**

  If you select this check box, you specify that the current access point requires authentication, and the following two fields are enabled:

  - **uthentication name**: Enter the name of the user
  - **uthentication password**: Enter the password required for the user above.

  If this information is completed, the list of GPRS access points shows **PAP** in the **Security** column.

Remove GPRS access point

If one or more GPRS access points are shown in the list, you can select one or more of them, and click this action to remove them from the list. You are asked to confirm your action.

Install access point

Click the **Install GPRS/WLAN access point** action when you want to send an access point to one or more new or existing devices. You must select the access point to install before selecting this action.

When installing on new or existing devices, the access point is installed using **OMA-CP** technology. This means that the user must accept a prompt to install the access point, and the user must enter the PIN code defined as **OMA PIN** in the **SMS modem** panel section of the **Server configuration** page in the **Server** tab (see ***SMS modem*** on page 228). The default PIN code is **12345**.

❖ ***Installing an access point on new devices***

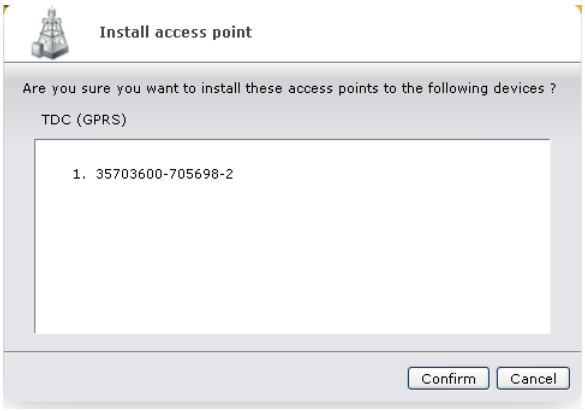
1. Select an access point in the **GPRS** or **WLAN** panel section in the **Access points** list.
2. Click the **Install GPRS/WLAN access point** action.
3. Leave the choice at **Install on new devices**, and click **Confirm**.
4. The **GPRS/WLAN access point installation** window is shown.
5. Add recipient devices by entering a phone number in the **Phone numbers** field and clicking **Add**. To remove a phone number from the list, click the number, and click **Remove**. You can Ctrl+click to select multiple numbers from the list.
6. Click **Install** to initiate the installation of the access point on the devices whose phone numbers you entered.

❖ ***Installing an access point on existing devices***

1. Select an access point in the **GPRS** or **WLAN** panel section in the **Access points** list.
2. Click the **Install GPRS/WLAN access point** action.
3. Choose **Install on existing devices**, and click **Confirm**.
4. A **device filter** page is shown, in which you can select the devices you want to install the access point on. This page is similar to the page shown when installing software to existing devices - see Device filter. However, the **Device filter** box on the page only contains one option:

   ❖ **elect all available devices**: If you select this check box, all devices that fit the criteria are selected, even if they are not shown on the page due to a restriction to the number of rows displayed in the table navigation bar.
5. Select the devices you want to install the access point on, and click the  or  action to continue.

6. A dialog such as the following is shown:



7. Click **Confirm** to initiate the installation on the selected device(s).

WLAN

In this panel section you can manage WLAN access points. You can define them on the DME server, remove them from the server, and distribute them to DME clients - see the following sections for information about this.

The list in the WLAN panel section consists of the following information:

- **Name**

  This column shows the name of the access point. This is the name given to the access point when it was defined on the DME server. Clicking the access point name lets you edit the access point in question, using the same window as when the access point was originally defined.

  See **Access points** above for the special meaning of access points where the name begins with **DME_AP**.

- **SSID**

  This column shows the name of the WLAN connection's SSID as entered when you created the access point.

- **Security mode**

  This column shows the security mode of the WLAN connection as entered when you created the access point - **None** or a **WPA** mode option.

- **Network mode**

  This column shows the network mode of the WLAN connection as entered when you created the access point - **Infrastructure** or **Ad hoc**.

- **Last changed**

  This column shows date of when the current access point was last changed.

New WLAN access point

When you click the **New WLAN access point** action, you can define a new WLAN access point to be stored the server. The access point definition window consists of the following fields:

- **Name**

  In this field enter a descriptive name for the access point you are defining. This field is shown in the list of WLAN access points. See **Access points list** above for the special meaning of access points where the name begins with **DME_AP**.

- **SSID**

  In this field enter the name of the network you are defining access to. This field is shown in the list of WLAN access points.

- **Network mode**

  The DME access point definition supports two types of network:

  - **nfrastructure**: This is the regular type of wireless network, which requires the use of access points.
  - **d hoc**: This is a network mode called IBSS, which allows wireless devices to work peer-to-peer without access points.

- **Hidden SSID**

  If the SSID of the network is hidden, select this check box.

- **Security mode**

  In this drop-down list you can choose the security setting of the network you are defining access to. You can choose **None**, **WPA** and **WPA2** without a pre-shared key, or you can choose **WPA-PSK** or **WPA2-PSK** (with a pre-shared key). In case you choose one of the latter two options, a field is shown in which you can enter the pre-shared key. The security mode is shown in the list of WLAN access points.

  - **ecurity key**: If the security mode is selected above involves a pre-shared key (PSK), enter the key in this field.

Remove WLAN access point

If one or more WLAN access points are shown in the list, you can select one or more of them, and click this icon to remove them from the list. You are asked to confirm your action.

Install WLAN access point

Click the **Install WLAN access point** action when you want to send an access point to one or more new or existing devices. You must select the access point to install before selecting this action. The installation process is similar as when installing GPRS access points. See ***Install access point*** on page 160 for more information.

DDF configurations

A DDF (Device Description Framework) configuration is an Open Mobile Alliance (***OMA http://www.openmobilealliance.org/default.aspx***) standard, which enables service providers (such as DME) to provision and configure software and settings on mobile phones.

Select the **DDF configurations** item in the page menu to see a list of OMA DM DDF configurations, which are available for provisioning to the clients. You can define the configurations on the DME server, remove them from the server, and distribute them to DME clients - see the following sections for information about this.

Most device models require different instructions. It is therefore necessary to configure DDF configurations for individual device models, and to test them before provisioning them to many devices.

For information about exactly which instructions are supported by each device model, use the **Retrieve device tree** action to get a copy of the DM tree of that particular model. DME will then request the DM tree from that device. You can do this for every device model for which you want to develop a DDF configuration. For more information, see ***OMA DM*** on page 99.

DDF XML files are used as a starting point when creating the DDF configurations which can be sent to devices. Excitor A/S makes a few sample DDF XML files available on request: one for setting up Mail for Exchange on Symbian devices, and one for creating access points on Symbian devices. DME does not guarantee the usefulness or functionality of either of these files. Contact DME Support if you want to see these samples.

If you need to set up configurations for providing 3rd party software, for instance antivirus software, you should request DDF XML files from the software vendor. Sometimes you can also find such files on the Internet, or you can build them from scratch using the specifications on the Open Mobile Alliance home page.

The workflow for provisioning DDF configurations is as follows:

1. Upload a DDF XML file to the server.
2. Create a DDF configuration based on the DDF XML file.
3. Install the configuration on one or more devices.
4. Monitor the installation status.

Each step is described in the following sections.

DDF XML

 In this panel section you can upload and manage OMA DM DDF XML files.

The list in the **DDF XML** panel section consists of the following information about uploaded files:

- **Name**

  This is the name you gave the XML file during upload.
- **File name**

  This is the physical name of the XML file.
- **Size**

  This is the size of the XML file in bytes.
- **Configurations**

  This is the number of configurations that are based on this file.
- **Changed**

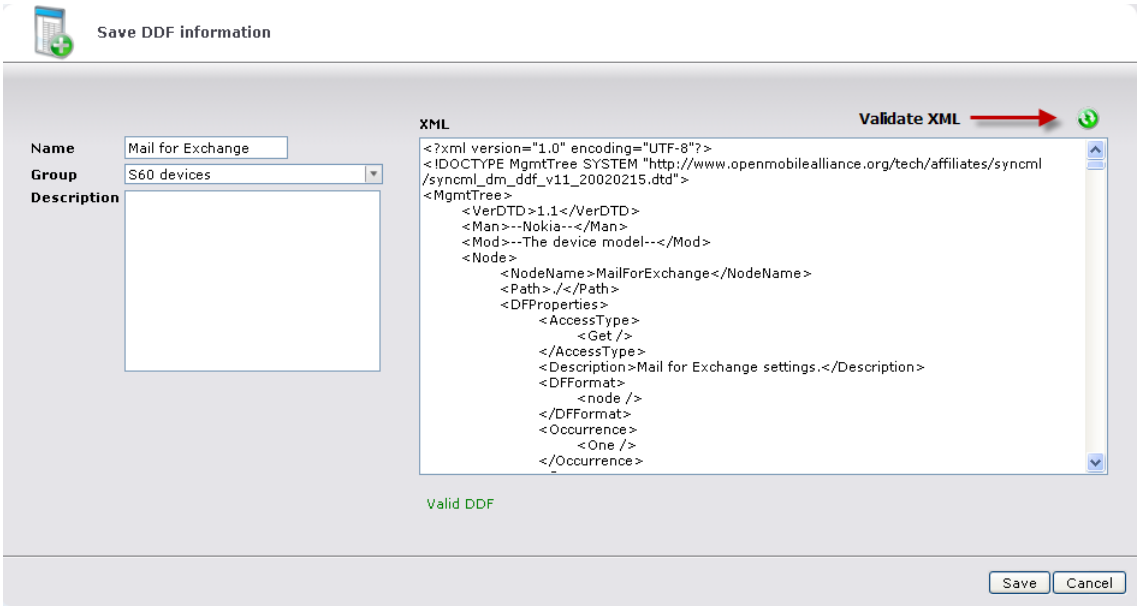
  This is the date of the latest change to the XML file.

The DDF XML contains the *management tree*. By editing the nodes in the tree, you can create a *DDF configuration*, which is specific to one or more device models. The XML files are edited (converted into configurations) in the **Configurations** panel section.

Upload DDF file

When you click the **Upload DDF file** action, you can browse to an OMA DM DDF XML file and upload it to the server.

When importing the selected file, you are asked to provide some information:



- **Name**

  This is the descriptive name shown in the DDF XML file list.

- **Group**

  You can arrange XML files in groups in the DDF XML file list, typically by the type of devices supported by the XML file. Enter a name for a new group, or select an existing group from the drop-down list.

- **Description**

  In this field you can enter a description of the current XML file. It is only seen when you edit the XML file.

- **XML**

  The large **XML** text field contains the actual XML file. You can edit the file directly in this window, either when uploading the file or later. The XML file contains the management tree, and you can edit it to add or delete branches or leaves here. Values are assigned to the leaves in the DDF configuration window.

  Click the validation button  to verify that the XML file contains valid DDF according to the OMA DDF DTD. The result of the validation is written below the text field: **Valid DDF** or **Invalid DDF**.

Delete DDF

If one or more DDF files are shown in the list, you can select one or more of them, and click this action to remove them from the list. You are asked to confirm your action.

Please note
Any configurations based on the deleted files are also deleted.

Configurations

 In this panel section you can create DDF configurations from the DDF XML files you have uploaded to the server, you can delete them, and you can install them on devices.

The list in the **Configurations** panel section consists of the following information about the available configurations:

- **Name**

  This is the name you gave the configuration when you created it. You can click the name to edit the configuration.

- **DDF**

  This is the name of the XML file upon which the configuration is based.

- **Operations**

  This is the number of operations, or *actions*, that this configuration intends to perform on the device. If you let the mouse pointer rest on the text in this column, you can see a list of the individual operations. Click the text to see the operations in a new, static window.

- **Changed**

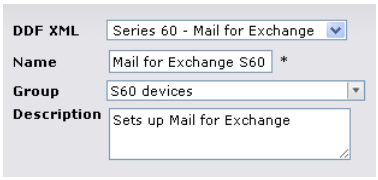
  This is the date of the latest change to the configuration.

The OMA DM DDF configurations are based on DDF XML files, which must be uploaded to the server before you can create a new configuration.

Create configuration

When you click the **Create configuration** action, a dialog is opened, in which you can customize the configuration. Note that this is the same dialog used when you edit the configuration by clicking its name in the configuration list.

In the top left section of the dialog, you specify information about the configuration:



- **Name**

  This is the descriptive name shown in the configuration list.

- **Group**

  You can arrange configurations in groups in the configuration list, typically by the type of devices supported by the configuration. Enter a name for a new group, or select an existing group from the drop-down list.

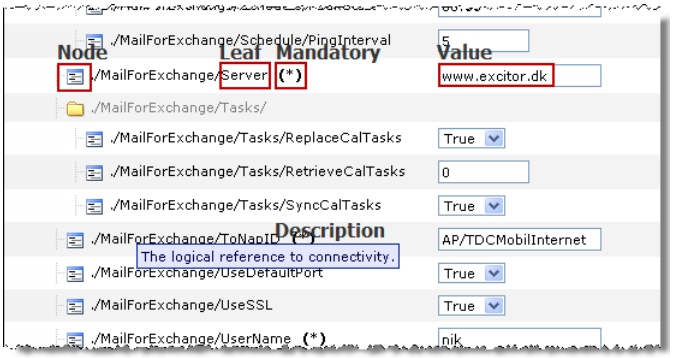
- **DDF XML**

  In this field you select one of the DDF XML files you have uploaded from the **DDF XML** panel section. The selected file is used as a template for the configuration, and is loaded into this dialog. The XML file contains the management tree, and you can assign values to the leaves in the tree here.

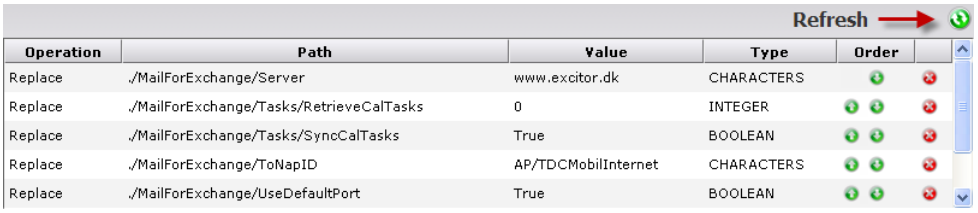
- **Description**

  In this field you can enter a description of the current configuration. It is only seen when you edit the configuration.

In the bottom pane, you see a representation of the XML file (management tree) selected above.



Here you can enter your configuration by changing values in the management tree. If you let the mouse pointer rest on the individual nodes to see more information about each node - this information derives from description tags embedded in the XML file. New values selected in the drop-down lists or entered in text fields in the **Value** column are copied to the top-right pane when you click the **Refresh** icon :



In the **Operations** pane, you can see the changes that you have made in the configuration. You can see the type of operation (for instance **Replace** or **Get**), the XML **Path** to the leaf containing the value, the **Value** itself, and the value's **Type** (for instance **CHARACTERS** (text) or **INTEGER**. In the **Order** column, you can change the order of the operations, and in the last column you can choose to remove the change again.

Click **Save** to save the configuration and exit the **Save configuration** dialog, or **Cancel** to exit without saving any changes.

For more in-depth information about creating, editing, and deploying DDF configurations, please request special documentation from software vendors or Internet resources as described in the introduction to the chapter about DDF configurations - see ***DDF configurations*** on page 164.

Delete configuration

If one or more configurations are shown in the list, you can select one or more of them, and click this action to remove them from the list. You are asked to confirm your action.

Install configuration

Click the **Install configuration** action when you want to install a DDF configuration on one or more new or existing devices. You must select the configuration to install before selecting this action. The installation process is nearly identical to the software installation process.

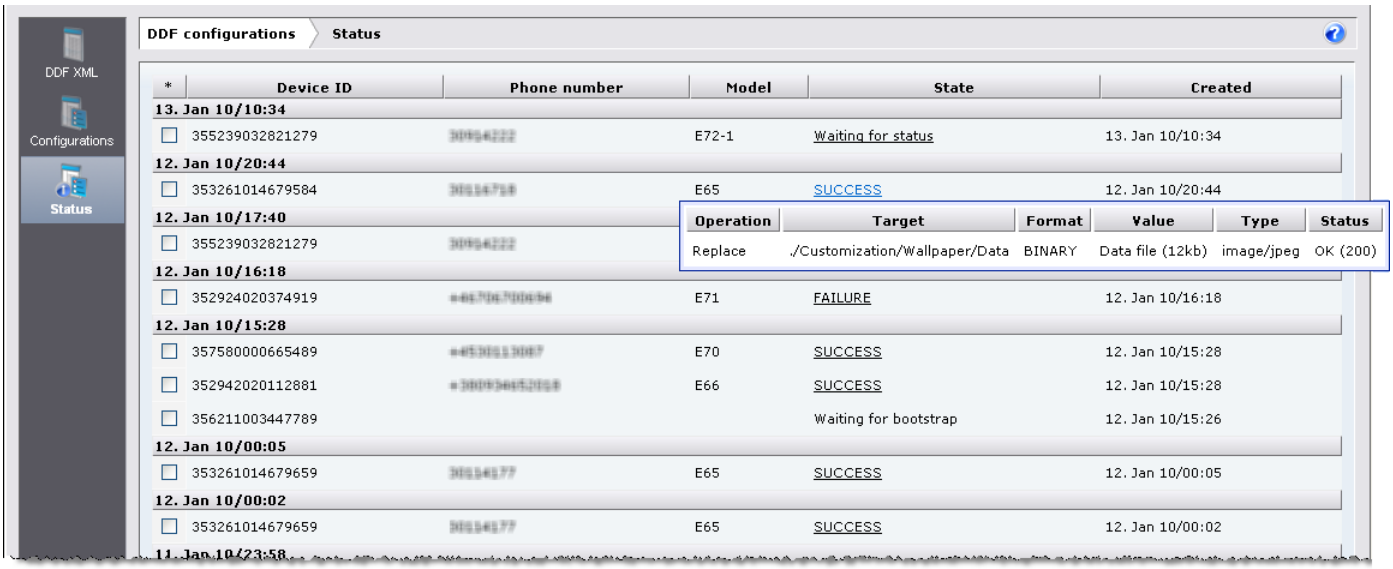
For more information about installing a DDF configuration on new or existing devices, see ***Installing software on new devices*** on page 138 or ***Installing DME on existing devices*** on page 143, respectively.

After installation, you can monitor the installation status in the **Status** panel section.

Status

In this panel section you can monitor the installation status of the DDF configurations you have provisioned to devices. When you have chosen to install a DDF configuration, you can monitor the installation progress here.

For information about the actions Remove installation jobs and Restart installation jobs, see ***Provisioning actions*** on page 98.



The list of DDF configuration installation jobs is divided into groups named after the time at which the installation job was sent. The list contains the columns showing the **Device ID**, **Phone number**, and **Model** of the device or devices to which the DDF configuration was sent, and the date and time when it was sent to the device.

Furthermore, the column **State** shows the current state of the installation job. The following states can be shown for an installation job:

- **SUCCESS** (in green)

  The installation of the DDF configuration was successful. This applies if the SyncML status return code (the value of the **Status** column, see below) for all the individual operations is either **OK (200)** or **Already exists (418)**. For a list of SyncML status codes,

see the ***OMA home page http://www.openmobilealliance.org/tech/affiliates/syncml/syncml_dm_represent_v11_20020215.pdf***.

- **FAILURE** (in red)

  The installation of the DDF configuration failed. This applies if the SyncML status return code (the value of the **Status** column, see below) for any of the individual operations is not **OK (200)** or **Already exists (418)**, but for example **Not found (405)** or **Command not allowed**. This means that the configuration needs to be modified, or that it is not possible to run on the device in question.

- **Waiting for status**

  The installation job has been sent to the device, but the device has not yet reported back to the server.

- **Waiting for bootstrap**

  The installation job has been sent to the device, but the device has never been bootstrapped. DME will bootstrap the device, and then attempt to install the DDF configuration.

If you let the mouse pointer rest on the entry (except **Waiting for bootstrap**), a pop-up window shows details about the installation job. If you click the entry, the details are shown in a new window (from which you can copy text etc.). You can see the following details about an installation job:

- **Operation**

  The type of operation carried out by the DDF configuration. Possible values are **Replace** or **Get**.

- **Target**

  The location in the DDF XML tree that is affected by the operation.

- **Format**

  The format of the value in the affected location in the DDF XML tree.

- **Value**

  The value of the affected location in the DDF XML tree.

- **Type**

  The MIME type of the value of the affected location in the DDF XML tree. For instance **image/jpeg**.

- **Status**

  The SyncML status code for the current operation. If all operations return either **OK (200)** or **Already exists (418)**, the entire installation is regarded to be successful.

Apple iOS profiles

Using the **Apple iOS profiles** setup panel you can upload and manage iPhone configuration and provisioning profiles, and remotely install them on Apple devices using SMS push (iPhone only) or Apple MDM for enrolled Apple devices (iPhone, iPad, or iPod touch). You can also monitor the status of the provisioning of the profiles.

An Apple iOS profile is created using a free tool from Apple called the *iPhone Configuration Utility*. This tool can be downloaded in a Windows or Macintosh version from the ***Apple support http://www.apple.com/support/iphone/enterprise/*** website.

With the iPhone Configuration Utility you can configure a *profile*, complete with wireless network settings, access points, VPN settings, private certificates, native PIN code activation, security settings etc. When the profile has been configured, it can be exported as a `.mobileconfig` file (for configuration profiles) or as a `.mobileprovision` file (for provisioning profiles). These are the files that can be managed by DME. Please refer to the Apple website for information about using the utility.

DME supports installing both signed and unsigned configuration files. Signing the configuration file is not really necessary, as it will be provisioned from the trusted DME server over a HTTPS connection.

Configuration

 In the **Configuration** section of the **Apple iOS profiles** setup panel you can upload and manage Apple configuration profiles.

The information you see in the table is entered during upload of the configuration file (see below). To edit the information, click the **Name** of the profile you wish to change.

When editing the configuration, you can assign it to a **Category**. Categories are used as section headers in the list of configurations. You can select an existing value from the list, or type a new category, which will be automatically added to the list. Furthermore, you can add or edit the configuration's **Description**, which is shown as a tooltip when you hover the mouse over the configuration name in this table.

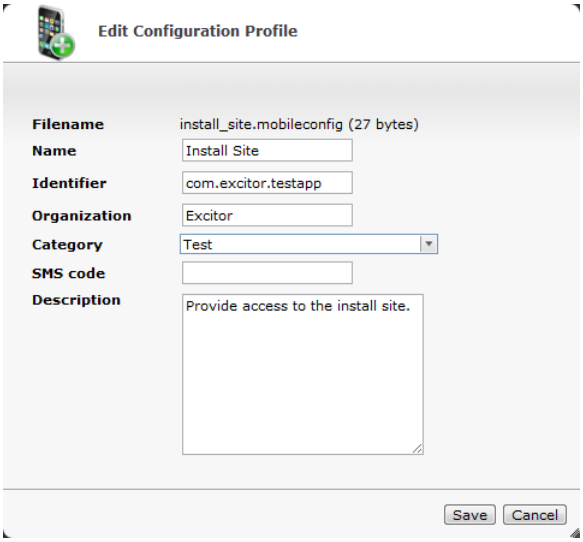
See also the next section.

Upload Apple configuration profile

When you click the **Upload Apple configuration profile** action, you can browse to an Apple configuration profile (`.mobileconfig`) file, and upload it to the server. The configuration file need not be signed.

Please note that if your DME server is set up in a load balanced cluster environment, you need to choose this action from *a single node*, not the main server path (which is the address of the load balancer). Otherwise the load balancer may mix up session IDs, and the operation will fail. See separate cluster setup documentation.

After selecting the file, you are asked to provide some information:



- **Filename**

  This field shows the filename and size of the current configuration file, and whether the file is signed and encrypted.

- **Name**

  Here you enter a descriptive name shown in the **Configuration** setup panel.

- **Identifier**

  In this field you must specify an app identifier that matches the identifier registered by the profile for this app - something like **`com.companyname.appname`**. Otherwise the device cannot verify (and run) the app.

- **Organization**

  In this field you must specify the name of the organization to which the identifier above is registered.

- **Category**

  You can divide your Apple profiles into self-defined categories. The list of categories is dynamically extended with any new category you add in the field. In the list of profiles, the profiles are grouped into the defined categories.

- **SMS code**

  You can specify an SMS code to enable users to send an SMS with a request for the configuration file to be downloaded to the device. For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Description**

  In this field you can enter a description of the current Apple configuration file. Use it to describe what the configuration does.

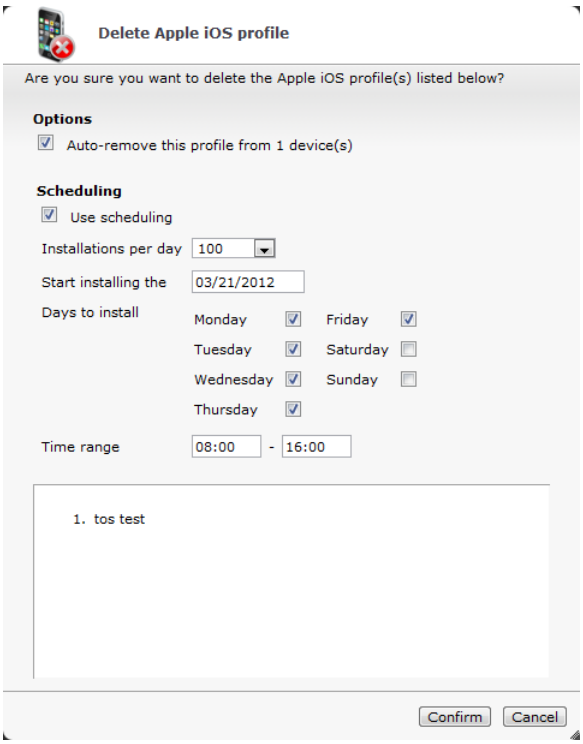
This information is shown in the **Apple iOS profiles** setup panel. You can edit some of the information again by clicking the profile **Name** from the list of profiles.

Click **Save** to enter the new profile into the list.

Delete Apple configuration profile

Click the **Delete profile** action to delete the currently selected Apple iOS profile(s) from the list. You are asked to confirm your action. The profile file associated with each configuration is also removed from the DME server.

If the configuration profiles to be deleted are installed on one or more devices, you will be asked if you want to delete (auto-remove) them from the devices as well - and if you do, you are given an option to schedule the profile removal.



Click **Confirm** to delete the profiles from this window and optionally from affected Apple iOS devices.

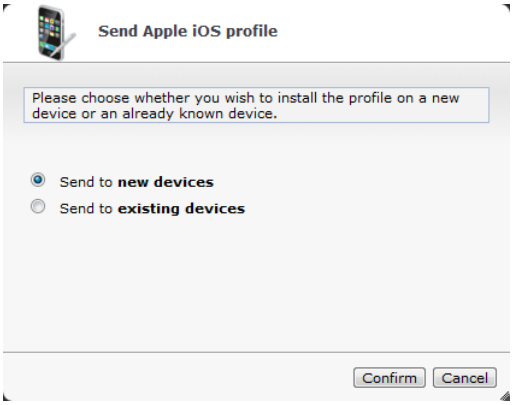
Send Apple iOS configuration profile

Click the **Send Apple iOS configuration profile** action when you want to configure an Apple iOS device according to the specifications of the profile.

❖ ***Sending Apple iOS profile***

1. Select the profile to send, and click the **Send Apple iOS configuration profile** action.

   DME now asks if you are sending the profile to devices that already exist in DME or not.



2. If the device(s) to which you want to send the profile have not yet been created in DME, select **Send to new devices**, and click **Confirm**.

   You are then prompted to enter the phone number or e-mail address of the devices to which you want to send the current profile. Click **Add** after each number or e-mail address. If you enter an e-mail address, the profile will be sent as a link to the specified e-mail address instead of being sent as an SMS message. This is useful in case the device does not contain a phone module (iPod touch, iPad).

   or

   If the device(s) to which you want to send the profile already exist in DME, select **Send to existing devices**, and click **Confirm**. A list of existing Apple iOS devices is shown. Select the relevant devices, and click the **Send configuration** action. For more information about this window, see Device filter.

3. DME users Apple's MDM system for installing the profile. This requires that your system is set up to use Apple MDM. See ***MDM on Apple iOS*** on page 126.

The profile will be installed on enrolled devices without user interaction. If a device is not enrolled yet, it will go through the enrollment process described in ***Enrolling devices*** on page 127.

4. Click **Use scheduling** if you want to distribute the installation evenly over a period of time.
5. Click **Install** to send the configuration to the devices.

You can now monitor the profile installation in the **Status** section.

The user can view the profile by selecting **Settings** > **General** > **Profiles** on the device.

Provisioning

 In the **Provisioning** section of the **Apple iOS profiles** setup panel you can upload and manage Apple provisioning profiles.

The information you see in the table is entered during upload of the configuration file (see below). To edit the information, click the name of the profile you wish to change in the **Name** column.

To delete a profile, see ***Delete Apple configuration profile*** on page 174.

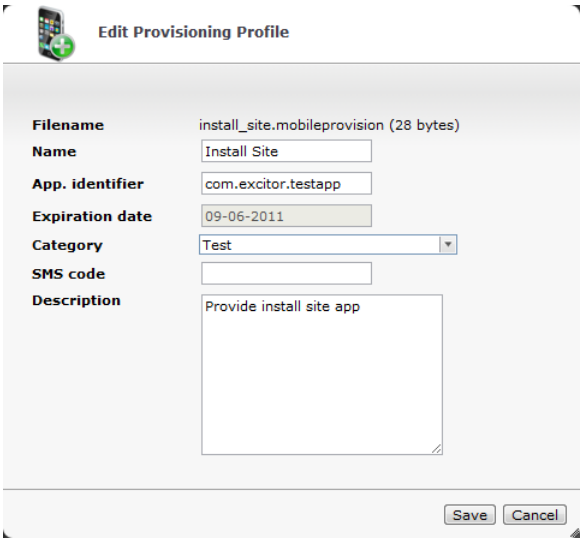
To send a profile, see ***Send Apple iOS configuration profile*** on page 175.

Upload Apple provisioning profile

When you click the **Upload Apple configuration profile** action, you can browse to an Apple configuration profile (`.mobileconfig`) file, and upload it to the server. The configuration file need not be signed.

Please note that if your DME server is set up in a load balanced cluster environment, you need to choose this action from *a single node*, not the main server path (which is the address of the load balancer). Otherwise the load balancer may mix up session IDs, and the operation will fail. See separate cluster setup documentation.

After selecting the file, you are asked to provide some information (DME tries to extract some of it from the file automatically):



- **Filename**

  This field shows the filename and size of the current configuration file, and whether the file is signed and encrypted.

- **Name**

  Here you enter a descriptive name shown in the **Provisioning** setup panel.

- **App. identifier**

  In this field you must specify an app identifier that matches the identifier registered by the provisioning profile for this app - something like `com.companyname.appname`. Otherwise the device cannot verify (and run) the app.

- **Expiration date**

  In this field you must specify an expiration date for the current profile.

- **Category**

  You can divide your Apple profiles into self-defined categories. The list of categories is dynamically extended with any new category you add in the field. In the list of profiles, the profiles are grouped into the defined categories.

- **SMS code**

  You can specify an SMS code to enable users to send an SMS with a request for the configuration file to be downloaded to the device. For more information, see ***Appendix B: Self-provisioning*** on page 392.

- **Description**

  In this field you can enter a description of the current Apple provisioning profile. Use it to describe what the provisioning does.

This information is shown in the **Apple iOS profiles** setup panel. You can edit some of the information again by clicking the profile **Name** from the list of profiles.

Click **Save** to enter the new profile into the list.

Status

 In the **Status** section of the **Apple iOS profiles** setup panel you can monitor the installation of Apple iOS profiles.

The table shows information about the current installation jobs:

- **Operation type**

  This column shows if the current installation job is a profile installation or a management operation such as an auto upgrade or installation removal.

- **Profile**

  This column shows the name of the profile currently being installed.

- **Started**

  This column shows the date and time on which the installation job was initiated.

- **Progress**

  This column shows a progress bar with information about the number of devices on which the current profile has been installed. This gives you a quick overview of the number of installations in the installation job that have been completed.

This table is constructed in a similar way to the software installation **Status** table. See ***Status*** on page 150.

Click the  button to view details about the current job, and  to hide the details again. Each subtable includes information about:

- **Device**

  The device on which the software is being or has been installed. If you let the mouse pointer rest on a device link, a box shows more information about the device. Click the device link to go to the settings page for that device.

- **User**

  This column shows the user name of the user who owns the device. The user name is only shown when the user has made a

successful login and system info synchronization - hence, it is not shown in the **Installing** sub-table in case of new installations of the DME client on as yet unknown devices.

- **Phone number**

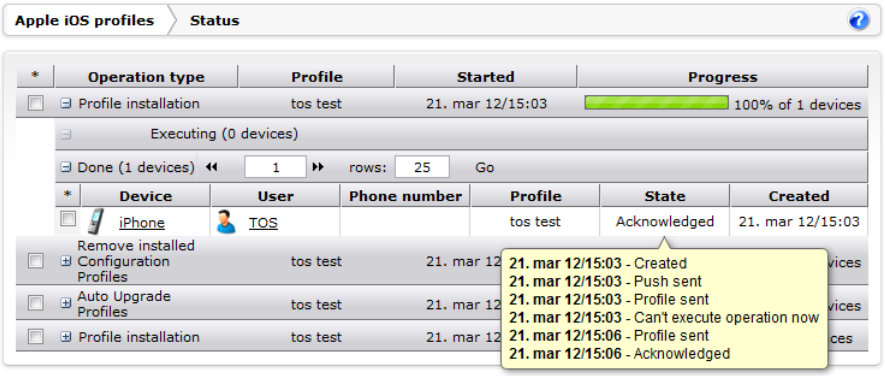
  The phone number of the device to which the installation job was sent.

- **Profile**

  The name of the profile sent to the current device.

- **State**

  This column shows the status of the installation job on the current device. If you let the mouse pointer rest on a status message to see a detailed, chronological sequence of events in the installation job for the current device.



  One state that can occur is **Can't execute operation now**. This message is returned from the device if the device is locked with a pin code. If this is the case, DME will stop trying. Instead, the device will itself poll the server regularly until a successful transaction is completed. This behavior is part of the Apple MDM protocol.

- **Created**

  This is the date and time on which the profile installation job was created.

Remove operations

To clean up the list of installation operations, you can remove them by selecting them and clicking the **Remove operations** action in the tab toolbar. You are prompted to confirm the deletion.

The installation operations are automatically cleaned out from the list after two weeks.

Restart operations

If something has gone wrong with an installation job, for instance if a user did not use the software download link before the link timed out, you can select the installation job (or multiple jobs) and click the **Restart operations** action in the tab toolbar. This will delete the original installation job, create an identical job, and send it again to the selected devices, including any options you have set for the job.

Provisioning status

This window shows an overview of the installation jobs that have been created on the server. A collapsible event log records the detailed, chronological sequence of events for each device in the installation jobs.

*	Device ID	User ID	Phone number	Model	Job type	Status	
☐	357663014358794		+38	E51	Software install (DME client 3.5.2)	DM job succeeded	29. Sep - 09:12:24
						Status received from device	29. Sep - 09:11:34
						Operations sent to device	29. Sep - 09:11:32
						Waiting for processing	29. Sep - 09:11:23
						DM job created	29. Sep - 09:11:22
☐	351503040958470		+63	C6-00	SMS/WAP Push (DME client 3.5.2)	Content downloaded	28. Sep - 11:31:12
						SMS push sent	28. Sep - 11:29:59
						Download link created	28. Sep - 11:29:59
☐	355239032821279	NIF	+45	E72-1	(utility 1.0.0)	Content downloaded	28. Sep - 10:43:42
						JAD file downloaded	28. Sep - 10:42:50
						Download link created	28. Sep - 10:42:50
☐			123		Bootstrap device	Waiting for processing	05. Oct - 09:04:44

You can select one of more installation jobs to remove the job records, restart the installation, or send a notification to the DM client on the devices. See ***Provisioning actions*** on page 98.

A similar window shows installations job for individual devices. Click a device in the **Devices** tab, and click the **Provisioning** setup panel. See ***Provisioning*** on page 98 (Device).

The table shows the following information:

- **Device ID**

  This column shows the device ID (typically IMEI number) of the device on which the installation job was carried out. The ID is only shown when the device has been connected to the DME server through DM.

- **User ID**

  This column shows the user name of the user who owns the device. The user name is only shown when the user has made a successful login and system info synchronization.

- **Phone number**

  The phone number of the device to which the installation job was sent.

- **Model**

  The phone model of the device to which the installation job was sent.

- **Job type**

  The type of installation job. This can be the any of the following:

  Software install (installed software): This is an installation job using DM.

  SMS/WAP Push (installed software): This is an installation job using WAP/SMS download link.

  Mark for install (installed software): This is an installation job using Mark for Install download link.

  Bootstrap device - Software install (installed software): This is a bootstrap followed by the installation of software using DM, possibly the "Default DME client".

  Bootstrap device - Using access point (AP name): This is a bootstrap followed by the installation of an access point.

  Retrieve DM Tree: A DM request for the device DM tree (requested from the OMA DM panel section of the settings page of supported devices - see ***OMA DM*** on page 99).

  Notify client job: A DM request to restart an OMA DM job. See Notify DM client.

- **Status**

  This column contains an expandable event log which records the detailed, chronological sequence of events for each installation job. For each log entry, the date and time are shown. Click  (if available) to view details, and  to collapse the details again. The icons have the following meaning:

   : The event/task is completed with success.

   : The task failed.

   : A task was created.

   : The server job was executed (such as creating a download link for the client), or the server is waiting for the device to process a DM job.

   : DM status received from the device.

   : DM operations instructions sent to the device.

   : An SMS push has been sent to the device.

Provisioning actions

The following actions are available for one or more selected installation job(s) in this list:

-  **Remove provisioning jobs**

  To clean up the provisioning status list, you can remove jobs by selecting them and clicking the **Remove provisioning jobs** action in the tab toolbar. You are prompted to confirm the deletion.

  The installation jobs are automatically cleaned out from the list after 7 days.

-  **Restart provisioning jobs**

  If something has gone wrong with a provisioning job, for instance if a user did not use the software download link before the link timed out, you can select the job (or multiple jobs) and click the **Restart provisioning job** action in the tab toolbar. This will delete the original provisioning job, create an identical job, and send it again to the selected devices, including any options you have set for the job.

  Note that DME cannot verify provisioning jobs of the type **Other software**.

-  **Notify OMA DM jobs**

  DME uses the standard push setting for notifying about OMA DM installation jobs. However, if the DME client is not available on the device, the DM engine on the device will never be notified of the installation job. Use this action to send a notification message by SMS directly to the DM engine on the device. Select the jobs that need special notification in this window (or the **Device setup** > **Provisioning** window), select this action, and click **Confirm** in the dialog that is shown.

  This action is only shown if the selected installation job was created using OMA DM.

Send to device

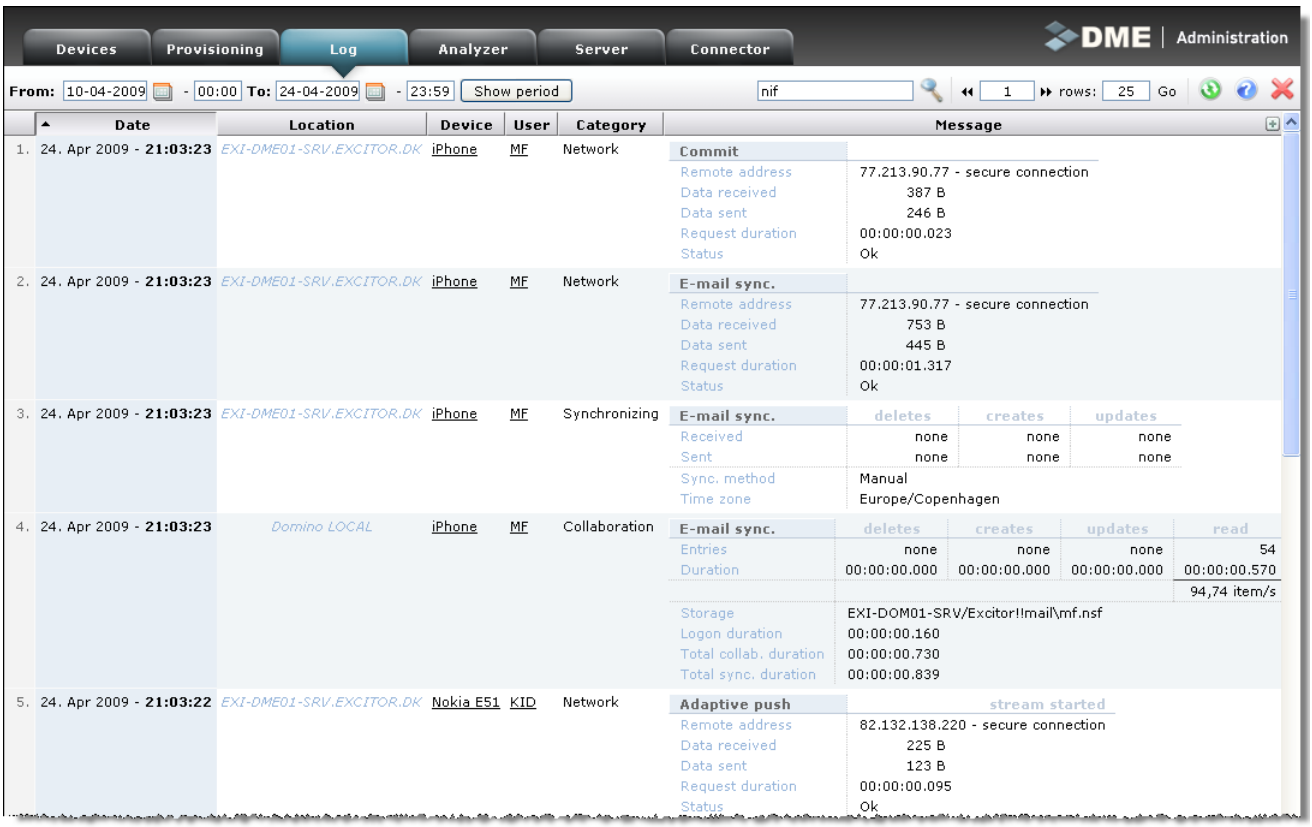
The options in the **Send to device** page menu are identical to the options in the corresponding menu in the **Devices** tab.

For more information, see ***Send to device*** on page 64.

Log

The **Log** tab is used to monitor the state of the DME server. All vital information is saved to the log for later use. You can use the log to look into problems, synchronizations, and supervise other exchange of data.

The log contains messages from the server, the connectors, the mail scan users, users who log on to the Web Administration Interface, and users connecting to the server through the devices.



In the **Log configuration** part of the **Data** section of the **Server configuration** panel, you can choose to see only information messages from DME or to include information messages from third-party applications as well. See ***Data*** on page 225.

The data you see in this window is stored in DME database. Furthermore, most of the log information is kept in the server log file `server.log`, which is found in the `log` directory of each DME server instance. By default, a new `server.log` file is created every day, and yesterday's log file is renamed to `server.log.[date]`, for instance `server.log.2010-08-24`.

DME uses Apache's `log4j` for collecting log information. You can configure log4j by modifying the file `jboss-log4j.xml`, which is located in the `/var/dme/instances/base/etc/jboss` directory (Linux) or `C:\Program Files\dme\jboss\server\default\conf` (Windows). For more information, consult the Apache website or your DME Partner.

The web server access logs can also be a useful tool for analyzing DME server traffic.

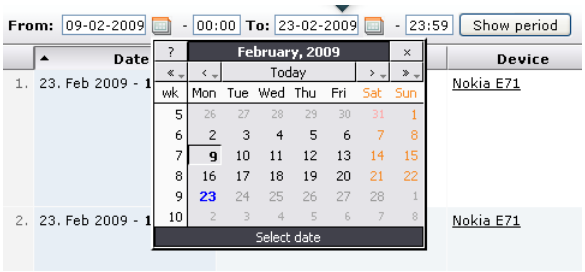
A number of functions in this window make it easier to find the information you need: date filtering, text filtering, paging, and sorting by columns.

Finding information

There are three ways to search for information in the log to find the entry you need. You can filter for specific text, filter by date and time, or you can combine the two methods.

With *text filtering* you can search for specific text in the log - for instance specific device(s), phone numbers and users, or specific words. You can also use the text filtering to only show logs of a specific category, for instance by filtering on **E-mail sync.**. See ***Filter bar - new style*** on page 33 for more information.

Date filtering is used to show log entries between specific dates and times. To select dates, click the calendar icon in the page menu. A pop-up calendar is shown, allowing you to pick a date. If you also wish to specify times, enter them in the text fields after the dates. When you are done, click **Show period**. See the illustration below.



Columns

The log information is shown in the following columns:

- **Date**

  This column shows the date and time of the current `server.log` entry.

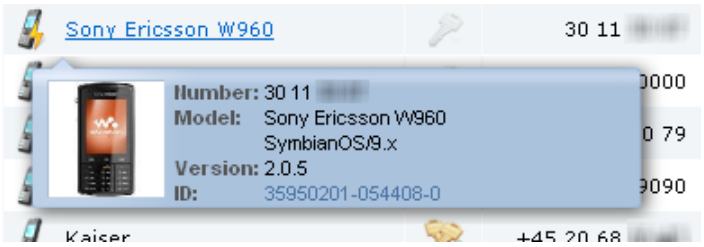
- **Location**

  This column shows the name of the server or connector for which the information was logged. This information is needed in load balanced or distributed environments and in fail-over situations in order to be able to pinpoint the server machine which issued the message or warning. The name is defined in the field **Server name**. For more information, see ***Web*** on page 233 - a section of the **Server configuration** panel.

- **Device**

  This column shows the device to which the log message pertains. If you let the mouse pointer rest on a device link, a box will appear with more information about the current device:

  - evice phone number
  - evice model
  - evice operating system
  - ME version installed on device
  - evice ID
  - ossibly a picture of the device



  The information derives from the DME database, and can be edited in the **Device** setup panel. You can click the device link to go to the setup page for the device in question.

  If the message does not concern a specific device, but is a system error message or warning, this column contains a dash **-**.

- **User**

  This column shows the user who is the current holder of the device to which the log message pertains. If you let the mouse pointer rest on a user link, a box will appear with more information about the current user:

- ull name and initials of device user
- itle of device user

The information derives from the DME database, that is the information which can be edited in the User setup panel. You can click the user link to go to the setup page for the user in question.

- **Category**

  The messages shown in the log are divided into a number of categories, each of which is described in the following section.

- **Message**

  The message column contains the message itself. For more information about the messages that can be displayed here, see the various subsections of the **Category** section previously.

  If the log entry reports a **WARNING** or an **ERROR**, you can expand the log to see the full error message by clicking the **+** button in the right side of the **Message** column header. The error message may report important information about faulty configuration of a subsystem, such as the LDAP or collaboration system ("user not found" or similar), or it may report an error in DME (usually in the form of an **NPE - NullPointerException**). Collapse the log again by clicking the **-** button.

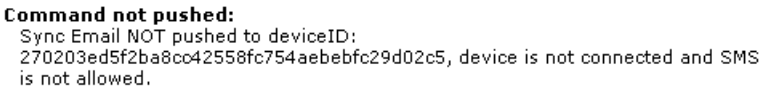
Log categories

The messages shown in the log are divided into the following categories.

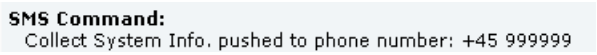
Adaptive push

Messages in the **Adaptive push** category show information regarding notifications sent to the device specified in the **Device** column where adaptive push is enabled. For more details about the error messages, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems.

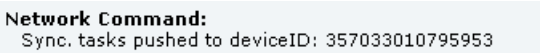
A notification error could be similar to the below - saying that a *synchronize e-mail* command could not be sent to a device, because the device is off and is running network push only.



Or it could be a message saying that a *force synchronization* command had been sent by SMS from the server to a device:



Or a message saying that a network push command to synchronize to-dos was sent successfully to a device:



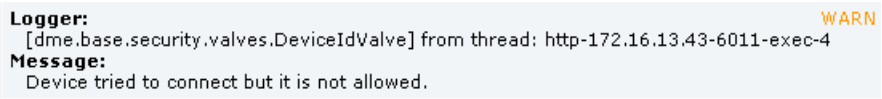
Or a message saying that a push was sent by APNS to an iOS device:

Audit

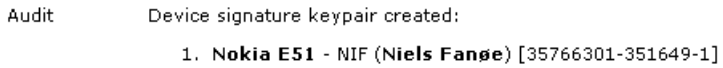
Messages in the **Audit** category show security and access information related to the device specified in the **Device** column. For more details about error messages, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems.

An audit message is for instance logged when a device is created.

An audit error or warning is for instance logged when a connection from a device was refused due to security restrictions. This could be due to the client being locked.



A message could also say that a client signature keypair was created by the server:



Central Services

Messages in the **Central Services** category show information from the DME Central Services server. New messages are picked up by the DME server when it accesses the DME Central Services server (see ***Central Services*** on page 230).

The messages are divided into three degrees of severity: "[Critical issue]" (shown in red text), "[Important issue]" (shown in yellow text), and "[Minor issue]" (shown in normal text).

Each message will typically contain a link to a website where more information can be found.

There are four types of messages:

- **Information about error in DME**

  If Excitor A/S has found an error in DME, for instance based on customer feedback through Central Services, a message about the error will be posted here.

- **Information from Excitor**

  Important information from Excitor, either of a business nature or technical nature. This corresponds to the Service Bulletins, which are sent by e-mail from Excitor whenever an announcement is made.

  This message type is also issued when the Central Services feature is turned on:

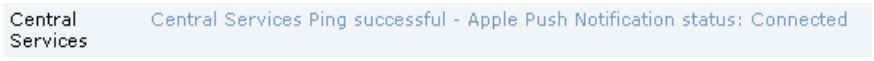
- **Newsletter from Excitor**

  Indicates that Excitor has published a new newsletter.

- **Warning**

  Proactive information about issues that might arise in your DME system if certain circumstances are met.

Furthermore, a message is entered in the log when the server pings the Central Services server:



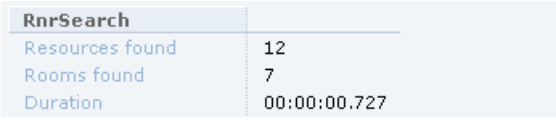
Collaboration

Messages in the **Collaboration** category show statistics about the client's connection with the collaboration system through the connector specified in the **Location** column. The information is shown as a table. There are two types of tables. One shows interaction with entries in the user's mail file or mailbox, and the other shows interaction with public resources or other actions. A message of the former type might look like this:

E-mail sync.	deletes	creates	updates	read
Entries	none	1	none	(x2) 88
Duration	00:00:00.000	00:00:00.707	00:00:00.000	00:00:01.685
				52,23 item/s
Storage	EXI-DOM01-SRV/Excitor!!mail\exdev.nsf			
Logon duration	00:00:00.221			
Total collab. duration	00:00:02.613			
Total sync. duration	00:00:05.229			

Function	This is the type of communication which was performed with the collaboration system. This could be **E-mail sync.**, **Calendar sync.**, **Addressbook sync.**, or **E-mail folder**.
Operation type header	Depending on the type of connection (function), up to four types of operations can be performed in the collaboration system as a result of a client connection: **delete**, **create**, **update**, and **read**.
Entries	How many operations of the available types were performed by the collaboration system as a result of the current connection. If a number is preceded by **(x2)**, it means that the specified number of items were read twice.
Duration	How long time did the above operations take.
(total)	This (untitled) row calculates the number of items that were processed per second.
Storage	The path to the user's mail file (Domino) or mailbox (Exchange).
Logon duration	The number of milliseconds it took to log on to the collaboration system.
Total collab. duration	The total duration of the client's interaction with the collaboration system during this session.
Total sync. duration	The total duration of the client's session with the DME server, including authentication, negotiation, etc. This corresponds to the total time of the connector/collaboration system interaction and the device/DME server interaction (see the **Synchronizing** category).

The second type of message is related to public entries in the collaboration system, or to password change. It may look like this:



RnrSearch	
Resources found	12
Rooms found	7
Duration	00:00:00.727

The table tells how many entries of the given type (rooms, resources, or contacts in a global address book search) were found, and how long time it took. For the **Password change** function, the table shows whether the password change was successful, and how long it took for the collaboration system to change the password.

The times and data amounts in the **Collaboration** category are part of the total for the current device specified in the **Network** category.

Connector

Messages in the **Connector** category show errors and warnings related to the connector specified in the **Location** column. For more details about an error, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems.

A message from a connector could for instance say that the LDAP group graph had been read from a certain server.

To see all messages relating to a particular connector, click the connector in the **Connector** tab, and select the **Log** panel section. See Log.

Device

Messages in the **Device** category show errors and warnings related to the device specified in the **Device** column. For more details about an error, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems.

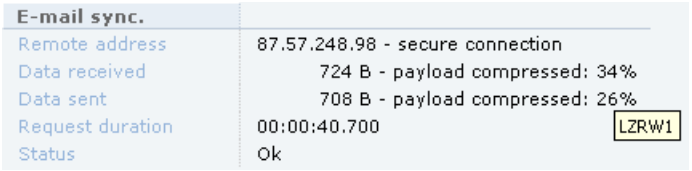
A device-related error could be that a SmartLink reference could not be downloaded due to an invalid link.

The message could also be the result from a diagnostic test forced from a device by the server.

Network

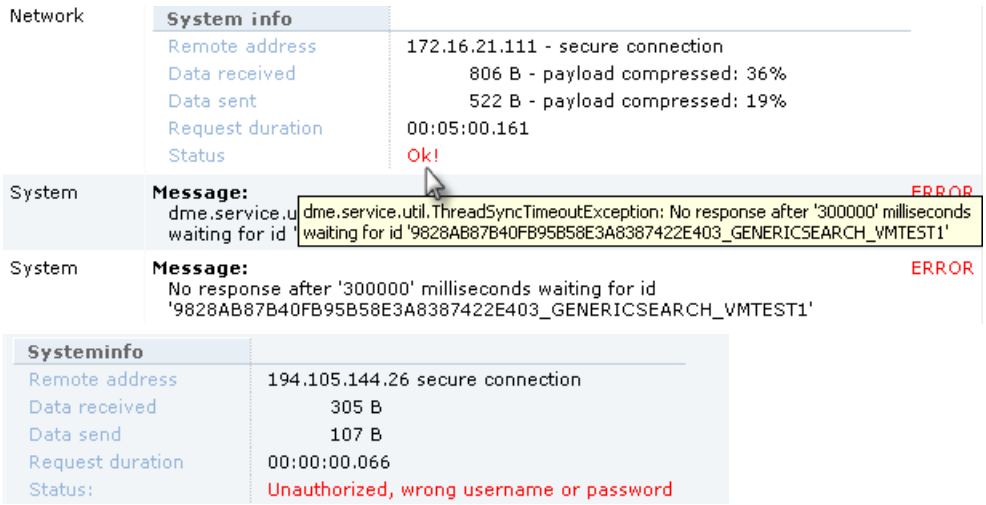
Messages in the **Network** category sum up the statistics about the client's connection with the DME server. This means that a client's connection to the DME server for synchronization and system information exchange, and the interaction with the collaboration system are added up in the **Network** category. This way you can see the total connection time (here), the time spent negotiating with the collaboration system (in the **Collaboration** category), and the time spent synchronizing (in the **Synchronizing** category). The data in this category forms the basis of the statistics shown in the **Analyzer** tab.

The network information is shown as a table, which might look like this:



Function	This is the type of communication which was performed with the collaboration system. For more information about each type of network connection, see below.
Remote address	This row states the remote IP address of the device that made the network connection, and whether the connection was secure (https). If you let the mouse pointer rest on the "secure connection" part of this row, a tooltip text will show the type of security that was in force during the connection - for instance **TLS RSA with AES 256 CBC SHA**.
Data received	The total amount of data received by the server, and the rate by which the "payload" part of the data was compressed. The payload is the total amount of data, less http headers etc. (which cannot be compressed). If you let the mouse pointer rest on the percentage part of this row, a tooltip text will show the technology that was employed to compress the data in this connection - for instance **LZRW1**.
Data sent	The total amount of data sent to the device by the server, and the rate by which the payload part of the data was compressed. The compression technology is shown as a tooltip.
Request duration	The total duration of the network connection, including authentication, collaboration system interaction, and synchronization.

Status	This row shows whether the current network connection was successful. Please note that the **Ok** simply means that the connection went well - but the connection might in fact have been an error message sent to the client. If the **Ok** is written in red, followed by an exclamation mark, it means that an error message was sent to the client. If you let the mouse pointer rest on the **Ok**, you can see the error message. See the graphic below. The message is usually preceded by a similar **System** category message. The other graphic below shows an entry with a non-OK status due to an authentication error.
Stream duration	For **Adaptive push - stream closed** messages, this is the total duration of the network stream session that was just closed.



The following functions are recorded as network connection types. For each function, statistics about the connection type, total data amount, total duration of the connection, and status are shown. Note that if the function is written in square brackets, for instance **[email]**, it is an indication that the request was unsuccessful (could not be parsed by the server).

- **Synchronization functions:** *E-mail*, *E-mail folders*, *Calendar*, *To-do*, *Addressbook*, *File*, *File - data*, *System info*

  The statistics of one synchronization process of the type mentioned. File synchronization is split into two categories: **Files**, which is the synchronization of data about which files should or should not be synchronized, and **Files, data**, which covers the files as such.

- **Search functions:** *Search* (generic search), *E-mail*, *Addressbook*, *Freetime*, and *RnR*

  The statistics of one search process of the type mentioned. The generic **Search** function is another name for **E-mail search**. **RnR search** is a search for Rooms & Resources when booking a meeting on the device.

- **Notification functions:** *Adaptive push*, *Adaptive push (IM)*

  The statistics of one adaptive push (network push) session. The **Stream started** message means that a network push stream was started by the client. In the client, the lightning symbol ⚡ is shown. **Stream closed** means that the network push stream was closed again by the client, for instance if the phone is switched off or the connection is otherwise lost. The **(IM)** variant indicates that the client has the **Sametime awareness** functionality turned on.

- **Provisioning functions:** *OMA DM*, *Self-provisioning*, *Application download*

  The statistics of one provisioning function, either by way of OMA DM provisioning or SMS self-provisioning, or the size of the client download, or the packets sent in by a device when retrieving the device DM tree.

- **Other functions:**

  Attachments: E-mail or meeting attachments uploaded to or downloaded from the server.

  Commit: The process of confirming that a transaction such as a synchronization went well. If a transaction is not committed, it will be rolled back.

  Diagnostic: The statistics of a device sending in its diagnostic log for analysis.

  Password change: The statistics of a user changing his or her network password from the device.

  Root certificate: The statistics of a user downloading the DME root certificate to his or her device.

  SmartLink: The statistics of a user using the SmartLink add-on functionality.

  Statistic: The statistics of a device sending in voice, messaging, and GPRS data usage statistics for use in the **Analyzer** view.

  Time zones: The server sending a list of known time zones to the client, so the client can match its time zone with that of the server.

Notification

Messages in the **Notification** category show errors and warnings related to notifications for the device specified in the **Device** column. For more details about an error, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems (if applicable).

A notification-related error could be due to a mismatch between a notification and the sync. table of a device.

Provisioning

Log entries of the **Provisioning** and **Software install** categories are best seen by selecting **Installation log** from the page menu in the **Provisioning** tab - see Installation log.

Messages in the **Provisioning** category show information about when bootstrap commands were sent to which devices, and whether a command to install the default DME client for the device type in question was also sent - as in the example below.

Sending DM bootstrap to device with phone number : 30914222 (Install default DME Client after bootstrap)

See also **Software install**.

Software install

Log entries of the **Provisioning** and **Software install** categories are best seen by selecting **Install log** from the page menu in the **Provisioning** tab - see ***Installation log*** on page 155.

Messages in the **Software install** category show information about various software installation events:

- If a DME client was made the default version for a given platform.
- If a new device type was identified in the **Device types** page (see ***Device types*** on page 155).
- When a push to install a client has been sent, as in the examples below:

  By SMS:

By OMA DM:

Software:	Symbian series 60 - DME Client 3.0.8
Device ID:	357663013516491
Information:	Setting server path through DM. Software installation through OMA DM.

- and more.

Synchronizing

Messages in the **Synchronizing** category show statistics about the client's synchronization with the DME server. Usually a log entry of the category **Collaboration**, pertaining to the same device, will precede this entry. The **Collaboration** log entry shows the interaction between collaboration system and the connector; this entry shows the interaction between the DME server and the client. The information is shown as a table, which might look like this:

E-mail Sync.	deletes	creates	updates
Received	none	none	none
Sent	none	2	none
Sync. method	Push		
Timezone	Europe/Copenhagen		

For each type of synchronization data (function), a column tells how many items were deleted, created, or updated. Depending on the type of item, the data can be received or sent. **Received** means that the data was received from the client by the server; **sent** means that the data was sent from the server to the client.

Function	This is the type of synchronization (function) which was performed with the collaboration system. This could be **E-mail**, **Calendar**, **Addressbook**, or **E-mail folder** sync.
Entries	How many items of the specified type were synchronized from the client (**received**) or from the server (**sent**) as a result of the current connection.
Sync. method	How were the items synchronized - as a result of a push, scheduled sync. or a manual sync. If the sync. method is followed by **flush**, it means that the data was *imported* by the client (deleted on the client first, then synchronized). **One way** means that the current synchronization was part of a batch, and that nothing was actually sent to the device. The client controls when the server should send the entire batch.
Time zone	The time zone of the client. This can be useful in case questions arise regarding differences in the time of meetings between the client and the collaboration system.

The times and data amounts in the **Synchronizing** category are part of the total for the current device specified in the **Network** category.

Furthermore, statistics about the client's exchange of system information with the DME server are logged as an entry in the **Synchronizing** category. This information is also shown as a table, which might look like this:

Settings	delete	create	update
received	none	66	none
sent	none	none	62
Applications	**delete**	**create**	**update**
received	none	3	none
sent	none	none	none
Network Operators	**delete**	**create**	**update**
sent	none	none	none
Properties	**delete**	**create**	**update**
received	none	15	none
Fields	**delete**	**create**	**update**
received	none	11	none

Duration:	00:00:04.612 (No pending)
Items parsed:	135 (29.27 per second)
Sync. Method:	Import
Time zone:	Europe/Copenhagen

System information, for instance client settings, from the client are compared with those set on the server, and the settings are synchronized. Mandatory settings from the server are enforced on the client, and the server representation of the client is updated to reflect the personalized, non-mandatory settings from the client. The following table explains the various items in the graphic above.

For each type of system information data, a column tells how many items were deleted, created, or updated. Depending on the type of system information, the data can be received or sent. **Received** means that the data was received from the client by the server; **sent** means that the data was sent from the server to the client.

Settings	**Settings** are pieces of information set in the **Settings** tabs in the client, or in the default, group, or individual device settings pages on the server. For instance, in the graphic above, 66 settings were created on the server to reflect settings on the client. In return, the server updated 62 of these settings and pushed them back to the client.
Applications	This type of data indicates the number of blocked applications and network connections.
Network operators	This type of data indicates the number of preferred network operators sent to the client.

Properties	This type of data indicates information about device properties received from the device and registered in the **Information** page section for the device in question.
Fields	This type of data indicates information about which contact and calendar fields are supported by the device in question.
Duration	This row shows the total duration of the client's interaction with the DME server during this session. The parentheses following the duration in seconds indicate if there are any items pending processing, in other words if the system information exchange is complete. If not, you need to refresh the **Log** page to view the finished results.
Items parsed	This row shows how many items (settings, applications, etc.) were processed in total, and how many were processed per second.
Sync. method	This row shows if the interaction with the server was caused by a synchronization, a push, or an import action.
Time zone	This row shows the time zone of the client.

System

Messages in the **System** category show errors and warnings which cannot be related to any of the other categories. This could be errors in one of the subsystems on which DME depends (for instance JBoss).

For more details about an error, click the **+** button in the **Message** header title. This will expand the message to include details about the error as posted by the DME subsystems.

Analyzer

The **Analyzer** tab shows traffic statistics and lets you run custom Analyzer reports using the BIRT reporting framework.

Statistical data with regard to DME data is always collected. Statistics with regard to voice, messaging, and general (non-DME) data traffic, is an optional setting which can be turned on or off using the **Log traffic** option in the **General** section of the settings for devices, groups, or default devices. For more information, see ***Appendix D: Traffic logging*** on page 408.

Statistics

The **Statistics** page menu contains functions to let you see traffic statistics, divided into four categories: **DME traffic**, **Voice traffic**, **Messaging traffic** and **Data traffic**.

The page menu contains a date filter similar to that in the **Log** tab (see ***Finding information*** on page 184), with the addition of a number of preset date filters: **Today**, **Yesterday**, **Week**, **Month**, and **Year**. The data shown in the Statistics pages are always limited by the dates selected in the date filter, and the current date range is shown at the top of each subtab in the Statistics pages.

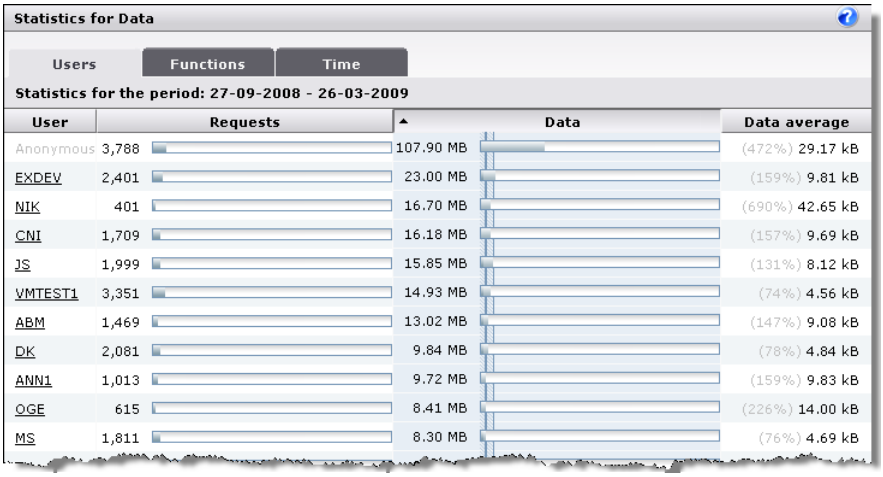
DME traffic

The DME traffic statistics page is divided into a number of subtabs, each of which showing the statistics from a different perspective.

The DME traffic statistics cover data from all communication between the client and the DME server, whether the communication is over the air as GPRS or Wi-Fi or through a direct cable connection. DME seeks to make as precise a measurement as possible, but some variance must be anticipated. DME traffic statistics are always collected, for all clients.

Users

This subtab shows a table of the DME data usage of each user in the DME system. You can sort the table by clicking the table headers. Within the time frame shown just below the subtab header, the statistics show the following (by column):



- **User**

  The name of the user for whom the DME data statistics are logged. Click to see more details about the user. The first user is always called **Anonymous** - this "user" is not a real user, but covers various overhead and data traffic that cannot be allocated to any particular user, such as failed logins and application downloads.

  The totals line shows the total number of users in the system (irrespective of the number of lines you have currently chosen to show in the table navigation bar).

- **Requests**

  This column shows the number of requests for DME data made by a user's device within the stated time frame. A request could be one act of synchronization, or an application download (client upgrade). Next to the actual number of requests is a graph showing the user's share of the overall number of requests made to the server. If you let the mouse pointer rest on the colored part of the graph, a tooltip text will reveal the user's share of the total requests made as a percentage.

  The totals line shows the total number of requests made to the server. Note that the numbers in the lines above may not add up to the total shown here - the total is the system total, whereas the table only shows the number of lines specified in the table navigation bar.

- **Data**

  This column shows the amount of DME data transferred by each user. After the actual number, a graph shows the user's share in the overall DME data traffic within the specified time frame. The graph is filled with two shades of blue: A dark blue (the left-hand end) showing the percentage of *Incoming* data (for instance calendar entries created on the device and synchronized to the server), and a lighter blue showing the percentage of *Outgoing* data (synchronized or downloaded to the device). If you let the mouse pointer rest on either color, a tooltip text will reveal the actual percentage.

  The hatched area () at the beginning of the graphs shows the standard deviation and the mean (the solid blue line) of the total set of data.

  The totals line shows the total amount of data moved. Note that the numbers in the lines above may not add up to the total shown here - the total is the system total, whereas the table only shows the number of lines specified in the table navigation bar.

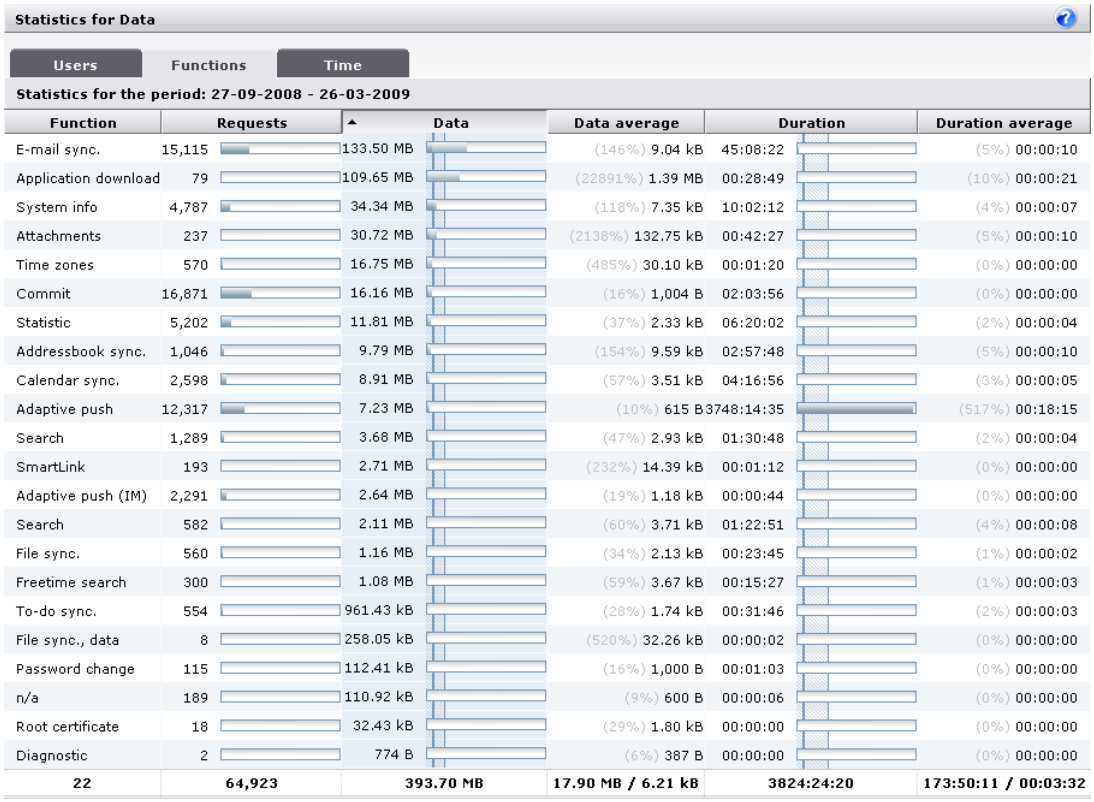
- **Data average**

  This column shows the average amount of DME data transferred by each user - that is, the average amount of data per request. The percentage number in parentheses indicates the user's average request size in relation to the total average shown in the totals line. This way you can for instance quickly identify users that transfer a large amount of data per request.

  The first number in the totals line shows the total amount of data (the **Data** column) divided by the total number of users (the **User** column), resulting in the average amount of data moved per user. The second number shows the total number of requests (the **Requests** column) divided by the total amount of data, resulting in the average request size.

Functions

This subtab shows a table of the data usage of the DME system divided into functions. You can sort the table by clicking the table headers.



Statistics for Data

Users | Functions | Time

Statistics for the period: 27-09-2008 - 26-03-2009

Function	Requests	Data	Data average	Duration	Duration average
E-mail sync.	15,115	133.50 MB	(146%) 9.04 kB	45:08:22	(5%) 00:00:10
Application download	79	109.65 MB	(22891%) 1.39 MB	00:28:49	(10%) 00:00:21
System info	4,787	34.34 MB	(118%) 7.35 kB	10:02:12	(4%) 00:00:07
Attachments	237	30.72 MB	(2138%) 132.75 kB	00:42:27	(5%) 00:00:10
Time zones	570	16.75 MB	(485%) 30.10 kB	00:01:20	(0%) 00:00:00
Commit	16,871	16.16 MB	(16%) 1,004 B	02:03:56	(0%) 00:00:00
Statistic	5,202	11.81 MB	(37%) 2.33 kB	06:20:02	(2%) 00:00:04
Addressbook sync.	1,046	9.79 MB	(154%) 9.59 kB	02:57:48	(5%) 00:00:10
Calendar sync.	2,598	8.91 MB	(57%) 3.51 kB	04:16:56	(3%) 00:00:05
Adaptive push	12,317	7.23 MB	(10%) 615 B	3748:14:35	(517%) 00:18:15
Search	1,289	3.68 MB	(47%) 2.93 kB	01:30:48	(2%) 00:00:04
SmartLink	193	2.71 MB	(232%) 14.39 kB	00:01:12	(0%) 00:00:00
Adaptive push (IM)	2,291	2.64 MB	(19%) 1.18 kB	00:00:44	(0%) 00:00:00
Search	582	2.11 MB	(60%) 3.71 kB	01:22:51	(4%) 00:00:08
File sync.	560	1.16 MB	(34%) 2.13 kB	00:23:45	(1%) 00:00:02
Freetime search	300	1.08 MB	(59%) 3.67 kB	00:15:27	(1%) 00:00:03
To-do sync.	554	961.43 kB	(28%) 1.74 kB	00:31:46	(2%) 00:00:03
File sync., data	8	258.05 kB	(520%) 32.26 kB	00:00:02	(0%) 00:00:00
Password change	115	112.41 kB	(16%) 1,000 B	00:01:03	(0%) 00:00:00
n/a	189	110.92 kB	(9%) 600 B	00:00:06	(0%) 00:00:00
Root certificate	18	32.43 kB	(29%) 1.80 kB	00:00:00	(0%) 00:00:00
Diagnostic	2	774 B	(6%) 387 B	00:00:00	(0%) 00:00:00
22	64,923	393.70 MB	17.90 MB / 6.21 kB	3824:24:20	173:50:11 / 00:03:32

Within the time frame shown just below the subtab header, the statistics show the following (by column):

- **Function**

  The name of the DME function that gave rise to data traffic. The statistics are accumulated from log entries of the category **Network**. For information about each function, see Network. The "function" called **n/a** is not a function as such, but means that some traffic could not be attributed to a function - this could be errors, attempts at anonymous logins, etc. Such data is attributed to the **n/a** "function" and the **Anonymous** "user".

  The totals line shows the total number of functions in the system for which statistics were collected within the specified time frame.

- **Requests**

  This column shows the number of data requests made, divided into the different functions, within the stated time frame. Next to the actual number of requests is a graph showing the function's share of the overall number of requests made to the server. If you let the mouse pointer rest on the colored part of the graph, a

tooltip text will reveal the function's share of the total requests made as a percentage.

The totals line shows the total number of requests made to the server.

- **Data**

  This column shows the amount of DME data transferred on account of each function. After the actual number, a graph shows the function's share in the overall DME data traffic within the specified time frame. The graph is filled with two shades of blue: A dark blue (the left-hand end) showing the percentage of *Incoming* data (for instance calendar entries created on the device and synchronized to the server), and a lighter blue showing the percentage of *Outgoing* data (synchronized or downloaded to the device). If you let the mouse pointer rest on either color, a tooltip text will reveal the actual percentage.

  The hatched area () at the beginning of the graphs shows the standard deviation and the mean (the solid blue line) of the total set of data.

  The totals line shows the total amount of data moved.

- **Data average**

  This column shows the average amount of DME data transferred by each function - that is, the average amount of data per request. The percentage number in parentheses indicates the function's average request size in relation to the total average shown in the totals line.

  The first number in the totals line shows the total amount of data (the **Data** column) divided by the total number of functions (the **Function** column), resulting in the average amount of data moved per function. The second number shows the total number of requests (the **Requests** column) divided by the total amount of data, resulting in the average request size.

- **Duration**

  This column shows the duration of the connection between device and server on account of each function, shown in the format HH:MM:SS. After the actual number, a graph shows the function's share in the overall DME connection time within the specified time frame. If you let the mouse pointer rest on the colored part of the graph, a tooltip text will reveal the function's share of the total connection duration as a percentage. Please note that the function **Adaptive push** is not included in this, as the nature of the network push aspect of the adaptive push connection is to keep a persistent data connection open.

The hatched area ( ) at the beginning of the graphs shows the standard deviation and the mean (the solid blue line) of the total set of data.

The totals line shows the total duration of all connections within the specified time frame.

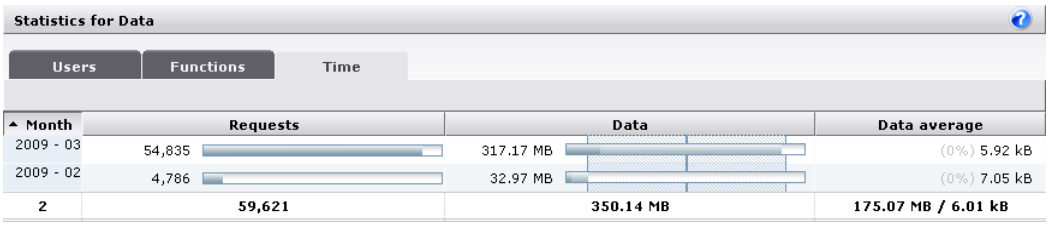
- **Duration average**

  This column shows the average duration of the DME data connection by each function - that is, the average connection time per request. The percentage number in parentheses indicates the function's average request size in relation to the total average shown in the totals line.

  The first number in the totals line shows the total connection duration (the **Duration** column) divided by the total number of functions (the **Function** column), resulting in the average connection duration per function. The second number shows the total number of requests (the **Requests** column) divided by the total connection duration, resulting in the average request duration.

Time

This subtab shows a historical table of the data usage in the DME system, by month. Note that the date filter does not apply in this subtab. You can sort the table by clicking the table headers. The statistics show the following (by column):



- **Month**

  The year and number of the month for which the data are shown.

  The totals line shows the total number of months for which statistics are shown.

- **Requests**

  This column shows the number of data requests made by devices within the month in question. A request could be one act of synchronization, or an application download (client upgrade). Next to the actual number of requests is a graph showing that particular month's share of the overall number of requests made to the server. If you let the mouse pointer rest on the colored part of

the graph, a tooltip text will reveal the month's share of the total requests made as a percentage.

The totals line shows the total number of requests made to the server.

- **Data**

  This column shows the amount of DME data transferred within the month in question. After the actual number, a graph shows the month's share in the overall DME data traffic. The graph is filled with two shades of blue: A dark blue (the left-hand end) showing the percentage of *Incoming* data (for instance calendar entries created on the device and synchronized to the server), and a lighter blue showing the percentage of *Outgoing* data (synchronized or downloaded to the device). If you let the mouse pointer rest on either color, a tooltip text will reveal the actual percentage.

  The hatched area ( ) of the graphs shows the standard deviation and the mean (the solid blue line) of the total set of data.

  The totals line shows the total amount of data moved.

- **Data average**

  This column shows the average amount of DME data transferred within the month in question - that is, the average amount of data per request. The percentage number in parentheses indicates the month's average request size in relation to the total average shown in the totals line.

  The first number in the totals line shows the total amount of data (the **Data** column) divided by the total number of months (the **Month** column), resulting in the average amount of data moved per month. The second number shows the total number of requests (the **Requests** column) divided by the total amount of data, resulting in the average request size.

Voice traffic

DME clients can track incoming and outgoing phone calls in order to build a statistical base, which you can use to monitor voice traffic to reduce TCO (Total Cost of Ownership).

Please note that the collection of statistics relies on a number of factors, including the ability of devices of different makes and models to collect and report the numbers correctly to the DME server. The DME server builds the statistics base on the received data, and DME cannot guarantee the correctness or completeness of this information.

The voice traffic statistics page is divided into a number of subtabs, each of which providing insight into the voice data from a different perspective.

The filter functions are used in the same way as for DME traffic statistics (see ***DME traffic*** on page 198).

Users

This subtab shows all incoming and outgoing calls for users whose devices are set up to log voice traffic. Each user's total traffic is shown as a percentage of the total traffic.

Country

Shows the sum of incoming and outgoing calls, by the country from which the voice calls were made.

Operator

Shows the sum of incoming and outgoing calls, by the operator through which the voice calls were made. Country is also included.

An operator marked with the  icon is the **Home operator**, meaning the operator which issued caller's SIM card.

An operator marked with the  icon is the **Service operator**, meaning an operator which lets you use its network where the home operator does not have coverage, typically in connection with roaming agreements.

Dest. country

Shows the sum of incoming and outgoing calls, by the country to which the voice calls were made.

Incoming

This subtab shows a detailed sum of incoming calls. The sum is based on the call operator and country.

Users | Country | Operator | Dest.country | Incoming | Outgoing

Statistics for the period: 12-06-2006 - 11-06-2007

Operator	Country	Direction	Country	Calls	Total time
N NetCom	Norway		Norway	3	4m 49s
N NetCom	Norway		Denmark	3	9m 0s
one	Austria		Denmark	5	10m 21s
sunrise	Switzerland		Denmark	1	50s
TDC MOBIL	Denmark		Denmark	722	35h 34m 26s
TDC MOBIL	Denmark		United Kingdom	2	35m 58s
TDC MOBIL	Denmark		Switzerland	1	2m 24s
TDC MOBIL	Denmark		South Africa	2	30m 36s
TDC MOBIL	Denmark		Netherlands	4	14m 43s
TDC MOBIL	Denmark		Sweden	2	10m 43s
TDC MOBIL	Denmark		Germany	3	33m 20s
TDC MOBIL	Denmark		Norway	9	23m 53s
TDC MOBIL	Denmark		Belgium	2	28m 58s
vodafone ES	Spain		Denmark	9	44m 54s
vodafone ES	Spain		South Africa	1	1m 34s
vodafone NL	Netherlands		Denmark	11	44m 46s
vodafone SE	Sweden		Denmark	13	25m 46s
vodafone SE	Sweden		Sweden	1	15s
Vodafone.de	Germany		Denmark	1	1m 42s

The table should be read like this: A DME user located in country A receives a call from country B. For instance, line two in the table above states that three calls have been placed from Denmark to numbers in Norway using the **N NetCom** operator. The **$** sign in the arrow means that the mobile phone was roaming when the call was made. This is important, as the call receiver pays for roaming calls.

Another example: In the last line but one, a call from Sweden was placed to a recipient in Sweden. However, the recipient was not a native of Sweden, so the call was roaming.

For an explanation of the operator icons, see ***Operator*** on page 205.

Outgoing

Corresponds to the **Incoming** subtab, but shows outgoing calls.

Messaging traffic

The Messaging traffic statistics page shows the number of SMS and MMS messages that have been sent and received from the client devices. The page is divided into a number of subtabs. Each subtab shows how many messages were sent or received from a different perspective.

Please note that the collection of statistics relies on a number of factors, including the ability of devices of different makes and models to collect and report the numbers correctly to the DME server. The DME server builds the statistics base on the received data, and DME cannot guarantee the correctness or completeness of this information.

The filter functions are used in the same way as for DME traffic statistics (see ***DME traffic*** on page 198).

The subtabs show the same as for Voice traffic statistics. However, instead of minutes of voice traffic, the subtabs show the number of messages sent and received.

Data traffic

The Data traffic statistics page shows the amount of data traffic that the client devices have used. The page is divided into a number of subtabs, each showing data traffic from a different perspective.

Please note that the collection of statistics relies on a number of factors, including the ability of devices of different makes and models to collect and report the numbers correctly to the DME server. The DME server builds the statistics base on the received data, and DME cannot guarantee the correctness or completeness of this information.

The filter functions are used in the same way as for DME traffic statistics (see ***DME traffic*** on page 198).

The subtabs show the same as for Voice traffic statistics. However, instead of minutes of voice traffic, the subtabs show the duration of data connections in minutes.

Analyzer reports

DME integrates with a third-party, open source project called BIRT ("Business Intelligence and Reporting Tools"). With BIRT, it is possible to develop and run custom reports on the DME database.

BIRT is an open source reporting system for web applications, especially those based on Java and J2EE. BIRT has two main components: a report designer based on Eclipse™, and a runtime component that can be added to an application server (such as DME). BIRT also contains a charting engine that lets you add charts to your reports.

Furthermore, a number of standard reports are included with DME. These reports are fully functional, and can furthermore be used as a basis for further development. Note that when the reports are run, the dates and times selected in the **Period** filter are used as parameter for the report. This means that if you change the date and time and click **Show period**, the report will be run again showing data for the new span of time. See ***Standard reports*** on page 212.

If you want to develop your own reports or customize the template reports supplied by Excitor A/S, do the following:

1. Download the BIRT reporting package from the ***Eclipse BIRT website http://www.eclipse.org/birt/phoenix/***.

   Note that you must get BIRT version **2.6.1**.
2. Install BIRT.
3. Install a JDBC driver for your DME database (can be obtained from the MySQL or Microsoft websites).
4. Register the JDBC driver in Eclipse.

It is highly recommended that you work with BIRT using a **read-only** user account on the database in order to prevent accidental data loss. Ask your Database Administrator about this.

For help on using the BIRT report designer, see the built-in online help for that product, or visit the ***Eclipse BIRT website http://www.eclipse.org/birt/phoenix/***.

New reports

When you have made a *new report*, use the **Upload report** action to load it to the DME server (see ***Upload report*** on page 209).

Editing existing reports

To edit an *existing report*, first download the report file to your local drive, edit it, and then upload it to the DME server again (see ***Edit report*** on page 210).

DME upgrades

Whenever DME releases a server upgrade (a new version or a Service Pack), the template reports shipped with DME are included in the database of the new installation. The reports may have been amended compared with the previous version, or new ones added. When you launch DME for the first time after the upgrade, any *new* template reports are extracted from the database and installed into the report directory. However, in order to not overwrite any customization made by you in the template reports, DME only installs reports that do not already exist in the reports directory:

`C:\Program Files\dme\jboss\server\default\filestore\reports` (Windows)

`/var/dme/instances/base/filestore/reports` (Linux)

This means that if you want DME to install a fresh copy of a report, you must delete the existing report file (`<reportname>.rptdesign`) from the reports directory, and restart the DME server. This will cause DME to re-install the template report from the database and make it available from the DME web interface.

The following sections describe the **Analyzer reports** page menu, which contains functions to manage and view BIRT reports in DME.

Manage reports

This page shows a list of the reports available to the DME system. The reports are grouped into one of four pre-defined categories: **Comparison reports**, **Summary reports**, **Usage statistics**, **User reports**, or in a user-defined category.

The tab toolbar in the **Manage reports** view contains the following actions.

Run report

Run the selected report. This corresponds to selecting a report in the **View reports** window. For more information, see ***View reports*** on page 211.

You must pick a report in the list before selecting this action.

Upload report

Click the **Upload report** icon to upload a new report to the server.

❖ ***Uploading a new BIRT report to the server***

1. Click the **Upload report** icon.
2. Browse to the location of the new report, and select it.
3. Supply a name and category for the report, and click **Save**.

Note that this is for uploading new reports only. If you want to replace an existing report with an updated version of the same report, you must select the report you want to update, click **Edit report**, and upload it from that window. For more information, see ***Edit report*** on page 210.

Edit report

Click the **Edit report** icon to edit details about the currently selected report, or to upload a new version of the selected report.

❖ ***Editing BIRT report details and updating reports***

1. Select a report in the list.
2. Click the **Edit report** icon.
3. In the field **Report name**, you can edit the external name of the report, that is the name shown in the report list.
4. In the **Category** field, select one of the pre-defined categories, or type the name of an existing or new category in the field **New category**. In the report list, the reports are grouped by categories.
5. The field **Report file** shows the physical name of the report design file on the DME server. If your browser supports showing XML, clicking the report file name will display the report design file in XML format.

   If you want to edit the report in the BIRT framework, right-click the link, download the report file to your disk, and load it into BIRT. When you are done editing the report, upload the edited report file for this report by clicking the **Upload report** icon in the tab toolbar.
6. If you select the field **Is runnable**, the current report is visible in the **View reports** list.

   A report which is not runnable is typically a drill-down report, that is a report which is run when you make a selection within another report, for instance clicking a user name in a voice traffic report. The report passes the user name parameter to the drill-down report. The text **[drill-down]** is automatically added to the name of such reports.
7. Click **Save**.

Delete report(s)

To delete one or more reports, select it or them, click the **Delete report**(s) icon, and confirm that you want to delete the selected report(s).

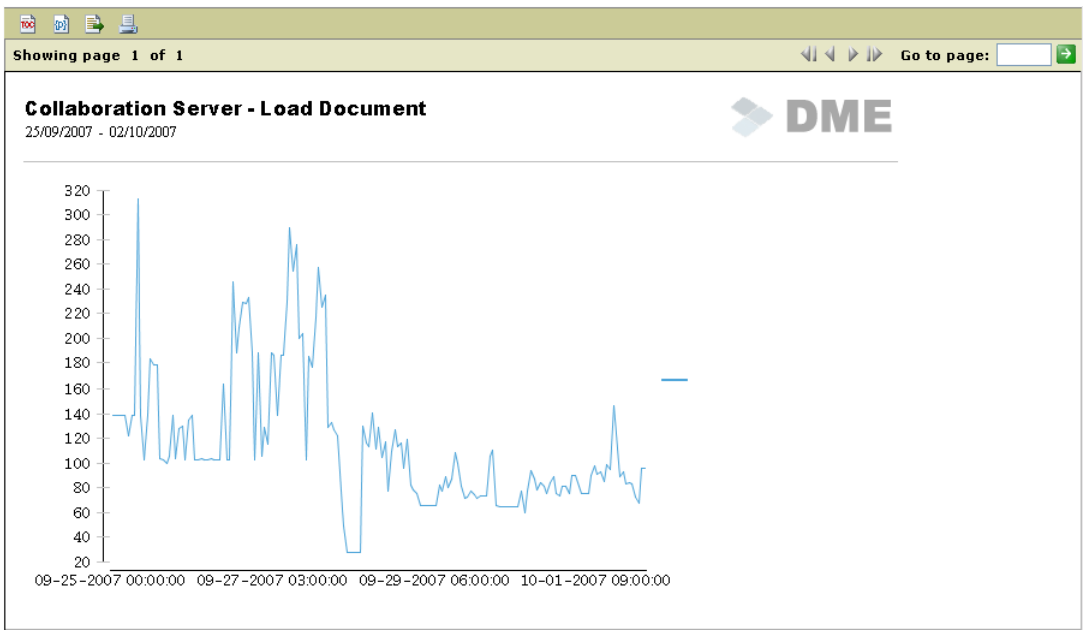
The reports are removed from the report list, and the associated report design files are deleted from the server. Please note, however, that if you delete a standard report (see ***Standard reports*** on page 212) in this way, it will be reinstalled the next time DME is restarted.

View reports

This page lets you choose a report from the **Select report** list. A report is included in the list if it has been uploaded to the server and marked as **Runnable**.

When you select a report, it is run immediately using the date range selected in the **Period** filter as parameter for the report. This means that if you change the date and time and click **Show period**, the report will be run again showing data for the new span of time. Please be aware that in order to run reports that cover a long time span, for instance a year, the DME server must have run without stopping for at least a full day. The BIRT round-robin database needs some time to build a reporting data foundation.

When you run a report, it is shown in a *report window* such as the one shown below.



The report window contains a number of buttons:


The TOC button toggles the Table of Contents on or off. This is not relevant for the standard reports, as they are all one-page reports.


Shows a parameter window. This is not relevant for the standard reports, as all parameters are passed from the server.


Exports the report data to a file with comma-separated values, which can for instance be opened in a spreadsheet application.


Convert the report to PDF format and display it in the browser. This ensures a good result if you want to print the report.

The navigation buttons on the right-hand side of the report window bar are not relevant for the standard reports, as they are all one-page reports.

Standard reports

Currently, DME includes the following standard reports, divided into groups:

Comparison reports:

- **Compare settings**

  Shows groups and devices with settings that are different from the default settings or notification schedule. Clicking the groups or devices lets you edit the group or device in question.

Summary reports:

- **Summary report**

  Shows a summary of a number of DME key performance indicators (KPI's): Traffic totals, top users. response times, memory usage, and service failures. Several of the KPI's include graphs for further details.

- **Devices per OS and model**

  Lets you pick one or all device OS and/or device models, and shows a list of the selected device types. Grouped by device type, details are shown about each device found.

Usage statistics:

- **Client notification methods**

  Pie chart showing the proportion of devices that receive notifications by SMS or network push, respectively.

- **Data usage by operation**

  Shows a breakdown of the total amount of data handled by the DME server into data traffic types, for example e-mail synchronization, application download, etc.

- **Roaming and Domestic calls per month**

  A dynamic cross-tab report showing the relation between roaming and domestic calls per year and month with groups, users in the groups. Numbers are color-coded - more than 500 domestic calls are shown in yellow, more than 1000 are red; more than 50 roaming calls are yellow, and more than 100 are red.
- **Top 25 data users**

  Shows a graph of the top 25 users of data traffic. You can click a bar to drill down to a breakdown of the individual user's data traffic.
- **Top 25 voice users**

  Shows a graph of the top 25 users of voice traffic. You can click a bar to drill down to a breakdown of the individual user's voice traffic by destination country. From here you can drill down to a list of the most frequently dialed numbers within the country in question.
- **Voice calls by country**

  Shows a breakdown of voice traffic by country.
- **Voice usage, for user/country**

  Lets you select a range of dates, a user ID, and a country ID (you can see a list of country IDs in the window **Preferred operators** - see ***Operators*** on page 276) to see a list of phone calls made by that user to the specified country.

User reports:

- **Current country and operator**

  Shows the latest known country and operator for all users.
- **New users**

  Shows new users with device, phone number, date of creation, date of latest sync, and client information within a range of dates.

Device statistics

The **Device statistics** section of the page menu contains one function.

View device list

This function lets you see a list of statistics pertaining to the devices registered in your system. It shows:

- Devices by type, with a count
- Operating systems used, with a count
- DME client versions used, with a count

The illustration below shows a section of the list; the part showing each version of the DME client installed on the server, and on how many devices each version is installed.

DME client version list

DME version	Count
-	2
1.8.1	1
1.8.2	9
1.8.4	1
1.9.0	9
1.9.1	30
1.9.2	22
2.0.2	1
2.0.3	1
2.0.4	1
2.0.5	1
Total	**78**

The list is for information only.

Server

The **Server** tab contains functions and information used for managing the DME server.

If you are using the Web Administration Interface with the role of **DME_Superuser**, you are not able to change the server configuration.

Server configuration

The **Server configuration** panel is a list of grouped settings, which enable you to configure various aspects of the DME Server. After configuring a group of settings, click **Save configuration** to save your settings.

Note that the default values specified here are not necessarily the best values for your setup. Always consult your DME partner or an Excitor consultant before changing the values. The ***DME Support http://www.excitor.com*** site also contains a rule-of-thumb guide to the best settings of key parameters for installations of different sizes.

This is the default page, meaning the page shown when you click the **Server** tab.

Client

 In the **Client** section of the **Server configuration** panel you can configure various aspects of the clients' communication with the server.

Client software database

The **Client software database** group of functions contains the following field:

- **Software push, ticket lifetime (minutes)**

  When software is pushed to the device by SMS or WAP, it is sent in the form of a link to the software on the server. This link will be valid for the specified number of minutes. If you specify "0", the link will always be valid. For information about installing software on clients, see ***Installing DME on existing devices*** on page 143. Default value: 60 minutes.

Connection

The **Connection** group of functions contains the following fields:

- **Client request linger (seconds, client output cache)**

  To keep the DME server from overloading the collaboration server, a mechanism exists to prevent excessive pulling in case of unstable GPRS connections. This setting defines the number of seconds that data to the client should be cached on the server. If a user tries to synchronize before the cache is flushed, the user will get the results from the cache instead of performing an actual synchronization, thus saving a connection to the collaboration server. Default value: 300 seconds. For more information about the cache, see Clients online.

- **Client request timeout (seconds)**

  The maximum amount of time in seconds that a synchronization request can exist before it is returned to the client as a timeout error. This typically happens if the collaboration system fails to respond. Default value: 300 seconds.

- **Max. number of concurrent client processes**

  This setting defines the maximum number of concurrent client connections from the DME server against the collaboration server. Please note this setting only has effect if set higher than `maxThreads` in `server.xml`. Note also that apart from this number of processes, the collaboration server needs to be able to handle the number of notification processes defined in the **Process** section of the **Notifications** setup panel. For more information, see ***Process*** on page 256. Default value: 100.

- **Upon busy server, retry after min. seconds**
- **Upon busy server, retry after max. seconds**

  With these two settings, you define a range of seconds. If a client process has been denied access to the server because the number of concurrent client processes has been exceeded (see above), the server tells the process to try again after a random number of seconds between the minimum and maximum number of seconds specified in these fields.

- **Network minimum keep-alive time (minutes)**

  In this field you can set the minimum time the server should wait before sending a keep-alive signal through the network push port. Default value is 3 minutes. In some configurations, this value and especially the maximum keep-alive time value can cause problems in connection with firewalls, proxies and other network equipment. For more information, see ***Appendix F: AdaptivePush™*** on page 422.

- **Network maximum keep-alive time (minutes)**

  In this field you can set the maximum time the server should wait before sending a keep-alive signal through the network push port. Default value is 30 minutes. The maximum value is 35 minutes. If the server waited longer than 35 minutes, Symbian devices would crash due to a limitation in the Symbian OS.

DM server

The **DM server** group of functions contains the following field:

- **Port**

  In this field you can specify the network port you want to use for OMA DM traffic. If the field is blank, DME uses the same port as for synchronization traffic (**5011** by default). In a DME cluster setup, you may be required to use a separate OMA DM port, if the load balancer cannot handle multiple types of rules (both cookie and URL stickiness in this case). The load balancer needs to keep a persistent connection between the client and the DME server node providing the software requested by the DM engine.

  If you change the port in this field, we recommend using port **5031** - this is the port used in the cluster configuration documentation, which is available at the Excitor Partner website. Note that you may need to change your firewall configuration as well.

Click **Save configuration** to save the current configuration.

Authentication

 In the **Authentication** item of the **Server configuration** panel you can configure how devices are authenticated in the DME system.

Security

The **Security** group of functions contains the following fields:

- **Create device on first connect**

  If this field is set to **True**, the DME server will automatically add devices in the **Devices** tab, the first time a user logs on to the server with a device which is not known to the system already (that is, with an unknown IMEI number). The device is assigned to the user. Unknown users are always created automatically if they pass the LDAP authentication.

  If this field is set to **Locked**, new devices will be created with device ID in the **Devices** tab, but locked and without any user being assigned to the device. This is because no LDAP lookup of the user credentials are made. In order to enable regular synchronization with the device, the device must be unlocked by

the DME Administrator using the function ***Toggle device lock*** on page 61 in the **Devices** tab. Furthermore, if client signing is enabled, the DME Administrator must send a new signing key to the device using the function ***Add client signing key*** on page 71. The next time the user synchronizes his or her device, the device is signed and assigned to the user, and regular synchronization is possible.

If the field **Send mail on creation** below is **True**, the DME Administrator will be notified whenever a device is created or changes users. Note that the device is assigned to a user, which implies that an LDAP lookup must be made.

If this field is set to **False**, you must create devices manually or import them in the **Devices** tab.

- **Automatically created users are initially locked**

  If this field is set to **True**, users who are created automatically (via LDAP) are initially locked, meaning that they are unable to log on to the DME server until the lock is cleared by an administrator in the **Devices** tab. If this field is set to **False**, users can start using DME immediately. Default: **False**.

- **Device allowed to switch users**

  If this field is set to **True**, devices can change hands - users are permitted to log in to any device running DME. If this field is set to **False**, a device is bound to a user, and it cannot connect to the server if the user logging in is different from what is registered in the **Devices** tab. In order for a device to be passed to another user, it must be detached from the user first by a DME Administrator (see ***Detach user from device*** on page 54).

  See also ***Switching users*** on page 80.

- **Allow Basic MDM devices**

  If this field is set to **True**, Basic MDM devices are permitted access to DME. Basic MDM devices do not require authentication, and are created with "anonymous users" in the **Devices** tab. They are used for device management purposes, for gathering traffic statistics, and to some extent for synchronizing files. For more information, see ***Appendix G: The Basic MDM client*** on page 425. If this field is set to **False**, no "anonymous" devices are allowed on the DME server.

- **Client signature**

  In this field you can specify if you want to require signed communication between clients and the server. Client signing is a process where the server confirms that the client is a valid user of the system, before any LDAP/AD authentication of the user takes

place. This prevents Denial of Service (DOS) attacks on the LDAP system.

Client signing builds on a system of public and private keys, issued by the DME server. Each client receives a unique key from the server. When the client connects to DME, the server will verify the key presented to the server by the client. If the key is not validated, access is denied immediately.

For more information about the architecture behind the client signature feature, please request special documentation: "Client Signing" (NDA applies).

- **alse**: The server does not expect the communication between server and client to be signed.
- **ompatible**: The server expects the communication between server and client to be signed, but only for compatible clients, that is DME clients version 2.0 and above running on the platforms mentioned above. This setting should only be used in a transition phase, for example during an upgrade from an earlier version of DME. When a certificate has been installed on all clients, you should change this field to **True**.
- **rue**: Every connection made by the client to the server is signed according to DSS (Digital Signature Standard). This means that before establishing the connection and looking the user up in LDAP, the server verifies that the client is in fact known by the system using a system of public and private keys.

See also **Auto sign** below.

When client signatures are enabled, a challenge can arise when the user changes his or her network password using a PC (not the device). If the network password is changed, the user may be unable to connect to DME. There are two variations of this scenario:

- he DME client has been closed (the device has been rebooted or the DME application has been switched off): In this case, the user must start the DME client, log in using the OLD password, log out, and then log in using the NEW password. If the user tries to verify a new password without having used the old password first (which is stored encrypted on the device), then the DME server will reject the device because the client signature certificate on the client does not match the one on the server.
- he DME client has not been closed since the user changed his

or her network password: In this case, the user must log out, and then log in to DME using the NEW password.

The important thing to remember is that you should not try to "help" the user by removing the signature key from the device in DME. You, the administrator, should only issue a new signature key to the device if the user is unable to log in to the device because the server is unable to verify the new password (because the client certificate cannot be verified by the server).

- **Auto sign**

  If this field is set to **True**, unsigned devices should be provided with a certificate (key pair) when they connect for the first time. If **Client signature** is enabled (see above), you can enable this setting in a transition period until all existing, compatible devices have been provided with a signature. If this field is set to **False**, you must use the tab function **Add client signing key** on page 71 in the **Devices** tab to generate a key pair for a device.

- **Send e-mail on creation**

  If this field is set to **True**, an e-mail is sent to an administrator when a device is created, a device changes users, or a new device signing key is generated. The DME Administrator can then verify the change, unlock any locked devices, or generate new keys for devices. The e-mail address is specified in the **Alert e-mail** section of the ***Collaboration*** on page 221 panel section.

- **Store user password (encrypted)**

  If this field is set to **True**, DME will store an encrypted version of each user's mailbox password in the local DME database. The password is stored the first time a user synchronizes his device. This way DME can employ the user's own password for scanning mailboxes instead of having to grant access to the DME server user. The password is only used for mailbox scans. See ***Collaboration*** on page 221 for more information about the DME server user.

  Note that if you change this setting from **True** to **False**, DME will flush all stored passwords. If you switch it back to **True**, the process of collecting the individual users' passwords starts over. This process requires that the active user sessions first time out in the JBoss application server, and this will take some time - approx. 20 minutes. During this period, those users will be unable to establish a connection from their DME clients.

- **Lock jailbroken/rooted devices**

  DME relies on the clients for information about which clients are jailbroken (iOS) or rooted (Android), and which are not. The client reports that a device is jailbroken or rooted by adding

(Jailbroken) or **(Rooted)**, respectively, to the device name - for instance **iPhone 3GS (Jailbroken)**.

If this field is set to **True**, DME will lock all devices that have been reported to be jailbroken or rooted. When you enable this setting, DME will lock all existing jailbroken and rooted devices the next time they contact the DME server, and create new devices as locked if they are jailbroken or rooted.

If the setting has been enabled, and you disable it again, you must manually unlock the locked devices.

Note: When you manually unlock a locked, jailbroken/rooted device, the device will not be locked again when it connects to the server, and the user can use the device as any other device.

Click **Save configuration** to save the current configuration.

Collaboration

 In the **Collaboration** section of the **Server configuration** panel you can configure how the DME server should manage S/MIME certificates, interact with the IBM Sametime instant messaging system, and send system-generated e-mails.

S/MIME

The **S/MIME** group of functions contains the following fields:

- **Secondary LDAP Certificate Store**

  In this field you can enter the URL to a secondary certificate store based on the LDAP protocol. For instance, VeriSign maintains a list (a public directory) here: ldap://directory.verisign.com. By entering this URL, you entrust an external partner (VeriSign) to maintain a list of trusted public keys. A description of this concept can be found here: http://www.verisign.com/stellent/groups/public/documents/guides/005327.pdf

  This way you do not have to install all root and external certificates on the DME server.

- **Automatically store unknown certificates**

  If this field is set to **True**, DME will automatically store certificates from "external people". External people (sometimes called "other people") are here defined as people who are not users in the DME system. Say that an external accountant sends a signed e-mail to the CFO of your company. The accountant's certificate will then be stripped from his mail and stored here as an external certificate. Now every user in the DME system will be able to receive signed messages from the accountant, and DME certificate

holders will be able to send signed and encrypted messages to the accountant without further setup.

- **Perform CRL/OCSP lookups**

  If this field is set to **True**, DME will look up certificate revocation lists (CRL) and certificate status using the Online Certificate Status Protocol (OCSP) to check if external certificates are valid. However, if the server does not have access to the Internet, you should set this option to **False** to keep the server from attempting something that is not possible anyway.

- **Accept certificate even if CRL lookup fails**

  If this field is set to **True**, DME will accept a public certificate from an external person, even if the certificate's CRL is unavailable at the moment, for instance if the CRL home page is down, or an Internet connection is temporarily down. Note that if the CRL is available, and the external person is found in the CRL, the certificate will naturally still be rejected.

Instant messaging

The **Instant messaging** group of functions contains the following fields:

- **IM server**

  In this field you can enter the path to your instant messaging (IM) server (currently only IBM Sametime is supported). This enables IM presence in the clients, so users of the DME client can see the status of other users of the instant messaging server entered in this field.

- **IM username**

  In this field you can enter the user name used for logging in to the Instant Messaging service user. The service user is used for acquiring the IM status of the users shown in client mailboxes.

- **IM password**

  In this field you can enter the password of the Instant Messaging service user. The service user is used for acquiring the IM status of the users shown in client mailboxes.

SMTP relay

The **SMTP relay** group of functions contains the following fields:

- **SMTP mail relay server**

  This is the external name of the mail server used by DME for sending system administration messages (see **Alert e-mail** below). Note that this mail server must allow relays from the DME server IP address.

  Note also that using a corresponding field on the **Main** section of the connectors' setup page you can set up a mail relay server for

each connector, which will handle system-generated messages about calendar conflicts and name resolution errors. See ***Main*** on page 311.

- **SMTP mail sender**

  In this field you can enter a name you want to show as sender when a user receives a system-generated message as described above. For instance, you can enter **DME Administrator** or similar as sender to make it obvious to the user that the message is system-generated. If you leave the field empty, system-generated messages will be sent with **root@DME-Server** as sender.

  Please take steps to ensure that e-mails from this sender are not evaluated as spam by the recipients' e-mail clients, for instance by instructing the DME users to add this sender to the "Safe Senders list" or similar. E-mail in spam mailboxes is rarely read, and almost never synchronized to DME clients, so there is a risk that important information is missed by the users.

Alert e-mail

The **Alert e-mail** group of functions contains the following fields:

- **E-mail from**

  In this field you enter the sender name of e-mails sent by the server to inform an administrator that a client was created on the server or a new client signing key was generated by the server. The e-mail is sent using the SMTP mail server specified in the field **SMTP mail server** above. As sender name, you can for instance choose the name of the current server. If you leave it blank, DME uses the name entered in the **SMTP mail sender** field above.

- **E-mail to**

  In this field you enter the recipient of the administrative server e-mails mentioned above.

Pre-caching sync. data

The **Pre-caching sync. data** group of functions contains the following field:

- **Pre-cache enabled**

  If this field is set to **True**, pre-caching is enabled on the server. Please note that if you are using a technical user (**DME_Server**) for scanning the users' mailboxes, this technical user must have full access to all the users' mailboxes for pre-caching to work correctly. You are using a technical user if the field **Store user password (encrypted)** in the **Authentication** panel is **False** (see ***Authentication*** on page 217). If this is the case, you must accept a warning about this in order to enable pre-caching.

  See below for an explanation of the DME concept of pre-caching.

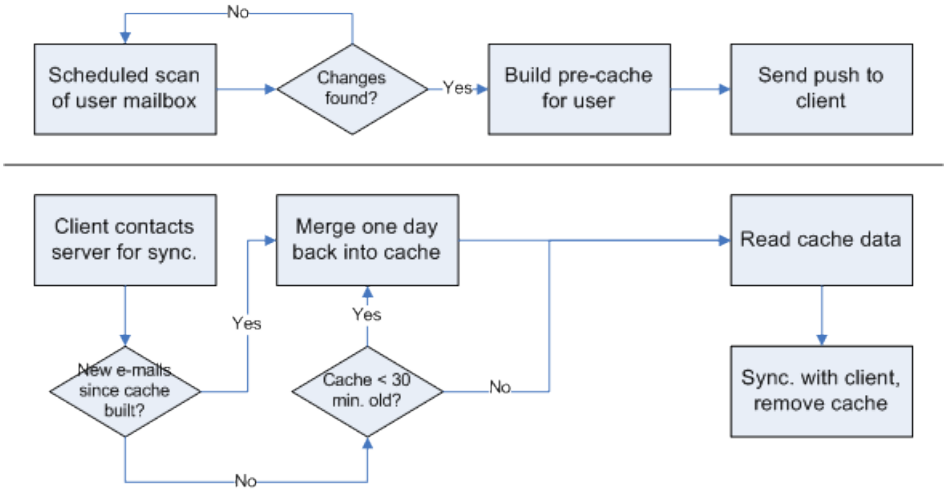
Pre-caching is a mechanism to reduce the time it takes to synchronize e-mails to the DME client. This mechanism was introduced in DME 3.5 Service Pack 7. Pre-caching does not require any new client.

Whenever the notification scanner detects a change in a user's mailbox, a request is sent to the connector in charge of synchronizing that user's e-mail. On receiving the request, the connector immediately begins to build a read-ahead cache where links to the user's e-mails are stored. When the cache is complete, the notification scanner sends a push using Adaptive Push to the client with information that new e-mail has arrived. When the client connects to the server in order to pick up new e-mail, the synchronization request is routed to the pre-built cache, and the new items are immediately available. Before synchronizing, the connector checks if a new e-mail has arrived in the space between the building of the cache and the actual synchronization by comparing the latest e-mail in the cache with the latest e-mail in the collaboration system.

If the cache exists already, it will be used if it is less than 30 minutes old. This means that any changes such as marking read/unread, moving to folders etc. that have been made in the collaboration system within this period of time will not be reflected in the DME client until the next synchronization.

If the cache is older than 30 minutes, the mailbox content from today and yesterday, including changes due to marking read/unread and moving to folders, is read out from the collaboration system and merged into the cache.

The cache is removed when the client synchronizes. See illustration below.



This applies to push, scheduled, and manual synchronization. In case of an import, the cache is never used.

Benefit

The user will experience significantly faster e-mail synchronization when receiving a push, because the server can compare the contents of the client's mailbox with the cache and does not need to contact the collaboration system for anything other than getting the new e-mails (or information about deleted or read e-mails, or whatever is required by the changes discovered in the mailbox). This speed optimization is especially significant on devices that do not support e-mail synchronization as a background process (as in Apple's iOS).

Security

The cache stored on the connector does not include the e-mails as such, only an MD5 checksum and a reference to the e-mail (a so-called *minimal note*). The e-mail content is stored securely in the collaboration system mailstores.

S/MIME

Due to the way in which S/MIME e-mails are handled by the collaboration system, enabling pre-caching will *not benefit* overall system performance if most of your e-mails are S/MIME. In other words, if your users primarily send and receive S/MIME e-mails, you should not enable pre-caching on the server.

Click **Save configuration** to save the current configuration.

Data

 In the **Data** section of the **Server configuration** panel you can view the amount of data used by the DME database, configure the DME data cleanup thread, specify directories for data storage, determine the volume of log entries, set the maximum size of file uploads, and configure the obfuscation of phone numbers in the statistics database.

Database usage

The **Database usage** group of fields shows the current size of three tables in the DME database. The size is shown as a ratio between the current size and the maximum amount available for the table in question. On systems based on the MySQL database, the maximum size is typically 4 GB. On systems based on MS SQL Server, the table size can usually be expanded dynamically, and you must ask your database administrator for information about the maximum size of each table.

- **Log table**

  A graphical view of the ratio between the actual and the maximum amount of data in the log.

- **Statistics table**

  A graphical view of the ratio between the actual and the maximum amount of data in the statistics table.

- **Voice statistics table**

  A graphical view of the ratio between the actual and the maximum amount of data in the voice statistics table.

Log configuration

The **Log configuration** section contains one option:

- **Only show info messages from DME**

  If this field is set to **True**, only information about DME is shown in the log.

  If this field is set to **False**, information from a number of third-party applications will also be included in the log, such as information about JBoss, Domino, CORBA and so on, as configured in the `jboss-log4j.xml` file on the connector. This information is also available elsewhere, that is in other log files. See the documentation for the third-party application in question.

  Default: **True**.

Database maintenance

The settings in the **Database maintenance** group of fields are used by the internal cleanup thread, which cleans out old log entries and statistics that have lost their relevance. This group of functions contains the following fields:

- **Delete log older than (days)**

  This setting specifies how old a log entry must be to be cleaned out of the database automatically. Default is **180**, which is about six months. However, if you run an active system with many users, it is a good idea to reduce the number of days to 90 or even 30 days, as the database log table will otherwise grow very large.

- **Delete statistics older than (days)**

  The functionality of this field is similar to that of the field field **Delete log older than (days)** above, but applies to statistics entries.

- **Delete old log & statistics every (hours)**

  In this field you can specify (in hours) how often the cleanup thread should be launched to clean out old log and statistics entries. Default is **24 hours**, meaning that the server will clean out log entries and statistics older than the number of days specified above daily.

Data storage directories

The **Data storage directories** group of functions contains the following fields:

- **Local data directory**

  The directory in which DME stores local data, including files for synchronization, device images, and device statistics.

- **Local temporary data directory**

  The directory in which DME stores temporary data, such as files being uploaded, temporary cache data, etc.

Data limits

The **Data limits** group of functions contains the following field:

- **Max. file size for upload to server**

  In this field you can specify the maximum size of files uploaded to the server. This limit applies to all files uploaded to the server. A file can be uploaded as a result of a file synchronization rule or as an attachment to an e-mail sent from a DME client, or it can be a DME client uploaded to the **Provisioning** tab.

  If your DME database is a MySQL database, and you increase this value to above the default value of **16 MB**, you will probably need to change the configuration the `max_allowed_packet` value for your database accordingly in order to prevent errors. For instance, if you change the value here to **32 MB**, enter the following command in the database shell:

  ```
  mysql --max_allowed_packet=32M
  ```

  For more information, see the following article on the MySQL home page: ***Packet too large http://dev.mysql.com/doc/refman/5.0/en/packet-too-large.html***.

Statistical data

The **Statistical data** group of functions contains the following field:

- **Hide no. of phone number digits**

  In statistical reports using the BIRT reporting framework it is possible to create reports that allow drill-down to individual phone calls. In many countries, it is not permitted to display the entire phone number in such reports for reasons of privacy.

  In this field, you can enter the number of digits that DME should hide from the phone numbers stored in the statistics database. The phone numbers are obfuscated by replacing the digits with an **X**. The digits are replaced from right to left. If you enter **0** in this field, the phone numbers will be fully displayed.

Click **Save configuration** to save the current configuration.

SMS modem

 In the **SMS modem** section of the **Server configuration** panel you can configure the SMS server attached to the DME server. DME supports Kannel and Now SMS (Windows only) as SMS server. The SMS server was installed together with the DME application, and you can configure some of the options here.

SMS modem

The **SMS modem** group of functions contains the following fields:

- **Phone country code**

  The default phone country code used for the SMS gateway.

- **SMS server**

  The DNS name or IP address of the SMS gateway.

- **Username**

  The user name giving access to using the SMS gateway.

- **Password**

  The password giving access to using the SMS gateway.

- **OMA PIN**

  Some devices require a PIN code to be able to open OMA configuration messages. The default OMA PIN code is "12345". See below and ***Appendix B: Self-provisioning*** on page 392.

- **SMS Service PIN**

  You can permit devices to use SMS codes for initiating downloads of configuration files and software (see ***Appendix B: Self-provisioning*** on page 392). By setting a PIN code in this field you can require that the SMS sent from the device must be followed by a PIN code (to enhance security). If you do this, the download request SMS sent from the device must have the following form:

  `<SMS Code> <PIN>`

  -and be sent to the number specified in the field **Modem phone number** below.

- **SMS gateway POST PIN**

  For enhanced security (to keep third parties from posting to the DME server), you can define a secret PIN code which must be part of the URL for the SMS gateway. This PIN code must be appended to the URL that connects the SMS gateway with DME in

the form **&gateway_pin=<GATEWAY_PIN>** - where **<GATEWAY_PIN>** is the number entered in this field.

If you are using Now SMS, you need to append this to the URL in the field **Command to Execute** in the **2-Way** tab in the Now SMS configuration utility. See the separate document **Integrating Now SMS with DME** for more information.

If you are using Kannel, you need to append this to the URL specified in line 80 (approx.) of the Kannel configuration file **/var/dme/kannel/kannel.conf**. The line contains something like

```
post-xml =
"https://<HOSTNAME>:5011/smsgateway/smsService"
```

After the change, the line should be something like

```
post-xml =
"https://<HOSTNAME>:5011/smsgateway/smsService&gateway
_pin=<GATEWAY_PIN>"
```

Restart the Kannel server after changing the configuration file.

- **Modem phone number**

  The phone number of the SMS modem attached to the SMS server. This is also the number used by the clients to report their phone number to the server, if the phone number in **Settings** > **General** for the device is blank (see **Phone number** in General settings). This means that if this field is blank, devices cannot report their phone number to the server.

  Please be aware that if you are using a web-based SMS service center, and you cannot get SMS feedback from the clients, **this field must be blank** in order to avoid that the client keeps trying to report its phone number to the server.

SMS gateway configuration

The SMS gateway configuration group of functions contains the following field:

- **Choose gateway interface**

  In this dropdown list you can choose which SMS gateway has been installed for sending out SMS messages and SMS/WAP push to the clients: **Kannel** or **Now SMS**. Then fill in the fields that apply to the SMS gateway you have chosen.

Kannel

The settings in this group of fields apply if you have installed Kannel as SMS gateway on the server. See also the documentation for the Kannel gateway.

The **Kannel** group of functions contains the following fields:

- **WAP push path**

  The path to the **WAP Push** script on the Kannel server.

- **OTA path**

  The path to the **Send OTA** script on the Kannel server.
- **SMS path**

  The path to the **Send SMS** script on the Kannel server.
- **Does the Kannel server use delivery reports**

  If this field is set to **True**, Kannel will expect a confirmation message from the operator that each SMS has been transmitted correctly.
- **DME host for delivery reports**

  If the use of delivery reports is enabled, enter the DME host name or IP address open for receiving delivery reports, that is the server where Kannel is installed. If empty, the external DME server address (the "server path" is assumed).
- **Bind SMS gateway input to IP address**

  In this list, you can choose to bind the SMS gateway only to a specific connector or to them all. In this way you can make sure that the SMS gateway can only be accessed from inside the company. The list is built from settings in the server configuration files, which are specified during the installation of DME.

Now SMS

This setting applies if you have installed the Now SMS/MMS Gateway (NowSMS) as SMS gateway on the server. See also the documentation for the Now SMS/MMS Gateway at **http://www.nowsms.com**.

The **NowSMS** group of functions contains the following field:

- **NowSMS server port**

  In this field you can specify the port number for the NowSMS web interface (default is **8800**).

Click **Save configuration** to save the current configuration.

Central Services

In the **Central Services** section of the **Server configuration** panel you can configure feedback to DME Central Services (CS), and turn Apple Push Notification on or off.

DME Central Services (CS) is a customer installation feedback service provided by Excitor A/S. When enabled, your DME server will automatically collect information about your system settings, your device mix, generic usage statistics, and system errors and warnings. This information is posted regularly to the DME CS server, which is run by Excitor. The information is collected from all participating DME customers. Note that this is strictly one-way traffic - the DME Central Services server will never contact a DME server.

With this information, Excitor gets more accurate background data about the server environment of their customers. The information is available to a group of DME support staff, who use it to access up-to-date data when helping our customers, and selected lead developers, who use the data to constantly improve DME.

It is very important to stress that the collected information is completely anonymous. In the **Installation information upload** section below you can read more about which information is uploaded, and how Excitor uses it for your benefit.

Apple Push Notification Service (APNS)

The **Apple Push Notification Service (APNS)** group of functions contains the following field:

- **APNS**

  Set this field to **True** to enable Apple Push Notification Service, which is required for iOS devices to receive push notifications from DME. For more information about further requirements, see ***Notifications on iOS devices*** on page 263.

  Please note that you can disable APNS for individual devices or groups of devices using the **Apple Push Notification** setting in the **Device settings** page (see ***General settings*** on page 366).

Installation information upload

The **Installation information upload** group of functions contains the following fields. Note that all fields are set to **False** by default, so you must enable them to take advantage of the Central Services statistics and error reporting features. Note also that all data that is sent to the CS server is anonymized. For instance, device IDs are hashed so that it is not possible to connect individual devices with their owners.

- **Upload basic installation information**

  If you set this field to **True**, DME will connect to the CS server 2-24 hours after the installation of DME 3.5 SP 3, and 2-24 hours after every subsequent server restart. The two-hour delay enables you to turn this feature off if you have a reason not to keep it enabled.

  The following information about your system is sent:

Server settings: The status of some of the settings in the **Server configuration** panel. Security-related settings from the **Authentication** section are not included.

License information: The number and type of licenses acquired, and how many free licenses are available.

- **Upload basic topology information (requires installation info)**

  In order to enable the collection of topology information, the field **Upload basic installation information** above must be enabled also. If you set this field to **True**, DME will connect to the CS server once every two weeks and send the following information about your system:

  System properties and environment: DME server version, Java version, etc. (largely the information shown in the **Monitor** > **Server properties** section).

  Database properties: Version, type, and JDBC driver version.

  Connector properties: Some of the settings made for each connector (no security-related settings).

  Device properties: For each device, its client version, platform, type, and settings such as what DME features are enabled (e-mail sync, calendar sync, etc.). Device IDs are hashed (made anonymous).

- **Upload usage statistics (requires topology info)**

  In order to enable the collection of usage statistics, the field **Upload basic topology information** above must be enabled also. If you set this field to **True**, DME will connect to the CS server once every two weeks and send the following information about your system:

  Usage statistics: The same statistics that form the basis for the built-in trend graphs on the **Monitor** page. Note again that the statistics are completely anonymous.

- **Upload error/warning log statistics (requires installation info)**

  In order to enable the collection of errors and warnings, the field **Upload basic installation information** above must be enabled also. If you set this field to **True**, DME will scan your system's log files and send the following information to the CS server once a day:

  Errors and warnings: The errors and warnings that occur most frequently (up to 20 of them) are picked out from the log files, and each error is hashed and given a special ID. This ID is then sent to the CS along with a list containing the following information: One instance of the complete error message; a time stamp for each occurrence of the error (max. 500 time stamps); a list of affected

device types and how many times each type is affected by the error.

With this information, Excitor can gain a deeper understanding of how our customers use DME, and what your needs are. This understanding is essential for the future development of DME.

As a more immediate benefit to you, Excitor will analyze the error messages that are reported. With this information, Excitor can build fixes for those particular errors, and send the fixes to those customers that are affected by the error.

The URL address of the DME Central Services (CS) server is `cs.excitor.com`. This cannot be changed. Port **443** (SSL) must be open from the DME server to the DME CS server. DME pings the CS server once every hour. If there is no response from the CS server, a message is written in the log.

Click **Save configuration** to save the current configuration. Click **Start upload** to upload the installation information to the Central Services server immediately.

Web

 In the **Web** section of the **Server configuration** panel you can configure various aspects of the DME server Web administration interface and of logging.

Web administration

The **Web administration** group of functions contains the following fields:

- **Days of statistics shown in Analyzer tab (default)**

  The default number of days for which statistics are shown on the **Analyzer** tab. You can change this value in the date filter in the **Analyzer** tab - see ***Finding information*** on page 184. **Recommended value:** 30.

- **Days of searchable log entries in Log tab (default)**

  The default number of days for which logs are searchable on the **Log** tab. You can change this value in the date filter in the **Log** tab - see ***Finding information*** on page 184. **Recommended value:** 30.

- **Installation name**

  In this field you can specify the name of the installation managed by these administration pages. It is the name shown in title bar of the web browser, typically the name of your company. The name is initially entered by the DME Setup Wizard, but you can change it here.

Note that you can have multiple instances of DME running on the same machine, for instance a production instance and a test instance. Entering different names for different instances makes it easier to distinguish between them.

- **Server name**

  In this field you can specify the name of the server on which the current installation is run. If the server name is empty (default), DME uses the server hostname as defined in the server OS. In a cluster setup, we recommend that you change the name in this field to a short name, which helps you to identify the server easily.

  The server name is printed on every entry in the server log, and can been seen on the entries visible in the **Log** tab. The server name is also added as the first part of the name of the different statistics you can see in the Monitor panel section.

  The inclusion of the server name in log entries makes it easier for a load balancer to distribute the server load and for a fail-over system to cease using a defective server. In a cluster, you set up all servers (virtual or physical) with the same installation name, but different server names. For more information, please request special cluster setup documentation.

- **Refresh user/group membership (minutes or time hh:mm)**

  The way that individual devices are structured into groups is important when notification schedules have been set up for individual groups. For instance, if a user is member of the LDAP group **Sales**, and a special notification schedule has been set up for this group, then it is important that DME knows which users are member of **Sales** in order to notify the users' devices about new e-mail etc.

  DME refreshes the relationship between users and groups by scanning the LDAP/AD system at regular intervals as defined in this field. You can either enter the number of minutes that should pass between each refresh, or you can enter a specific time of day in **hh:mm** format, and DME will then perform the user/group refresh at that time. You could for instance specify that DME should refresh the user/group memberships every night at **02:00**.

  If you want to make sure that the user/group memberships are up-to-date, click the **Run now** button to perform a manual refresh. You may want to do this if you change the relationship of a device to a group (by adding devices to or removing devices from a group, or by changing the priority of a group), or if you switch users in or out of groups in the LDAP/AD system.

- **Server documentation url**

  In this field you can specify the path to the online documentation for the DME server. Excitor A/S maintains a website with the

documentation for the different versions of the DME server and other documentation. By default, the server path is set to **http://documentation.dmesync.com/server/[ServerVersion]**, where **[ServerVersion]** is the version of the current DME server, with underscores replacing the periods - for instance **3_6**. In case firewall restrictions or other issues makes it impossible to access the Excitor documentation site, you can request a copy of the online documentation for installation on the local machine. No Web server is required.

The online help is shown when you click a question mark icon in the page. For more information, see ***Online help*** on page 40.

- **Bind admin site to IP address**

  With this setting, you can choose the port you want to use for accessing the DME web administration interface, typically `8080`. By binding the web interface to a specific port, you exclude access from other ports which are used for other purposes, for instance the `5011` sync port. The chosen port can for instance be configured by a firewall to be available from inside the company only (and not the internet). Please note that you must not choose the port which is used for network push (`5021` by default), as this will lead to undesired effects in the Web Administration Interface.

  The list of available ports is built from settings in the `server.xml` configuration file, which is generated during the installation of DME.

  When you connect to the web interface in a cluster setup, for instance using `https://<path to load balancer>:8080`, the load balancer will direct you to the next available server in the round-robin rotation. If you want to be able to manage a specific server node in the cluster, you must set up rules on the load balancer that forward you to the intended server. For instance, you can forward port `8081` to port `8080` on the `DME-1` node, `8082` to `DME-2:8080`, and so on. Thus, entering the path above with port `8080` will show you a random server, port `8081` will show you `DME-1`, and so on.

  It should be noted that in a cluster setup you can manage any server node in the cluster, and the node will immediately propagate your configuration changes to the other nodes. The only case where you need to see a specific node is when viewing statistics on the **Monitor** page on the **Server** tab, which can only be viewed from the master node. The master node is the node shown first when you view the **Server properties** subtab on the **Monitor** page.

Log

The **Log** group of functions contains the following field:

- **Whois server**

  The **whois** server is used for looking up the provider of the connecting device, translating IP addresses in the **Log** tab to human readable DNS names.

Click **Save configuration** to save the current configuration.

Monitor

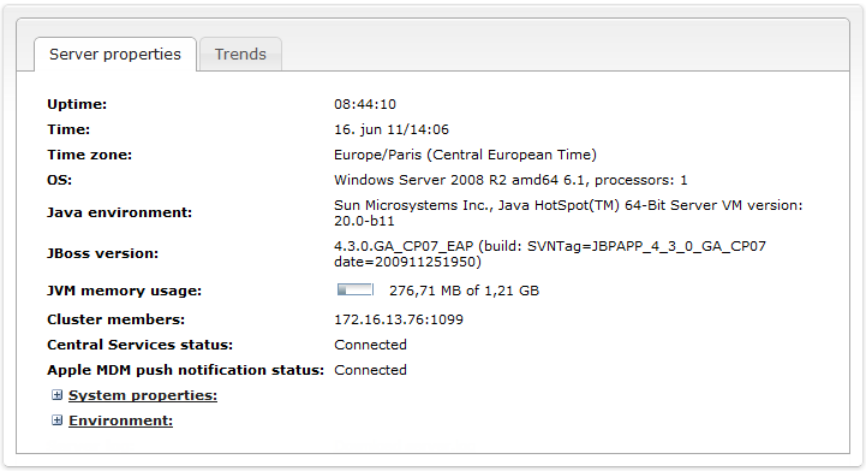
 In the **Monitor** section of the **Server configuration** panel, you can view the properties of the DME server and the different services that the DME server depends on. Furthermore, you can see statistics and trends about server and connector performance.

This information is useful for troubleshooting the server and connectors.

The **Monitor** section is divided into the following two tabs.

Server properties

The **Server properties** tab shows some statistics and environment information about the DME server.



The following information is shown:

- **Uptime**

  The DME server has been running for this amount of time. The time is shown as a number of days plus a number of hours, minutes, and seconds.

- **Time**

  This is the current server time.

- **Time zone**

  This is the current server time zone.

- **OS**

  The full name of the operating system on which DME is installed.

- **Java environment**

  The Java version installed on the server.

- **JBoss version**

  The version of the Java application server JBoss from Red Hat. Note that as of DME 3.5, DME uses the Enterprise Edition of JBoss - in previous versions, we used the Community Edition.

- **JVM memory usage**

  This is the memory usage of the Java Virtual Machine.

  For instance, if the numbers are **1.15 GB of 1.22 GB**, it means the following: 1.22 GB is the maximum amount of memory available for Java objects in the JVM. The JVM itself takes up memory, but that is not included in this amount. Out of the 1.24 GB, 1.15 GB is actually being used by JBoss and DME. Please note that for performance reasons, the JVM will not release memory (from no-longer-used Java objects etc.) until it is necessary, and therefore the usage will often seem to be higher than it actually is.

- **Cluster members**

  This field lists the IP addresses of the online, active members of the DME cluster. The server listed first is the primary server in the cluster (the *master node*). If the master node is down, number two in the list will take over and become the master node. This does not change, even when the original master node is back online.

  If DME is not set up with multiple servers, only the current server is listed in this field.

- **Central Services status**

  If the DME server has been configured to connect with DME Central Services, this fields shows if the connection was successful (**Connected**). Among other things, this has an impact on Apple Push Notification Services. For more information, see ***Setting up notifications on Apple iOS*** on page 266 and ***Central Services*** on page 230.

- **Apple MDM push notification status**

  If an Apple MDM APNS certificate has been installed on the server, this fields shows **Connected**. It is then possible to enroll and configure iOS devices. For more information, see ***MDM on Apple iOS*** on page 126.

- **System properties**

  Click to expand this field. The field shows information about the Java system installed on the server, as reported by Java.

- **Environment**

  Click to expand this field. The field shows information about the server environment as reported by Java.

Trends

The **Trends** tab shows a collection of statistic trends and key performance indicators concerning the DME server and connectors.

The list of statistics contains four columns:

- **Statistic**

  This is the name of the statistic. Click the name to view the statistic (as explained below).

- **Location**

  The DME component to which the current statistic pertains. This could be the DME server, which is shown with a server icon and the name of the server, or a connector, which is shown with a connector icon and the name of the connector.

- **Trend 4h**

  An arrow in this column shows if the trend has been rising or falling over the last 4 hours. The trend analysis is based on a linear regression analysis of the measurements. If the result of the regression analysis is at least 5% above the measured average, the trend is rising, and a grey upward arrow is displayed. If the result is at least 5% below the measured average, the trend is falling, and a grey downward arrow is shown. If no significant change has occurred, no arrow is shown.

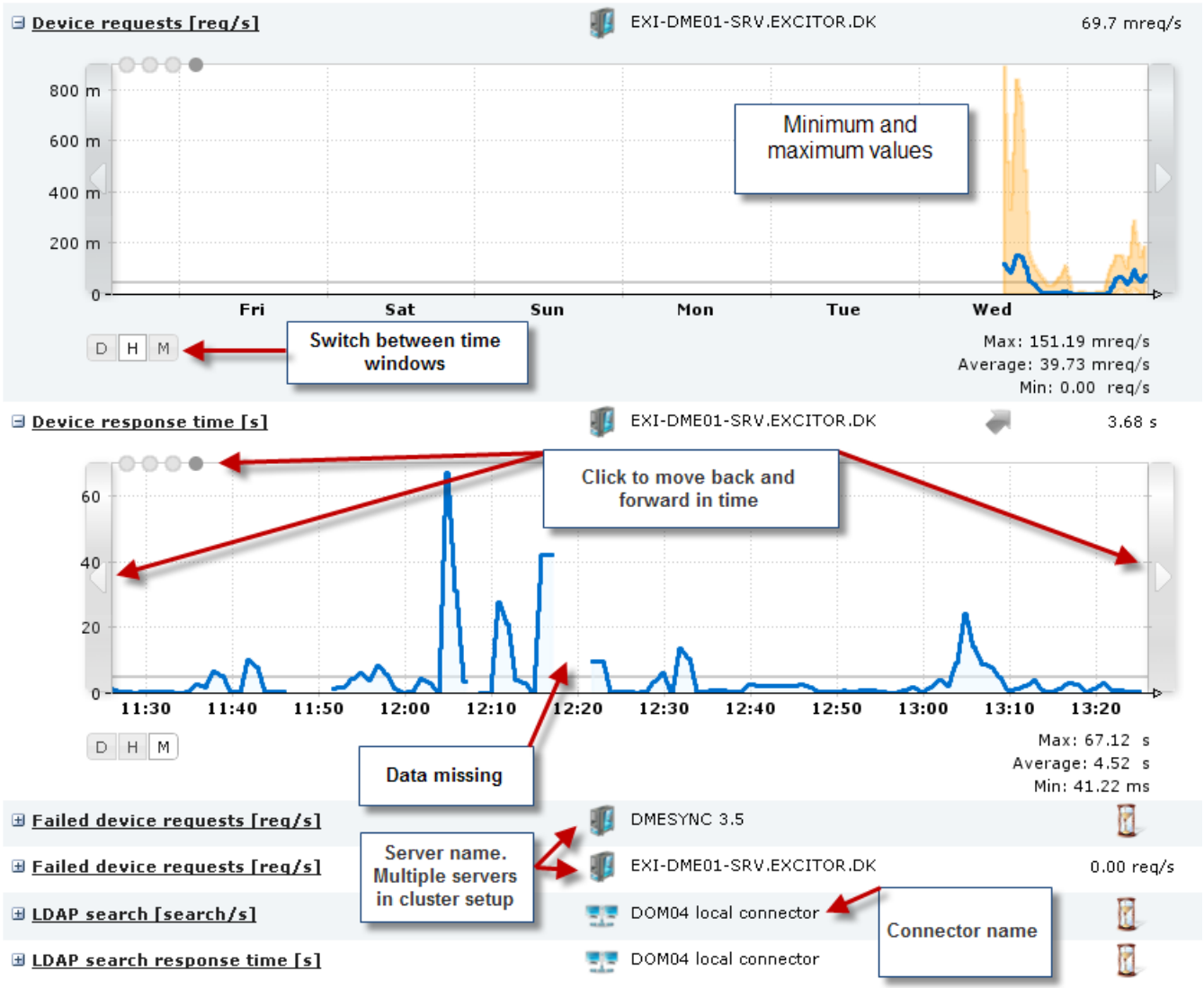
- **Avg 4h**

  This column shows the average over the last 4 hours. An  icon in this column means that the average cannot be calculated due to lack of data.

When you click the name of a statistic, an interactive graph is shown below the name. All statistics are created using the RRD4J tool, which makes use of round-robin databases for dynamic collection and display of data. For a technical explanation of the principles behind the collection and display of data, please see the following tutorial: ***RRD4J Tutorial http://code.google.com/p/rrd4j/wiki/Tutorial***.

Each trend graph contains three *trend blocks*: **Days**, **Hours**, and **Minutes**. You can switch between them by clicking the **D**, **H**, or **M** button at the bottom left of the graph. Each trend block contains four *windows* showing data for a span of time. The **Days** trend block contains a total time span of 2 years, split into 4 windows of 6 months each. The **Hours** trend block contains a total time span of 4 weeks, split into 4 windows of 1 week each. The **Minutes** trend block, which is the default view, contains a total time span of 8 hours, split into 4 windows of 2 hours each.

Clicking the grey, vertical bars to the left and right of the graph moves the window back or forward, respectively. You can also click one of the grey dots at the top left of the graph to select one of the four windows. Note that when you move between windows, *the Y axis scale may change*. When the latest window is displayed (dot no. four is selected), the graph will be updated automatically. There is no need to press **Refresh** to update the graph. In fact, if you refresh the browser page, all open graphs will close. Below the graph are the statistics for the window shown in the graph.



DME collects data every minute (this is called the *sample time*). This is important when you want to understand the numbers. For instance, the graph may show that 4.3 database connections were open at a given point - such a number only makes sense when you remember that the number of connections was measured once every minute, and an average calculated. The graph is drawn using linear interpolation - a straight line is drawn between each measuring point (minute) to create the graph (instead of drawing only vertical and horizontal lines, for instance, or only drawing lines between every other measuring point).

The calculated average for the current view is shown as a thin, grey line across the graph. If more than 50% of the data in the view is invalid (typically if there are no data for a period of time), no average is calculated. This accounts for any "holes" in the graph.

Below the graph are the **Max**, **Average**, and **Min** values of the current window. The numbers are reflected directly in the graph - the **Max/Min** values are the highest and lowest points of the blue line, and the **Average** equals the grey line. In the **Hours** window, the peak and low values of individual samples are shown with an orange color, and the blue line shows the average of 60 sample values.

In the following, each statistic is described briefly.

Authentications [auth/s]

Shows the number of authentications per second performed by the current connector.

Authentications response time [s]

The time it takes to perform one authentication operation.

Device web threads usage [%]

Shows the percentage of the threads allocated to the Tomcat web server that are actually in use. The maximum number of threads is set up per connector by altering the `MaxThreads` value in the `server.xml` file (located in `/var/dme/instances/base/deploy/jboss-web.deploy`).

Collaboration items [items/s]

A collaboration item can be one e-mail, one contact, one calendar entry etc. The graph shows how many items are read out per second from the collaboration system.

Collaboration item response time [s]

The time it has taken to read out one collaboration item (one e-mail, one contact, one calendar entry etc.) (total number of items in sample/total time in sample).

Tasks [s]

How many *tasks* are performed by the current connector per second. A task is a connector operation such as a settings sync., an e-mail sync., an connector info request from the server, etc.

Task response time [task/s]

How many seconds does it take for one task (e.g. a sync operation) to be performed by the connector.

Thread usage [%]

A thread is a process on the connector. The maximum number of threads is set up in the **Main** panel section of the connector setup page. The graphs shows the percentage of the threads allocated to the connector that are actually in use.

Database connections usage [%]

Shows the percentage of the available database connections that are actually in use by the DME server. The maximum (and minimum) number of database connections can be set up in the `dmebaseDB-ds.xml` file, which is located in `/var/dme/instances/base/deploy`.

Device network data [b/s]

How many bits per second are moved between device and connector. The amount of data corresponds to the values shown in the **Data received** and **Data sent** entries of the **Network** category in the **Log** tab.

Device requests [req/s]

How many requests were sent from devices per second. A request is any communication from the server - sync, time zone request etc.

Device response time [s]

How many seconds it takes to respond to one device request (total number of requests in sample/total time in sample).

Failed device requests [req/s]

How many requests sent from devices have failed - per second. A request is any communication from the server - sync, time zone request etc. A request can fail due to server timeout or lack of authorization.

Rejected (please retry) device requests [req/s]

How many requests sent from devices were rejected by the server - per second. A request is any communication from the server - sync, time zone request etc. A request can be rejected due to a server timeout or because the same request had already been submitted (e.g. a manual sync sent just after a scheduled sync).

LDAP search [search/s]

The number of LDAP searches performed by the current connector per second. An LDAP search comprises almost any communication with the LDAP, including user lookups.

LDAP search response time [s]

The time it takes to perform one LDAP search by the current connector per second. An LDAP search comprises almost any communication with the LDAP, including user lookups.

Network push [push/s]

How many push notifications have been sent per second from the DME server through the network push connection to DME client devices.

iPhone push [push/s]

How many push notifications have been sent per second from the DME server through the Apple Push Notification Service to iOS devices.

Connected network push [devices]

How many devices have been connected to the server over the network push connection, and when.

Network push connection lifetime [min]

For how long time have the devices been connected over the network push port. A high number is sign of a healthy system. Some firewalls disconnect the network push connection after a number of minutes. To steer around this, you can set the maximum (and minimum) "keep-alive time" in the **Client** panel section of the **Server configuration** page.

Memory used [B]

This is the JVM memory heap used. In the **System properties** tab of this page you can see the current value for the server. This graph shows memory usage over time. A memory usage graph exists for both server and connectors.

Notification scan tasks [task/s]

How many notification scans are performed per second.

Notification scan tasks response time [s]

How long time does it take to perform one scan (total number of notifications in sample/total time in sample).

Skipped notification scan tasks [task/s]

The number of notification scan tasks that were skipped per second. Notification scans can be skipped (postponed) for a number of reasons - if the scanned resource is disabled; if the device is roaming; if a pending flag has been set for the client.

Send SMS [SMS/s]

How many SMS text messages are sent by the server per second.

TEM integration

 In the **TEM integration** section of the **Server configuration** panel you can configure the integration with third-party CDR/TEM partners. A CDR (Call Data Record) or TEM (Telecom Expense Management) partner can analyze the voice, messaging, and data traffic of your DME clients, and return accurate statistics and numbers to you.

The integration can also be used to refine the DME Cost Control system, in which the DME users are given immediate warnings when their phone bills reach a certain limit, to allow more accurate figures. Without the integration, the DME server only stores the *balances* incurred by each user in order to be able to warn the user. To get the accurate statistics separated into usage types etc., you need the TEM integration. For more information, see ***Appendix H: DME Cost Control*** on page 430.

Telecom Expense Management partner

The **Telecom Expense Management partner** group of functions contains the following fields:

- **Enable TEM partner integration**

  If this field is set to **True**, you enable the integration with your TEM partner. At the time of writing, DME is working with Teleopti, a leading provider of solutions for strategic Workforce Management (WFM) and Telecom Expense Management (TEM), on creating full TEM integration.

  By enabling the integration, you agree to forward traffic statistics from the DME clients to the TEM integration partner.

- **URL for TEM partner web service**

  In this field you can specify the URL for the web service provided by your TEM partner. When TEM partner integration is enabled, DME will use this URL when transferring traffic statistics to the TEM partner and retrieving aggregates and numbers from the TEM partner.

Click **Save configuration** to save the current configuration.

Notifications

Clicking the **Notifications** page menu entry opens the **Data notification** panel. This panel is a list of grouped settings, which makes you able to configure the DME Notification Framework. The notification framework is enabled or disabled in the field **Status** in the Process panel section (see ***Process*** on page 256).

Please note that special considerations apply to Apple iOS devices. See ***Notifications on iOS devices*** on page 263 for more information.

The notification framework

The notification framework is the system by which DME scans the collaboration system and other systems for changes and lets the clients (devices) know that changes have occurred. This scan takes place periodically, and the frequency of the scan can be adjusted for each DME *resource*. DME operates with the following resources:

- **E-mail** (including e-mail folders)
- **Calendar**
- **Contact**
- **To-do**
- **Notes (Journals)**
- **System information**
- **Files**
- **RSS**

Each of these resources is described later.

The flags

The frequency, priority, and other settings for the scanning of a certain resource is called a scan *scheme*. For each scheme, and for each device, DME keeps track of when the system needs to scan for changes again. You can see the time of the next scan in the **Schedule** section of the individual devices in the **Devices** tab (see Schedule).

When a scan is run, a change may be found (as described in ***Scanning*** on page 247).

- *If no change is found:*

  The time of the next scan is calculated based on the scan scheme, and nothing more is done.

- *If a change is found:*

  A flag is raised for the device in question. The device now has a *pending notification*, which can be seen in the **Pending** panel section for all devices (see ***Pending*** on page 262), or in the **Pending** subtab of the **Schedule** section of the individual devices

(see Schedule). The flag shows the type of the resource for which the scan was made, for instance a **Sync. e-mail** notification.

Furthermore, the scan for the scheme in question requires minimum resources, as it only checks for the presence of the Pending flag and moves the time of the next scan into the future.

The *Pending* flag will be cleared in the following cases:

- When the device performs a synchronization of the same type as the pending flag (as mentioned above), either due to a scheduled sync., a push, or a manual sync. This is the regular way to clear a flag.
- When the flag's time to live (TTL) expires. In the field **Process cache TTL** in the **Process** panel section, you can set a maximum time to live for these pending flags. This is to clean up the list of pending notifications if the device for instance is turned off. If the same device keeps producing notifications which are not cleared by a synchronization, but only because the TTL expires, the system can be configured to not scan devices after a certain number of such notifications. When this happens, the pending flag becomes a *permanent pending flag*, and no more notifications are set for the device until the flag is cleared by a sync. See ***Process*** on page 256.
- If the synchronization scheme is reset. This is done by selecting the action **Reset schedule(s)** in the **Schedule** panel section, either in the **Server** tab (for all devices) or when editing a group (for a group of devices). See ***Schedule*** on page 246. See also below for reasons to reset the scheme.

After the flag has been cleared, the time of the next scan is calculated from the scan scheme, and the process starts over.

Suspension of notifications

The DME server may stop sending notifications for specific devices in the following events:

- If the device is roaming, and the setting **Notification scan when roaming** is set to **Disabled**.
- If the particular resource is disabled in the settings for the device. For instance: If a general scan scheme has been set up for **Files**, but the synchronization of files is disabled for the device, DME will scan for that resource much less frequently.
- If the maximum number of notifications has been reached (see ***Notification*** on page 248).

Note that the user will still be scanned, but no notifications will be sent to his or her device.

Error handling

Sometimes, an error may occur during scanning. This can for instance happen if the DME database cannot be reached, or the collaboration system is being restarted, or if DME cannot access a user's mailbox. DME distinguishes between two types of errors:

1. *Login errors.* This is when DME cannot log in to the collaboration system for some reason. In this case, the scan is suspended for 30 minutes. If the error arose because a user with credentials stored on the DME database could not log in, the credentials of the user in question are furthermore erased from the database. This is in order to prevent the scanner from accidentally shutting the user out of the collaboration system and, by extension, the network - which might happen in some types of setup if the scanner tries too many times without success. The scanner will automatically restart when the user synchronizes his or her device.
2. *Other errors.* If any of the subsystems are down, DME will attempt to scan again after 2 minutes, then after 4 minutes, then after 6 minutes, and finally DME will keep retrying the scan every 1 hour.

If an error condition has occurred, and you resolve the error, you do not have to wait for the scanner to discover this after perhaps a full hour. Instead you can select the action **Reset schedule(s)** in the **Schedule** panel section to force DME to restart the scanner immediately. The time of the next scan for the affected resources and devices is then recalculated, and the timer is started again. Note that this action is available at all levels (default in the **Server** tab and for groups and individual devices in the **Devices** tab).

Schedule

In the **Schedule** section of the **Data notification** panel you can define the default *schedule* for all devices. If you need to specify a different schedule for an individual device or a group of devices, you can do so in the **Devices** tab.

The notification schedule includes different types of information:

- The *resource* to which it applies (see ***Scanning*** on page 247).
- The *method* by which the devices are notified of changes (see ***Notification*** on page 248).
- The *scheme* of the notification cycle (when the scan is run - see ***Frequency*** on page 248 and ***Setting the scheme*** on page 251).

The schedules defined create scan jobs, which are fed into a scanning queue. This queue can be seen in the **Clients** section (see ***Clients*** on page 254).

Scanning

Scanning is the process where DME checks to see if a change has occurred in the collaboration system or in DME, affecting the device being processed. If a change has occurred in the collaboration system, DME will notify the device about the change as a push (if enabled), and raise a "flag" that a change has occurred. This flag is detected if the device is pushed or polls for changes, and removed when the synchronization has taken place. You can monitor the scanning process in the sections ***Clients*** on page 254, ***Process*** on page 256, History, and ***Pending*** on page 262. If the user initiates a manual synchronization, a full scan is always performed.

A change may occur in several different areas, called *resources*:

- **E-mail**: Has a new e-mail arrived in the user's mailbox, or has a change in the e-mail folder structure occurred? Has an out-of-office rule been created, changed, enabled, or disabled?
- **System information**: Has a change been made on the DME server, which affects the device? This could be a change in a setting, an application block, or a Mark for Installation.
- **Calendar**: Has a meeting been created, deleted, accepted, declined, or updated?
- **Contact**: Has a contact been created, deleted, or updated?
- **To-do**: Has a to-do been created, deleted, or updated?
- **Files**: *(requires special license)* Has any file sync. rule detected that one or more files should be synchronized?
- **Notes:** *(Domino only)* Has a notebook or a note (also known as a *journal*) been created, deleted, or updated?
- **RSS**: *(requires special license)* Has an RSS feed been created, or have new articles appeared in an existing feed?

One or more scanning schemes can be set up for each resource individually.

In order to know if a change has occurred for any of the resources except **System information**, **Files**, and **RSS**, DME scans the mailbox of the user who holds the device. The mailbox scan can take place in one of two ways:

1. **DME_Server** technical user scan: A technical user, usually called **DME_Server**, has access to all mailboxes. The mailboxes are then scanned for changes through this user. The technical user is specified in the **Collaboration** section of the **Server configuration** panel (see ***Collaboration*** on page 221).
2. Scan using individual users: The credentials of each user are used for scanning the mailbox of the user in question. The advantage of this is that no single user (the technical user) has access to all mailboxes. However, the credentials of each user must be stored

in the DME database (heavily encrypted). See also the description of the **Store user password** field in the **Authentication** section of the **Server configuration** panel (see ***Authentication*** on page 217).

The choice of mailbox scan method will depend on company policies. See collaboration system integration documentation for information about how to set up Domino or Exchange to match the selected choice.

If a change has occurred, a notification may be sent to the device - depending on the schedule setup (see ***Notification*** on page 248).

Frequency

For the **Calendar** and **To-do** resources, a distinction is made between a *fast scan* and a *full scan*. As the name implies, the fast scan is a quick way to see if any change has occurred in the immediate future. The full scan is a more thorough, but also more time consuming process.

For **Calendar** and **To-do** resources, a synchronization is scheduled if:

- **Fast scan**: A calendar entry for today or tomorrow is changed.
- **Full scan**: Any calendar entry is changed within the entire span of time defined in the client settings (the *synchronization window*).

For all other resources, there is no difference between fast and full scans.

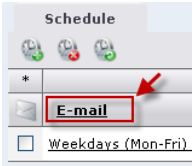
The frequency setting does not apply to schedules that are based on Exchange subscriptions. Every 45 minutes a process is run to verify and clean out unused subscriptions.

Notification

For each resource, you can specify different notification options.

- ***Setting notification options***

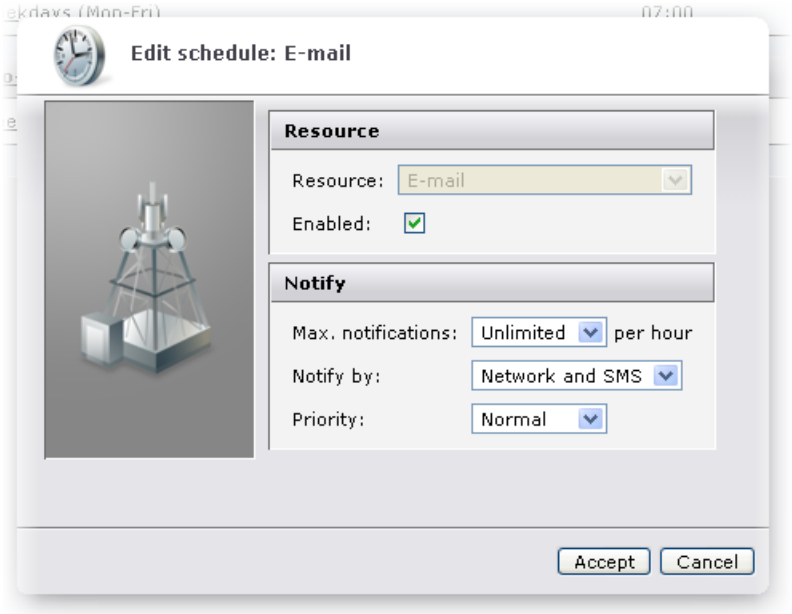
1. In the **Schedule** section of the **Notifications** panel, click the resource whose options you wish to change, for instance **E-mail**:



or

If the resource is not shown, click the **New schedule** icon  to create the resource in the list, and then click the resource link.

The popup window **Edit schedule: E-mail** (depending on the resource you selected) is shown.



While you are editing the schedule, the scheduled resource is disabled (not used by the scanner), and the text "[*disabled*]" is added to the resource heading, for instance **E-mail [** *disabled* **]**.

2. If you select the check box **Enabled**, notifications for the resource in question are enabled.

   If notification is disabled, the affected client(s) will not receive any notification of changes within the resource in question. Note that notification can be enabled or disabled at all levels (system, group, and device).

3. In the drop-down list **Max. notifications**, select the maximum number of notifications you want to send to the devices per hour: **3**, **5**, **10**, or **Unlimited**.

   The number of notifications per hours is calculated as a floating time window. For example: You have chosen to send a maximum of 3 notifications per hour. Say a user receives one new e-mail every 10 minutes. DME will then send a notification to the client in question according to the following table:

Time	DME server action
10:00	"New mail" notification sent to user.
10:10	"New mail" notification sent to user.
10:20	"New mail" notification sent to user.
10:30 - 11:19	No action.

11:20	"New mail" notification sent to user, telling that 6 new mails have arrived (one every ten minutes since 10:20).

This way you can save SMS traffic costs. Note that if you use network push (see below), you can safely set the value to **Unlimited**.

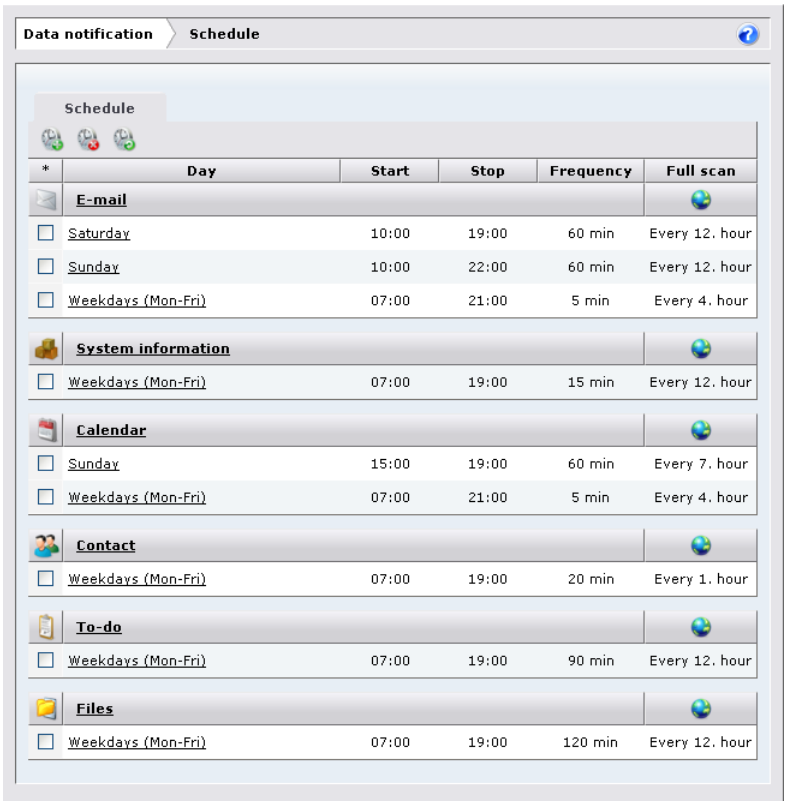
1. In the drop-down list **Notify by** you can choose the mechanism to be used by DME when notifying the device about changes. You can choose between the following options:

   - **nly Network**: Notification is only sent as network push, that is by IP over the HTTP or HTTPS protocol.
   - **etwork and SMS**: AdaptivePush™ notification - a network push as above is first attempted, and if this is not possible for any reason, an SMS is sent to the device instead. A network push may be impossible due to misconfiguration, if the device is off, or if the device does not have network access. Note that SMS push may be disabled for individual users - see Toggle push to device.

   For more information about adaptive push over the network, see ***Appendix F: AdaptivePush™*** on page 422.
2. In the drop-down list **Priority** you can set the default scan priority. The selected priority (**High** - **Normal** - **Low**) instructs the server how to rank mailbox scan requests on the server. These requests can be seen in the **Clients** section of the **Notification** panel - see ***Clients*** on page 254.
3. Click **Accept** to save the changes to the notification schedule.

Setting the scheme

When you open the **Schedule** section of the **Notifications** panel, an overview of the scan cycle scheme for each listed resource is shown:



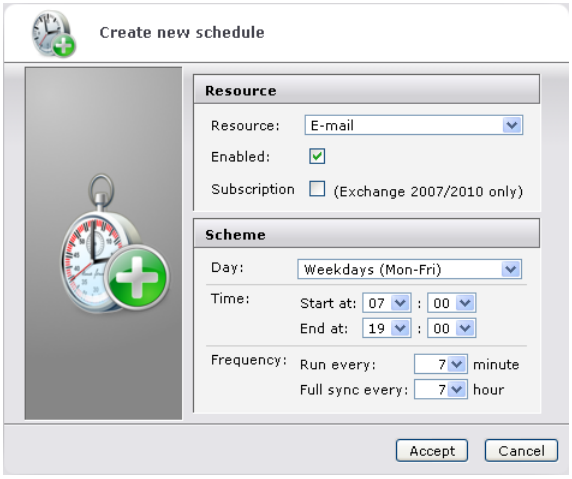
The overview shows the name of the resource and the scan cycle(s), or *scheme(s)*, defined for the resource in question. The schemes are shown with the day or days and time frames within which the scans take place, the frequency of fast scans, and the frequency of full scans.

If the scheme name is followed by the text **(subscription)**, the current scheme is an Exchange push subscription. For more information, see below.

❖ ***Setting and editing a notification scheme***

1. Click the **New schedule** icon  .

The **Create new schedule** dialog is shown:



2. In the **Resource** drop-down list, select the resource for which you want to create a new notification schedule. The resources are described in the section ***Scanning*** on page 247.
3. The **Enabled** field allows you to disable the scanning scheme so that it is not included by the scanner.
4. **Subscription**: If your collaboration system is Exchange 2007 or 2010, you can choose to subscribe to Exchange notification events for e-mail, contacts, calendar, and to-do schedules. DME will then listen to events from the Exchange server, and create a notification to the client if applicable. A notification is always created in case of *new* e-mail events; a notification is created in case of *update*, *delete*, or *new* calendar/to-do events if the calendar item is within the client's calendar/to-do synchronization window; and a notification is created in case of *update*, *delete*, or *new* contact events.

   Note that as of DME 3.6 SP2 the clients will receive a notification for every event (every time they receive a new e-mail for instance). See the description of the **Process cache TTL** field in ***Process*** on page 256.

   If you choose to base a schedule on Exchange subscriptions, the **Frequency** fields below change to 45 minutes and 24 hours, respectively. You cannot change these values. Furthermore, the text **(subscription)** is added to the name of the scheme in the **Schedule** section, and the **Frequency** and **Full scan** columns display a dash (-). The **History** panel section shows information about notifications created from subscriptions - see History.

   When a subscription schedule is created, a subscription URL is sent to Exchange. This subscription URL is set on the DME Exchange connector. See Functions.

   DME subscribes on a per-user/per-resource (e-mail, calendar, contact, to do) basis. If you define a schedule from 07:00 to 19:00,

DME will send **X** subscription requests times the number of resources, where **X** is the number of users at 7:00, and will then send an unsubscribe command at 19:00. This could potentially amount to a large amount of notifications. If you define a 00:00 to 23:59 schedule, then only 1 subscription per user per resource type is sent.

5. In the **Day** drop-down list, select the day in the week on which the scan should be run. You can choose among the following options:
   - **onday** through **Sunday**
   - **eekdays (Mon-Fri)**
   - **very day**
6. **Time**: In the fields **Start at** and **End at**, specify the time of day within which the notification scan cycle should be run. For instance, if you choose 07:00 to 17:00 on weekdays, the devices to which the schedule applies will not receive notification of changes within the current resource outside regular working hours. The user of the device may, however, choose to do a manual synchronization at any time to check for new items. Furthermore, you may choose to define an additional schedule with less frequent scans to cover off hours.
7. **Frequency**: In the field **Run every**, you define the frequency of fast scans for the resource in question (see ***Frequency*** on page 248). Specify the frequency in minutes. Note that you cannot set a frequency for Exchange subscription schemes.

   The amount of minutes specified in this field should be divisible by the amount specified in the **Full sync every** field below, converted to minutes. DME schedules the scans to occur every number of minutes specified here, with the scan occurring on the hour specified in **Full sync every** being a full scan. If the full sync does not occur on the same minute as the regular scan, the schedule will in effect be reset every time a full scan is performed. This does not impact performance much, but it is best to specify the value in the **Full sync every** field as a multiple of the number of minutes in **Run every**. Values such as 2, 3, 5, 10, 15, 20, and 30 will always work, because all these numbers can be divided into 60 (one hour).
8. In the field **Full sync every**, you define the frequency of full scans for the resource in question (see ***Frequency*** on page 248). Specify the frequency in hours. Note that the full scan applies to the **Calendar** and **To-do** resources only.

9. Click **Accept** to add the notification schedule to the resource in question.

Note that the schedule only applies to automatic synchronization (push and pull). In case of manual synchronization from the client, and in case the client has created new items (such as an e-mail), a full synchronization is always performed.

To edit an existing scheme, click the scheme. The dialog is the same as when creating a new scheme, except that you cannot change the resource type.

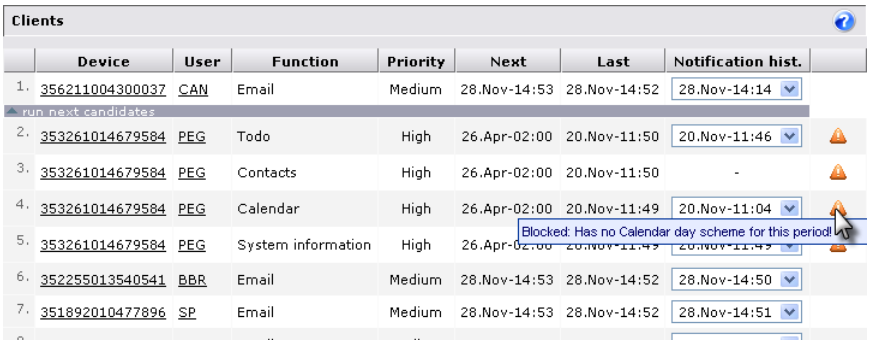
To delete a scheme, select the scheme or schemes to be deleted by clicking the check box next to the scheme name. Then click the **Delete schedule** icon  , and confirm the deletion.

To reset a scheme, mark the scheme or schemes to be reset by clicking the check box next to the scheme name. Then click the **Reset schedules** icon  , and confirm. See ***Notifications*** on page 244 for reasons to do this.

Clients

In the **Clients** section of the **Data notification** panel you can view information about the scanning to be performed for clients. A *client* is a term used for the connection between one user and one device.

The list shows a maximum of 50 scans. The text **<more>** at the bottom of the list simply indicates that more scans are pending (the list could contain thousands of entries).



This section shows an overview of which users' mailboxes are to be scanned next according to the current notification schedule. This is called the *scan queue*, and the list contains the following information:

- **Device**

  The current device of the user whose mailbox (or file sync. rules or system information) is to be scanned. Click the device to see how the device is set up. If you let the mouse pointer rest on a

device link, a box with more information about the current device is shown.

- **User**

  The user whose mailbox (etc.) is to be scanned. Click the user to see more information about the user. If you let the mouse pointer rest on a user link, a box with more information about the current user is shown.

- **Function**

  The resource being scanned: **E-mail**, **Calendar**, **Contacts**, **To-do**, **System information**, or **File**.

- **Priority**

  The priority here reflects the corresponding setting for the device - either **Low**, **Medium**, or **High**. See Schedule.

- **Next**

  When is the next scan scheduled. Scans that are being passed to a scanning thread are shown above a thin grey line with the text *run next candidates*.

  The scan time is color coded. It the timestamp is green, the time for the next scan is close to "now". If it is 1 minute behind "now", the timestamp is yellow - or if your sample time as defined in the **Process** section is more than 1 minute, it becomes yellow when the sample time has passed. If it is more than 5 minutes behind, or if the sample time is greater than 5 minutes and the sample time has passed, the timestamp is red. You can use this information to determine whether you need to adjust notification settings (see ***Process*** on page 256).

- **Last**

  The date and time of the last scan.

- **Notification hist.**

  A historic list of the last notifications sent to the device in question. The number of notifications shown in the list depends on the setting of the field **Max. notifications per hour** in the **Schedule** panel section in the **Server** tab or for individual devices (see ***Schedule*** on page 246). If, for example, a maximum of 5 notifications are sent per hour, the notification history list will record the time of 5 notifications. If **Unlimited** is selected, this window will not show any notification history.

- **(no name)**

  The last column shows an e-mail icon, calendar icon, or to-do icon if the device has a pending notification. If it does, it is moved to the bottom of the scanning queue. Furthermore, a warning icon or

information icon may be shown. In this case, point the mouse to the icon to see the warning or information message.

For more information about pending notifications, see ***Pending*** on page 262.

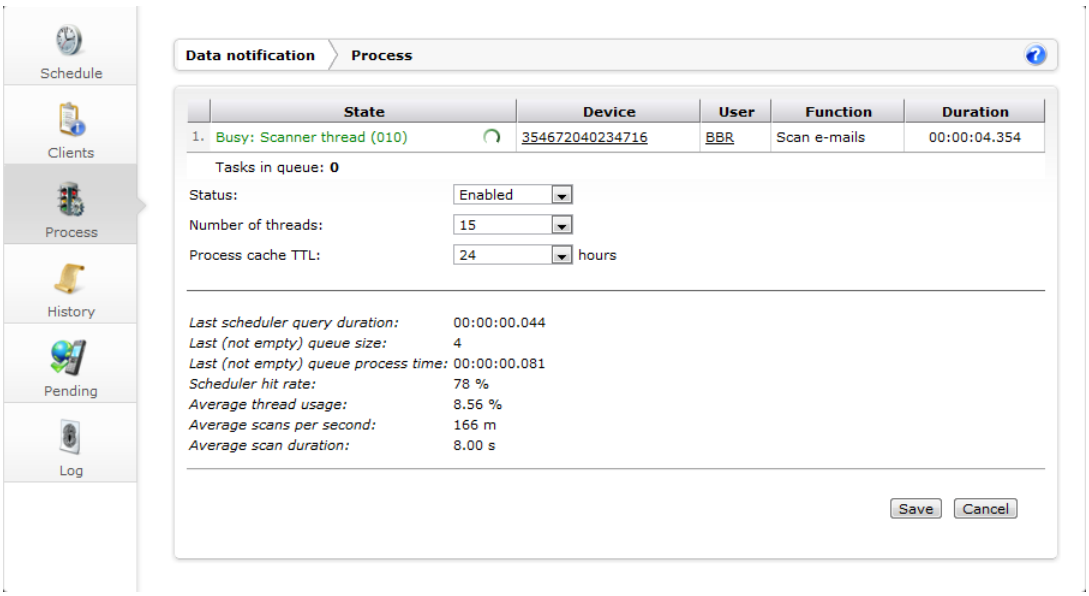
The jobs scheduled for scanning are processed by *notification scanner threads*, which can be monitored in the **Process** section. See ***Process*** on page 256.

Process

In the **Process** section of the **Data notification** panel you can specify features of the way DME scans the collaboration system for changes in users' mailboxes etc. You can turn scanning on or off, and you get a live view of the scanning processes (the *scanner threads*).

Each time the notification scheduler is run (see ***Notifications*** on page 244), it finds out which users' mailboxes need to be scanned, and for what. For instance, it may be time to scan the calendar for 20 users. All these *scanning tasks* are placed on the queue shown in this section. Each scanner thread takes care of one scanning task. The number of tasks currently on the queue is shown at the bottom of the table after the text **Tasks in queue**.

DME makes use of a so-called a *command stack* - a list of commands to be processed when the client connects to the server. For more information about the command stack, see the next section: ***Command stack priorities*** on page 259.



The table part shows the currently busy threads - up to the number specified in the field **Number of threads** below. If the server is currently not scanning the collaborations system, no threads are shown. If any scanning tasks are waiting to be processed (apart from the ones shown in the table), then the number of tasks in queue is displayed below the table. The number shows the difference between the total number of current scanning tasks and the the number specified in **Number of threads**.

Table columns:

- **State**

  This column shows that a thread is active. This is also indicated by an animated thread icon:  . The number in parentheses is an internal number used to identify the thread.

- **Device**

  This column shows the device whose owner's mailbox is is being scanned. If you let the mouse pointer rest on a device link, a box will appear with more information about the current device. Click the device link to view and edit the device in the **Device** setup panel.

- **User**

  This column shows the user name of the user whose mailbox is being scanned. If you let the mouse pointer rest on a user link, a box will appear with more information about the current user. Click the user link to view and edit the user in the **User** setup panel.

- **Function**

  This column shows the item type that is scanned for (**E-mail**, **Calendar**, etc.).

- **Duration**

  This column shows the duration of the scan. This duration is used as a basis for the statistics below, among other things.

Using the fields below the table, you can enable or disable scanning, tune the server's use of threads, etc. After changing values, click **Save** to commit the new settings to the DME server.

Fields:

- **Status**

  This might be called the "notification framework main switch". This field is initially set to **Disabled** (after installing the DME server). When the server has been set up and is working as intended, change the status to **Enabled** in order to start the notification framework and enable push notification to the clients.

- **Number of threads**

  In this field you choose the number of threads to be used for client connections. You can choose numbers in increasing intervals between 1 and 50. The higher the number, the greater the load on the server. The number of threads should be balanced with the number of users, the tightness of the notification schedules, and the capabilities of the server hardware.

- **Process cache TTL**

  TTL means "Time To Live". This setting adjusts the length of time the **Pending** flag is allowed to exist before it is cleared by the server. The scanner will reissue a notification if the notification has not been cleared by the client within the time set by the process cache TTL. For more information, see the ***Pending*** on page 262 panel section.

  This value only applies if you are *not* running with Exchange subscriptions (see ***Setting the scheme*** on page 251). If you *are* using Exchange subscriptions, a new notification will be sent to the device on every event, only limited by the Adaptive Push setting **Max. notifications if no response from a device**. This is to accommodate devices that have no background sync ability, such as Apple iOS devices, where the Notification Center will then build a complete list of received e-mail notifications rather than just one that may cover any number of received e-mails. The notifications are cleared when the device synchronizes with the server.

Finally, a set of statistics is shown in the bottom pane. You can use these statistics when tuning the server.

Statistics:

- **Last scheduler query duration**

  How long time did it take for the scheduler to read "who" and "when" to scan from the DME database. The duration applies to the result currently shown in the window.

- **Last queue size**

  How many tasks were added to the queue. The queue size applies to the last time a non-zero number of tasks were found.

- **Last queue process time**

  How long time did it take to process the entire queue. The process time applies to the number of tasks in the field **Last queue size** above.

- **Scheduler hit rate**

  How many times does a query for tasks result in new tasks. For instance: If the result is 50%, it means that half the queries to the DME database find new entries in the scanning queue.

- **Average thread usage**

  How many of the maximum number of threads (from the field **Number of threads**) are used on average. This average is based on a round-robin principle. Thread usage is sampled frequently, and the average is calculated over one hour's worth of samplings.

- **Average scans per second**

  How many scans are performed per second. For instance, a value of **789m** means that in one second, DME scans 789 "millitasks" - almost 0.8 task per second. This average is also based on a round-robin principle, and calculated over one hour's worth of samplings.

- **Average scan duration**

  How long time does each scan take on average. For instance, a value of **652m** means one scan per 652 milliseconds - about 0.65 second. This average is also based on a round-robin principle, and calculated over one hour's worth of samplings.

In the trends graph **Notification scanner thread usage**, you can see some of these statistics graphically over time. See ***Monitor*** on page 236.

Command stack priorities

When a client connects to the server for any purpose - for instance to synchronize e-mail - DME checks the *command stack* for the device in question before executing the client request. The reason for this is to check if any other commands with a higher priority are waiting for execution on the client - for instance a device flush, which would be more important than an e-mail sync.

The following is a general description of the way DME gives priority to the various commands.

- If a client is *unknown to the server*, it is forced to send in full system info before anything else, except if a **Flush data** command has been issued to it. A device is unknown for as long as a full system information has never been received from the device.
- If a device has a *pending e-mail import* and it tries to perform an e-mail sync, the import will be performed first.
- If a device has a *pending flush data*, the device data will always be flushed.
- Actions that are force-sent from the server to the client never time out (they have no *Process cache TTL* (see **Process** and **Pending**).
- The full command stack is always sent to the client after each successful synchronization.

The general list of priorities is as follows:

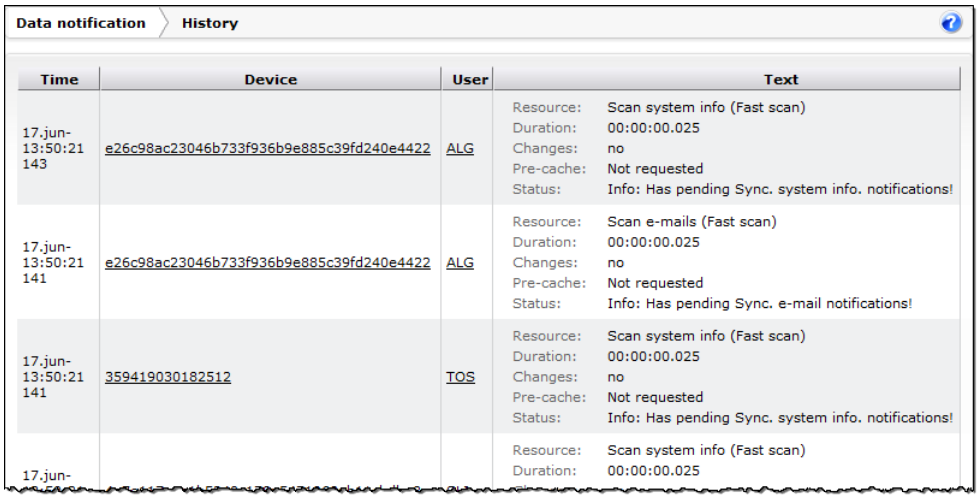
1. *Flush data* takes precedence over all other commands.
2. *Send full system info*/*Import system info* takes precedence over all other commands apart from **1** (Flush data).
3. *Synchronize system info* takes precedence over all other commands apart from **1** and **2**.
4. *Import x* (for instance *e-mail*) takes precedence over *Synchronize x* only.

The command stack sent from the server can include other commands, for instance *Get diagnostic log*. The list of commands sent to the client is ordered according to the above list of priorities.

One result of the command stack is that if a user synchronizes e-mail (for instance), he or she may experience that a calendar sync is performed afterwards. This is because a pending calendar notification existed, and the server makes use of the existing connection to synchronize. This saves time and resources on the client.

History

In the **History** section of the **Data notification** panel you can see a history of client connections. The list shows the time of connection, the device and user, and a description of the connection - what resource was scanned, if the scan was a full or fast scan, how long time it took, if any changes (such as new e-mails) were found, if data was taken from the pre-cache, and what the status of the scan was.



The status can for instance show if the scan in question was in fact carried out. A scheduled scan may be prevented from being executed for a number of reasons:

- It may have been blocked because the device in question already has pending notifications. In this case, the status message will say something like **Info: Has pending Sync E-mail notifications!**
- The scan is postponed because the device settings exclude the possibility of a sync. anyway. In this case, the status message will say something like **Info: Sync Calendar disabled - scan postponed 1 hour**.
- Or the scan engine might report an error. In this case, the error message is shown as status.

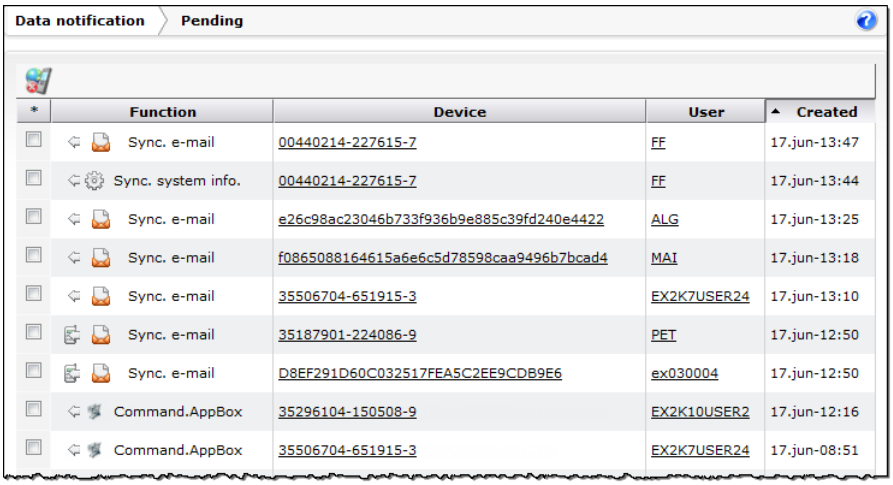
If multiple connections happened simultaneously (within the same second), they are grouped together using a thin grey bar with an arrow pointing to the simultaneous connections.

In case of Exchange subscription notifications (see ***Setting the scheme*** on page 251), you can use the list to see if the subscription is validated/created correctly, meaning that the connector subscription web server (see ***Exchange e-mail and PIM*** on page 336 > **General**) received an **OK** from Exchange EWS. This requires that an e-mail sync route has been defined for the user in question (the same applies for calendar and contacts). If e-mail sync is disabled for user **X**, or if the user hasn't yet imported calendar/contacts, then no subscription is created for this user. A notification will be sent again 4 times at an interval of a number of minutes, then delay one hour before trying again.

A maximum of 250 history lines are displayed.

Pending

In the **Pending** section of the **Data notification** panel you can see a list of pending notifications. You can sort the list by clicking the text of the column headers.



DME makes an entry in this list every time it runs a scan according to the schedule and finds that a new e-mail, calendar entry or other item should be synchronized with the client at the next synchronization (see ***Schedule*** on page 246). The list shows the type of notification, the device and user, and the time at which the entry was created in this list. The entry information has been pushed to the device in question (if push is enabled for the device), and at the next synchronization the entry in question will be removed from the list.

When the icon in the **Function** column is shown like this , the notification was by network push (or APNS for Apple iOS devices). When shown like this , the notification was delivered by SMS.

An item can also be removed from the list if the time limit set in the field **Process cache TTL** in the **Process** panel section (see ***Process*** on page 256) has expired. For instance, if a new e-mail is found for a user, but the user's device does not synchronize within the specified process cache TTL (Time To Live), the entry will be removed from the list of pending processes.

Furthermore, you can delete one or more pending notifications manually in this window. Select one or more pending notifications, and click the action **Delete pending notification(s)**  to delete them. You may for instance want to delete a pending notification if you push a synchronization or import job to a device in error.

Log

In the **Log** section of the **Data notification** panel you see a subsection of the information shown in full in the **Log** tab. You only see information related to notifications.

For more information, see ***Notification*** on page 194.

Notifications on iOS devices

Due to the application design rules on the Apple iOS device platform, notifications work differently on those devices. This note explains how Apple iOS devices receive notifications.

As the DME client for Apple iOS is shut down every time you log out (due to iOS design rules), it is impossible to have it listen for push messages from DME, either using network push or SMS push while the client is not running. To overcome this problem, DME has removed the network push option for iOS devices, and makes use of the Apple APNS (Apple Push Notification Service) framework, which makes sure that every Apple iOS device in the world can be contacted via Apple APNS servers. The notifications are thus sent from the DME server, via Apple's servers, to the iOS device. The notification is presented to the user on the device, and he/she can then take some action, for instance launch DME.

As an alternative to the APNS solution, DME has implemented a form of SMS notification - the SMS received contains a URL on the form `dme://<command>`, which the user can press in order to open DME and start the action (for instance synchronize e-mail).

APNS is by far the *recommended protocol* to use for Apple iOS devices.

APNS and DME

The APNS solution works in the following way:

1. *The DME client for Apple iOS starts up and registers with the APNS that it wants to receive notifications.*

   Through a system of certificates, Apple can route the notification pushes from the DME server to the DME application. This system is already in place, and no configuration is required.

   It is important to note that all communication between the DME Server and the APNS is routed through a central DME server called *DME Central Services* (DME CS). This is the only way to truly separate the many different DME servers around the world that send notifications to Apple iOS devices. For more information, see ***Central Services*** on page 230.

2. *The DME client for Apple iOS receives a device token from the APNS, which it reports to the DME Server via DME CS.*

   This is done in the form of a device property (visible in **Devices** > click Apple iOS device > **Information**).

3. *The DME Server composes the notification messages, and establishes the required SSL connections to the APNS via DME CS.*

   The server uses the provided device tokens to send the notifications. APNS notifications are part of the Adaptive Push framework, and it therefore adheres to the following set of priorities:

   - irst DME sends the notification to the Apple iOS device as APNS (if enabled).
   - lse it is sent as SMS (if enabled).

4. *If the DME client for Apple iOS is running,* the client will react immediately when the APNS notification is received, and nothing is shown to the user.
5. *If the DME client for Apple iOS is not running,* the user will see a popup message with a text and a DME launch button.

   If the user chooses to launch the DME client, the client will perform the requested action. If the user ignores the action, then no action will be performed by the client when it is next started - this is a limitation imposed by Apple.

APNS feedback

DME has no way of telling if the notification reached the Apple iOS device. However, the APNS has a system to tell if the DME client has been removed from the device. If this is the case, a *feedback* notice is returned the DME Central Services server. All Apple feedback messages are collected on the DME CS server. The DME server sending the push notification will first check with the CS server if sending the notification is permitted (if there is no feedback message for the device in question).

If it is not permitted, the DME server will refrain from sending the push, and remove the token ID from the device in question as specified above. This will remove the device token from the Apple iOS device in question, effectively stopping the flow of notifications to that device.

What is sent to CS

This information is provided to assure you that DME security is in no way compromised by using Apple APNS over DME Central Services. In order to send an APNS message DME sends data to the Central Services server. The content of this data cannot be traced back to any particular user. The data contains the following elements:

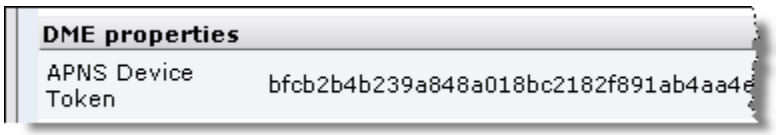
- **Device Token:** An iOS application-specific token identifying the combination of device and application - it is different for every installation of the DME application, and cannot be translated into device IDs.
- **Installation ID:** An ID identifying the DME installation the message derives from - from this we can see which customer is sending the message, but not what user. The installation ID is unique across all DME Server nodes in a DME cluster.
- **Hashed Terminal ID:** This is an MD5 hash of the device ID - we can use this to see that two messages come from the same device, but we cannot derive the real device ID from this hashed ID.
- **Originating Server ID:** An ID identifying which server in an installation that sent the message - identifies the DME Server node in the DME Cluster.
- **Message Type:** The type of notification - is this for an e-mail, contact etc.
- **Alert Body:** The message sent to the device - this is what the user sees.

Based on this information, a notification is sent to APNS. For more information about APNS, see the ***Apple iOS Developer Library http://developer.apple.com/library/ios/#documentation/NetworkingInternet/Conceptual/RemoteNotificationsPG/ApplePushService/ApplePushService.html***.

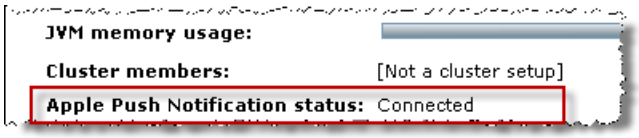
Setting up notifications on Apple iOS

To use APNS on your system, check the following:

1. Make sure that the **APNS** setting is **True** in the **Central Services** section of the **Server configuration** panel (see ***Central Services*** on page 230).
2. Make sure that the secure port **443** is open in the firewall from the DME server to the following website: `cs.excitor.com`. This allows the server to query the DME Central Services server.
3. Install the DME client for Apple iOS version 3.5 or later on an iOS device, and synchronize.
4. Verify that the device is shown in the **Devices** tab in DME.
5. Make sure that **Apple Push Notification (APN)** is **Enabled** in the **General** section of device settings (for the device, for the group, or by default). See ***Settings*** on page 89.
6. Synchronize the device (which cannot be jailbroken!) again. A full system information sync will provide a new property called **APNS Device Token** (visible in **Devices** > click the iOS device > **Information**), which is necessary for Apple Push Notifications to work:



7. In **Server** > **Server configuration** > **Monitor**, you should now be able to see that the **APN status** is **Connected**:



The Apple Push Notification Service is now up and running.

Subscriptions

With the **Subscriptions** page you can create models of the actual subscriptions you have with the your phone operators.

You can specify the cost of calls, SMS, MMS, and data traffic, both domestic and international. You can create different price lists when roaming from different countries.

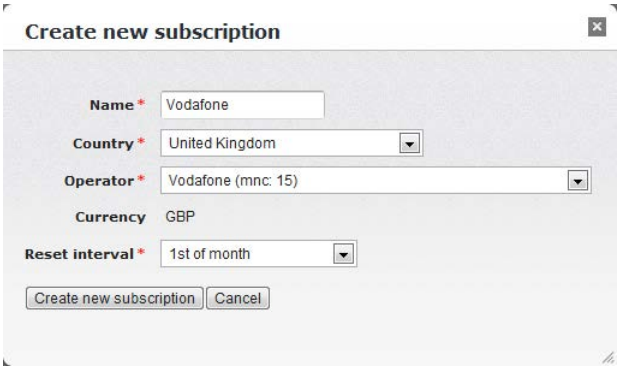
When you have modeled your subscriptions, you can assign the subscriptions to groups, and the devices in these groups will then start recording the actual costs incurred by each device.

When this functionality is linked with the DME Call Blocker functionality, you can start limiting the permitted costs of each device. For more information about the DME Cost Control features, see ***Appendix H: DME Cost Control*** on page 430.

The following sections describe how you manage subscriptions.

Add subscription

To create a new subscription model, click **Add subscription**. The following dialog is shown:



- **Name**

  Enter a name for the current subscription model. Use something that is easy to recognize.

- **Country**

  Select the home country of devices using this subscription. When a device is attached to this subscription, this is the home country, and all other countries are roaming countries.

- **Operator**

  In this field, select an operator from the list of operators available in the selected country. The MNC (Mobile Network Code) is listed after each operator name so you can differentiate operators with the same name. For instance, there are multiple operators called **Orange** in the UK, but with different MNCs. To find the operator you are actually using, contact your operator.

- **Currency**

  The currency is automatically entered by DME based on your choice of country.

- **Reset interval**

  In this drop-down list, you can choose when devices using this subscription model should reset their limit counter. If a limit has been set for a device, the amount balance built up toward that limit is cleared at the interval specified in this field:

1st of month, **Middle of month**, or **1st and middle of month**.

Example: The limit is reset on the 1st in the month. A device using this subscription has a limit of GBP 100. At the end of the month, the user has used GBP 80. This balance of GBP 80 is cleared at the turn of the month, again allowing the user to use GBP 100 during the new month.

Click **Create new subscription** to save the new subscription, or **Cancel** to exit the dialog without saving the subscription.

When the subscription is saved, you can start entering prices in the **Subscription details** section of the **Subscriptions** page as described in the subsequent sections.

Domestic default rates

In the **Domestic default rates** pane of the **Subscription details** section you enter the rates of calls and other phone usage within the home country as defined by the subscription model.

In all the fields that show a currency, you need not worry about deleting the currency by accident - DME will always insert the correct currency when you click **Save changes**.

- **Domestic voice**

  The rate for placing voice calls, per minute.

- **Free voice per month**

  If your subscription includes a number of free voice minutes, enter the amount of minutes per month in this field. Free minutes do not count against the allowed balance for the clients using this subscription.

- **International voice**

  The rate for placing international calls, per minute. The price in this field concerns calls to countries that have not been defined in the **Domestic country details** pane.

- **Receiving voice**

  In some countries, there is a rate for receiving calls. You can enter the rate per minute in this field.

- **Data**

  The rate for data traffic, per MB. This is used for downloads, streaming services, Internet use etc.

- **Free data per month**

  If your subscription includes an amount of free data traffic, enter that amount per month in this field. Free data traffic do not count against the allowed balance for the clients using this subscription.

- **Domestic SMS**

  The rate for sending one text message (SMS).

- **Free SMS per month**

  If your subscription includes a number of free text messages, enter the amount of messages per month in this field. Free text messages do not count against the allowed balance for the clients using this subscription.

- **International SMS**

  The rate for sending one text message to a foreign country. The price in this field concerns text messages to countries that have not been defined in the **Domestic country details** pane.

- **Domestic MMS**

  The rate for sending one multimedia message (MMS).

- **Free MMS per month**

  If your subscription includes a number of free MMS, enter the amount of messages per month in this field. Free MMS do not count against the allowed balance for the clients using this subscription.

- **International MMS**

  The rate for sending one multimedia message (MMS) to a foreign country. The price in this field concerns MMS to countries that have not been defined in the **Domestic country details** pane.

Click **Save changes** to finish your subscription model definition, or **Discard changes** to cancel. Clicking any of the other panes in this section will keep your changes, but you must click **Save changes** when you have done entering all the rates to save the subscription model.

Domestic country details

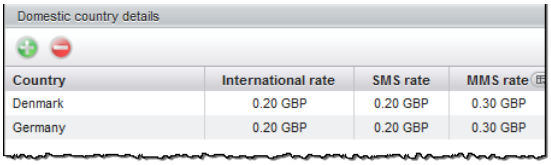
Use the **Domestic country details** pane of the **Subscription details** section for entering the rates of calls and messaging for specific countries. The rates entered here apply when your users call or send messages to the listed countries using their home operator.

The list is a table in which you can add the countries to which your users most often place calls or send messages. If a country is not included in this list, the rate defaults to the **International voice**, **International SMS**, and **International MMS** fields in the **Domestic default rates** pane.

- ***To add rates for a country***

1. Click the icon to add a country definition.

2. In the popup dialog, select the country, and enter the rates for **Voice** (per minute), **MMS** (a piece), and **SMS** (a piece), in the currency of the home country.
3. Click **OK** to save the country settings. The result could for instance look like this.



❖ ***To edit rates for a country***

1. Double-click the country, and change the rates.
2. Click **OK** to save the changes, which are effective immediately.

❖ ***To remove a country from the subscription list***

1. Select the country in the list, and click the icon.

Roaming default rates

In the **Roaming default rates** pane of the **Subscription details** section you enter the rates of calls and other phone usage for when the phone is roaming, that is the phone is not using its home operator - typically if the phone user is traveling.

The rates entered here are *default rates* - meaning the rates used when roaming from a country not listed in the **Roaming country details** pane.

❖ **Voice**

The default rate for voice calls when roaming, per minute.

❖ **SMS**

The default rate for one text message (SMS) when roaming.

❖ **MMS**

The default rate for one multimedia message (MMS) when roaming.

❖ **Data**

The default rate for one MB of data when roaming.

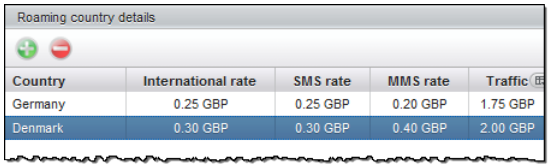
Roaming country details

Use the **Roaming country details** pane of the **Subscription details** section for entering the rates of calls, messaging, and data when roaming from specific countries. The rates entered here apply when your users call, send messages, or use data traffic from one of the listed countries. The rates are used both for calls etc. made for the home country, the same roaming country, and for other countries.

The list is a table in which you can add the foreign countries from which your users most often use their phone. If a country is not included in this list, the rate defaults to the **Voice**, **SMS**, **MMS**, and **Data** fields in the **Roaming default rates** pane.

❖ ***To add roaming rates for a country***

1. Click the icon to add a country definition.
2. In the popup dialog, select the country, and enter the rates for **Voice** (per minute), **MMS** (a piece), **SMS** (a piece), and **Data** (per MB), in the currency of the home country.
3. Click **OK** to save the country settings. The result could for instance look like this.



❖ ***To edit roaming rates for a country***

1. Double-click the country, and change the rates.
2. Click **OK** to save the changes, which are effective immediately.

❖ ***To remove a country from the subscription list***

1. Select the country in the list, and click the icon.

Edit subscription

To edit a subscription, select it in the list of subscriptions, and click **Edit subscription** in the page menu, or simply double-click the subscription you want to edit.

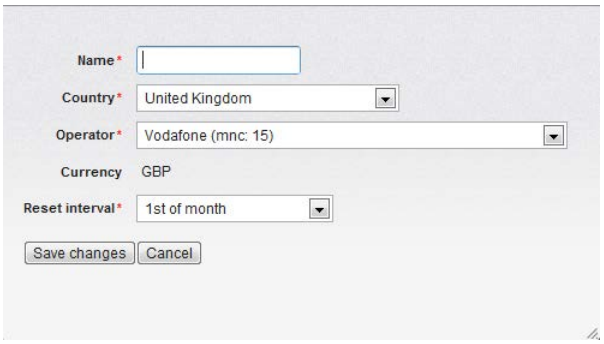
A dialog similar the dialog in which you created the subscription is shown. Edit the details, and click **Save changes** to exit.

Changing the **Reset interval** is effective immediately. Please remember that if you change the interval, you may increase the period in which the users build up their balance before they receive a cost warning in the client. For this reason, you may want to increase their **Quota** in the settings for the group or groups of devices that are using this subscription temporarily.

Copy subscription

When you have completed the fields of one subscription model, you may find that you use other operators with roughly the same prices. You can then choose to create a new subscription based on an existing model.

Select a subscription, and click **Copy subscription** in the page menu.



This pop-up dialog lets you enter a name for the new subscription, and for instance select another operator.

Click **Save changes**. A copy of the existing subscription model is made, complete with rates in all panes of the **Subscription details** section. You can now edit this subscription model and assign it to groups of devices.

Delete subscription

To delete a subscription model, select it in the list, and click **Delete subscription** in the page menu. Confirm the deletion.

Note that devices using this subscription will no longer be warned or blocked when their quota is reached. See ***Appendix H: DME Cost Control*** on page 430.

Default settings

When a new device is created in DME, a set of default settings for the device is sent to the client the first time the device connects with the server, or when a new user takes over an existing device. Through a careful use of default settings and locking device settings you can enforce your company's security policies. In the following, a *setting* can be anything found in the **Default settings** setup panel - settings, notification schedules, files, application blocks, preferred operators, subscriptions, and RSS feeds.

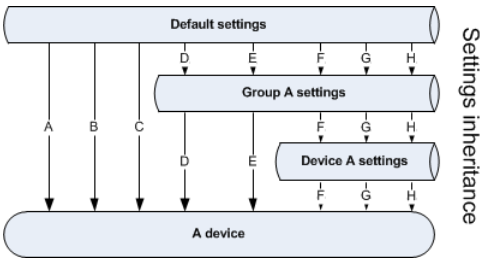
You can specify settings for a device at device at three levels:

1. Using **Server** > **Default settings**
2. Using **Server** > **Group management** > edit a group to which the device belongs
3. Using **Devices** > edit a specific device

DME uses the following order of inheritance when pushing settings etc. to a device:

- *Default settings* are overwritten by *group settings*
- *Group settings* are overwritten by *device settings*

This can be illustrated in the following way:



Settings set in **Default settings** apply to any device, unless the same setting has been changed for a group of which the device is a member, or changed for that device only. In the illustration above, the settings **A**, **B**, and **C** are applied to all devices. Devices that are member of **Group A** do not get default settings for settings **D**, **E**, **F**, **G**, and **H**, but inherit them from **Group A**. Furthermore, the specific device **A** does not inherit settings **F**, **G**, or **H** from the group, but gets the settings from the specific device.

This way you can set up a security policy by specifying strict default settings, and possibly make more relaxed settings for selected groups of devices or individual devices. For more information about how membership of different groups is handled, see ***Group hierarchy and inheritance*** on page 280.

When you have specified the various categories of settings in this setup panel as desired, remember to click **Save** to commit the settings to the DME server.

Settings

 In this panel section, you can set and lock default values for client settings. For a description of how to work with the settings in this panel section, see ***Settings*** on page 89.

For a description of each of the many device settings, see ***Appendix A: Device settings*** on page 351.

For a description of how the changing of default settings applies to individual devices, see ***Default settings*** on page 273 and ***Group hierarchy and inheritance*** on page 280.

When you click **Save** to save the changes, a dialog shows which settings you have changed, and asks you to confirm that you wish to save the settings and send them to all affected devices at the next synchronization. A device is affected if the setting has not already been overridden by a group or individual setting, or if you lock the setting in this window.

Schedule

 In this panel section you can set the default notification schedule and push e-mail options. For more information, see the ***Schedule*** on page 246 and ***Process*** on page 256 sections in the **Data notification** panel in the **Server** tab.

Files

 With DME you can push files to devices or synchronize files between a server location and the device much the same way as e-mail and calendar information. This feature can be used for distributing different files to the devices of different DME users.

Files can be synchronized with devices at three levels:

1. With *all devices*: Click **Server** > **Default settings** > **Files**
2. With a *group of devices*: Click **Server** > **Group management** > double-click a group > **Files**
3. With one *specific device*: Click **Devices** > double-click a device > **Files**

The method by which files are synchronized is the same in all three cases.

This panel section shows a list of file synchronization rules that apply to the currently edited set of devices (all devices, a group of devices, or a specific device). For more information, see ***Appendix C: File synchronization*** on page 396.

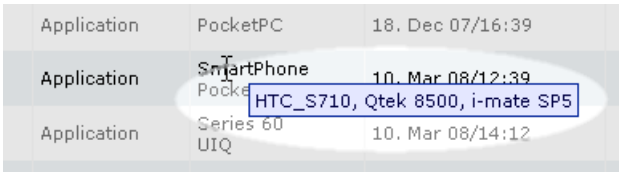
Applications

 This panel section contains a union of the applications and network connection types installed on all devices in the system. A network connection type is an access point to a network, controlled by the device - for instance a Bluetooth connection. You can use the list to block one or several applications or connections on any device. If an application or connection is blocked, the user will receive the following warning when he or she tries to use the application or network connection:

The **Type** column in the table indicates if the current item is an application or a network connection.

To block applications or connections, select the **Block** field for the item(s) in question, and click **Save** to save the new settings. A dialog shows the settings you have changed and asks you to confirm that you wish to save the settings and send it to the devices at the next synchronization. If you also select the field **Push to devices** in the confirmation dialog, the changes are pushed to the devices immediately. The devices will block those of the marked applications and connections that exist on the device in question.

The **Platforms** column shows the platforms on which the application on the current line is installed: **Series 60**, **UIQ**, **PocketPC**, or **SmartPhone**. If you let the mouse pointer rest on a field in the **Platforms** column, a tooltip shows which devices in your system belong to the platform in question:



It is not possible to block applications on Java devices due to restrictions in the Java operating system.

Operators

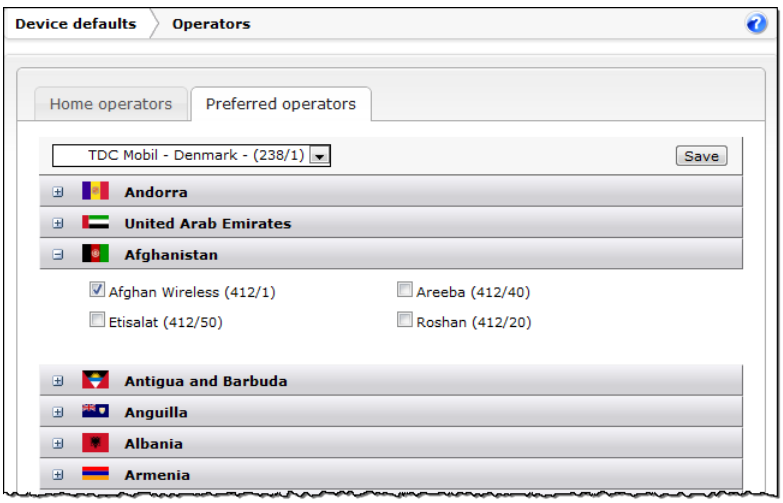
In this panel section, you can choose which mobile operator networks you prefer the DME clients to use in whichever country they are located in or travel to.

For each country, you can select one or more *preferred operators*. Whenever a DME user travels to that country, DME checks which operator has been selected by the device. If the selected operator is not one of the preferred operators, DME will show a warning on the device, including up to three names of preferred operators. On Symbian devices, the user has to change to one of the preferred operators manually. On Windows Mobile devices, the user can accept a prompt to let the device change to the preferred operator automatically, if the setting **Assist switch to preferred operator** is enabled in the **General** section of the device settings on the server - see ***General settings*** on page 366.

Please note that due to platform limitations, the **Preferred operators** feature has not been implemented in DME for Java or iOS devices.

This panel section shows a list of all commonly known mobile operator networks, divided into countries. The list is retrieved from the Wikipedia online encyclopedia: `http://en.wikipedia.org/wiki/Mobile_network_code`. See below for information about refreshing and editing the list.

The panel section is divided into two subtabs: **Home operators** and **Preferred operators**. The image below shows the **Preferred operators** subtab:



In each subtab, the list is divided into sections, each listing the known networks in one country or territory. Click to open or close a country section. Countries and territories for which selections have been made are open by default, the rest are closed.

For each network, the associated MCC (Mobile Country Code) and MNC (Mobile Network Code) are shown in parentheses, for instance **Afghan Wireless (412/1)**. These codes are used to identify the network, and used for statistics in the **Statistics** tab. If the full name of the operator is not immediately visible, a tool tip will show the full name of the operator when you point the mouse to it.

Home operators subtab

In the **Home operators** subtab, you select which operator or operators you use in each country in which your company has offices. You can select more than one per country.

Example: You have offices in Denmark, Sweden, Germany, and the United Kingdom. For each of these four countries, you select the mobile operators from which you buy your mobile telephony services.

Click **Save** to save the new settings.

Preferred operators subtab

In the **Preferred operators** subtab, you select which operator or operators your users are advised to use in any country, based on the user's home operator.

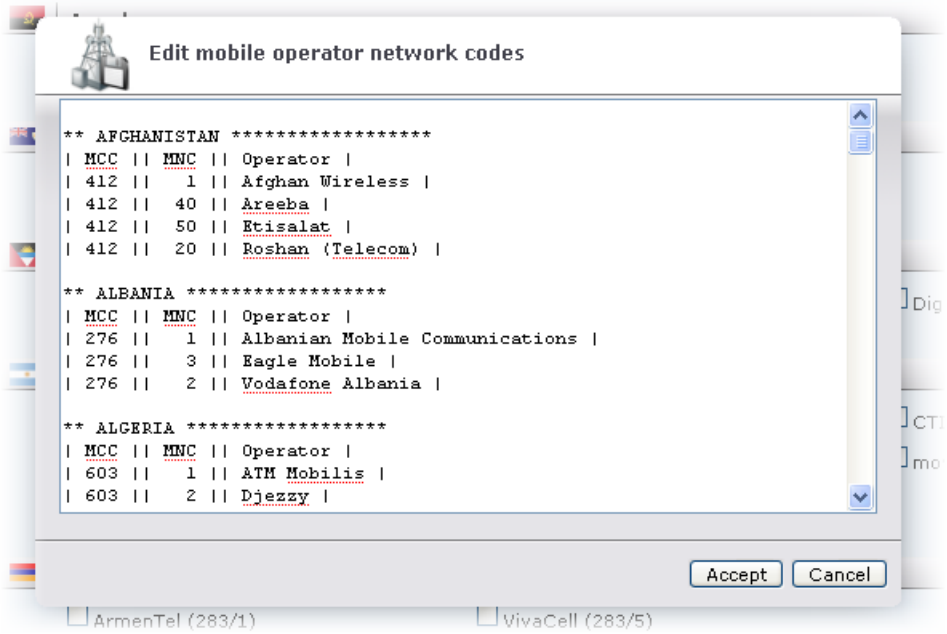
1. In the dropdown list at the top of the page, choose the home operator you want to edit.
2. Go through the list, selecting the operators with which the home operator has roaming agreements, and where the prices are best. You only need to select operators in the countries that your users are actually likely to travel to. You may select multiple operators in any country.
3. Click **Save**, and repeat the process for each home operator.

A maximum of 100 preferred operators can be selected per home operator. Home operators are by default selected as their own preferred operators.

Click **Save** to save the new settings.

Editing the list

To edit the list of countries and operator names, click the button **Edit networks** at the top of the list of home operators in the **Home operators** subtab. A window such as the following is displayed:



In this window, you can add, edit, and delete the names and codes of operators, or remove entire countries from the list. Click **Accept** to apply the changes.

The original list derives from the Wikipedia online encyclopedia: **`http://en.wikipedia.org/wiki/Mobile_network_code`**. To refresh the list in DME, go to the Wikipedia page, and edit the article (click the **edit** link on the line near the top that reads **Country operators**). When the **Editing Mobile network code (section)** page appears, copy the entire contents of the page, and switch back to DME. In the **Edit mobile operator network codes** window, delete all contents (**Ctrl+A**, **Delete**), and paste the content from the Wikipedia article into the window. Click **Accept** to apply the changes, and wait for DME to re-render the page.

DME will remember any settings you have previously made.

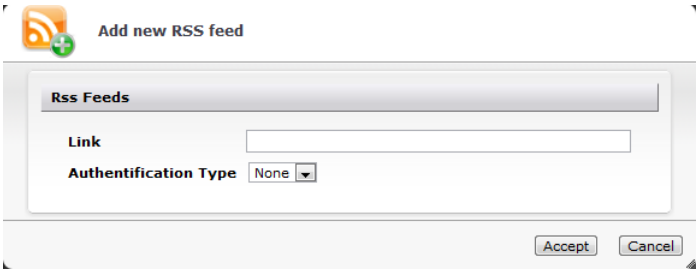
RSS feeds

In this panel section, you can define RSS feeds that are to be offered to all users.

The list shows the currently defined feeds.

❖ ***Adding an RSS feed***

1. To add an RSS feed, click the **New RSS feed** button  .



2. In the **Link** field, enter the link (URL) to the web page that provides the feed. This can be from a public site, such as a news site, or an internal site. The RSS provider will usually announce the exact name of the URL to be used on their website.
3. If the RSS provider requires the user to supply login credentials, specify the **Authentication type** in the drop-down list.

If an RSS feed cannot be read from the URL entered, DME shows a warning. You are allowed to create the feed, however.

To delete a feed, select one or more feeds in the list, and click the **Delete RSS feed(s)** button  . You will be asked to confirm the deletion.

The next time a user synchronizes feeds, the new feeds will appear on the user's device, and the deleted feeds will be removed.

Note that you can set up RSS feeds for a group of devices (see ***View and apply settings*** on page 284) or for individual devices (see ***Setting up devices*** on page 84).

Group management

Groups are the key to device management in DME. Every device is member of at least one group. Settings, schedules, subscriptions, RSS feeds, etc. (in the following simply called *settings*) should be applied to devices through their membership of groups.

A system of *group hierarchy* ensures that devices that are member of multiple groups are given the correct settings in case there is a conflict between settings in the different groups.

This group system has a number of advantages. First of all, you can be sure that all devices are given a set of settings. Secondly, it makes it easy to manage large numbers of devices because new devices are automatically assigned to groups. The groups that you create are *smart groups*, meaning that group membership is determined by the current properties of the device. If the properties change, the device may also change groups. For instance: You decide to create a group for each country where your company has offices. The country affiliation is based on the SIM card of each device. If a device in the country group **France** is given a new SIM card issued in the UK, the device will automatically switch to the **United Kingdom** country group. For more information, see ***Adding groups*** on page 282.

The group membership of a device is evaluated every time properties are changed for the device after a system information synchronization.

If you want to see which devices are currently member of a group, go to the **Devices** tab and click the **Advanced** button in the filter bar. Then click Group filter, select one or more groups, and click **Search**. The members of the selected group or groups are then displayed in the **Devices** tab. See ***Advanced filters*** on page 36.

On this page, you see a list of the groups that have been created, along with its *type* (described in the section ***Adding groups*** on page 282) and the number of devices in each group. The group **Default Settings** is a system group that cannot be removed.

Group hierarchy and inheritance

Groups are organized in a hierarchical structure. There are 8 *group types*, each of which has a certain *weight*, or place in the hierarchy.

The hierarchical weight of each group type is as follows:

Group type	Hierarchical weight
Default	0
Country	100
Operator	200
Platform	300
OS	400
Model	500
Directory group (LDAP/AD)	600
Manual group	600 (also)

Device	700

These weights are used for determining the *inheritance* of individual settings. This is best illustrated with an example.

Say you have created the following groups and settings (see ***Adding groups*** on page 282 for instructions how to do this):

Group type	Criterion	Settings
Country	France	Subscription model: France Telecom RSS feed: Le Monde
Country	United Kingdom	Subscription model: Vodafone
Platform	iPhone	Disable calendar push
OS	iPhone OS/4.3.2	Push Apple configuration profile A
OS	iPhone OS/3.1.3	Push Apple configuration profile B
Directory group	Sales	RSS feed: CRM updates

Now say that two new devices are added to the DME system: A **Nokia E72** belonging to a sales representative in the UK, and an **iPhone 4** running iOS 4.3.2 in France. This is the way in which DME will apply settings to these two devices:

Group	Nokia E72 (UK)	iPhone 4 (France)
Default settings	All settings	All settings
Country France		Subscription model: France Telecom RSS feed: Le Monde
Country United Kingdom	Subscription model: Vodafone	
Platform iPhone		Disable calendar push
OS iPhone OS/4.3.2		Push Apple configuration profile A
LDAP group Sales	RSS feed: CRM updates	

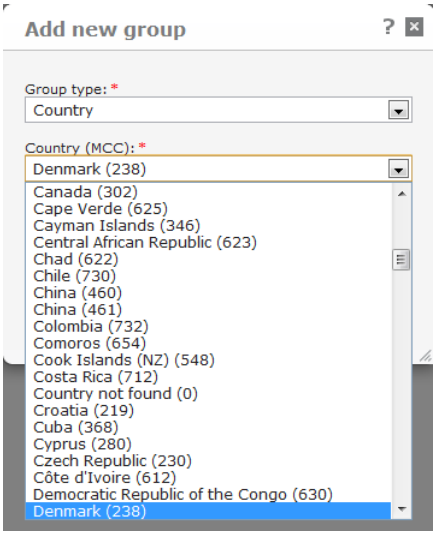
Thus, the two phones get a different set of settings because they are automatically arranged in different groups. Since the **Platform** group has greater weight than the **Default** group, the **Disable calendar push** setting will overwrite the default setting on the iPhone. You can say that settings in a group with greater hierarchical weight overwrites the same setting in a group with a lower weight.

In case of directory groups, a device can be member of two directory groups with conflicting settings. For instance, a device can be member of both a **Sales** LDAP group and a **UK** LDAP group. In this case, the hierarchical weight issue is determined by assigning a priority to each directory group in the window **Group priority**. For more information, see ***Directory group priority*** on page 289.

The "heaviest" weight is the device itself - making settings on an individual device overrides all other settings. To "flush" any settings made in heavier groups or for the device itself, you can choose to lock the settings at a lower (lighter) level. This means that the settings made on the lighter levels will overwrite settings on heavier levels, unless they themselves are locked. This way, you can for instance make sure that a specific setting is the same for all devices in the system. For more information about this, see ***Default settings*** on page 273.

Adding groups

To add device management groups in DME, click **Server** > **Group management** > **Add group**.



You can create different *types* of groups. The group type is used as criterion for selecting the devices that make up the smart group. The selection of the devices is based on the device properties which are reported to the DME server by the devices during system info synchronization. These properties can be seen for each device in the **Information** panel section of the device setup page (see ***Information*** on page 86).

❖ ***To create a smart group:***

1. Select the group type in the **Group type** field.
2. Make a selection in the group type criterion field that is shown.

3. Optionally edit the name of the group in the **Name** field.
4. Click **Save** to create the new smart group.

You can choose among the following group types in the **Group type** field:

- **Country**

  Devices are selected for the group by their country affiliation. The countries are identified by their MCC code (Mobile Country Code) as reported in device properties (**Current mobile country code**).

  This group type could for instance be used if you want to send different RSS feeds to the devices, depending on their country.

- **Operator**

  Devices are selected for the group by their home operator. The operators are found by first selecting a country in the **Filter country** field, and then selecting the home operator in the **MNC** field. The operators are identified by their MNC code (Mobile Network Code) as reported in device properties (**Current mobile network code**).

  This group type could for instance be used if you want to assign different subscriptions to the devices, depending on their home operator.

- **Platform**

  Devices are selected for the group by their platform. The list of possible platforms (for instance **Android**, **S60**, or **iPad**) is extracted from the existing devices in the system.

  This group type could for instance be used if you want to assign all iPhones to a special group in order to send certain Apple profiles to them.

- **OS**

  Devices are selected for the group by their operating system. The list of possible operating systems (for instance **SymbianOS/9.3**, **iPhone OS/4.3.1**, or **Android 2.2**) is extracted from the existing devices in the system.

  This group type could for instance be used if you want to assign all Apple devices using a pre-4.0 OS to a special group in order to disable calendar notifications for those devices.

- **Phone model**

  Devices are selected for the group by their device model. The list of possible models (for instance **Nokia E72**, **iPhone 4**, or **GT-I9000**) is extracted from the existing devices in the system.

This group type could for instance be used if you want to assign all Apple devices using a pre-4.0 OS to a special group in order to disable calendar notifications for those devices.

- **Directory group**

  For this group type, the devices are selected based on their user's membership of directory (LDAP/Active Directory) groups. In other words, a device will be included in the group if the current user belongs to the selected directory group.

  This group type could for instance be used if you want to push certain files or RSS feeds to members of the Sales organization.

- **Manual group**

  This group type is provided as a means to group devices that are not logically related through any of the criteria above. You can assign individual devices to a manual group in the **Group** setup panel when editing a device. See ***Group*** on page 97.

The dialog will show different fields based on the **Group type**. When you have completed the fields, click **Save** to save the new smart group.

DME then scans the properties of all devices, and automatically assigns the devices that match the entered criteria to the new group. You can now assign settings, schedules, files, applications, licenses, RSS feeds, and possibly Apple profiles to the group of devices.

View and apply settings

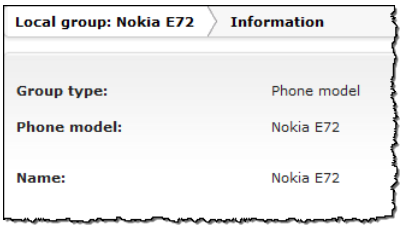
When you double-click a group name (or select a group and click **View and apply settings**), you can see and edit settings for the group in question.

For smart groups other than groups of the type **Directory group** you can specify Settings and RSS feeds. For **Directory group** groups, you can furthermore specify Schedules, Files, and Applications.

Information

In this panel section, you can see basic information about the current group.

The fields available in this section depend on the type of group, and correspond to the fields available when creating the group (described in the section ***Adding groups*** on page 282). You cannot change anything in this section.



This panel section contains the following fields:

- **Group type**

  This field shows the type of the current group.

- **[Criterion]**

  This field shows the criterion on which the group is created. For instance, for a group of the type **Platform**, this criterion (field name) would be called **Platform**, and the value could for instance be **S60**.

- **Name**

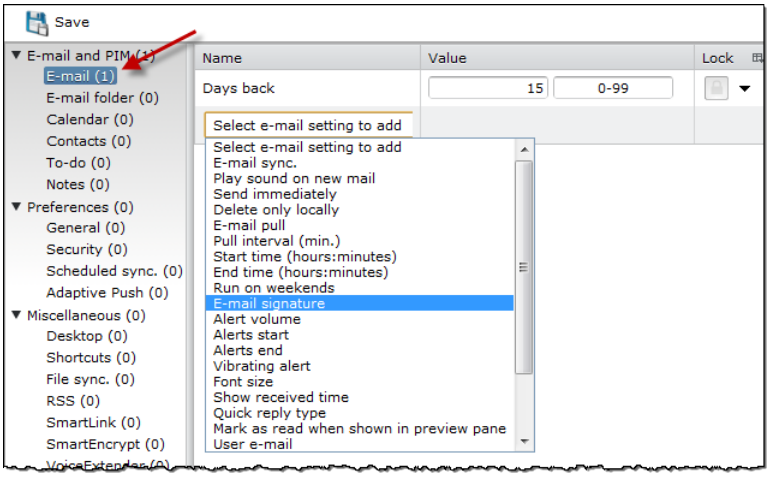
  This field contains the name by which the group is known in the system (the display name).

Settings

In this panel section you can override settings that derive from default settings or from another group with a lower hierarchical weight, and apply them to the devices that are members of the current group.

To specify which settings to override, first select each one from among all available settings, set a value for the setting, and determine if the setting should be locked. When you have added all the settings you need for the group, click **Save** to apply the settings to the group.

To add a setting, click the dropdown list that is shown in each group of settings, and select a setting. The example below is from the **E-mail** group of settings in the **E-mail and PIM** category.

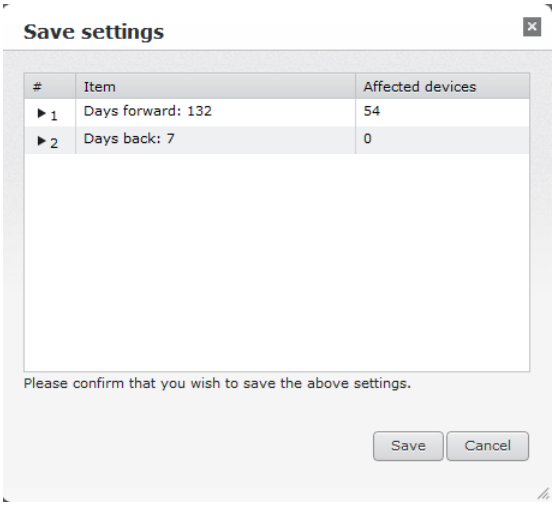


The **E-mail** group (arrow) indicates that 1 setting has been added to the group.

Now change the settings as required. You can change both the *value* and the *range* of permitted values. See ***Settings*** on page 89 for information about values and ranges. If you **Lock** a setting, it will be locked on all affected devices, meaning that the users cannot change the value from their phone. This is the way to enforce values in the DME system.

If you do not want to add a setting anyway, click to select it, and click the small **Remove** icon:

When you are done defining the settings, click the **Save** button . DME shows a dialog such as the following:



Here you can see how many devices will be affected by the change. A device is affected by changes made to the group if:

- The device is member of the current group, *and*
- The same setting has not been set to a different value in a group with a hight hierarchical weight, for instance directly for the device.

Click the small black triangle next to each setting in the confirmation window to see how DME has selected the affected devices.

Example

You change the setting **Days back** for e-mail from **5** to **15** in the group **S60**. The **S60** group has 22 members. The group is of the type **Platform**, which has a hierarchical weight of **300**.

Eight of the devices in the group **S60** are also member of a group called **SymbianOS/9.3**, which is of the type **OS** and has a hierarchical weight of **400**.

Furthermore, three of the devices in the **S60** group has an individual change of the **Days back** value made directly on the devices - corresponding to a hierarchical weight of **700**.

When you click **Save** to save the new value for **Days back** in the group **S60**, the setting will apply to 22 devices, minus the 8 in the **OS** type group, and minus the 3 devices for which individual settings had been made (assuming they are not also part of the **SymbianOS/9.3** group) - a total of *11 devices*.

Schedule

If the current group is a **Directory group** or a **Manual group**, this panel section lets you override the default notification schedule settings for the current group. The functionality of this panel section corresponds to that of the **Schedule** panel section for the server. See ***Schedule*** on page 246.

Files

If the current group is a **Directory group** or a **Manual group**, this panel section lets you can override the default file synchronization settings for the current group. The functionality of this panel section corresponds to that of the **Files** panel section for individual devices. See Files.

Applications

If the current group is a **Directory group** or a **Manual group**, this panel section lets you override the default application and connection blocking for the current group. The functionality of this panel section corresponds to that of the **Applications** panel section for individual devices. See ***Applications*** on page 275.

RSS feeds

In this panel section you can set up one or more RSS feeds and enable the current group (the devices that are member of the group) to subscribe to them. The functionality of this panel section corresponds to that of the **RSS feeds** panel section for default settings. See ***RSS feeds*** on page 278.

Apple profiles

 If the current group is based on Apple iOS devices, you can use this panel section to send one or more Apple iOS configuration profiles to the current group of devices. The profiles are made available in this panel section when they are uploaded through the **Provisioning** > **Apple iOS profiles** page (see ***Apple iOS profiles*** on page 172).

When you use this function to add a profile to a group of Apple iOS device, the devices will become enrolled with DME if they are not already enrolled.

To install profiles on the current group of devices, select the profiles you wish to install by switching them **ON** (or **OFF** if you want to remove them). Then click **Save**. The profiles will then be installed on the devices.

Note that the installation or removal process has a separate schedule. The server checks for changes in device profiles every 15 minutes between 08.00 and 16.00 server time. It may therefore take up to 15 minutes for the installation to start, or it will begin at 8 the following morning.

Profiles can also be added to individual devices. If a device already has a profile added, and the same profile is added through a group in this window later on, then the group setting will override the device profile, making it impossible to remove the profile from the device. If the profile is removed from the group, it will again be possible to remove the profile from the device (but it is not removed automatically).

Delete group

To delete one or more groups, highlight it or them in the **Group management** page, and click **Delete group**. You are prompted to confirm the deletion.

Update references

To refresh the relationship between each device and its group, click **Update references**. This updates the groups created in DME based on directory groups with the actual directory groups in LDAP/AD.

DME usually does this for you when you create a directory group. However, if you create a user manually and assign a device to the user, or if a device has swapped users, then you should choose this action to make sure the directory group mapping is correct.

Directory group priority

A device can be member of more than one LDAP or AD directory group, for instance both a **Sales** and a **UK** LDAP group. To resolve a situation in which a device is member of two directory groups with conflicting settings, you can change the directory group priorities in this popup window.

The popup window lists all directory groups defined in the **Group management** window. By default the list shows the group name, the LDAP/AD group upon which it is based, and the number of devices in the group. By clicking the  icon, you can also choose to see the group type (always **Directory group**), the hierarchy weight (always **600.0**), the current priority, and the date of last change.

To change group priorities, simply drag the row up or down in the table. The group with a higher priority overrides a group with a lower priority if they contain the same settings.

Certificates

The **Certificates** section of the page menu contains the following functions:

Install root certificate

When you click this function, the browser will attempt to install the DME server's root certificate. Follow your browser's prompts to install it. The following screenshot is from the Firefox browser:

Select **Trust this CA to identify web sites**.

Click **View** to see details about the certificate and the issuer of the certificate.

This should only be done one time per browser and computer you access the web interface from. If you try to install it again, your browser will show an error message.

Your browser now trusts the DME server.

S/MIME certificates

The **S/MIME certificates** panel is a list of grouped settings, which makes you able to configure and maintain S/MIME certificates on the server.

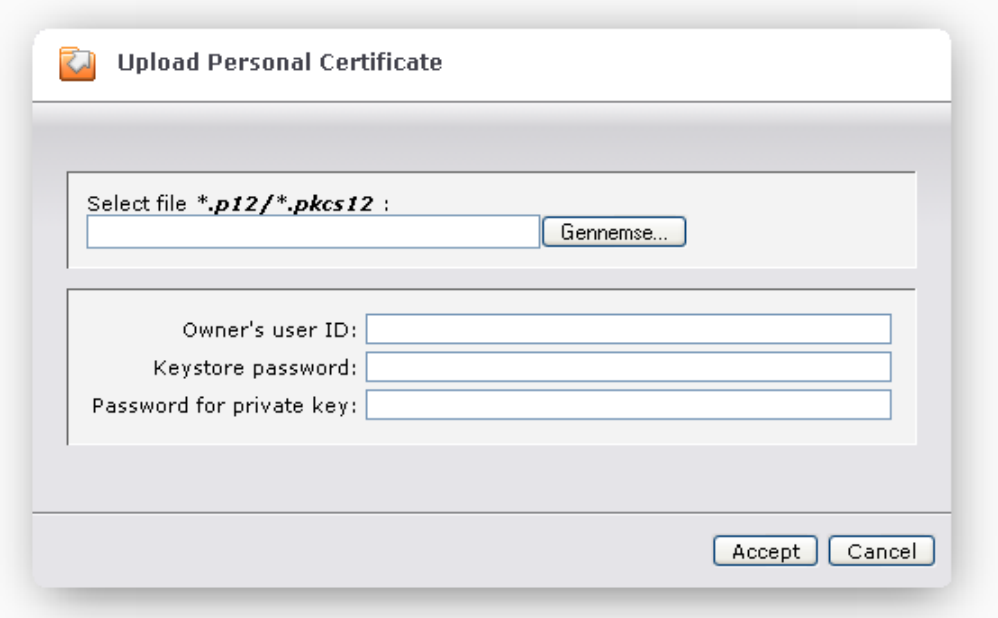
User

The instructions described here apply, whether you came to this page through the regular Web Administration Interface or through the **myDME** interface. For more information about **myDME**, see ***Appendix E: myDME*** on page 414.

In the **User** section of the **S/MIME** panel you can see user certificates. The certificates listed here are used by to sign outgoing S/MIME messages, to decrypt incoming encrypted S/MIME messages, and to encrypt outgoing S/MIME messages stored in your **Sent** folder. The list shows the certificate issuer, the date of expiration, and whether the certificate is valid.

This is where a user can install his or her private key through the **myDME** interface, or where the DME administrator installs the private keys on behalf of the DME users. In the following, it is assumed that the user installs the certificate himself or herself.

To install your personal certificate, click the **Upload Personal Certificate** icon in the tab toolbar. Doing this permits you to upload the **P12** or **PKCS12** file, which you received from the trust authority (which issued the certificate - see ***Appendix E: myDME*** on page 414), and which contains your public and private keys. This will open the following popup window:



In the upload dialog, you are prompted for the location of the **P12** or **PKCS12** file. Furthermore, you must complete the following fields:

- **Owner's user ID**

  This is your keystore identity (your DME user name (mail name) before the @ sign). Note that in **myDME** this field is not shown, as you can only upload your own private keys.

- **Keystore password**

  This is the password which must be supplied to open the encrypted keystore (**PKCS12**) file, and which is typically issued to you by the trust authority.

- **Password for private key**

  This is the separate password for the private key contained in the **PKCS12** file. Only enter this if you know that it is required.

When you click **Accept**, the public and private keys of the user in question are uploaded and installed in the DME server's keystore. You can now click the user in the table to view the certificate and see the certificate chain (sometimes trust authorities issue certificates based on their trusting other authorities - this is described as a certificate chain).

To use the personal certificate in the DME client, you need to enter the private key password into the **Private key password** field in the **Security** page of the **Settings** menu of your device. If you have entered a password in the **Password for private key** field, this is what you must enter in the client. Otherwise, enter the **Keystore password**. Your client can now access your private key on the server.

External

In the **External** section of the **S/MIME certificates** panel you can view the public certificates of external persons (sometimes called "other people") - here defined as a person identified by an e-mail address which is not part of the DME system. Say that an external accountant sends a signed e-mail to the CFO of your company. The accountant's public certificate will then be extracted from his mail and stored here as the public certificate of an external person. Now every user in the DME system will be able to receive signed messages from the accountant, and DME users who have uploaded their personal certificates will be able to send signed and encrypted messages to the accountant without further setup, simply by selecting the appropriate functions in their client.

The certificates of external persons are automatically stored here, if the option **Automatically store unknown certificates** is selected in the **Collaboration** section of the **Server configuration** panel (see ***Collaboration*** on page 221).

Otherwise you can upload a public certificate by clicking the **Import Certificates** icon  in the tab toolbar. If you do this, the imported certificates are trusted if their issuing certificate authority (CA) exists in the DME certificate store (see ***Root*** on page 292).

Root

In the **Root** section of the **S/MIME certificates** panel you can view *root certificates*. Root certificates are the public certificates of certificate authorities that we trust. For instance, if an e-mail is received by the system with a certificate issued by trust authority **A**, DME scans the list of trusted authorities for **A**. If **A** is not found, the certificate is rejected, and the e-mail will not appear to be signed when opened by the recipient.

Just as user certificates, you can upload trusted root certificates in this section of the **S/MIME certificates** panel.

CRL

In the **CRL** section of the **S/MIME certificates** panel you can view the public CRL - *Certificate Revocation List*. Every trust authority maintains a list of certificates that are no longer valid for some reason. Such a list is called a "Certificate Revocation List" (CRL). The URL to the list is embedded in the certificate. The CRL of each trust authority known by the DME system is listed here. The CRL is checked automatically when a certificate is found in an e-mail sent to the DME system.

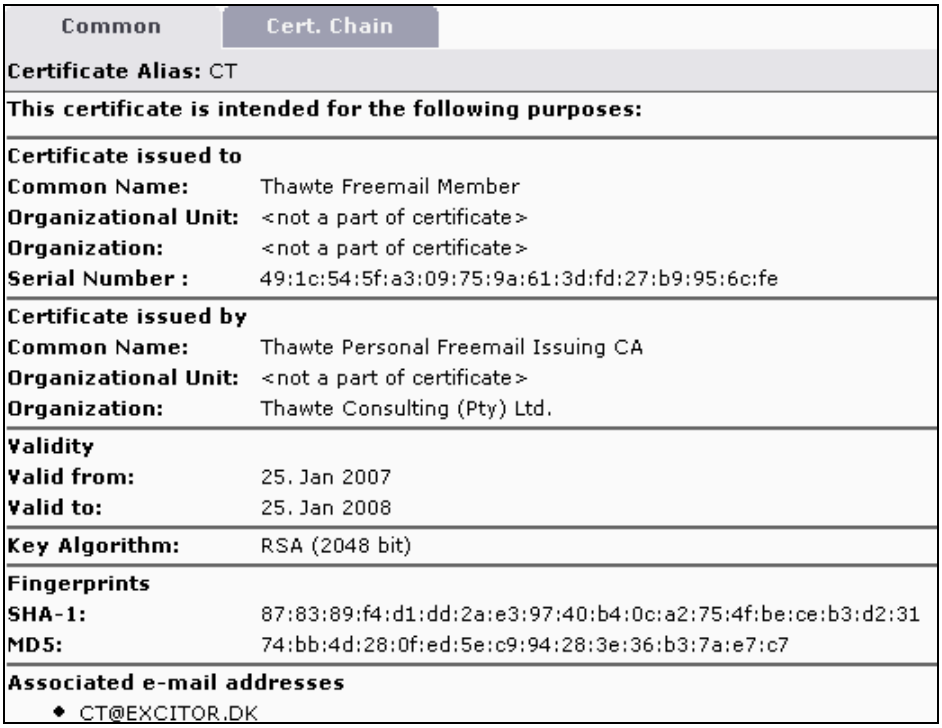
If the DME server succeeds in looking up the CRL, and the certificate is found in the CRL, the message is rejected.

The DME may be unable to look up the CRL for some reason (such as bad URL specified in certificate, spelling error, or connection error). A setting called **Accept certificate even if CRL lookup fails** in the **Collaboration** section of the **Server configuration** panel specifies whether the certificate (and, by extension, the message) should be accepted even if the DME server could not reach the CRL. See **Collaboration on page 221.**

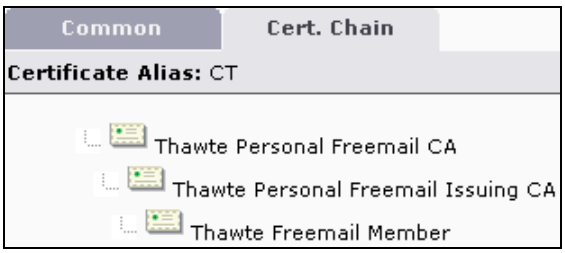
If you let the mouse pointer rest on the CRL source URL, information about the CRL issuer is displayed in a pop-up information box.

Viewing certificates

When you click a certificate, whether from the User, ***External***, or ***Root*** on page 292 panel sections, you can view its contents. For instance, when clicking a user certificate, information similar to the following is shown in the **Common** subtab:



By clicking the **Cert. Chain** subtab, you can see the certification chain:

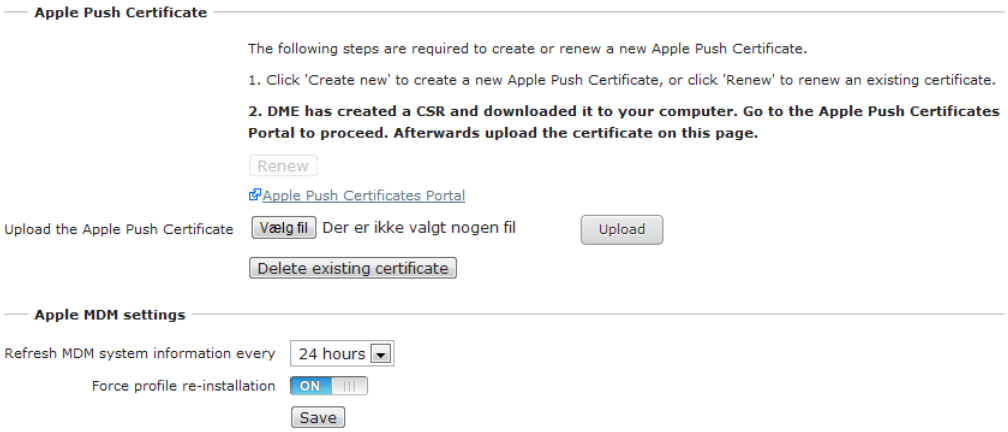


This certification chain shows that **Thawte Personal Freemail CA** is the root issuer of the certificate (**CA** = **Certificate Authority**).

In the or ***CRL*** on page 293 panel section, information about the CRL issuer is displayed in a pop-up information box when the mouse pointer rests on the CRL source URL.

Apple MDM

On this page you can configure the DME server as an Apple MDM server.



Furthermore, you can set options for refreshing Apple MDM system information.

Apple Push Certificate

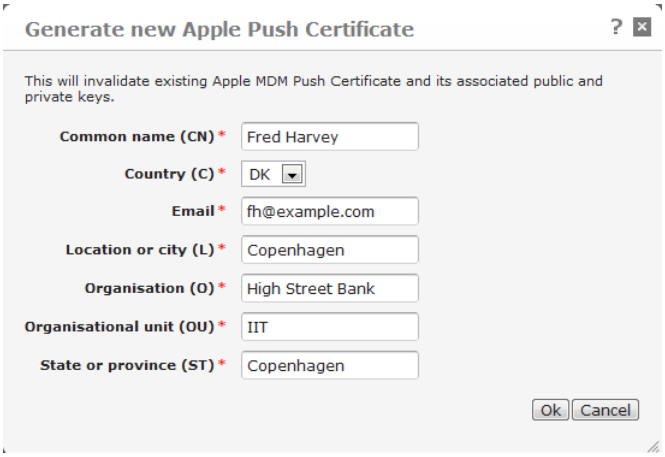
Apple Push certificate

With this group of functions you can manage the Apple Push Notification Service (APNS) certificate, which is required for using DME as an Apple MDM server. DME detects if an APNS certificate has already been installed, and shows a **Create new** button or a **Renew** and **Delete** button accordingly.

The steps required are outlined at the top of this section. The step highlighted with a **boldface** font is the step you need to perform next. They are as follows:

❖ ***Managing APNS certificate***

1. If you want to create a new certificate for setting Apple MDM up for the first time, click the **Create new** button. You are then prompted to enter information about your organization, to be used for the generation of the Certificate Signing Request (CSR).



or

If you already have an APNS certificate on your DME server, the button will be called **Renew** instead of **Create new**, and when you click it, DME will show the CSR information you entered previously.

or

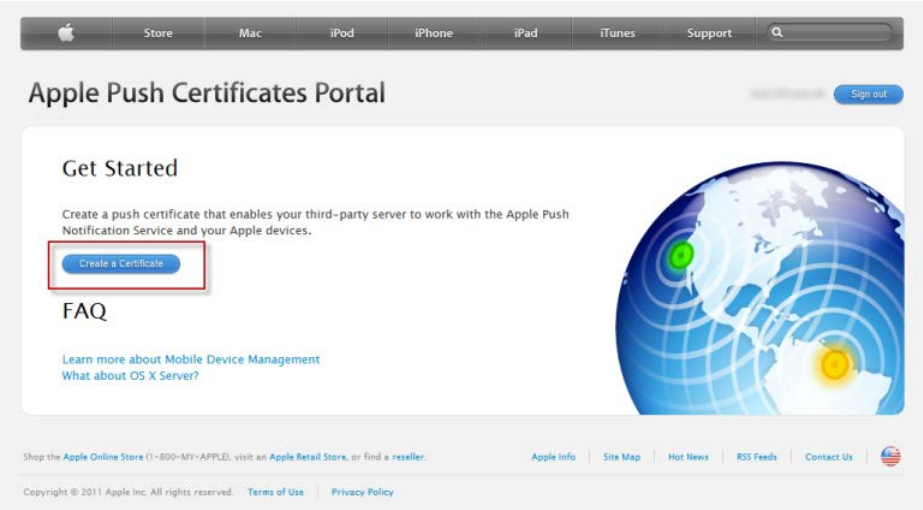
If you already have an APNS certificate on your DME server, but you want to create a new one (start the process over), click **Delete existing** certificate. Confirm your choice by selecting **Yes, delete Apple Push Certificate** In the ensuing pop-up window, and click **Delete**. *Note that* when you do this, the existing certificate is deleted along with the associated public and private keys. You will need to create a new certificate, and if any devices were already enrolled, they must be re-enrolled using this new certificate.

Click **Ok**.

The DME server responds by first *deleting any existing certificate* on the server, and then downloading the CSR file to your computer. The file is called **`signedCSR`**.

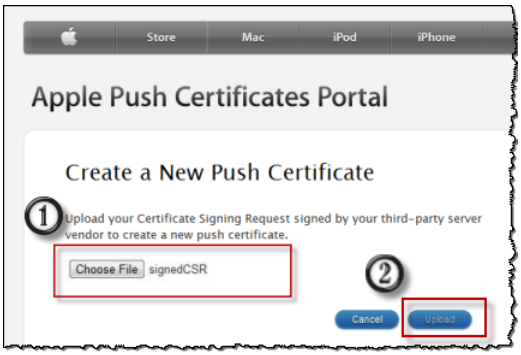
2. Now upload the CSR file to Apple. Click the **Apple Push Certificates Portal** link listed on the page (**`https://identity.apple.com/pushcert/`**) in your browser.
    1. The website opens in a new page in your browser, and you are asked to sign in. You can use any valid Apple ID for this.

After logging in, you reach the **Apple Push Certificates Portal** page:



2. Click **Create a Certificate**.

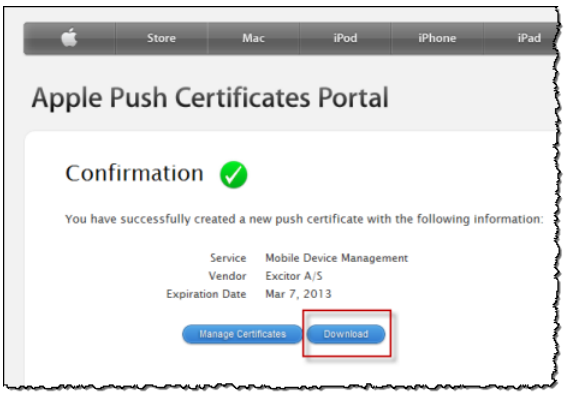
   You are asked to upload the CSR file generated by DME in step 1 above:



   Select the file, and click **Upload**.

3. Apple processes the CSR and generates a certificate for you.

   Click **Download** to retrieve the certificate.



Switch back to the DME web administration interface.

3. Browse to the certificate you received from Apple in step 3 using the file selection button in DME.
4. Click **Upload**.

   The certificate is uploaded to the server.

When you have completed the above steps, restart the DME server to refresh the certificate cache. DME detects the presence of the certificate, and automatically turns MDM APNS on. You can see the APNS connection status by selecting the **Server** tab > **Server configuration** > **Monitor** > **Server properties**. The field **Apple MDM push notification status** changes from **Disconnected** to **Connected**. See ***Monitor*** on page 236.

Important legal notice: Apple is very clear that a certificate can be installed on ONE server only. This means that if you for instance run a test server and a production server, you will need two separate certificates.

Firewall setup: The introduction of DME Central Services in DME Server 3.5 SP 3 made it possible to run APNS using the DME Central Services server, which in turn enabled you to close the firewall ports to the Apple APNS server.

However, the Apple MDM system requires that no proxy (the role played by the DME Central Services server) may stand between the Apple APNS server and the MDM server (DME). This makes it necessary to open your firewall to the following URIs:

```
gateway.push.apple.com:2195
feedback.push.apple.com:2196
```

Note also that if you are using an Apple iOS device over WiFi, you need to open port **5223** in order to be able to receive notifications. See the Apple knowledge base for more information.

When you are done, you are able to enroll Apple devices with the DME server. See ***Enrolling devices*** on page 127.

Apple MDM settings

- **Refresh MDM system information every**

  With this function, you can let DME make the connected device refresh system information at the interval specified - every day, every **7**, **14**, or **30** days, or **Never**. A system information sync. refreshes the information listed about the device in the **Information**, **Applications**, and **Apple MDM** sections in the device setup pages.

  The reason you want to do this is to refresh the list of profiles installed on the device in order to check if any profiles have been deleted by the user. If a profile has been deleted, you can let DME

attempt to reinstall it by enabling the function **Force profile re-installation**.

- **Force profile re-installation**

  If this field is set to **True**, DME will compare the list of profiles installed on the device by DME (as seen in the **Apple MDM** section of the device setup page) with the list of profiles that are actually installed on the device (see also ***MDM on Apple iOS*** on page 126). If the user has removed a profile from the device, DME will attempt to reinstall the profile on the device.

  It is important to note that the Apple protocols do not allow DME to prevent the user from removing a profile from their device. If the user removes the main DME MDM profile, the device loses its bootstrapped status, and must be enrolled again in order for any MDM feature to work (including forcing a profile re-installation).

  To make sure that the list of installed profiles is kept up to date, you should also enable the **Refresh MDM system information every** function above.

Click **Save configuration** to save the current configuration.

License

The **License** section of the page menu contains one function, which is used for managing your DME server licenses: **Manage licenses**.

On this page you can view the contents of the license file you have purchased from your DME Partner. To use DME, you need a valid license file. The license file grants access for a specific number of users to use a specific set of features in DME. If you do not have a license file, you will be able to log on to the Web Administration Interface, but no users will be able to synchronize their devices. The licenses are bound to the physical server through the server's MAC address. In a load-balanced system (cluster), you need to include the MAC address from each of the servers in the cluster in the license file before installing it on the primary server node.

It is possible to obtain different licenses for DME, depending on how you wish to use the system. All license types include device management. Your DME software partner will help you with any questions you may have about licensing.

No matter which license type is assigned to a device, the device must run the DME client. The client only shows the features to which the license grants access. For instance, if calendar synchronization is not permitted, the client will not show menu items involving the calendar, such as **Synchronize calendar** and **New meeting**.

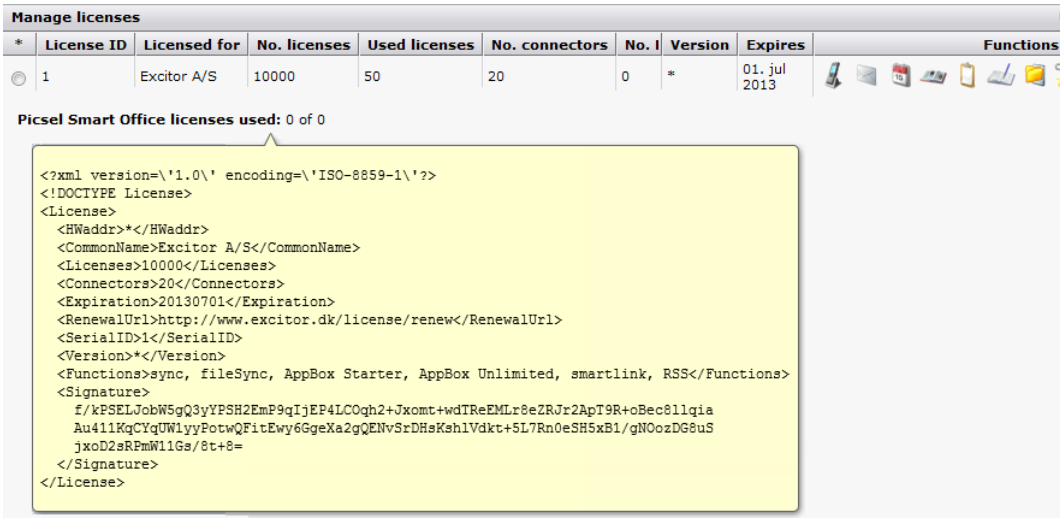
A *device management license* (only) means that the device is shown in the **Devices** tab. You can use many of the features in the **Push to device** page menu section with the device, except the ones that involve synchronization. Furthermore, you can use DME to block applications and networks on the device (see ***Applications*** on page 275), if the device supports this feature. Note that the DME Basic MDM client must be installed on the device. In this case, the DME client will consist of a login screen, some setup options, and a splash screen. See also ***Appendix G: The Basic MDM client*** on page 425.

License columns

The **Manage licenses** page contains the following columns:

- **License ID**

  This column shows the ID assigned to the current license. The ID is supplied in the license file generated by your DME software partner. You can view the license XML file by letting the mouse pointer rest on this column or the column **Licensed for**.



- **Licensed for**

  This column shows the name of the licensee - that is, the name of your company. As for the column **License ID**, the license file is displayed when you let the mouse pointer rest on this column.

- **No. licenses**

  This column shows the number of licenses that your company has purchased.

- **Used licenses**

  This column shows how many of the maximum number of licenses that have in fact been used by devices in your system.

- **No. connectors**

  This column shows the number of connectors that are attached to the current server.

- **No. Doc. Viewer**

  This column shows the number of DME Document Viewer licenses that this license covers. Below this table, a text says how many of such licenses are in fact in use.

- **Version**

  This column shows the version of DME to which your license applies. A * is a wildcard character meaning **any**. Hence, **3.*** means that the license is valid for any DME version 3, for instance 3.0 or 3.6.

- **Expires**

  This column shows the date on which your license expires. You need to renew your license before this date. This is most often relevant in connection with DME trial licenses.

- **Functions**

  This column shows what the current license covers:


Device management


E-mail synchronization


Calendar synchronization


Contacts synchronization


To-do (task) synchronization


Notes (journal) synchronization


File synchronization


SmartLink (see ***SmartLink settings*** on page 385)


RSS feed synchronization


AppBox Starter. License to run one DME add-in application.


AppBox Unlimited. License to run any number of DME add-in applications.


Telecom Expense Management integration

All license types include device management.

- **Default**

  The license file which has been assigned as default license is marked with a ✔. (Note: redundant field.)

DME Document Viewer licenses

Licenses for the DME Document Viewer and editor (the tool for viewing and possibly editing documents in the secure container of the clients) are counted separately. For instance, you can purchase a license for 1000 DME users and 200 Document Viewer users. Below the description of the DME license, a text will show how many Document Viewer licenses have been bought, and how many are in use.

The column **No. Doc. Viewer** in the license table also shows the number of DME Document Viewer licenses purchased.

Tab actions

The **Manage licenses** page contains the following actions:

New license

When you receive a license file from your DME software partner, you must upload it to the DME server. Select the **New license** action, browse to the file, and click **Accept**. If the file is a valid license file, it is uploaded to the server database.

The license file that you upload will replace the existing license file on the server.

Delete license

If you need to revoke a license file from the server, select the license in the table, and click this action. When you confirm the action, the license file is removed from the server.

You can remove a license file manually from the DME server if you know where it is located.

Runtime

The functions in the **Runtime** section of the page menu are used to see the current state of SMS messages sent, connected DME clients, and system messages.

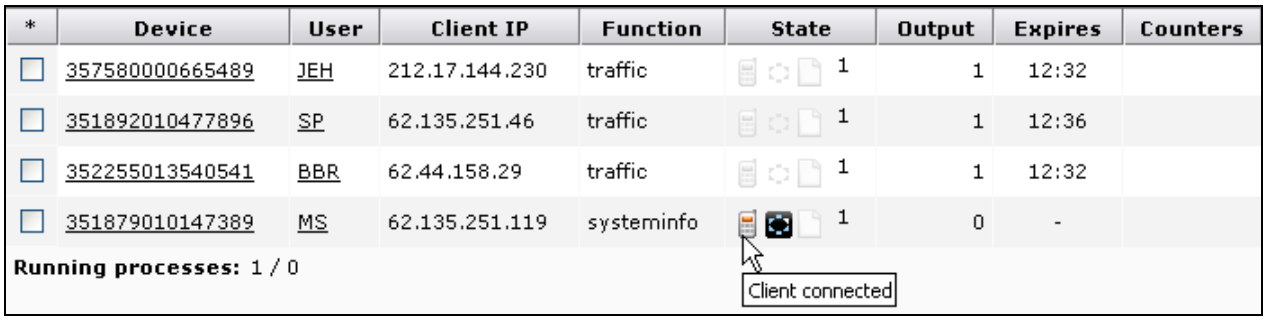
SMS commands

This page shows a list of the SMS commands sent from the server to devices, such as sync messages, WAP pushes etc. The list shows the date and time of the SMS and the phone number, device ID and user ID it was sent to. The information derives from the Kannel server.

If you let the mouse pointer rest on the icon in the left-hand column, a tooltip shows the nature of the SMS in question.

Active clients

Here you can see information about which clients are currently online - or rather, the clients for which the DME server still stores a cache. The amount of time user sync data are stored is specified in the ***Client*** on page 215 section of the **Server configuration** panel.



Apart from the device ID, user ID, and the device IP address, information about the online clients includes the following:

- **Function**

  The type of data in the cache.

- **State**

  The state of the cache. A fully drawn icon indicates that the state is active. Possible states are: **Connected** ( ), **Running** ( ), and **Data output ready** ( ).

  The number following the icon indicates the number of times the current process has run. Sometimes a process is run multiple times, for example if the client connection is interrupted.

- **Output**

  The number here indicates how many times the output has been sent to the client. Output may need to be sent multiple times, for example if the client connection is interrupted, or if the client makes an identical request within a given time frame - in which case the results are passed to the client from the cache, and the figure in this field is increased.

- **Expires**

  After the time in this field, the current cached connection is flushed. See the **Client** section of the **Server configuration** panel (***Client*** on page 215).

- **Counters**

  One or more counters may be displayed in this field. This typically happens if a situation arises which should be monitored - for instance a time-out condition. If this occurs, a time-out counter will appear in this field, counting the number of time-out conditions for the cached data in question.

The **Running processes** indicator below the table indicates the number of current processes (equal to the number of entries in the table above where the **Running** icon is shown). After the slash, the number of orphan processes (known as "zombie processes" in Linux) is shown. An orphan process may occur if a client initiates a large process and then cancels it and initiates another, similar process. These conditions are rare, and the best thing that DME can do about it is to let the processes time out by themselves. The implications of killing such orphan processes is undefined. If many such processes occur, the problem usually lies in client setup or user behavior.

If you want to terminate and remove any client processes, select the processes in question, and click the **Delete** icon in the tab toolbar.

Show directory groups

The **Show directory groups** function is used for showing the global group graph from the LDAP/AD directory.

The graph reflects whether the setting **Group graph mode** in the **Domain** section of the connector setup panel is set to **Full** or **Partial**. If **Full**, all groups are shown. If **Partial**, only the groups that relate to the DME server are shown.

For more information, see ***Domain*** on page 314.

Connector

The **Connector** tab contains functions and information used for managing each connector attached to the DME server. For more information about the role of connectors in the DME system, see ***DME server architecture*** on page 15.

This tab contains two subtabs: **Connectors**, which shows a list of all connectors known to the DME server, and **Users**, which shows detailed routing information about each user serviced by a connector.

Furthermore, the page menu contains the following items:

- **Routes** - Refreshes the **Connector** tab page.
- **AppBox** - Link to the DME AppBox. Also accessible from the **Server** tab. See AppBox.
- **Show directory groups**. Also accessible from the **Server** tab. See ***Show directory groups*** on page 304.

Connectors

The **Connectors** subtab contains a list of all connectors known to the DME server. The following columns show information about each connector:

- **Connector**

  This column contains the name of the connector. This is originally specified during the installation of the connector, but can be changed in the **Main** section of the connector's **Connector settings** page. To view and edit the properties of the connector, click the name.

  The icons associated with each connector have the following meaning:


Primary connector with broadcast (supported users are selected automatically)


Failover connector with broadcast


Locked connector (see below)


Primary connector, supporting a list of named users


Failover connector, supporting a list of named users

 Primary connector, supporting the users of a specified LDAP group

 Failover connector, supporting the users of a specified LDAP group

For information about the difference between the types of connectors, see ***Setting up connectors*** on page 311.

- **Enabled**

  This column uses an icon to show the status of the connector on the current line.

   A *locked padlock* icon means that the connector is locked. Connectors are locked by default when they are created - the administrator must unlock the connector before it can be used.

   If the icon is a *green checkmark*, the connector is enabled and running correctly for this server. Note that if DME is installed as a *cluster solution* (that is, a solution with multiple DME servers), the connector may be unavailable to other servers in the cluster.

   If the icon is a *grey dot*, the connector is currently unavailable because it has been stopped.

   If the icon is an *x in a red circle*, the connector was once reachable and working, but is now unavailable. This can happen if the number of threads available for the connector has been exhausted - in other words, the connector is overloaded (see the **Main** section of the connector's **Connector settings** page). The connector will not accept new jobs until there are available threads again. If DME is installed as a cluster solution, the connector may be available to other servers.

- **Connector type**

  This column shows which collaboration system is serviced by the current connector:

   for IBM Lotus Domino,  for Microsoft Exchange, or  for generic LDAP systems.

- **Group graph**

  This column shows a green checkmark if the current connector is used for building the LDAP/AD directory group graph as described in the **Domain** section of the connector's **Connector settings** page (see ***Domain*** on page 314).

- **Functions**

  The next 9 columns show the functions that the connector in question serves. For each connector, you can specify that it should for instance serve users by synchronizing their e-mail and contacts, or that the connector should be used for user authentication. A blue dot indicates that the connector is used for

the function; a grey dot indicates that the connector is not used in that capacity. The available functions are:

- uthentication
- -mail sync. and notification. This includes synchronization of e-mail folders
- ontact sync.
- alendar sync. and notification
- ask / To-do sync.
- otes sync. (Journals)
- SS feed sync.
- ree time search
- ontact search
- ooms and resources search
- martLink resolution

For more information, see ***Setting up connectors*** on page 311.

- **Location**

  The **Location** column shows the network location of the current connector. The name of the server and the IP address of the server are shown.

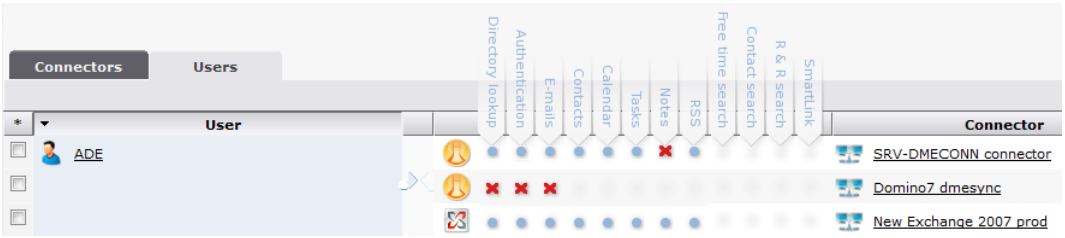
- **Routes**

  This column shows the number of *routes* that are serviced by the connector in question. The number of routes is calculated as the number of functions times the number of users. For example, if the current connector is used for authentication for all 300 DME users and for e-mail and contact synchronization for 100 of these users, the number will be (300 users x 1 function (authentication)) + (100 users x 2 functions (e-mail and contact sync.) = 500 routes.

  Next to the number, a graph shows the percentage of the total number of routes for the DME server that are served by this connector. If you let the mouse pointer rest on the graph, a tooltip will show the actual percentage.

Users

This subtab shows a list of all users connected to the DME server.



For each user, the columns to the right of the user show which functions are served by which connectors.

● The blue dot indicates that the connector is used for the specified function.

The faint grey dot indicates that the connector is not used in that capacity (yet).

○ The hollow, blue dot indicates that the connector has been used for the specified function (a route exists to the user), but the function has since been disabled.

✖ The red X indicates that the route is not available for the user in question on that connector. This can happen if a broadcast has found a connector to service a user for a certain function, but no connection to the user could be established. Note that a new broadcast will not be made - you need to flush the route table for the user in question in order to create a new route.

The following columns are shown:

- **User**

  The first column shows the users on the DME system. You can click the user name to edit his or her properties.

- **Collaboration system**

  The next column shows by a symbol the collaboration system to which the user is connected - Domino or Exchange.

- **Directory lookup**

  A ● in this column indicates that the connector used for directory lookup - that is, for querying user information such as mail file and group memberships.

- **Functions**

  A ● in any of the next columns indicates which connector or connectors serve the user with the function in question.

  Note that a blue dot is not shown until the user has actually performed the function. For instance, if connector **A** is set up to

run the **Contact search** function, a blue dot is not shown in the **Contact search** column for a user until the user has in fact performed a search for contacts in the Global Address Book on his or her DME client. In other words, the route is not created for the user until required.

- **Connector**

  This column shows the connectors that apply to the current user (that is, at least one column is marked with ● or ✖). You can click the connector name to edit its properties.

Connector tab actions

The main **Connector** tab toolbar contains the following actions. After selecting each action, you are asked to confirm your choice.

-  **Remove connector(s)**

  Clicking this action removes any selected connector(s) in the list. The DME server no longer has a record of the location of the connector, and the connector must be reinstalled in order to appear in the list again.

-  **Flush routes for selected connector(s) or user(s)**

  As described in the section about the DME server architecture (see ***DME server architecture*** on page 15), each user is assigned to one connector to be serviced within a given function area (e-mail, search, etc. as specified in the connector setup). This is called the user's *route*. If that user needs to move to another connector (for instance because he is relocated to a different branch office), you need to select this action to flush the route table - both for the connector which the user leaves and the connector to which the user should be assigned. The route table is flushed for the entire connector. The DME server will start broadcasting users again, and the broadcast will be picked up by the connector to which the user has been moved.

  The route from user to connector is created again at the time of the first synchronization. Please note that the notification scanner is not able to create routes. As a consequence, if there is no route to a user, a notification of a new e-mail will not reach the user until after the first synchronization, where the route is recreated.

  You can flush routes for one or more connectors or users.

- **Toggle connector lock**

  When a connector is installed on a server somewhere, and it tries to connect to the DME server, it is initially created in a **Locked** state. The DME administrator must manually toggle the lock status of the connector by selecting this action. Clicking this action toggles the lock of the selected connector(s).

Setting up connectors

Click the name of a connector in the **Connectors** or **Users** subtab to view and edit its properties. The following sections describe the *connector setup panel*.

Please note that some fields and groups of fields only apply to one particular collaboration system or LDAP. Such fields are marked with a symbol in this manual:

for Lotus Domino

for Microsoft Exchange

for generic LDAP

Furthermore, some fields in the user interface are marked with a red * (asterisk). Such fields are considered mandatory - if they are not completed, DME will not work correctly. For instance, the **LDAP server** field in the **Authentication** setup panel is mandatory - but only if the current connector is set up to serve authentication requests (**Enable authentication** = **On**).

Note that for reasons of overall stability, it is important that all network equipment is *not* set to auto-negotiate speed. The network equipment (network interface cards, firewalls etc.) should always be set to the speed of the slowest network component in the chain to prevent speed fallbacks and resending of network packets.

Main

In the **Main** section of the **Connector settings** panel you can configure various properties of the current connector. All fields in this section are mandatory.

Connector

The **Connector** group of functions contains the following fields:

- **Display name**

  This is the common name of the current connector. The name is shown in the main **Connector** tab. The connector is given a name when it is originally installed, and that name is reported to the server. However, you can change the name in this field.

- **Node type**

  In this field you select the *node type* of the current connector. You can choose between the following options:

  - **rimary**

    A **Primary** connector is the connector which the DME server will direct all applicable requests to. If you set up more than one **Primary** connector to service the same segment of users or functions, they will service the users according to a "round robin" principle. If there for instance are three connectors associated with the same group of users, DME will consider the load on all three connectors and which connector last serviced the user. Based on this information, DME will select the next connector in line to service the user, effectively load balancing the system.

  - **ailover**

    A **Failover** connector will be used if all **Primary** connectors are taken out of service or are exhausted (see **Process** below) for a segment of users or functions. It is good practise to set up a small-volume failover connector in case the primary connector(s) should fail or otherwise be taken out of service, to service the users until a primary connector is up and running again.

Process

The **Process** group of functions contains the following fields:

- **Number of threads**

  In this field you can enter a number of threads, or *processes*, that the connector should be able to handle at the same time. Default value: **25**.

- **Exhaustion level**

  In this field you can enter a number of threads, or *processes*. When the queue of processes waiting to be executed by the connector reaches this number, it is a sign that the connector is overloaded. The connector will stop working, and any failover connector will

take over. The main connector list will show a  , and an entry will be made in the server log. Default value: **50**.

- **Execution timeout**

  In this field you can enter a value in seconds. After a thread (a task given to the connector by the server) has not been completed during this span of time, it will be terminated, and an entry will be made in the server log. Default value: **900** seconds.

SMTP (e-mail notifications)

The **SMTP** group of functions define how DME can send certain system-generated e-mail messages to users, such as messages about calendar conflicts and name resolution errors.

Messages sent to the administrator in connection with client creation alerts etc. are sent by the SMTP relay server defined in the corresponding setting for the DME server (see ***Collaboration*** on page 221).

The **SMTP** group of functions contains the following fields:

- **SMTP relay server**

  Connectors are not necessarily on the same network as the DME server. Therefore you need to enter the external name of the mail server used by the connector for sending the various e-mail messages described above. Note that this mail server must allow relays from the connector's IP address.

- **SMTP mail sender**

  In this field you can enter a name you want to show as sender when a user receives a system-generated message as described above. For instance, you can enter **DME Administrator** or similar as sender to make it obvious to the user that the message is system-generated. If you leave the field empty, system-generated messages will be sent with **root@DME-Server** as sender.

  Please take steps to ensure that e-mails from this sender are not evaluated as spam by the recipients' e-mail clients, for instance by instructing the DME users to add this sender to the "Safe Senders list" or similar. E-mail in spam mailboxes is rarely read, and almost never synchronized to DME clients, so there is a risk that important information is missed by the users.

Info

This section contains information about the current connector.

The **Info** group of functions contains the following fields:

- **Connector ID** is an internal identifier of the connector used by the DME server. It is very important that this ID is unique across the entire DME system. The ID is written in the connector's

configuration file `dme-config.xml` when the connector is installed.

- The **Version** field contains the version number of the connector. This version number can be used to verify that the current connector is compatible with the DME server. The number should match the version and build number of the DME server (which can be seen by clicking the DME Administration logo (see ***About DME*** on page 39)).

Click **Save** to save the new settings.

Domain

In the **Domain** section of the **Connector settings** panel you define the directory (LDAP/AD) settings of the current connector, and the generation of the directory group graph. All fields in this section are mandatory.

Directory server

The **Directory server** group of functions contains the following fields:

- **Domain info directory server**

  In this field you must enter the DNS name or IP address of the directory server (LDAP/AD) used by the current connector. You can specify a non-standard port by adding a port number (**:<port>**). Different directories can be used for different connector functions. The directory specified here is used for looking up each user's mail file and group membership.

- **User for domain info queries**

  In this field you enter the name of the user which performs the directory lookups. For more information about creating this user, see the separate Domino and Exchange Integration documentation issued by Excitor A/S. This user should have access to querying the directory for information such as mail file location and group memberships. By convention, this user is most often called **DME_Server**.

- **Password**

  In this field you specify the password of the directory query user specified above.

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search

for information in the LDAP specified above, and not follow any chain of LDAP referrals.

- **Test connection**

  Click this button to verify that the connection to the LDAP server can in fact be established with the connection information you have entered for this connector. You should do this before clicking **Save**. Note that the function only tests the LDAP specified in the **Domain info LDAP server** field, and not all LDAP servers that this DME server can reach. This way, you can test the connection against one connector at a time.

  Enter the name of a user that you know exists in the LDAP directory. DME suggests the DME query user, but you for instance enter your own user name.

  Click **Test**. If the connection to LDAP is successful, the result page will show various information about the user, retrieved from LDAP. If the connection failed, the result page will show an exception which may help you pinpoint the problem.

  Click **Back** to try with another user, or click **Cancel** to end the test.

Generic LDAP setup 

The **Generic LDAP setup** group of functions contain options for setting up a generic LDAP system. This is typically used if:

- DME is used for device management only, and is therefore not connected to a collaboration system, *and*
- You cannot use the Basic MDM client solutions, because you need to be able to authenticate users.

If you have these two requirements, you can authenticate users against any directory system, such as Open LDAP or Novell eDirectory, using the fields below.

When the user has been granted access through the directory server specified in the **Authentication** field in the **Authentication** section, the user's domain information is looked up. The information is looked up by the administrative user specified in the **LDAP server** group of fields above.

In the following fields, you can specify how this lookup should take place.

- **User search query**

  In order to find domain information for the user in question, this is the search string DME uses to query the generic LDAP system. The string is written in the LDAP query language. `{0}` is a placeholder, representing the user name employed by the user for

logging in to the DME client. *Example:*
`(&(objectclass=person)(cn={0}))`
Please note that if multiple users have the same CN, but different domains, you must set up a generic LDAP connector per domain. For instance, `CN=John Smith, OU=XYZ` and `CN=John Smith, OU=WQJ` must be serviced by different connectors.

- **User search DN**

  The user in question must be member of the DN specified here. *Example:* `dc=example,dc=com`

- **Attribute mapping**

  This is a comma-separated list of attribute mappings. This maps a fixed list of attributes used by DME (written in CAPITALS) to the corresponding field in the generic LDAP system. Most of the attributes are self-explanatory - except the `GROUPS` attribute: the group specified here is the name of the attribute that contains information about group memberships. This is where DME will look for membership of the **DME_User** or **DME_Admin** groups.

- **Group name regex**

  The regular expression string entered in this field is meant to isolate the group name from other information in the group name field in the generic LDAP. By default (if the field is empty), DME will strip `CN=` from the beginning of the string and everything following the first comma. If, for example, the generic LDAP system specifies the name of the groups of which a user is member like this: `CN=DME_User, DC=example, DC=com`, DME will only return **DME_User**.

  However, you can enter a different regular expression here, conforming to the rules outlined on Sun's help page on Java regular expressions: http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html.

User groups (group graph)

The **User groups (group graph)** group of functions contains the following fields:

- **Read out group graph**

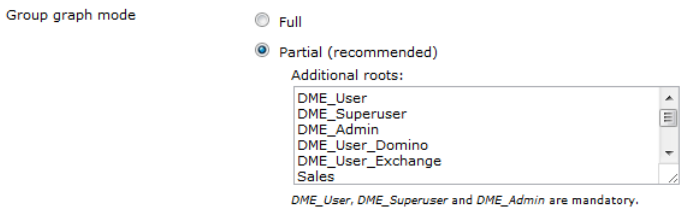
  The DME server requires a group graph, which is a tree representation of the directory groups from the organization's directory server (LDAP/AD). This graph is used by DME to detect the rights of a given user, based on the user's association with a group: is the user member of a group which is a member of **DME_User** (or a group impersonating **DME_User** - see **Access rights** below), of **DME_Superuser**, or **DME_Admin**. For more information, see ***The group graph*** on page 18.

Furthermore, the groups in the group graph can be used for grouping devices in the **Devices** tab. For more information, see Groups.

Only one system-wide group graph can be used by the DME server. It is sufficient to let one connector read out the group graph from the directory and send it to the server. Letting more connectors do this is also allowed, but not recommended. The connector used for authentication uses the group graph stored on the DME server to verify that a user is member of the **DME_User** group. When this field is selected, the current connector will extract the group graph from the directory server specified in the field **Domain info LDAP server** above, and send it to the DME server when you click **Save**. The group graph is extracted according to the specifications below.

- **Group graph mode**

  In these fields you can specify the extent to which you want to send the directory group graph to the DME server. This is only relevant if the field **Read out group graph** above is also selected.



  If you choose **Full**, all groups in the directory are included in the group graph. Choosing **Full** allows you to build Analyzer reports using the directory groups as parameter. However, if your organization's directory contains a very large number of groups (10,000+), it is recommended to choose **Partial**, as building the group graph can put quite a strain on the connector.

  If you choose **Partial**, the DME groups **DME_User**, **DME_Admin**, **DME_Superuser** and their subgroups are included in the graph by default. However, you can enter additional roots to be traversed. If, for example, you enter **OtherRoot** as in the example shown above, the group graph will consist of the mandatory DME groups and any directory groups below **OtherRoot**. You can add roots that do not exist in the directory specified in the **LDAP server** group of fields above, for instance if you want to allow users, who are not members of any group in the specified LDAP server, to log on.

  Furthermore, you can choose **Partial** and add the * keyword to the list. This means that all groups will be included (as in **Full**), with the addition of any other groups you need to specify.

When you click **Save**, the connector will read out the group graph and send it to the DME server. A log entry in the **System** category with the text **New group graph arrived:**, followed by the actual group graph, will be written to the log (see ***Log*** on page 183). The group graph can be seen by clicking **Show LDAP groups** in the page menu of the **Server** tab.

- **Read timeout**

  In this field you can enter the number of minutes for which the connector should try to read the directory group graph. After the specified number of minutes, the process will stop.
  Recommended value: 60 minutes.

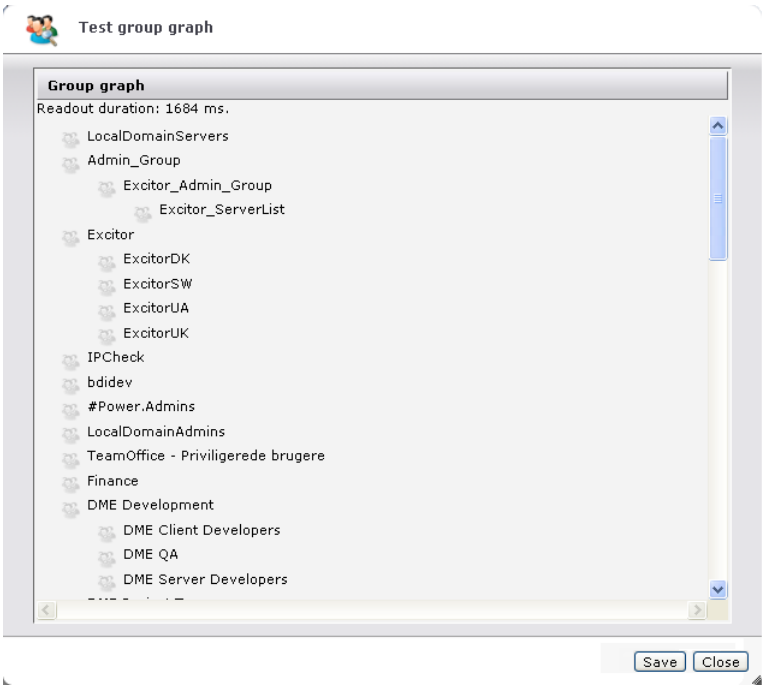
- **Read frequency**

  In this field you can either enter the number of minutes that should pass between each refresh of the directory group graph, or you can enter a specific time of day in **hh:mm** format, and DME will then refresh the directory group graph at that time. You could for instance specify that DME should refresh the user/group memberships every night at **03:00**.

- **Test readout**

  When you have specified the LDAP server or altered the group graph setup, you can click the **Test readout** button to verify your changes. This button is available if the field **Read out group graph** is selected. If it is not (if the current connector is not used for reading out the group graph), you can enable the field, test the group graph, and then disable the field again - enabling the group graph function for the connector does not take effect until you click **Save** in the **Domain** panel.

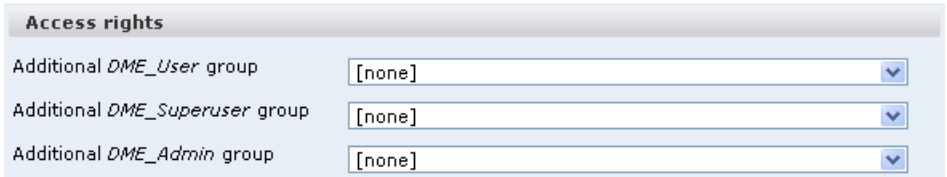
The test verifies that the group graph can in fact be read from the LDAP server with the information specified in the **LDAP server** group of fields above. A popup window shows *either* the group graph as defined in this group of functions (as an indication of success), *or* an error message as an indication that the connection to the LDAP server failed. Perform the test before saving your changes to the connector. The picture below shows an example of a successful readout of the group graph.



Click **Close** to exit to the **Domain** panel again.

If you have made changes that you want to apply before the next scheduled run of the group graph readout, you can also use the **Test readout** function as a manual refresh of the group graph. Run the test, and click **Save** to save the group graph.

The **Access rights** group of functions contains the following fields:



- **Additional DME_User group**

  If you want to use an LDAP group in addition to **DME_User** for DME users, choose an LDAP group here. This group will then have the same rights as **DME_User**. For more information about user groups, see ***About users*** on page 79.

- **Additional DME_Superuser group**

  The functionality of this field is similar to that of the field **Additional DME_User group** above, but applies to the **DME_Superuser** group.

- **Additional DME_Admin group**

  The functionality of this field is similar to that of the field **Additional DME_User group** above, but applies to the **DME_Admin** group.

Supported users

The **Supported users** group of functions lets you specify which users should be serviced by the current connector (the *route users*) - either manually or by letting the connector broadcast for users to be serviced.

If you have a central directory server and a local mail server for a specific office/location, you can for instance configure a specific group in your directory for users of this office/location, and configure a DME connector to service users of this group only.

DME user domain

You can limit the connector to only serving users from a specific domain. This allows you to run one DME server for multiple domains. For instance, if your DME server hosts users from multiple distinct companies, you can set up one connector per company by only allowing the connector to create routes to users from a certain domain only.

The domain must be entered on the form `domain.com`. For Domino users, this must match the e-mail address of the user. For Exchange users, this must match the `UserPrincipalName`.

For instance, if `domain.com` is entered here, a user logging in as `john.doe@domain.com` can be serviced by this connector; a user logging in as `john.doe@example.com` cannot.

Route users

The users' route to a DME Connector is based on a built-in priority, where the more specific user selection has the higher priority. For instance, if a user is specified in the **Users** field of one connector, but is also found as member of a group specified in the **Members of** field of another connector, then the route will be created to the connector where the user is specified directly. If the user is not found in either of those fields of any connector, the route will be created to a connector set to **Automatic** (broadcast).

- **Users**

  In this field you can specify a comma separated list of users that should be serviced by this connector. The users should be specified as they would be displayed in the **User** column in the **Devices** tab. A list could for instance be **NIF,LL,MFB**. In this case, only the users NIF, LL, and MFB would be serviced by this connector. This could for instance be used for debugging purposes in connection with the setup of a new DME connector.

- **Members of**

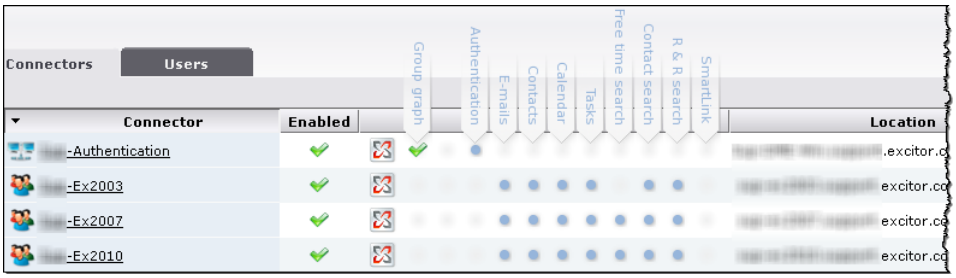
  In this field you can specify a group from the directory specified in the field **Domain info directory server** above. The effect is similar to that of the field **Users** above, and should only be used in the same circumstances - while testing a new installation. Only users that are members of the selected group are serviced by this connector. This only applies if the field **Automatic** below is not checked.

- **Automatic**

  If this field is selected (default), the fields **Users** and **Members of** above are ignored. Instead, the DME server determines which users should be serviced by which connector by way of a *user broadcast*, as described in the section about the DME server architecture - see ***DME server architecture*** on page 15.

  Note that it is a requirement that *at least one* connector is set to **Automatic**.

  If, for instance, you use the **Members of** setting to route your Exchange 2003 users to one connector, your Exchange 2007 users to another connector, and your Exchange 2010 users to a third connector, then you must set up a fourth connector for **Authentication** only, using the **Automatic** setting - like this:



Click **Save** to save the new settings.

Authentication

In the **Authentication** section of the **Connector settings** panel you define whether the current connector is used for authentication. All fields in this section are mandatory, except the **Password change** section in Exchange setups.

Function

The **Function** group of functions contains the following field:

- **Enable Authentication**

  If you select this field, the current connector will by used for authentication purposes, meaning that it will accept user authentication requests from the DME server. The connector will verify the username and password of the user, and will detect which directory groups the user is member of. The groups are matched against the directory group graph stored on the server to see if the user is member of **DME_User**. At least one DME connector must have this role.

Authentication

The **Authentication** group of functions contains the following fields:

- **LDAP server**

  This is the LDAP server used by the connector for authenticating users. This may or may not be the directory server from which the group graph is derived.

  The user's group membership is sent to the server for comparison with the directory group graph for verification that the user is in fact member of the DME_User group (or equivalent) and thus has access to the system. Note that if you just enter an IP address or a hostname without indication of protocol in this field, DME will prepend the IP address with `ldap://`.

  If your system is set up to use secure LDAP, you must enter `ldaps://` yourself, change to a secure port, and configure the firewall accordingly. The secure LDAP path has the following format: `ldaps://LDAP_SERVER_HOSTNAME:SECURE_LDAP_PORT` (the secure port is typically **636**, but this may be different in your setup). For more information, contact ***DME Support http://www.excitor.com***.

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search for information in the LDAP specified above, and not follow any chain of LDAP referrals.

- **AD domain** 

  Enter the AD domain in this field. This must be in *UPN suffix* format, which is usually the same as your DNS domain, for instance **`your.domain.com`** or something similar to **`ad.domain.local`**. Do not use the old Windows 2000 format such as DOMAIN\ .

  The login information from the DME client usually only consists of your user name, which is passed to the DME server. In order for the DME server and connector to successfully authenticate against the Active Directory or the Exchange server, it is necessary that the AD domain (UPN suffix) is appended to this user name (for example **`your.domain.com`**), giving the unique **UserPrincipalName** of **`username@your.domain.com`**. You must enter the AD domain information in this field, even if you only use one domain.

- **Test login**

  Click this button to open the **Test authentication** window, in which you can attempt a login process against the authentication LDAP server specified in the **LDAP server** field.

  Enter the user name and password of a user in the corresponding fields, and click **Test**. If the test is successful, the window shows some information about the user, and the amount of time it took to retrieve the information. If the test failed, an error message is shown to help you pinpoint the problem.

  Click **Back** to try with another user, or **Cancel** to exit the window.

The **Password change** group of functions contains the following fields: 

- **Administrator user name**

  The DME client uses the users' AD password for authentication. At regular intervals, this password will expire according to company security policies. In order to ensure uninterrupted access to e-mail and calendar from the DME client, the client users are able to change their AD password from the client.

  If you leave this field and the field **Administrator password** blank, the users have access to changing the password for as long as it is not completely expired yet - that is, when the users have received a warning that the password is about to expired in *x* days.

  If you enter the user name of an AD administrator and a password in these fields, the users will be able to change their AD password, even if the password has expired completely (the flag 'User must

change password on next logon' is marked on the user's account in AD).

Please note that the password change functionality requires a secure connection to your AD through the LDAPS protocol. The path to your secure LDAP server must be specified in the **LDAP server** field (above).

- **Administrator password**

  In this field you can specify the password of the AD administrator entered above.

Authentication setup for generic LDAP 

In the **Authentication setup for generic LDAP** group of fields you can configure the way users log in to DME when using generic LDAP.

- **Login name expression**

  In this field you can specify the composition of the user name applied when attempting a login to the generic LDAP system, which is specified in the field **LDAP server** above. The user name is often composed of CN and DC specifiers. In this field, `{0}` is a placeholder for the login name used by the DME users on the client.

  As an example, assume that the user name used when logging in to the DME client is `Sabine Adelhof`, and this field contains the following expression:

  ```
  cn={0},dc=example,dc=com
  ```

  In this example, the complete user name used for attempting a login will be `cn=Sabine Adelhof,dc=example,dc=com`. The generic LDAP system is further set up in the **Domain** section (see ***Domain*** on page 314).

Click **Save** to save the new settings.

E-mail and PIM

In the **E-mail and PIM** section of the **Connector settings** panel you define the scope of the synchronization tasks of the current connector, and how the connector is to integrate with the collaboration system with regard to e-mail and PIM synchronization.

On every subtab in this section, you can choose the following options:

- **Test connection**

  Check if your settings work correctly. See the section ***Test*** on page 325.

❖ **Save**

Saves the changes you have made in the current subtab. Note that switching subtabs also saves any changed values in the current subtab.

❖ **Cancel**

Restores the values in the current subtab to whatever they were before you opened the subtab or pressed **Save**. Canceling brings you back to the main **Connector** page.

The settings available for each supported collaboration system are described separately below.

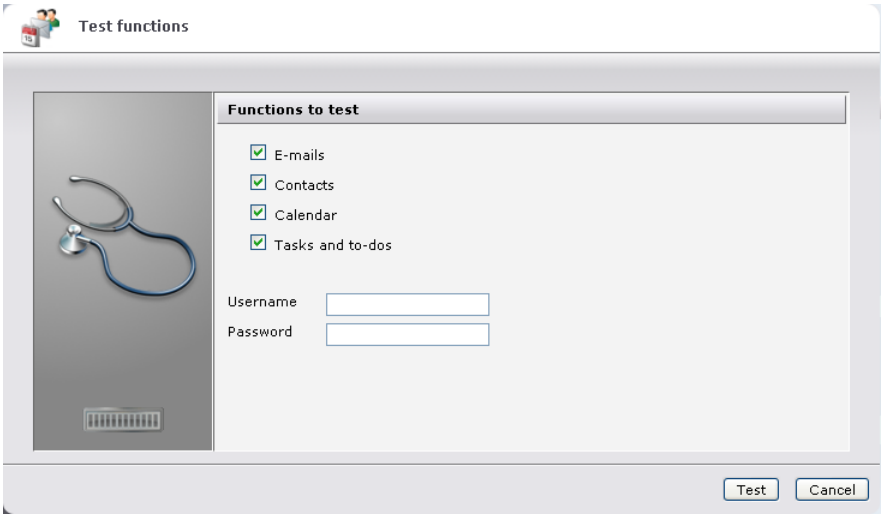
Domino e-mail and PIM on page 326

Exchange e-mail and PIM on page 336

Test

When you are done setting up the connector for Domino or Exchange, you can run an automatic test to see if everything is set up correctly.

When you click **Test connection**, the following window appears:



You can now test a full synchronization cycle with the user you enter in the **Username** field.

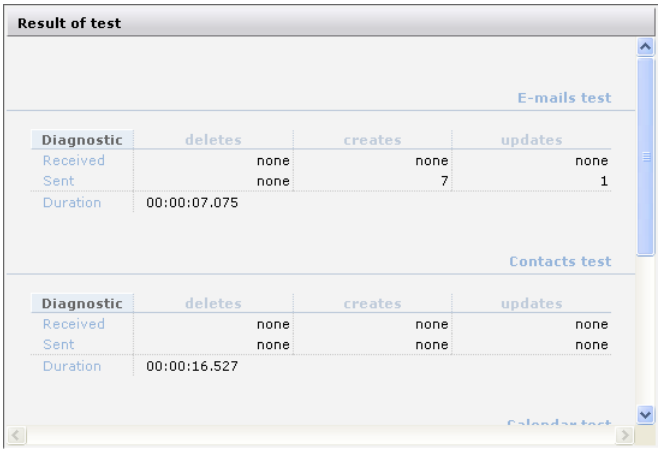
❖ ***Performing an automatic test***

1. Select the functions you want to test using the current connector. Only select the functions that the connector is meant to service. Select a combination of **E-mail**, **Contacts**, **Calendar**, and **Tasks and to-dos**.
2. Enter the name of a user you know should be serviced by the connector. If no users exist in DME yet, you must create one

manually first. The user created must exist in the LDAP/AD directory of the connector.

3. Enter the password of the user you are testing for in the **Password** field.
4. Click **Test**.

DME now runs a test for each function by attempting to make a synchronization. A dummy device is created for the indicated user, and a full synchronization cycle is run for each function. The result of the diagnostic is shown in the window:



If any errors have occurred, they will be clearly marked in the window, and will also appear in the log. Any creates, deletes, and updates caused by the synchronization are rolled back immediately in any case, and the dummy device is deleted.

Click **Back** to perform another test, or **Cancel** if you are done.

Domino e-mail and PIM

The following subtabs are available when setting up a Domino connector.

General (Domino)

In this subtab of the **E-mail and PIM** section of the currently edited Domino connector, you can set up general Domino-related options.

- **Server**

  If you need to overwrite the mail server information retrieved from the Domino LDAP directory as specified in the **Domain** setup panel, specify the mail server here. All users of this connector will use this mail server unless otherwise configured on the individual user pages.

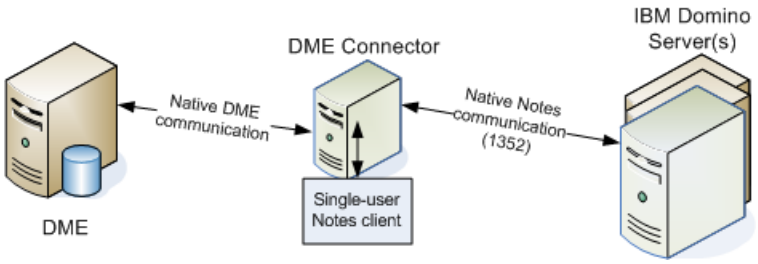
- **Using Notes session**

  In this mode, you install the connector on a machine on which a Notes client is also installed. This solution is referred to as the *Notes session* solution. You must install a Notes client on the

machine where the connector is installed, and set up a user with **Manager** rights to the mailboxes of all DME users in the Domino system. This user is called the DME proxy user. In the **Notes ID password** field, enter the password for the proxy user.

The Notes client that you install must fulfill the following criteria:

Version 8.5 Basic installed as **Single User**. This applies, regardless of the version of Domino you are using.

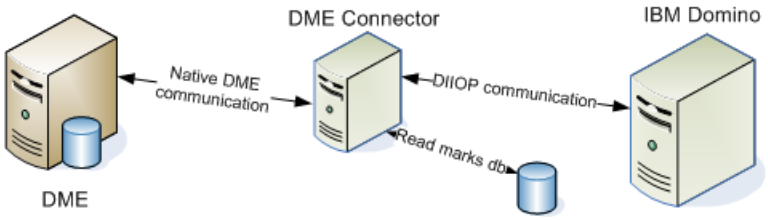


There are a number of advantages to this over using the Remote/Corba connection solution (below):

1. The connector will not have to use the DIIOP protocol, which is slower than the native Java connection running on port **1352**.
2. No read mark database needs to be configured for helping the DME clients to know which e-mails have been read. For important information about this functionality, see **Read marks** below.
3. It is possible to use Notes encryption.
4. You can use a Domino system with multiple Domino servers.

❖ **Using Remote / Corba connection**

In case policy or geographical circumstances prohibit using the Notes binaries solution, you must connect to Domino using DIIOP (IBM's variant of the CORBA protocol), as illustrated here:



When you select this option, specify the DIIOP port to be used by the connector (**63148** by default).

Also specify if you want to use secure DIIOP by selecting the field **Secure (SSL)**. Note, however, that the performance penalty of running in **SSL** mode can be high, and that it is not recommended unless necessary.

Also complete the fields concerning the readmark database below.

Please refer to the Domino documentation for information about how to manage the Domino keyring and set up secure DIIOP.

Refer to the **DME installation documentation** for further information about installing DME and integrating with Domino - see the ***DME install site http://install.excitor.dk***.

- **Use roaming settings if available**

  If this field is selected, DME reads the personal address book location from the roaming settings in the LDAP user profile. This is the default, but you can switch this feature off by removing the checkmark from this field, in which case the user's mail database is used as address book.

The **Notes encryption** group of functions contains the following fields:

There are two ways in which a user can send and receive Notes-encrypted e-mail on his or her device. In both cases, DME needs access the user's Notes ID file. Here you can choose which method you want to use for gaining access to the ID files.

- **Get user ID files from iNotes**

  If you select this option, you can instruct the users to use the iNotes webmail interface to upload his or her user ID file. For instructions how to do this, see the Domino integration guide at the ***DME install site http://install.excitor.dk***.

- **Use ID storage database**

  If you select this option, you can enter the location of a special **IDStorage** database, which you can obtain from the ***DME install site http://install.excitor.dk***. With this in place, the user can upload his or her ID file to a special Domino database. DME will then use the uploaded Notes ID file when encrypting e-mail sent from the device and decrypting e-mail synchronized to the device. This removes the need for the ID file to be stored on each device. The ID files are stored in such as way that it is *only* possible for the user himself/herself to access the ID file.

  For instructions how to use this database, see the Domino integration guide at the ***DME install site http://install.excitor.dk***.

When the user has supplied his or her Notes ID file, he or she must enter the password for the ID file in the field **Private key password** in **Settings** on the device. The user is then ready to receive and send encrypted e-mail on the device.

- **ID temp directory**

  This is the location where DME stores a temporary copy of the ID file while using it for encryption or decryption.

- **Shred ID files after use**

  If you select this option, the ID files in the temporary directory will be shredded after use. Shredding means that the file is first altered in random ways, and then deleted. This makes it impossible to restore the file.

E-mail

This subtab contains the required settings for enabling the current Domino connector to service e-mail users.

- **Enable e-mail sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing e-mail and e-mail folders for users that are routed to the connector, meaning that it will accept e-mail and e-mail folder synchronization requests from the DME server for those users.

- **Database**

  If you need to overwrite the mail file path information retrieved from the Domino LDAP directory, specify the mail file here. This can for instance be necessary if the mail boxes of several DME mail servers are replicated to a server with a different mail box path. To insert the user name into the path, use **{0}**. In the example below, the DME user name is `jd`, and `{0}` therefore equals `jd`:

  `mail\{0}.nsf` equals `mail\jd.nsf`

  Note that this setting can be overwritten on a per-user basis in the **Devices** > **User setup** > **Collab.conf.** panel section.

- **Mail domain**

  The name of your Domino Mail Domain. This domain will be appended to all sent mails, to instruct the Domino server to evaluate the recipients. This way DME does not have to query the LDAP directory every time. Only use this option if you have only one corporate domain.

- **Sender address format**

  This parameter determines how the sender addresses should be displayed in the DME client.

  If you select **Domino format, then Internet address**, the sender's address will be shown as **John Smith/Headquarters/Domain** if possible in the **From** field of the e-mails you receive; otherwise it will be shown in the form **john.smith@domain.com**. Note that the addresses of other recipients of the e-mail (in the **CC** or **BCC** fields) are always shown in Domino format (**John Smith/Headquarters/Domain**).

If you select **Internet address, then Domino format** (default), the sender's address will be shown in the form **john.smith@domain.com** if possible; otherwise it will be shown as **John Smith/Headquarters/Domain**.

- **Recipient separator**

  This field is mainly used for Exchange installations, but it is possible to specify the same option for Domino installations. Microsoft Exchange permits e-mail addresses such as **lastname, firstname <name@domain.com>**. According to e-mail standards, e-mail addresses containing a comma should be enclosed in double quotes (or similar). Since Exchange does not enforce this standard, addresses such as the above would be misinterpreted by DME. In order to circumvent this, you can use this field to define permitted separators between e-mail recipients. You can choose to allow comma only, semicolon only, or both comma and semicolon.

- **Connector temp directory**

  The connector will use this directory for storing the cache if pre-caching is enabled on the server. See **Pre-caching sync. data** in ***Collaboration*** on page 221. If nothing is entered here, DME uses the standard TEMP directory for the connector OS. To avoid that the connector server is filled up by temporary files, DME cleans out temporary attachment files once a day.

- **Extract embedded images as attachments**

  When a user receives an e-mail with embedded images, the images are not visible in the DME client unless this field is selected. If this field is set to **True**, images that are embedded into received e-mails are extracted from the e-mail and included as attachments in the client. Furthermore, you must enable this function in order for DME to recognize URL links (*Domino hotspots*) in e-mails on the client.

  Attaching embedded images will naturally increase the load on the DME connector. If this is a problem, consider installing a separate connector for users who definitely need images and working URL links in their e-mails on the client.

  Please note that Lotus Notes imposes a limitation to this feature. If the size of the e-mail document (including attachments) exceeds 12 MB, the extraction of embedded images will not work, and a number of "Unable to execute request" error messages will be written to the server log.

- **Add attachments from document links**

  In Notes, you may add links to Notes documents in an e-mail. If this field is **True**, DME will check if linked Notes documents contain any attachments, such as Word documents, image files,

etc. If one or more attachments exist, they are added as attachments in the e-mail synchronized to the clients, and they are thus available for download on the clients. This is for instance useful if you use a shared document database and want to send Notes document links instead of sending the actual files. Performing this check for linked Notes documents will naturally increase the load on the DME connector.

- **E-mail disclaimer**

  In this field you can write a standard disclaimer message which is appended to every e-mail message sent from the device through DME. The disclaimer is appended *after* any signature that may be automatically appended in the client (either the DME client or a regular e-mail client), and after any other text such as e-mail history.

The **Read marks** group of functions contains the following fields:

If the connector services e-mail, you may need to install a special DME Unreadmark database, which is available from the ***DME Install site http://install.excitor.dk***, in order for e-mails in the client to be marked as read or unread. The DME Unreadmark database supports the following platforms: **Windows 32-bit**, **Linux**, **AS/400** (with support library), **Solaris**, and **AIX**.

To see if you need to install this database and specify its location, see the following table:

	DIIOP mode	Notes session mode
Domino 7.x	Specify **Database**	Specify **Server** and **Database**
Domino 8.x	Specify **Database**	Specify *nothing* (remove any information in the fields)

This means that:

1. If the connector communicates with any supported version of Domino using DIIOP (Remote/Corba), you must specify the name of the **UnreadMark** database in the **Database** field, leaving the **Server** field blank.
2. If the connector is running as a Notes session, AND your Domino version is less than version 8, you must specify the name of the **UnreadMark** database in the **Database** field and the name of the server on which it is installed in the **Server** field.
3. If the connector is running as a Notes session, AND your Domino version is version 8 or above, the **Server** and **Database** fields must both be blank.

- **Server**

  If you are running Domino 7.x in Notes session mode, you must specify the server on which the **UnreadMark** database is installed. If you leave this field blank, and a file path is specified in the field **Database** below, DME will look for the **UnreadMark** database on the user's mail server, and the **UnreadMark** database must be located on all mail servers accessed by DME.

  In DIIOP (Remote/Corba) mode, you should not specify any server in this field.

  This field *must* be blank when running Domino 8.x in Notes session mode.

- **Database**

  This field contains the path to and name of the **UnreadMark** database, relative to Domino's data directory. The path to and name of the database must be the same on all Domino servers.

  This field *must* be blank when running Domino 8.x in Notes session mode.

Contacts

This subtab contains the required settings for enabling the current Domino connector to service users of Contacts synchronization.

- **Enable contact sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing contacts for users that are routed to the connector, meaning that it will accept contact synchronization requests from the DME server for those users.

- **Server**

  If you wish to use another contacts server than the one retrieved from the Domino LDAP as specified in the **Domain** setup panel, specify it with this setting.

- **Database**

  If you wish to use another contacts file/URL than the one retrieved from the Domino LDAP, specify it with this setting. You can use **{0}** to substitute the user name.

- **Use Domino 7 address mapping**

  In Domino 7 and earlier, there are only two address fields available. As of Domino 8, there are three. This means that with Domino 8, contact addresses map easily to the device contact fields **Home**, **Work**, and **Other**. However, if you run a Domino version before 8, DME employs the usual "Work/Home scheme" for addresses as well as for e-mail addresses, phone numbers, mobile phone numbers, and fax numbers. For more information, see **"Contact mapping"** in the **"Client deployment guide"**.

If this field is set to **True**, DME uses the work/home scheme for addresses as well. Applies to Domino installations earlier than version 8.

- **Allow failover to mail database**

  If this field is set to **True**, DME will attempt to read contacts from the mail database if the contacts database specified above cannot be reached.

- **Sync. primary phone number**

  In the DME client, the user can dial a number by pressing the green Call key when, for instance, an e-mail is highlighted in the **Inbox**. The client will then check if the e-mail address of the e-mail sender can be found in the local contacts, and prompt to dial the number of the associated contact. If not found in the local contacts, the client will ask if the user wants to search the Global Address Book for the contact. If more than one number is associated with a contact, DME shows a list of numbers that the user can choose from.

  The first number on that list is the *default number*. There are three ways to specify a default number:

  1. The DME administrator can enforce the use of a certain phone number field as primary number by changing the contact sync mapping file, for instance to ensure that the users dial a low-cost number as their first choice when calling a contact. For more information, see separate documentation about **Custom Mapping**, which is available to DME Partners.
  2. If you use Domino as collaboration system, you can use the *primary number* set in Notes to specify the default number in DME. This applies to all device platforms, except iPhone. See more below.
  3. The user can specify his or her own default numbers directly in the native phonebook application. This feature, however, is only available on Symbian devices. The administrator-enforced default number will always take precedence over any user-specified default number.

  The default number is stored on the collaboration system as well. On Exchange systems, the default number is stored in a hidden field, and is only applied if the user chooses to import his or her contacts. On Lotus Domino systems, however, Lotus Notes also supports a default number; here it is called the *primary number*. You can choose to synchronize the Notes primary number and the phone default number, ensuring that they are the same.

  If this field is set to **False**, DME will not synchronize the Lotus Notes primary number with the devices. Instead, the users' or the administrator's choice of default number is saved in a hidden field

in Notes (as for Exchange), kept updated during contact synchronization, and applied when the user chooses to import his or her contacts to the device.

If this field is set to **True**, DME will synchronize the choice of primary number in Lotus Notes with the default number on the phone, keeping them identical. If a mapping file exists, the administrator's choice will be reflected in Lotus Notes. If a mapping file does not exist, selecting this field will synchronize the choice of default numbers on Symbian devices, and add the default number functionality within DME to devices on platforms that do not support default numbers by using the Notes primary number as default number.

For more information about using DME to place calls, see the separate client guides.

- **Use device platform specific contact mappings**

  If this field is set to **True**, the connector will look for contact and search mapping files that have been customized for specific device models or device platforms. The connector looks for files with special file names. For more information, see the document "Custom mapping of fields in DME", which is available from the Excitor website.

Calendar

This subtab contains the required settings for enabling the current Domino connector to service users of calendar synchronization.

- **Enable contact sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing contacts for users that are routed to the connector, meaning that it will accept contact synchronization requests from the DME server for those users.

- **Add room to location**

  In the synchronization process, DME does not pass information in the **Rooms** field back to the client. This means that if a user books a room but leaves the **Location** field empty, the DME client user will not be able to see where the meeting is held (even though the room is booked correctly). To get around this issue, you can specify in this field if you want to concatenate (join) the information from the **Rooms** and **Location** fields into the **Location** field of calendar entries in the DME client.

  If you select **Never**, DME will not concatenate information in the **Rooms** and **Location** fields.

  If you select **If Location field is empty**, DME will copy the value of the **Rooms** field to the **Location** field on the client, but only if the **Location** field is empty.

If you select **Always**, DME will always concatenate information in **Rooms** and **Location**. For instance, if the **Rooms** value is **Meeting Room 4**, and the **Location** value is **4th floor**, the **Location** field in the DME client will say **4th floor (Meeting Room 4)**. If the user changes the **Location** field and synchronizes, DME will attempt to split the value of the **Location** field into the **Location** and the **Rooms** fields on the collaboration system. If DME fails to split the value, for instance if the user removed a parenthesis from the value, the entire value will be entered into the **Location** field on the collaboration server.

- **Add chair and participants**

  If you select this field, DME will include information about who is chair and which other participants were invited for a meeting, in the calendar entries synchronized with the client. This information is visible in calendar entries on the client. The information is not included if a meeting has no other participants than the chair, which is the case for personal appointments, all-day events, etc.

Tasks and to-dos

This subtab contains the required settings for enabling the current connector to service users who synchronize *tasks* (Windows Mobile clients) or *to-dos* (other clients).

- **Enable task/to-do sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing the tasks/to-dos for users that are routed to the connector, meaning that it will accept task/to-do synchronization requests from the DME server for those users.

Notes (Journals)

This subtab contains the required settings for enabling the current Domino connector to service users who synchronize notes (or *journals* as the were called before Domino version 8.5).

- **Enable notes/journals sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing the notes (or journals) for users that are routed to the connector, meaning that it will accept notes/journals synchronization requests from the DME server for those users.

- **Server**

  To set up synchronization of personal notebooks for *roaming users*, make sure the field **Use roaming settings if available** is selected in the **General (Domino)** subtab. The location of the personal notebook will then be picked up from the **Roaming** settings on the user document of the roaming users.

To set up synchronization of personal notebooks for *non-roaming users*, the notebook databases must be replicated to the Domino server. Then specify the location of the notebooks in this field and the field **Database** below. Leave this field blank, if it is the same server as specified in the **Domain** panel of the connector setup page.

- **Database**

  For non-roaming users, use this field to specify the location of the personal notebooks on the form `path\notebookname{0}.nsf`, where `{0}` is the user's shortname - for instance `journal\notebook_{0}.nsf`.

  Keep in mind that the notebook location can also be specified on a per-user basis in the user setup page > **Collab.conf**. A location specified here overrides any other setting.

Exchange e-mail and PIM

The following subtabs are available when setting up an Exchange connector.

General (Exchange)

In this subtab of the **E-mail and PIM** section of the currently edited Exchange connector, you can set up general Exchange-related options.

- **Server**

  If you need to overwrite the mail server information retrieved from the Active Directory as specified in the **Domain** setup panel, specify the mail server here. All users of this connector will use this mail server unless otherwise configured on the individual user pages.

  For *Exchange 2003*, you must enter the name or IP address of the frontend (OWA) server, if you have both frontend and backend servers.

  For *Exchange 2007/2010*, you must enter the name or IP address of the server or cluster with **CAS** role.

  This field can only be left blank if you have an "all-in-one" Exchange server, where both frontend and backend are on the same machine.

- **Server reg. expression**

  DME uses a regular expression to extract the name of the mail server from the users' entry in Active Directory. If the default regular expression should fail, you can enter another expression here. The expression is interpreted by Java. For more information about Java regular expressions, see http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html.

- **Database**

  If you need to overwrite the mail file path information retrieved from the Active Directory, specify the mail file here. To insert the user name into the path, use **{0}**. In the example below, the DME user name is `jd`, and `{0}` therefore equals `jd`:

  `{0}_mail` results in the WebDAV folder `.../exchange/jd_mail/...`

  This field should usually be left blank.

- **AD domain**

  Enter the AD domain in this field. This must be in *UPN suffix* format, which is usually the same as your DNS domain, for instance `your.domain.com` or something similar to `ad.domain.local`. Do not use the old Windows 2000 format such as DOMAIN\ .

  The login information from the DME client usually only consists of your user name, which is passed to the DME server. In order for the DME server and connector to successfully authenticate against the Active Directory or the Exchange server, it is necessary that the AD domain (UPN suffix) is appended to this user name (for example `your.domain.com`), giving the unique **UserPrincipalName** of `username@your.domain.com`. You must enter the AD domain information in this field, even if you only use one domain.

The **Connection** group of functions contains the following fields:

- **Protocol**

  In this field you can specify the protocol type of the version of Exchange you are using: **Exchange 2003 (WebDAV)**, **Exchange 2007 (Web service)** or **Exchange 2007 (Web service).** If you do not choose the correct version in this field, the integration to your Exchange system will not work. The default value in this field is **Auto detection**. However, it is recommended to switch the value to the protocol type you actually use, as the DME server at regular intervals will use some resources on testing which system you are running.

- **Auth. scheme**

  In this field you can choose how the connector should authenticate against Microsoft Internet Information Server (IIS). Exchange exposes the collaboration system to DME through the IIS (in the form of Outlook Web Access (Exchange 2003) or Web Services (Exchange 2007 and above)), so DME needs access to the IIS web server.

  On the **Authentication Methods** page of the IIS Manager you define how users (such as the DME connector) can access IIS. In

this field you must choose a corresponding value. Note that DME only supports **NTLM** (which corresponds to **Integrated Windows authentication**) and **Basic** authentication. The DME connector *does not support* NTLMv2 SSP. If the Exchange CAS server's local policy security setting **Network security: Minimum session security for NTLM SSP based (including RPC) servers** is set to **Require NTLMv2**, then the DME connector is unable to authenticate with CAS.

If you run Exchange 2003 and have enabled **Forms Based Authentication** (FBA) in your OWA setup, you must choose **Basic** in this field. If you run Exchange 2007 and above, DME communicates with IIS directly through web services (EWS), and the OWA interface is not used (and thus FBA does not apply at all).

Please note that IIS must have anonymous access to the EWS when you are running Exchange 2010. See the Exchange 2007/2010 integration documentation.

- **Mailbox naming scheme**

  (This field was called **OWA mailbox** in previous versions of DME). In this field you can specify how your Outlook Web Access mailboxes are set up on Exchange 2003. DME supports the use of the following naming schemes to point to the users' OWA mailboxes. In the examples, the John Smith uses his Windows login ID **JS** as an e-mail alias for his regular e-mail address **john.smith@domain.com**:

  Mailbox alias. Example: `http://exchangeserver/exchange/js/`

  Name part of e-mail address. Example: `http://exchangeserver/exchange/john.smith/`

  E-mail address where the full e-mail address is used in the path to the inbox. Example: `http://exchangeserver/exchange/john.smith@domain.com/`

  Note that on Exchange 2007 systems, this value in this field is used for getting the size of e-mail attachments through the WebDAV protocol. If you use Exchange 2007, you should set this field to **E-mail address**. Exchange 2010 does not require the WebDAV protocol.

- **Virtual OWA directory**

  If your Exchange 2003 server is using virtual directories in OWA, the virtual domain must be specified in this field. For instance, a hosting company may use virtual directories to host the Exchange mail for many customers, on the form `mail.hosting.com/customer-name`. In this case, you would enter `customer-name` in this field to substitute the default `/exchange`

path. The connector can now access the user mailboxes on `mail.hosting.com/customer-name/<username>`.

Note that on Exchange 2007 systems, the value in this field is used for getting the size of e-mail attachments through the WebDAV protocol. Exchange 2010 does not require the WebDAV protocol.

This field should be left blank in most installations.

- **EWS URL (2007/2010)**

  This field is most likely only used if you have a hosted environment and a virtual directory pointing to the Exchange standard `/EWS` web service. This field should be left blank in most installations.

  Whatever you enter in this field will replace the `/EWS` part of the standard Exchange server URL. A standard URL could look like this:

  `http://exch.domain.com:80/EWS/exchange.aspx`

  (derived from Active Directory or from the fields in the **E-mail and PIM** group of fields above). You can for instance enter the name of a company whose Exchange you are hosting in this field: `/Excitor/exchange.aspx`

  DME will then change the URL to the following:

  `http://exch.domain.com:80/Excitor/exchange.aspx`

  This applies to Exchange 2007 and 2010.

- **Subscription URL (2007/2010)**

  If you want to subscribe to Exchange push mail events (see ***Setting the scheme*** on page 251 in the section about notification), you must enter the URL and port number to which Exchange should send push mail events for the users serviced by the current connector. These events generate notifications for DME users. Enter the URL and port number of the current connector (which acts as a small web server). Note that any firewall between the connector and Exchange must have an open port *from* the Exchange CAS server *to* the connector.

  Example: **http://<IP or DNS name of the connector machine>:<port number>**, for instance **http:/172.16.10.10:8888**. Make sure the port number on the connector machine is not already in use. There is no default value.

  Note that DME does not support the use of the HTTPS protocol for this URL - HTTPS is not necessary, as the data exchanged between Exchange and the connector only contains push information and token values.

  When a subscription schedule is created, the URL entered here is sent to the Exchange EWS server, asking to send events when new

items (such as e-mails) are received. The reason that the complete URL is sent is that this way it will not be converted to another URL if a NAT table is set up between the connector and the Exchange system.

- **Secure (SSL)**

  If the Exchange 2003 and 2007 WebDAV service or the Exchange 2007 and 2010 CAS server require a secure SSL (HTTPS) connection, this field must be **Enabled**. Exchange 2007 and 2010 use SSL by default. For more information, see the Exchange 2007/2010 Integration documentation.

- **Trust all servers/certificates**

  If you select this field, DME will trust all servers and certificates - always trusting connections from the servers you have set up for this connector. This is the recommended setting in order to prevent errors if for instance the issuer name of the SSL certificate is unknown. If the certificate is expired, a warning will be written to the log, but the connection will be accepted.

E-mail

This subtab contains the required settings for enabling the current Exchange connector to service e-mail users.

- **Enable e-mail sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing e-mail and e-mail folders for users that are routed to the connector, meaning that it will accept e-mail and e-mail folder synchronization requests from the DME server for those users.

- **Recipient separator**

  Microsoft Exchange permits e-mail addresses such as **lastname, firstname <name@domain.com>**. According to e-mail standards, e-mail addresses containing a comma should be enclosed in double quotes (or similar). Since Exchange does not enforce this standard, addresses such as the above would be misinterpreted by DME. In order to circumvent this, you can use this field to define permitted separators between e-mail recipients. You can choose to allow comma only, semicolon only, or both comma and semicolon.

- **Connector temp directory**

  The connector will use this directory for storing the cache if pre-caching is enabled on the server. See **Pre-caching sync. data** in ***Collaboration*** on page 221. If nothing is entered here, DME uses the standard TEMP directory for the connector OS. To avoid that the connector server is filled up by temporary files, DME cleans out temporary attachment files once a day.

- **Read attachment sizes (2007 only)**

  The Exchange 2007 Web Service (EWS) API offers no way to read out the size of attachments. Therefore DME uses WebDAV to read out attachment sizes - the way it is done in Exchange 2003 - in order for users to be able to see the size of attachments on the DME client. However, if you do not want to do this, or WebDAV is not available, you can disable this feature to save some processing time.

- **E-mail disclaimer**

  In this field you can write a standard disclaimer message which is appended to every e-mail message sent from the device through DME. The disclaimer is appended *after* any signature that may be automatically appended in the client (either the DME client or a regular e-mail client), and after any other text such as e-mail history.

Contacts

This subtab contains the required settings for enabling the current Exchange connector to service users of Contacts synchronization.

- **Enable contact sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing contacts for users that are routed to the connector, meaning that it will accept contact synchronization requests from the DME server for those users.

- **Use device platform specific contact mappings**

  If this field is set to **True**, the connector will look for contact and search mapping files that have been customized for specific device models or device platforms. The connector looks for files with special file names. For more information, see the document "Custom mapping of fields in DME", which is available from the Excitor website.

Calendar

This subtab contains the required settings for enabling the current Exchange connector to service users of calendar synchronization.

- **Enable calendar sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing the calendar for users that are routed to the connector, meaning that it will accept calendar synchronization requests from the DME server for those users.

Tasks and to-dos

This subtab contains the required settings for enabling the current connector to service users who synchronize *tasks* (Windows Mobile clients) or *to-dos* (other clients).

- **Enable task/to-do sync.**

  If you set this switch to **ON**, the current connector will be used for synchronizing the tasks/to-dos for users that are routed to the connector, meaning that it will accept task/to-do synchronization requests from the DME server for those users.

Functions

In the **Functions** section of the **Connector settings** panel you can enable and disable various functions of the current connector.

On every subtab in this section, you can choose the following options:

- **Test connection**

  Check if your settings work correctly. See the section ***Test*** on page 325.

- **Save**

  Saves the changes you have made in the current subtab. Note that switching subtabs also saves any changed values in the current subtab.

- **Cancel**

Restores the values in the current subtab to whatever they were before you opened the subtab or pressed **Save**. Canceling brings you back to the main **Connector** page.

Functions

The **Functions** subtab contains the following functions:

- **Enable RSS**

  If you set this switch to **ON**, the current connector will be used for synchronizing RSS feeds for users that are routed to the connector, meaning that it will accept RSS feed synchronization requests from the DME server for those users.

- **Enable SmartLink**

  If you set this switch to **ON**, the current connector will be used for handling SmartLink requests from DME clients for users that are routed to the connector, meaning that it will forward download requests for SmartLink resources to the DME server for those users. See ***SmartLink settings*** on page 385 for more information about SmartLink. Note that this is the only resource that can be handled by a generic LDAP connector.

Out of Office

The **Out of Office** subtab contains the following functions:

- **Enable Out of Office**

  If you set this switch to **ON**, the current connector will be used for exchanging Out of Office settings between server and client. Out of Office settings set on the collaboration system will be sent to the client, but they can be updated from the client. For instance, a user can enable Out of Office rules from his or her phone.

- **Use Out of Office as** 

  If the current connector is a Domino connector, you must specify whether the Out of Offices (OOF) rules are implemented as an **Agent** or as a **Service** in your Domino environment. OOF as a service was introduced in Domino 8.5. Ask your Domino administrator about this if you are in doubt.

Search

In the **Search** section of the **Connector settings** panel you define the scope of the search tasks of the current connector, and how the connector is to integrate with the collaboration system with regard to searching.

The settings available for each supported collaboration system are described separately below.

Domino search on page 343 

Exchange search on page 346 

Domino search

The following subtabs are available when setting up search capabilities on a Domino connector.

Global address book search

This subtab contains the required settings for enabling the current Domino connector to let users search the Global Address Book.

- **Enable GAB search**

  If you set this switch to **ON**, the current connector will be used for handling the Global Address Book search requests of the connected users.

- **Server**

  In this field you can specify the directory server to use for the searches of the current type. The field must be completed.

- **Search DN**

  You can minimize the search to a certain branch of the LDAP Server tree by specifying a DN (Distinguished Name) in this field.

- **Find results that**

  In this field you can select when DME should return the result to the client: Either if the search term is found anywhere within the result (option **Contain client terms**) or if the search term is found at the beginning of the result (option **Start with client terms**). The latter option reduces the time it takes the collaboration server to return results to DME, but requires a more precise search on the part of the client.

- **Max. number of results**

  In this field you can specify the maximum number of results to be returned by a search (default value: 25).

- **Search timeout**

  In this field you can specify the maximum time (in seconds) a search is allowed to run on the collaboration system before timing out (default is 30 seconds).

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search for information in the LDAP specified above, and not follow any chain of LDAP referrals.

- **Domino wildcard search: Use like operator at**

  In this field you can specify the number of characters that must be entered before DME performs a 'LIKE' (fuzzy) search. A LIKE search is able to find contacts even if some search criteria are misspelled. For example, a LIKE search will find contacts with similar names (e.g. Suzanna and Susanna), but will not attempt a LIKE search if the search term is short. Please note that this applies to Domino collaboration systems only.

- **Advanced: Custom query**

  You may want to filter the results returned from the Global Address Book before they are returned to the user, for instance in order to remove service accounts and similar and only return names with valid e-mail addresses. To do this, enter a text string in this field: For a match to be returned as part of a Global Address Book search, the string entered in this field *must* exist in the LDAP/AD entry of the match. The string entered here is appended to the string in the **Search DN** field.

For instance, you could enter **O=Exchange** in this field to specify that in order to be returned as a match, the entry must have O (Organization) set to "Exchange". The syntax of the query string must follow standard LDAP Query. For examples, see the ***Microsoft TechNet website http://technet.microsoft.com/en-us/library/aa996205(EXCHG.65).aspx***.

Rooms and resource search

This subtab contains the required settings for enabling the current Domino connector to let users search for Rooms and Resources.

- **Enable R&R search**

  If you set this switch to **ON**, the current connector will be used for handling the Rooms and Resources search requests of the connected users.

- **Server**

  In this field you can specify the directory server to use for the searches of the current type. The field must be completed.

- **Room DN**

  In this field you can specify the distinguished name or names where rooms are found. Separate the list of DNs with semicolon `;` or comma `,`.

- **Resource DN**

  In this field you can specify the distinguished name or names where resources are found. Separate the list of DNs with semicolon `;` or comma `,`.

- **Max. number of results**

  In this field you can specify the maximum number of results to be returned by a search (default value: 25).

- **Sorting locale**

  In this field you can specify the locale by which the list of rooms and resources should be sorted in the client. This especially applies to languages that use non-English characters. The sort order should be specified in the common ISO format: a language code as specified by ISO-639 and a country code as specified by ISO-3166, separated by an underscore. For instance, Danish is specified as **`da_DK`**; Canadian French as **`fr_CA`**.

  For a list of language codes, see for instance http://ftp.ics.uci.edu/pub/ietf/http/related/iso639.txt

  For a list of country codes, see for instance http://userpage.chemie.fu-berlin.de/diverse/doc/ISO_3166.html (second column).

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search for information in the LDAP specified above, and not follow any chain of LDAP referrals.

Free time search

This subtab contains the required settings for enabling the current connector to let users perform free time searches.

- **Enable free time search**

  If you set this switch to **ON**, the current connector will be used for handling the free time search requests of the connected users.

Click **Save** to save the new settings.

Exchange search

The following subtabs are available when setting up search capabilities on an Exchange connector.

Global address book search

This subtab contains the required settings for enabling the current Exchange connector to let users search the Global Address Book.

- **Enable GAB search**

  If you set this switch to **ON**, the current connector will be used for handling the Global Address Book search requests of the connected users.

- **Server**

  In this field you can specify the directory server to use for the searches of the current type. The field must be completed.

- **AD domain**

  Enter the AD domain in this field. This must be in *UPN suffix* format, which is usually the same as your DNS domain, for instance **`your.domain.com`** or something similar to **`ad.domain.local`**. Do not use the old Windows 2000 format such as DOMAIN\ .

  The login information from the DME client usually only consists of your user name, which is passed to the DME server. In order for the DME server and connector to successfully authenticate against the Active Directory or the Exchange server, it is necessary that the AD domain (UPN suffix) is appended to this user name (for example **`your.domain.com`**), giving the unique **UserPrincipalName** of **`username@your.domain.com`**. You must

enter the AD domain information in this field, even if you only use one domain.

- **Search DN**

  You can minimize the search to a certain branch of the LDAP Server tree by specifying a DN (Distinguished Name) in this field. In a new installation, this field has a "default value":

  `DC=xxx;DC=yyy`

  For instance, if you want to search to cover the whole organization/domain called **documentation.ad.domain**, the Search DN should be:

  `DC=documentation,DC=ad,DC=domain`

  If you want to restrict the search to a specific Organizational Unit called "Denmark" or the default "Users" container, you can modify the search DN to:

  `OU=Denmark,DC=documentation,DC=ad,DC=domain` or
  `CN=Users,DC=documentation,DC=ad,DC=domain`

  You can separate the list of DNs with semicolon `;` or comma `,`.

- **Find results that**

  In this field you can select when DME should return the result to the client: Either if the search term is found anywhere within the result (option **Contain client terms**) or if the search term is found at the beginning of the result (option **Start with client terms**). The latter option reduces the time it takes the collaboration server to return results to DME, but requires a more precise search on the part of the client.

- **Max. number of results**

  In this field you can specify the maximum number of results to be returned by a search (default value: 25).

- **Search timeout**

  In this field you can specify the maximum time (in seconds) a search is allowed to run on the collaboration system before timing out (default is 30 seconds).

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search for information in the LDAP specified above, and not follow any chain of LDAP referrals.

- **Advanced: Custom query**

  You may want to filter the results returned from the Global Address Book before they are returned to the user, for instance in order to remove service accounts and similar and only return names with valid e-mail addresses. To do this, enter a text string in this field: For a match to be returned as part of a Global Address Book search, the string entered in this field *must* exist in the LDAP/AD entry of the match. The string entered here is appended to the string in the **Search DN** field.

  For instance, you could enter **O=Exchange** in this field to specify that in order to be returned as a match, the entry must have O (Organization) set to "Exchange". The syntax of the query string must follow standard LDAP Query. For examples, see the ***Microsoft TechNet website http://technet.microsoft.com/en-us/library/aa996205(EXCHG.65).aspx***.

Rooms and resource search

This subtab contains the required settings for enabling the current Exchange connector to let users search for Rooms and Resources.

Please note that for Exchange 2003, you need to add an Active Directory metadata field to those AD users that are actually rooms and resources. For more information, see the Exchange 2003 Integration guide at the **Installation Checklist** section of the ***DME Install site http://install.excitor.dk***.

- **Enable R&R search**

  If you set this switch to **ON**, the current connector will be used for handling the Rooms and Resources search requests of the connected users.

- **Server**

  In this field you can specify the directory server to use for the searches of the current type. The field must be completed.

- **AD domain**

  Enter the AD domain in this field. This must be in *UPN suffix* format, which is usually the same as your DNS domain, for instance **`your.domain.com`** or something similar to **`ad.domain.local`**. Do not use the old Windows 2000 format such as DOMAIN\ .

  The login information from the DME client usually only consists of your user name, which is passed to the DME server. In order for the DME server and connector to successfully authenticate against the Active Directory or the Exchange server, it is necessary that the AD domain (UPN suffix) is appended to this user name (for example **`your.domain.com`**), giving the unique

UserPrincipalName of `username@your.domain.com`. You must enter the AD domain information in this field, even if you only use one domain.

- **Room DN**

  In this field you can specify the distinguished name or names where rooms are found. Separate the list of DNs with semicolon `;` or comma `,`.

- **Resource DN**

  In this field you can specify the distinguished name or names where resources are found. Separate the list of DNs with semicolon `;` or comma `,`.

- **Max. number of results**

  In this field you can specify the maximum number of results to be returned by a search (default value: 25).

- **Sorting locale**

  In this field you can specify the locale by which the list of rooms and resources should be sorted in the client. This especially applies to languages that use non-English characters. The sort order should be specified in the common ISO format: a language code as specified by ISO-639 and a country code as specified by ISO-3166, separated by an underscore. For instance, Danish is specified as `da_DK`; Canadian French as `fr_CA`.

  For a list of language codes, see for instance http://ftp.ics.uci.edu/pub/ietf/http/related/iso639.txt

  For a list of country codes, see for instance http://userpage.chemie.fu-berlin.de/diverse/doc/ISO_3166.html (second column).

- **Follow referrals**

  One LDAP repository can refer to other LDAP repositories for information. This is especially the case for Active Directory environments. By default, DME allows this, but in some cases it may not be desirable. If you disable this field, DME will only search for information in the LDAP specified above, and not follow any chain of LDAP referrals.

Free time search

This subtab contains the required settings for enabling the current connector to let users perform free time searches.

- **Enable free time search**

  If you set this switch to **ON**, the current connector will be used for handling the free time search requests of the connected users.

Click **Save** to save the new settings.

Log

In the **Log** section of the **Connector settings** panel you can see a subsection of the main server log. Only log entries pertaining to the current connector are shown. For more information, see ***Log*** on page 183.

Appendix A: Device settings

This appendix describes each device setting in the DME server. Some settings can only be changed at the server, and not on the client. Such settings are marked as **Server only** in this documentation.

For each setting, a small table will show which client platforms support the setting. For instance:

Supported by: (supported by Android, Apple iOS, Symbian, and Windows Mobile).

Possible abbreviations are:
ALL = All platforms, = Android, = Apple iOS, = Symbian, = Windows Mobile, = Windows Phone*), = BlackBerry.

Note that if ALL settings in a group of settings are supported (or not supported) by the available platforms, the list of supporting platforms will not be shown for each setting in the group, but at the top of the page describing the settings.

You can also see if a setting is supported by a certain device by clicking the device in the **Devices** tab and viewing the **Settings** page. If the setting is listed for that device, then it is supported.

Some of the listed settings include an indication of **Recommended value:**. This value is what is recommended for a DME system of up to 500 users with medium load on the collaboration system. In most cases, this value is also the default value.

The settings are arranged in four groups: **E-mail and PIM**, **Preferences**, **Miscellaneous**, and **Cost alerts**. These groups are described in the following.

*) Please note that a DME client for Windows Phone is not yet available.

E-mail and PIM settings

This group of **Default settings** gives access to the following categories of settings, each shown in a separate table:

E-mail settings on page 352

E-mail folder settings on page 356

Calendar settings on page 358

Contacts settings on page 361
To-do settings on page 364
Notes settings on page 365

E-mail settings

- **E-mail sync.**

  Supported by: 

  If this setting is **On**, scheduled e-mail synchronization is enabled. This setting affects push mail, e-mail pull, manual synchronization, and scheduled sync. **Recommended value: On**. If you select **Off**, e-mails are never synchronized.

- **Days back**

  Supported by: 

  In this field you can specify how many days back the DME client should synchronize e-mails. By default, the permitted range is from 0 to 99 days, but you can change this. Note that with higher numbers, the load on the DME server will increase.

- **Play sound on new e-mail**

  Supported by: 

  If this setting is **On**, the device will play a sound every time a new e-mail arrives in the DME client. On most devices, you can specify which sound to play in the e-mail settings on the client. **Recommended value: On**.

- **Send immediately**

  Supported by: 

  In this field you can choose if new e-mails and meeting invitations composed on the DME client should be synchronized to the server immediately when the user presses **Send**. The field has three options:

  - **o**

    New e-mails are not sent immediately, but are queued in the device **Outbox** for the next scheduled or manual synchronization.

  - **end & Receive**

    When the user presses **Send**, a full e-mail synchronization is initiated.

- **end only**

  When the user presses **Send**, the new e-mail is synchronized to the server, but the server is not queried for new e-mail or system information. This significantly reduces the load on the server and the time it takes to synchronize.

Recommended value: Send only.

- **Delete only locally**

  Supported by:

  If this setting is **On**, e-mails deleted on the DME client are not deleted from the collaboration system. **Recommended value: On**. If this setting is **Off**, e-mails deleted in a DME mailbox folder on the device will also be deleted on the collaboration system.

- **E-mail pull**

  Supported by:

  If this setting is **On**, client-initiated (pull) synchronization of e-mail is enabled. This corresponds to the ***Scheduled sync. settings*** on page 377, but is independent of the synchronization schedule set up on the DME server. **Recommended value: Off**. If **On,** a Pull synchronization of your e-mail only is defined, based on the following settings:

  - **ull interval (min.)**

    In this field you can specify how often the pull should be executed. By default, the permitted range is from 10 to 120 minutes, but you can change this. Note that the load on the DME server and the drain on the device batteries will increase, the lower a number you specify.

  - **tart time (hours:minutes)**

    In this field you can specify the time of day at which e-mail pull should start. You can for instance choose to start checking for new mail at 8 in the morning.

  - **nd time (hours:minutes)**

    In this field you can specify the time of day at which e-mail pull should stop. You can for instance choose to not check for new mail after your regular work hours. Use together with the field **Start time** and **Run on weekends**.

  - **un on weekends**

If this setting is **On**, the client will pull for e-mails in the weekend also, during the interval specified by the **Start time** and **End time** settings.

- **E-mail signature**

  Supported by:

  In this field you can enter a text which should be used as an e-mail signature on the client. You can create a separate signature for different groups in the system, so that for instance separate departments have separate signatures. The signature is inserted below the text of e-mails that you write on the client, but above any existing text (if you reply to or forward an e-mail). See also Functions in the DME Administration Reference.

- **Alert volume**

  Supported by:

  In this field you can specify the volume of the alerts the user hears when a new e-mail arrives.

- **Alerts start/end**

  Supported by:

  In this field you can specify the time of day from which you want the user to begin and stop receiving audible alerts when a new e-mail arrives.

- **Vibrating alert**

  Supported by:

  If this setting is **On**, the device vibrator will be activated when a new mail is received by DME.

- **Font size**

  Supported by:

  In this field you can choose the font size used in the DME client. Choose between **Small**, **Normal** (default), and **Large**.

- **Call privacy**

  Supported by:

  In this field you can specify whether the device should send the caller ID when calling a number directly from an e-mail.

  - **hone default**: Use the settings from the device to determine whether to use the network operator's settings, send, or hide the user's number.
  - **lways ask**: Ask the user whether or not to send the caller ID.
  - **end my number**: Send caller ID whenever possible.

Hide my number: Never send caller ID.

- **Show received time**

  Supported by:

  If this setting is **On**, a column is added to the mailbox folders with the date on which the e-mail was sent or received.

- **Quick reply type**

  Supported by:

  In this field you can specify the function of the option **Quick reply** in an open e-mail. You can choose among the following options:

  1. To sender with history
  2. To sender without history
  3. To all with history
  4. To all without history

  When the user selects **Quick reply** in an open e-mail, DME will perform the function specified in this field.

- **Mark as read when shown in preview pane**

  Supported by:

  On the Apple iPad, the e-mail interface in horizontal position is a 3-pane view - a folders list, a mailbox folder, and a preview pane. If this setting is **On**, showing an e-mail in the Preview pane will mark the e-mail as read. If this setting is **Off**, an e-mail is only marked as read when the user double-taps to open it.

Furthermore, some read-only settings are listed. These settings can only be seen per device, and cannot be changed from the web interface:

- **User e-mail, User names**

  Supported by:

  This information is used by the client to filter out the user's own name and e-mail address when choosing **Reply to All** in an e-mail. If the client did not have this information, the user would include himself or herself when making a reply to all.

- **OOF information**

  Supported by:

  This information is retrieved from the collaboration system and sent to the client when the user enters the **Out of Office** screen. From there, the user can enable or disable the OOF message, change the message, and set other start and end dates.

E-mail folder settings

- **E-mail folder sync.**

  Supported by: 

  As of DME 3.6, the **E-mail folder sync.** setting is *always enabled*, and it has been removed from the **Settings** page.

  With e-mail folder synchronization you can synchronize e-mails from any folder in your collaboration system mailbox, instead of only from the Inbox. As for the Inbox, you can limit the number of synchronized e-mails in folders by specifying a maximum age of the e-mails to be synchronized. This is specified as a default number of days for all e-mail folders, but you can allow the number to be changed on a per-folder basis on the clients. Furthermore, you can specify if you want to receive notification of new e-mails in sub-folders - for instance, if a mailbox rule on the collaboration system automatically moves incoming e-mails to sub-folders, you will not receive a notification unless you choose to. See also **Allow individual settings** below.

  If this field is set to **Enabled**, scheduled synchronization of folders on your collaboration system is enabled. When enabled, the folder tree structure will be made part of the synchronization of e-mails. Note that the synchronization of the folder tree structure is one-way; the folder structure on the device will always be updated to reflect the collaboration system, as it is not possible to create or delete folders on the device.

  If you use Lotus Domino as your collaboration system, please note the following:

  1. In Domino, it is possible to have the same document (e-mail) located in multiple folders - it is essentially the same document, and therefore it has the same ID in the collaboration system. In DME, an e-mail is only shown in one location in the mailbox folder tree, even if it has been copied to multiple folders in Domino.
  2. S/MIME messages sent from the device will not be deleted from the **Sent** mailbox folder on the client even if it is removed in Lotus Notes. It must be removed manually from the client if desired.
  3. In Lotus Notes, you cannot manually move an e-mail to the **Sent** mailbox folder. This is possible in the DME client (even if not recommended).

  Furthermore, if you send an e-mail from the device, the e-mail is moved to the **Sent** mailbox folder on the device, even if the collaboration system is for some reason unable to send it after synchronization.

- **ays back in folder (default value)**

  In this field you can specify how many days back the DME client should synchronize e-mails in sub-folders, when this is enabled. By default, the permitted range is from 0 to 99 days, but you can change this. Note that with higher numbers, the load on the DME server will increase. Note also that this number may be overwritten on a per-folder basis on the device, if the field **Allow individual settings** below is selected. **Recommended value:** 1.

- **ync. e-mail in folder (default value)**

  If this setting is **On**, synchronization of the e-mails residing in folders is enabled. When this setting is **On**, the actual e-mails in the folders are included in the synchronization. If this setting is **Off**, e-mails in folders are never synchronized, only the folder structure. Note that this setting may be overwritten on a per-folder basis on the device, if the field **Allow individual settings** below is also **On**.

- **can folder for changes (default value)**

  If this setting is **On**, folders are scanned for the arrival of new e-mails on the server. If folder scan is not enabled, users will not receive notification of new e-mails in sub-folders on the collaboration system. It is recommended to let the individual clients determine which folders it is necessary to receive notifications for. See **Allow individual settings** below.

- **aximum folders on device**

  In this field you can specify the maximum number of folders to be synchronized to the clients. Symbian devices cannot handle large numbers of folders (more than about 300-500), and they will crash if this number is exceeded. The actual number of possible folders differs from device to device, but is usually somewhat higher than 300.

  There is no way to specify that an "unlimited number" of folders is allowed. To work around this, you can enter a large number (for instance 10,000) in this field.

  Please note that your collaboration system determines which folders are synchronized to the client if you have more folders than specified in this field. IBM Domino will synchronize as many entire sub-folder "trees" (a "tree" being a root folder and all folders contained in it, at all levels) as possible, in alphabetical order by root folder, until the folder limit is

reached. Microsoft Exchange will synchronize folders by age - that is, the oldest folders up until the folder limit are synchronized to the devices.

If you set this field to **0** (zero), the folder structure will not be available for searching for e-mails from the client either.

- **llow individual settings**

  If this setting is **On**, the DME users can modify the e-mail folder synchronization settings on a per-folder basis. From the server, you can only allow or disallow the synchronization of e-mail in *all* sub-folders. To set up e-mail folder support in the most efficient way, it is recommended that you *enable* e-mail folder synchronization, *disable* the synchronization of e-mails in folders, and *enable* this field to allow the users to pick which folders they need to keep synchronized.

  Please note that if you change this setting from **On** to **Off**, all folders with individual settings on a device will be overwritten with the default settings on the client devices. Note also that if a device user chooses to import folders, the same thing happens - all individual folder settings will be overwritten, and the user must redefine individual settings on a per-folder basis.

  Furthermore, the client contains a function called **Apply to all folders now**. When that function is selected, the settings for **Days back** and **Sync. e-mail in folder** in the **Settings** > **Folders** window/tab are propagated to all e-mail folders on the client.

Calendar settings

- **Calendar sync.**

  Supported by: 

  If this setting is **On**, scheduled calendar synchronization is enabled. **Recommended value: On**.

  - **ays back**

    In this field you can specify how many days back the DME client should synchronize calendar entries. By default, the permitted range is from 0 to 999 days, but you can change this. Note that with higher numbers, the load on the DME server will increase. **Recommended value: 7**.

  - **ays forward**

In this field you can specify how many days ahead the DME client should synchronize calendar entries (the calendar *synchronization window*). By default, the permitted range is from 0 to 999 days, but you can change this. Note that with higher numbers, the load on the DME server will increase.

 Note that the maximum number of days that Microsoft Exchange allows a user to synchronize is 729 days. This synchronization window is calculated from the date furthest back in time. This means that if the user sets a very high value for **Days back**, for instance 700 days, DME is only able to synchronize calendar entries 29 days ahead in time, regardless of the setting in the field **Days forward**. **Note that** if you specify a span greater than 729 days, no calendar events will be synchronized at all, and no error is logged about this.

- **Calendar pull**

  Supported by: 

  If this setting is **On**, client-initiated (pull) synchronization of calendar items is enabled. This corresponds to the ***Scheduled sync. settings*** on page 377, but is independent of the synchronization schedule set up on the DME server. **Recommended value: Off**.

  If **On,** a Pull synchronization of your calendar only is defined, based on the following settings:

  - **ull interval (min.)**

    In this field you can specify how often the pull should be executed. By default, the permitted range is from 10 to 120 minutes, but you can change this. Note that the load on the DME server and the drain on the device batteries will increase, the lower a number you specify.

  - **tart time (hours:minutes)**

    In this field you can specify the time of day at which calendar pull should start. You can for instance choose to start checking for calendar updates at 8 in the morning. Use together with the fields **End time** and **Run on weekends**.

  - **nd time (hours:minutes)**

    In this field you can specify the time of day at which calendar pull should stop. You can for instance choose to not check for new calendar updates after your regular work hours. Use together with the fields **Start time** and **Run on weekends**.

- **un on weekends**

  If this setting is **On**, the client will pull for calendar updates in the weekend also, except during the interval specified by the **Start time** and **End time** settings.

- **Calendar mode**

  Supported by:

  In this field you can choose the level of interaction between the device native calendar and the DME calendar. **Open** means full integration. **Mixed***) means that the meeting times are shown in the native calendar, but you must open DME to see the title, description and other information. **Secure** means that there is no integration between the native and the DME calendar.

  Notes for **Apple iOS** clients:

  - n the client, the choice between **Open** and **Secure** mode is made by the Calendar setting **Copy to local**. If this setting is **On** on the client (**Open** mode), DME creates a local calendar called **DME**, and shows calendar entries from DME in that local calendar. The entries from DME are exported (*one-way sync.*) to the device calendar.

    In this mode, appointments in the local **DME** calendar must be created/updated/deleted from within the secure DME calendar in order for the changes to be reflected in the collaboration system.

  - ote that when set on the server, the **Calendar mode** setting is interpreted differently on the iOS platform. The administrator can *allow* **Open** mode, not *enforce* it:

    On server, **Calendar mode** is set to:
    Secure, not locked

    This is interpreted by the client as:
    On new installations, **Secure** is set on the client, but the user may change this to **Open**.
    If the client is already set to **Open**, it will NOT be switched to **Secure**.

    Set to: **Secure, locked**

    Interpreted as: The client is set to **Secure**, regardless of previous setting.

    Set to: **Open (locked or not locked)**

    Interpreted as: On new installations, **Open** is set on the client, but the user may change this to **Secure**.

If the client is already set to **Secure**, it will NOT be switched to **Open**.

For more information, see the Client User Guide for your platform.

*) Please note that **Mixed** mode is only available for clients that are still running a 3.5-level client. **Mixed** mode was removed in 3.6. If selected, a 3.6 client will interpret this as **Secure** mode.

- **Alarm sound**

  Supported by:

  If this setting is **On**, the device will sound an alarm when the calendar shows a notification for an upcoming event.

- **Alarm vibration**

  Supported by:

  If this setting is **On**, the device will vibrate when the calendar shows a notification for an upcoming event.

- **Alarm flashing LED light**

  Supported by:

  If this setting is **On**, the device will flash the LED light when the calendar shows a notification for an upcoming event.

- **Show device events in DME**

  Supported by:

  If this setting is **On**, events in the device calendar on iOS devices will also be shown in the secure DME calendar. The events will be shown in a different color from the events that are synchronized by DME. This applies regardless of calendar mode.

Contacts settings

With these settings, you determine the extent to which you want users to synchronize contacts. For an important note about "Suggested Contacts" in Outlook 2007 and 2010, see below.

- **Contacts sync.**

  Supported by:

  If this setting is **On**, scheduled contacts synchronization is enabled.

- **Device address book**

  Supported by:

  In this field you can choose the level of interaction between the native address book on the device and the DME Address Book.

Copy all fields: All information synchronized between the DME Address Book and the collaboration system is reflected in the device address book. Changes, deletions, and additions made in the device address book are copied to the DME Address Book and synchronized to the collaboration system. This is also called **Open mode**.

Copy name and phone numbers: All contacts synchronized between the DME Address Book and the collaboration system are copied to the device address book. However, only name and phone numbers are shown - e-mail addresses and other information are only kept in the DME Address Book. If the user edits the name or phone number in the device address book, this information will be synchronized to the DME Address Book. However, if any other information is added to the native contacts, this information will be removed again by DME. In other words, only DME should be used for maintaining contacts. This is also called **Mixed mode**.

Do not use: There is no interaction between the device address book and the DME Address Book. This option should be chosen if you want users to keep private contacts completely separate from corporate contacts, whether for reasons of security or work/life balance. This lets the users keep business contacts in DME in sync with the collaboration system, while letting them synchronize personal contacts with other applications. This is also called **Secure mode**.

Notes for Apple iOS clients:

- ixed mode is not supported by iOS client 3.6.3 and above. If set, mixed mode will be interpreted as **Secure**.
- n the client, the choice between **Open** and **Secure** mode is made by the Contacts setting **Sync with local**. If this setting is **On** on the client (**Open** mode), DME creates a local contacts group called **DME**, and shows contacts from DME in that local group. The contacts can be maintained either in DME or in the device address book.
- ote that when set on the server, the **Device address book mode** setting is interpreted differently on the iOS platform. The administrator can *allow* **Open** mode, not *enforce* it:

  On server, **Device address book** is set to:
  Secure, not locked

  This is interpreted by the client as:
  On new installations, **Secure** is set on the client, but the user may change this to **Open**.

If the client is already set to **Open**, it will NOT be switched to **Secure**.

Set to: **Secure, locked**

Interpreted as: The client is set to **Secure**, regardless of previous setting.

Set to: **Open (locked or not locked)**

Interpreted as: On new installations, **Open** is set on the client, but the user may change this to **Secure**.
If the client is already set to **Secure**, it will NOT be switched to **Open**.

For more information, see the Client User Guide for your platform.

Suggested Contacts

 Outlook 2007 and 2010 have a concept of **Suggested Contacts**. This is a folder called **Suggested Contacts**, which is a list of everyone you have e-mailed and everyone who has e-mailed to you, and who is not already in your **Contacts** folder.

In order to prevent these "semi-contacts" to be synchronized as DME contacts, the following workaround has been implemented as of DME 3.6 SP2:

In Outlook 2007/2010, there is by default one **Contacts** folder. However, you can freely create contacts folders almost anywhere in the Outlook folder structure, for instance in the root folder or inside a mail folder. But when you click the **Contacts** folder, you always see all contacts folders as if they are placed below (within) the main contacts folder. By right-clicking a contacts folder in Outlook and selecting **Properties**, you can see where the folder is truly located.

This is important, because in order to effectively filter out **Suggested contacts** (and **Deleted contacts** too), DME will not include a contacts folder in the contacts sync., *if it is located in the root folder* - except the main **Contacts** folder, of course. So if a user has created a contacts folder in Outlook 2010 or 2007, and now wonders why the contents are not synced to his or her device, have the user check if the folder is located in the root by checking its **Properties** in Outlook. If it is in the root, have the user move it into a mail folder (this works, but is not recommended) or the main **Contacts** folder (recommended).

To-do settings

For a to-do to be included in the synchronization from the collaboration system to the device, the following criteria must be fulfilled by the to-do on the collaboration system:

1. A due date has not been specified, and it has not been marked as complete (Domino only).
2. No start date or end date is specified, and the task is not marked as complete.
3. Or the to-do is overdue and not marked as complete, regardless of the values in the starting date and due date fields.
4. Regardless of the above, a to-do is included if either the starting date or the due date is within the time span set in To-do settings (the *sync window*).

Examples:

The sync window is set to 10 days in To-do settings, and today is April 15th.

1. A to-do on the collaboration system was created on March 23rd with a due date on April 17th. This to-do is synchronized to the device because the due date is within the 10-day sync window specified in the To-do settings.
2. Another to-do was created on March 3rd, with a due date of March 16th. It has not been marked as completed. This to-do is synchronized to the device. When it is marked as completed, it will no longer appear on the device.

Settings:

- **To-do sync.**

  Supported by: 

  If this setting is **On**, scheduled synchronization of to-dos (tasks) is enabled. This setting affects push notification, manual synchronization, and scheduled sync.

  If you select **Off**, to-dos are never synchronized.

  - **ays back**

    In this field you can specify how many days back the DME client should synchronize to-do entries. By default, the permitted range is from 0 to 99 days, but you can change this. The days are calculated from the starting or due date of the to-do (if one of the dates is within the specified range). Note that with higher numbers, the load on the DME server will increase. **Recommended value: 7**.

- **ays forward**

  In this field you can specify how many days ahead the DME client should synchronize to-do entries. By default, the permitted range is from 0 to 999 days, but you can change this. The days are calculated from the starting or due date of the to-do (if one of the dates is within the specified range). Note that with higher numbers, the load on the DME server will increase. **Recommended value: 30**.

Notes settings

 Notes (or *Journals* as they were called before Domino version 8.5) are a Lotus Domino feature. With DME, you can view, edit, and update your Domino Notebook notes in your DME client.

Please note that notebook synchronization requires a special license. For more information, see ***E-mail and PIM*** on page 324 in the Connector setup.

- **Notes sync.**

  Supported by: 

  If this setting is **On**, scheduled synchronization of Domino notes (journals) is enabled.

  - **ays back**

    In this field you can specify how many days back the DME client should synchronize notebook entries. By default, the permitted range is from 0 to 99 days, but you can change this. Note that with higher numbers, the load on the DME server will increase.

  - **ays forward**

    In this field you can specify how many days ahead the DME client should synchronize Domino notes (the notebook *synchronization window*). By default, the permitted range is from 0 to 999 days, but you can change this. Note that with higher numbers, the load on the DME server will increase.

Preferences settings

This group of **Default settings** gives access to the following categories of settings, each shown in a separate table:

General settings

- **Server path**

  Supported by: **ALL**

  The server path is the URL by which the DME client can reach the DME server. This is the external DME server address, including the port number. `/nam_xml` must *not* be added to it (this was a requirement in previous versions of DME). This value must be correct, otherwise your DME clients will not be able to connect to the DME server after the first synchronization. It is highly recommend to lock this setting so users cannot change it. This setting is locked on the devices by default. The server path is usually provisioned to the device along with the client software using OMA DM or SMS push. See also ***Send server path*** on page 67.

- **Phone number**

  Supported by: **ALL** (if they have a phone module)

  This is the phone number for the device. This value naturally cannot be set in the default or group settings on the server. It is either entered by the user when installing the DME client or later by entering the number in **Settings** on the device, or it is registered by the server during OMA DM or SMS push installation of the DME client and subsequently synchronized to the client.

  If no phone number is registered for the device in the client, the client will send an SMS to the server's SMS modem, which responds with the number from which the SMS was sent. This number is then synchronized to the server at the next sysinfo sync. The phone number must be set in order for SMS-based features, including DM actions, to work correctly on the device. Please note that for the device to discover its own phone number, the SMS modem phone number must be registered on the server

(**Server** > **Server configuration** > **SMS modem**). See ***SMS modem*** on page 228 for more information.

- **Launch on startup**

  Supported by:

  If this setting is **On**, the DME client will launch immediately after start or reboot of the device. **Recommended value: On**.

  If **Lock device when logout** in the **Security** group of settings is enabled, this setting must be enabled also (does not apply to the Basic MDM client).

- **GPRS timeout**

  Supported by:

  By default, the GPRS connection times out after 1 minute for cost reasons, but you can choose to never close the connection. **Recommended value: After 1 minute** to reduce data costs and save battery lifetime. This setting does not affect network push, which runs on a different connection.

- **Log traffic** (server only)

  Supported by:

  If this setting is **On**, the client logs incoming and outgoing traffic for use in Traffic statistics (see Statistics). If **On**, make sure this feature does not conflict with local data protections laws.

- **Instant messaging awareness**

  Supported by:

  If this setting is **On**, the device keeps track of the online presence and online status of selected users. The server will include the online status of e-mail senders in the mailbox of the recipient device when synchronizing e-mails. A colored dot is shown next to the e-mail sender's name. The color is green if the sender's online status is **Available** or equivalent, red if the status is **Away** or equivalent, and yellow if the status is **Do no disturb** or equivalent.

  Currently, the instant messaging application Sametime from IBM is supported. Note that enabling this function only has effect if the device uses network push. The location of the instant messaging server is entered in the **Instant messaging** part of the ***Collaboration*** on page 221 section of the **Server configuration** page.

- **Background sync. when roaming**

  Supported by:

If this setting is **Off**, the device will not perform background synchronization when using a roaming network. Background synchronization covers scheduled synchronization, e-mail and PIM pull, and SMS push notification. If **Manual sync. when roaming** is **On**, the user will still be able to synchronize manually.

The roaming status of the device is stored on the server. The first background sync performed while roaming will therefore be carried out normally, but will also inform the server that the device is roaming, effectively cutting the device off from further background synchronization. This means that the server is unable to detect that the device is back in the home network, unless the user performs a manual sync. When using this cost-saving feature, it is important to instruct the users to perform a manual sync when they return to their home network.

- **Manual sync. when roaming**

  Supported by:

  If this setting is **Off**, the user will not be able to perform manual synchronization when using a roaming network. When roaming, a user trying to perform a manual sync will see a message saying that synchronization is not allowed when roaming.

  The device uses information from the SIM card when checking if it is currently roaming. As soon as the phone is no longer roaming, the user is able to synchronize manually again. Performing a manual sync will also inform the server that the device is no longer roaming, which is necessary for re-enabling background sync. See also **Background sync. when roaming**.

- **Assist switch to preferred operator** (server only)

  Supported by:

  If this setting is **On**, the client will help the user switch to an operator among the choices made in the list of mobile operators. This only applies to Windows Mobile clients. If this setting is **Off**, or on other platforms than Windows Mobile, it is up to the user to switch to the preferred operator. See ***Operators*** on page 276 for more information.

- **Desktop "Close" key action**

  Supported by:

  In this field you can specify the action of the secondary device action button when the Desktop is shown. The following choices are available:

  - **ock**: This is the default setting. Pressing the secondary action button locks DME and shows the Login screen.

- **ide**: If you select this option, pressing the secondary action button will hide (minimize) DME without logging out the user.

- **Login "Close" key action**

  Supported by:

  In this field you can specify the action of the device action buttons when the Login screen is shown. This setting does not apply to iPhone. The following choices are available:

  - **xit**: This is the default setting. Pressing the secondary action button exits the DME application.
  - **ide**: If you select this option, pressing the secondary action button will hide (minimize) DME without logging out the user. Note that by selecting this, both the **Exit** action and the **Login** action are moved to the primary action button, which is then called **Options**.

- **E-mail key**

  Supported by:

  If this setting is **On**, the user can select the DME application as the program to be launched when he or she presses the **Mail** one-touch button  on the Symbian device.

- **Homescreen integration**

  Supported by:

  With this setting, you can choose to show a notification with the number of new e-mails in DME. The notification pops up on the Nokia homescreen when a new e-mail arrives. When the user clicks the navigation key (or taps the notification area - 5th edition only), DME opens or is brought to the foreground. If the user presses any other key (or taps outside the notification area - 5th edition only), the notification disappears, and the user can continue working with the phone.

  You can choose among the following options:

  - **nabled**: The notification is shown for approx. 30 seconds every time the user goes to the homescreen. This means that the notification will reappear whenever the user navigates to the homescreen from another application; when the phone wakes from screensaver mode; or when the user presses any button after the notification has disappeared by itself (that is, after 30 seconds). The notification will be removed when the user opens DME and reads any of the new e-mails.

- **how once**: The notification only appears once - when the user clicks (or taps) something to make the notification disappear, it will not reappear until a new e-mail arrives.
- **isable**: The homescreen integration feature is disabled.

- **1.-3. access point**

  Supported by:

  In this field you can specify the primary, secondary, and tertiary access point used to connect to the DME server. It is recommended to enter the fastest and/or cheapest access point as the primary access point, such as WLAN, and let it fall back to GPRS as a secondary access point. Note that if you fill in these fields, you must be certain that all the Symbian devices that use this property have the access points in question installed.

- **Run upon startup/resume**

  Supported by:

  With this setting you can specify which action the DME client for iOS (3.5.6 and later) should perform after launch or after resuming from minimized state. To provide the fastest check for server commands after startup of the client, set this to **E-mail sync.**. This requires that the notification framework has a schedule for e-mail scans - otherwise the option **System info sync.** is faster. Please note that in version 3.5.6 of the DME client, the value **None** is interpreted as a **System info sync.**.

- **Action to perform on client upon initial import**

  Supported by:

  The first time a feature is enabled for a client device, this action will be performed. For instance, if you enabled calendar sync. on a device where this was previously disabled, then the action selected here will be run for the client's calendar the first time the client connects to DME. Note that the client user will not be asked about this - therefore, you should use the **Wipe** option with caution!

  - **ipe**: The first time the client connects to synchronize a resource of a certain type (calendar, contacts, etc.), the client is commanded to *wipe* any existing data on the device. For instance, if you synchronize contacts for the first time, all your existing contacts will be deleted first. The user is not asked about this.

Use this option with care. You can use the **Wipe** mode if you want to make sure that only company data is stored on the phone.

- **erge**: The first time the client connects to synchronize a resource of a certain type (calendar, contacts, etc.), the client is commanded to *merge* any existing data on the device. For instance, if you synchronize contacts for the first time, all your existing contacts on the device will be sent to the server as *creates* first. The server will then detect and remove duplicates, and then synchronize the result. The user is not asked about this.

  This is the recommended setting.

Note that the device will always wipe or merge the available data store. In the case of Calendar and Contacts, personal items will not be affected if the device uses **Secure mode**.

- **Enable AppBox**

  This setting is reserved for future use.

Security settings

- **Logout timeout (min.)**

  Supported by: **ALL**

  In this field you can specify the number of minutes after which the DME client automatically logs the user out of the DME client. By default, the permitted range for superusers is from 0 (never) to 600 minutes, but you can change this. **Recommended value: 10**.

  Note that on Android, Symbian, and Windows Mobile, the DME logout timer starts when the screen times out. On iOS, the timer starts after any action in DME.

- **Action on SIM card change**

  Supported by: ( )( )

  In this field you can choose how the DME client should react when a new SIM card is inserted into the device. A user may need more than one SIM card, for instance if the user travels and uses local prepaid SIM cards, or if the user switches between a private and a company SIM card. However, simply allowing SIM card changes poses a security threat, as a malevolent user might steal a device and insert his own SIM card in order to (potentially) gain access to files and other data on the device. Therefore you can choose among three options in this field:

- **one**

  If you select this option, the DME client will do nothing when a user changes SIM cards. This is usually not recommended for the above stated reasons.

- **ock device (Note: limited support by Android or Apple iOS devices or Basic MDM clients)**

  When the DME client detects the SIM card change, the client automatically switches to **Lock device** mode (Shell protection). The user now has to log in to DME in order to use the device. It is recommended to use the option **Limit on password attempts** to deter malevolent users from trying to guess a password. Just before logging in, DME checks if the current SIM card has been used before. If it has not, the user is prompted to enter the phone number for the new SIM card. This phone number and the SIM card identification number are stored and thus recognized the next time the SIM card is inserted. A maximum of 62 pairs of phone numbers and SIM card IDs can be stored in this way. This option does not apply to the Basic MDM client.

  As of DME version 3.6.*x*, Apple iOS and Android devices have limited support for this feature: they are able to detect a change of SIM cards *if the new SIM card is from a different operator*, and then lock the device.

- **lush data**

  If you select this option, the DME client will flush (delete all data from) the device if another SIM card is inserted. The device will be flushed as if you had pushed the **Destroy all device data** command to the device (see ***Delete device data*** on page 55).

  As of DME version 3.6.*x*, Apple iOS and Android devices have limited support for this feature: they are able to detect a change of SIM cards *if the new SIM card is from a different operator*, and then flush the device.

On Java devices, only devices running Java Platform 7.2 or above support this functionality as described above. Devices running older versions of the Java Platform can only detect a change of SIM cards if the new SIM card is from a different operator.

- **Lock Messaging**

  Supported by:

If this setting is **On**, the device messaging (SMS/MMS) application can only be opened if you are logged in to the DME client.

- **Lock Calendar**

  Supported by:

  If this setting is **On**, the device calendar can only be opened if you are logged in to the DME client. On Symbian devices, this is the Calendar application. On Windows Mobile, this is the Outlook Pocket PC, which also locks Contacts and To-dos (Tasks).

- **Lock Contacts**

  Supported by:

  If this setting is **On**, the device contacts application can only be opened if you are logged in to the DME client. On Symbian devices, this is the Contacts application. On Windows Mobile, this is the Outlook Pocket PC, which also locks Calendar and To-dos (Tasks).

- **Lock To-do**

  Supported by:

  If this setting is **On**, the device to-do application can only be opened if you are logged in to the DME client. On Symbian devices, this is the To-Do application. On Windows Mobile, this is the Outlook Pocket PC (Tasks), which also locks Calendar and Contacts.

- **Lock device on logout**

  Supported by:

  If this setting is **On**, the device will be locked when you log out of the DME client. This is also known as *shell protection*. *Locked* means that you are only able to receive voice calls, make emergency calls, receive (but not view) text messages, and respond to calendar alarm messages. If this setting is enabled, you must enable the setting **Launch on startup** in the **General** group of settings also. This way, this level of security is maintained even if the device is rebooted. Furthermore, the DME client will automatically restart if it should crash.

- **Show username on logout** (server only)

  Supported by: **ALL**

  If this setting is **On**, the user name remains visible in the **Login** screen after the user has logged out.

- **Limit on password attempts (0 = no limit)** (server only)

  Supported by: **ALL**

  In this field you can specify the permitted number of login attempts to the DME client. "0" is no limit. Note that when the

limit is reached, the DME client will flush (*delete all data from*) the device. The device will be flushed as if you had pushed the **Destroy all device data** command to the device (see ***Delete device data*** on page 55). By default, the permitted range for superusers is from 0 (none) to 10 attempts, but you can change this.

- **Disable 'Send' button in attachments view** (server only)

  Supported by:

  If this setting is **On**, the user is not permitted to forward attachments on the device by Bluetooth, Infrared etc.

  Apple iOS devices: If this option is **Off** (meaning that the **Send** button *is enabled* in the attachments view), a user can export and print attachments from iOS devices.

- **Allow attachment download** (server only)

  Supported by:

  If this setting is **On**, the user is permitted to download attachments in e-mails, meeting invitations, to-dos, and notes.

- **Allow attachment upload** (server only)

  Supported by:

  If this setting is **On**, the user is permitted to add attachments from the device in e-mails and other items. The maximum file size is by default **16 MB**, but this limit may be changed in the ***Data*** on page 225 section of the **Server configuration** page.

- **Prevent uninstall of DME Client** (server only)

  Supported by:

  This setting controls if the user is able to uninstall the DME client from his or her device.

  Disabled: The user can freely remove the DME client from the device.

  Enabled - Unless when logged in: The user can only uninstall the client, if the user is able to log in to the DME client and thus prove that he or she is a registered user of the system. Note that this option is not available for DME Basic MDM clients.

  Enabled - Always: The user is never able to uninstall the DME client.

- **Allow password change** (server only)

  Supported by: **ALL**

  If this setting is **On**, the user is permitted to use the **Change password** functionality in the client. Note that to use this feature, certain requirements must be fulfilled.

- **omino**: Users need write access to the LDAP. See the **Domino Integration Guide** for details.
- **xchange**: You need secure access to the AD, using the LDAPS protocol. Furthermore, to allow users to change passwords when the password has expired (and not only during the grace period), you must enter an administrator user name and password on the Exchange connector. See ***Authentication*** on page 322.

- **Days before to show expiration warning** (server only)

  Supported by: **ALL**

  In this field you can specify the number of days a user should be warned that he must change his network password. On the client, the user can then choose the **Change password** function and change the password remotely, making direct access to the network unnecessary. This is only supported on systems based on Active Directory. By default, the permitted range for superusers is from 0 (never) to 30 days, but you can change this.

- **Allow global address book search** (server only)

  Supported by:

  If this setting is **On**, the user is permitted to perform searches in the global address book.

- **Allow use of PIN code/swipe**

  Supported by: **ALL**

  Your company security rules may require users to enter a long, complex password with a mix of letters and special symbols to gain access to the network and collaboration system. This may be easy to enter on a full PC keyboard, but can be difficult to enter using your phone keypad.

  Instead of using the collaboration system password for logging in, it is possible to substitute the password for a *swipe code* of your choice - a pattern drawn with the finger across a set of tiles shown on the screen. On Symbian S60 and Windows Mobile devices, you can define a *PIN code*. The minimum number of tiles for the swipe code, or the minimum length of the PIN code, can be set (see below), but the users are free to define a code that is easier to enter using the keypad.

  In order to maintain high security on the device, the following special conditions apply when using the swipe/PIN code instead of the regular password:

- he swipe/PIN code defined by the user will expire after some time, which you specify (see below).
- f the users attempts to log in using his or her swipe/PIN code, but he or she enters the code wrong, the user must use his or her regular password for the next attempt to log in. The swipe/PIN code is *not* invalidated, however, and can be used the next time the user attempts to log in to DME.

Important note about using this feature on iOS and Android (client 3.6.3 and up) devices: Due to the multitasking limitations inherent in these platforms, DME on iOS and Android is typically shut down more frequently than DME on other platforms. Since the network password is normally only kept in memory and not stored when the user exits DME, the decision was made to allow the user to keep the encrypted password in the iOS device storage, *even when DME is shut down*. **The encryption of the stored password is not strong when using the swipe code feature, and it is possible for a hacker to break the password, if he gets access to the phone.** From a security point of view, it is therefore not recommended to use this feature on those devices.

If this setting is **On**, the use of PIN codes or swipe patterns as a supplement to the regular password is permitted with the restrictions specified below.

- **IN code/swipe minimum length**

  In this field you can specify the minimum length of the PIN code chosen by the user, or the number of tiles that must be touched when defining the swipe pattern, if **Allow use of PIN code/swipe** is **On**. If the user tries to define a PIN code/swipe pattern shorter than this value, it will be rejected by the client. By default, the permitted range for superusers is from 4 to 99 numbers/tiles, but you can change this. **Recommended value: 4**.

- **IN code/swipe time-out (hours)**

  In this field you can specify you can set the *validity period* of the PIN code or swipe pattern set by the user. The validity period is specified in hours, and begins when the user logs in to DME using his or her regular password. After this, the user can use his or her PIN code/swipe pattern to log in to DME, until the validity period runs out. Then the user has to use his or her regular network password again in order to reset the validity period. The user does not have to change the PIN code/swipe

pattern. The **Login** screen will always make it clear if the regular password is required, or if the user can choose between the regular password and the PIN code/swipe.

By default, the permitted range for superusers is from 0 (never) to 48 hours, but you can change this. If you set this value to **0**, the PIN code/swipe pattern will never expire.

- **Require trusted certificate** (server only)

  Supported by:

  If this setting is **On**, DME clients will only connect to the server if it has a certificate from a trusted certificate provider.

  If this setting is **Off**, the client will either accept all certificates (including self-signed certificates), or ask the user to accept the certificates.

  See also ***SSL certificates*** on page 114.

Scheduled sync. settings

- **Scheduled sync.**

  Supported by:

  If this setting is **On**, the DME client will initiate synchronization of the enabled resources (e-mail, calendar, etc.) according to the schedule specified below.

  If this setting is **Off**, the synchronization of resources relies on client-initiated sync (pull, where applicable), manual synchronization, or push notification from the mail system. If **On,** the scheduled synchronization is based on the following settings:

  - **nterval (min.)**

    In this field you can specify how often scheduled sync. should be executed. By default, the permitted range is from 0 (never) to 99999 minutes, but you can change this. Note that the load on the DME server and the drain on the device batteries will increase, the lower a number you specify. **Recommended value:** 180 minutes.

  - **tart time (hours:minutes)**

    In this field you can specify the time of day at which the scheduled sync should start. You can for instance choose to start scheduled sync at 8 in the morning. Use together with the fields **End time** and **Run on weekends**.

- **nd time (hours:minutes)**

  In this field you can specify the time of day at which the scheduled sync should stop. You can for instance choose to not sync after your regular work hours. Use together with the fields **Start time** and **Run on weekends**.

- **un on weekends**

  If this setting is **On**, the client will perform a scheduled sync in the weekend also, during the interval specified by the **Start time** and **End time** settings.

Adaptive Push settings

- **Push system information**

  Supported by: **ALL**

- **Push e-mail**

  etc.

  Supported by: 

  With the **Push x** settings you can determine if you want the devices to be notified of changes in the different resources **x**. These settings will by default be **On**. However, for some client platforms you might want to turn off for instance **Push contact** or **Push calendar**. This typically applies to iOS devices, where background synchronization is not possible, and where notifications about calendar or contact changes might be disruptive. All resources will be synchronized when the user synchronizes e-mails anyway.

- **Network push**

  Supported by: 

  If this setting is **On**, network push is enabled. This means that notifications and server commands are sent over the GPRS network if available. For more information, see ***Appendix F: AdaptivePush™*** on page 422. If not enabled, or if the GPRS network is unavailable, notifications are sent by SMS. Network push support has been removed from the DME client for iOS as of version 3.5.6 of the client. See **Apple Push Notification** below.

  - **etwork push path**

    In this field you can specify the network path used for network push. Network push requires a separate connection to the server. Be aware that the path and port must be given access

through the corporate firewall. For more information, see ***Appendix F: AdaptivePush™*** on page 422.

- **Apple Push Notification (APN)**

  Supported by:

  If this setting is **On**, Apple Push Notification (APN) is enabled. This is required if you want users of iOS devices to be able to receive notifications through the Apple Push Notification Service (APNS), which is recommended. For more information about further requirements, see ***Notifications on iOS devices*** on page 263.

- **Network push when roaming**

  Supported by:

  As a cost-saving feature, you can disable the network (IP) connection when the device is roaming. You can do this by turning this setting **Off**. If **Notify when roaming** (below) is enabled, the server will resort to SMS push (if permitted by the notification schedule that applies to the device) or Apple Push. If **Notify when roaming** is disabled also, the device will receive no notifications at all.

  The current roaming status of the device can be seen in the device **Information** page (see ***Information*** on page 86). To update the roaming status, the user can perform a manual synchronization when he or she returns to his or her home network.

- **Notify when roaming**

  Supported by:

  As a cost-saving feature, you can disable push notification when the device is roaming. The client will not receive any notifications by network push, SMS, or Apple Push.

  If this setting is **On**, DME will send notifications about new e-mail and other items, even when the device is roaming. If **Network push when roaming** (above) is **Off**, the notifications will not be pushed by network push, but only by Apple Push (iPhone) and SMS (if permitted by the notification schedule that applies to the device).

- **Max. notifications if no response from a device**

  Supported by: **ALL**

  In this field you can specify the number times the server will send a notification to a device that does not respond by synchronizing. If a device is off for a long time, for instance if the device holder is on a 2-week vacation without his device, the server will stop sending notifications to the device after the specified number of notifications. This saves SMS and traffic costs. The number of

notifications is reset every time the device has contact with the server.

- **Enable SMS fallback**

  Supported by: **ALL**

  If this setting is **On**, the server will fall back to notification by SMS push if network push (IP push) is unavailable (making this Adaptive Push™). If this setting is **Off**, the affected clients will not receive notification by SMS.

Device security settings

With the settings in the **Device security** section you can set up a security profile for your Android devices. If you set any of these settings to anything other than the default values, DME will require Device Administrator privileges on the device. This way you are able to enforce device administration policies on the device according to the standards set by Google on their ***Google Developer website http://developer.android.com/guide/topics/admin/device-admin.html#policies***.

Supported by:

- **Corporate device**

  If this setting is **On**, the device is designated a *corporate device*. This means that the administrator is entitled to perform any operations on it, as it is corporate property. If the device is the employee's personal device (Bring Your Own Device), the employee has control over personal items on the device. If the device is a personal device, and the administrator sends a Destroy all Data command to the device, only DME data will be destroyed. See also the notes in ***Destroy device data - by platform*** on page 57.

- **Password enabled**

  If this field is set to **Unspecified**, the device user is free to set or not set a password. Note that this is not the DME password, but the password used for enabling the screen.

  If the field is set to something other than **Unspecified**, the user is required to set a password of one of the following types:

  - **iometric**: The user must use a biometric "password" if the device supports this. This can be fingerprint, iris scan etc.
  - **omething**: The user must enter some kind of password, but the policy does not care what it is.

- **umeric**: The user must enter a password containing at least numeric characters.
- **lphabetic**: The user must enter a password containing at least alphabetic (or other symbol) characters.
- **lphanumeric**: The user must enter a password containing at least *both* numeric *and* alphabetic (or other symbol) characters.
- **omplex**: The user must enter a password containing at least a letter, a numerical digit and a special symbol.

- **Min. password length**

  Set the required number of characters for the password. For example, you can require PIN or passwords to have at least six characters.
- **Min. number of letters required in password**

  The minimum number of letters required in the password.
- **Min. lowercase letters required in password**

  The minimum number of lowercase letters required in the password.
- **Min. non-letter characters required in password**

  The minimum number of non-letter characters required in the password.
- **Min. digits required in password**

  The minimum number of numerical digits required in the password.
- **Min. symbols required in password**

  The minimum number of symbols required in the password.
- **Min. uppercase letters required in password**

  The minimum number of uppercase letters required in the password.
- **Password expiration timeout**

  When the password will expire, counted from when a new password is set. The value can be **Never**, **1 month**, **3 months**, **6 months**, or **1 year**.
- **Password history restriction**

  This policy prevents users from reusing the last *n* number of unique passwords. This policy is typically used together with **Password expiration timeout**, which forces users to update

their passwords after a specified amount of time has elapsed. The value can be **1**, **3**, or **5**.

- **Max. allowed failed password attempts**

  Specifies how many times a user can enter the wrong password before the device wipes its data. The value can be between **0** and **9** attempts, where **0**=Never wipe data.

- **Max. inactivity time lock (minutes)**

  Sets the length of time since the user last touched the screen or pressed a button before the device locks the screen. When this happens, users need to enter their PIN or passwords again before they can use their devices and access data. The value can be between **1** and **60** minutes.

- **Require storage encryption**

  If this setting is **On**, the storage area will be encrypted, if the device supports it.

- **Disable camera**

  If this setting is **On**, the device camera will be disabled.

Miscellaneous settings

This group of **Default settings** gives access to the following categories of settings, each shown in a separate table:

Desktop settings on page 382

Shortcuts settings on page 383

File sync. settings on page 384

RSS settings on page 385

SmartLink settings on page 385

DME viewer and editor settings on page 386

G/On server settings on page 387

Desktop settings

- **Log in to**

  Supported by: 

  In this field you can specify which screen you want the user to see after logging in to the DME client. You can choose between the following options:

- **esktop**: DME starts in the Desktop view after logging in.
- **nbox**: DME opens the Inbox after logging in.
- **ast Used**: ( ) DME remembers which of the below views was active when you last logged out of DME, and starts here when you log in again.
- **alendar**: ( ) DME opens the Calendar after logging in.
- **o-do**: ( ) DME opens the To-do view after logging in.
- **otes**: ( ) DME opens the Notes view after logging in.
- **eeds**: ( ) DME opens the RSS Feeds view after logging in.

- **Background**

  Supported by:

  In this field you can specify the color of the Desktop background. You can choose between the following two options:

  - **ark**: The Desktop is shown with a dark background.
  - **ight**: The Desktop is shown with a light background.

  The Desktop background is not affected by the user's choice of theme on the phone.

- **Startup sound**

  Supported by: **ALL**

  If this setting is **On**, DME will play a happy jingle when the user launches the client.

Shortcuts settings

In the fields **Shortcut 0** to **Shortcut 9**, you can change the shortcuts defined for the device.

Supported by:

A shortcut is selected on the device by pressing ***<num>**. The currently defined shortcuts can be viewed on the device by pressing **. For each of the fields, you can select a shortcut to one of the following options:

Shortcut option	Action

None	Removes any existing shortcut definition. The shortcut will do nothing.
Sync. e-mail	Synchronize e-mail.
New e-mail	Create a new e-mail.
Open inbox	Open the **Inbox**.
View folders	Open the **Folders** screen to change to another e-mail folder.
Open calendar	Open the internal DME calendar.
Open contacts	Open the **Contacts** application.
Global Address Book	Search the Global Address Book to find a contact.
Search e-mails	Search for e-mails on the collaboration system.
Mark read	Mark selected e-mail or e-mails as read.
Mark unread	Mark selected e-mail or e-mails as unread.
Move to folder	Move selected e-mail or e-mails to an e-mail folder of your choice.
New meeting	Create a new meeting invitation.
Sync. calendar	Synchronize the calendar according to settings.
Sync. contacts	Synchronize your contacts.
Sync. to-do	Synchronize to-dos according to settings.
Sync. files	Synchronize files according to settings.
Sync. all	Synchronize everything according to settings.

File sync. settings

- **File sync.**

  Supported by: 

  If this setting is **On**, file synchronization is enabled. This requires that file synchronization is enabled as an add-on in the server license file. **Recommended value: On** if possible. This setting affects push notification, manual synchronization, and scheduled sync.

RSS settings

RSS is a family of web feed formats used to publish frequently updated works - such as blog entries and news headlines - in a standardized format. RSS *clients* can subscribe to these feeds, and download the published headlines along with a summary or description. The summary will usually contain a link to the entire *article*. See ***RSS feeds*** on page 278.

Supported by: 

- **RSS sync.**

  If this setting is **On**, RSS synchronization is enabled on devices that support RSS feeds and to which a license is applied.

- **Max. RSS entries**

  In this field you can choose the number of RSS entries that should be downloaded to the client, counting from the latest feed entry. This number applies to each feed to which the user subscribes. You can select **50**, **100**, or an **Unlimited** amount of entries.

SmartLink settings

- **SmartLink**

  Supported by: 

  If this setting is **On**, the SmartLink functionality is enabled on the server. SmartLinks are special URLs in the body text of e-mails, which are handled in a special way by the client and by the server. Typically, SmartLinks will point to Word documents, PDF files, or other binary files that are only available on the corporate intranet. When the URL link (SmartLink) is clicked in the client, the client will download the file, much like an attachment, and open it using the default application – for instance Pocket Word or QuickOffice – instead of attempting to open the resource in a browser.

- **SmartLink sites**

  In this field, you can define such SmartLinks. The links are defined as *match strings*, meaning that links that contain part or all of the text in a defined match string will be recognized as a SmartLink by the client. Note that to be recognized as a link at all, the link must begin with a text that can be identified as a link by the client, for instance `http:`, `https:`, or `www.`.

  You can specify multiple folders by separating the paths with the pipe character: |

  Examples of SmartLink match strings

Examples of SmartLink match strings

https://intranet.company.com/	All documents in this domain can be downloaded to the client.
http://documents.company.com/doc.aspx?docid=	Documents that are part of a corporate CMS can be downloaded. The document ID pinpoints the correct document.

Some SmartLinks require entries in a configuration file on the server. Please request special documentation from DME Support.

DME viewer and editor settings

- **Enable DME viewer and editor**

  Supported by:

  If you have purchased a license for DME Viewer and Editor integration, you can enable the integration using this setting. DME client users can then view attachments using an advanced Document Viewer, which is built into DME. Attachments remain within the secure DME container while they are viewed.

  Note that currently this only applies to DME clients for Android, but we are working on including document editing capabilities, which will then also apply to the DME client for Apple iOS.

  The DME Viewer currently supports the following file formats:

  - icrosoft Office documents
  - omma-separated value files (opened as Excel spreadsheet)
  - lain text files
  - dobe PDF documents
  - orean Hangul documents
  - mage files: WMF, EMF, BMP, GIF, JPEG, PNG

  The DME Viewer technology is licensed from Picsel Smart Office.

G/On server settings

- **G/On server path**

  This setting is reserved for future use.

Cost alerts settings

This group of **Default settings** gives access to the following categories of settings, each shown in a separate table:

Supported by: 

TEM integration settings on page 387

Call blocker settings on page 389

TEM integration settings

These are the basic settings of the DME cost control feature, which lets you monitor the costs incurred by the managed devices. The cost control feature can be extended with a **Call blocker** feature, which lets you curtail the use of the phone if certain limits are exceeded. For more information about this, see ***Appendix H: DME Cost Control*** on page 430.

- **Enable TEM integration** (server only)

  Enable or disable TEM integration (Cost Control). With Cost Control, you can monitor and report on the expense incurred by each device. If you are subscribing to a Telecom Expense Management (TEM) partner, the TEM partner can automatically refine the figures reported here.

  Please note that Cost Control requires a separate license. The ability to integrate with a TEM partner is provided by DME, but the TEM partner fees are charged separately from DME by the TEM partner.

- **Who controls balances**

  This field lists the available TEM integration options. If you select **DME** in this field, the client data is calculated by DME subscription models only. If you have installed a separate TEM integration plugin, you can select that in this list.

- **Quota**

  In this field you can enter the quota that applies to the devices. The quota is the maximum permitted balance per device - see below.

- **Subscription**

  In this field you can choose one of the subscriptions created in the **Server** > **Subscriptions** page. If cost control is enabled for a device, this is the subscription that the device will use when calculating the cost of using the phone.

If you are viewing settings for one device, the following fields show the current consumption of the current device. These values are initially set by the device, based on figures entered in the **Subscriptions** page. If you are subscribing to a Telecom Expense Management (TEM) partner, the TEM partner can automatically refine these figures with more accurate calculations at regular intervals. The figures are reset once or twice a month. See Subscriptions.

- **Balance**

  The balance is the sum of totals consumed by the device, as seen by the fields **Total calls price**, **Total SMS price**, **Total MMS price**, and **Total traffic price** below. The field is reset once or twice a month as specified in **Subscriptions**.

  If a device is approaching the limit as specified in the field **Quota** above, you can overwrite this field with a lower balance, and push the change to the device (for instance if the device user has a good reason for exceeding the quota due to travels etc.).

- **Total consumption of billable calls in minutes**
- **Total calls price**

  The total number of minutes used calling from the current device, and the total cost of these minutes.

- **Total consumption of billable SMS**
- **Total SMS price**

  The total number of text messages sent from the current device, and the total cost of these messages.

- **Total consumption of billable MMS**
- **Total MMS price**

  The total number of multimedia messages sent from the current device, and the total cost of these messages.

- **Total consumption of billable traffic in MB**
- **Total traffic price**

  The total number megabytes of data sent or received by the device, and the total cost of this traffic.

Call blocker settings

With these settings you can specify how DME should react when a device exceeds the quota specified for it in the **Cost control** settings. Please note that the **Call blocker** feature requires a separate license.

For more information, including examples of regular expressions, see ***Call blocker*** on page 431 in Appendix H.

- **Policy used when the balance exceeds the quota**

  What should the device do if the user exceeds the quota assigned to him or her in the **TEM integration settings**?

  Warn: A warning message is shown to the user, showing the current balance. The user is allowed to continue the call.

  Block: A message is shown to the user, showing the current balance. The user is *not* allowed to continue the call.

- **Home operator exclusion list**

  A regular expression selecting numbers that are not permitted when using the home operator.

- **Home operator exclusion list policy**

  If an excluded number is used, should the user be warned about it (**Warn**) or denied access to using it (**Block**).

- **Home operator inclusion list**

  A regular expression selecting numbers that are always permitted when using the home operator.

- **Incoming calls exclusion list**

  A regular expression selecting numbers from which it is not permitted to receive calls.

- **Incoming calls exclusion list policy**

  If an excluded incoming call number is received, should the user be warned about it (**Warn**) or denied access to using it (**Block**).

- **Incoming calls inclusion list**

  A regular expression selecting numbers from which it is always permitted to receive calls.

- **Roaming exclusion list**

  A regular expression selecting numbers that are not permitted when roaming.

- **Roaming exclusion list policy**

  If an excluded number is used, should the user be warned about it (**Warn**) or denied access to using it (**Block**).

- **Roaming inclusion list**

  A regular expression selecting numbers that are always permitted when roaming.
- **Roaming incoming calls exclusion list**

  A regular expression selecting numbers from which it is not permitted to receive calls when roaming.
- **Roaming incoming calls exclusion list policy**

  If an excluded incoming call number is received when roaming, should the user be warned about it (**Warn**) or denied access to using it (**Block**).
- **Roaming incoming calls inclusion list**

  A regular expression selecting numbers from which it is always permitted to receive calls when roaming.
- **Home operator SMS inclusion list**

  A regular expression selecting numbers that it is always permitted to send text messages to when using the home operator.
- **Home operator SMS exclusion list**

  A regular expression selecting numbers that it is not permitted to send text messages to when using the home operator.
- **Home operator SMS exclusion policy**

  If an excluded number is used for a text message, should the user be warned about it (**Warn**) or denied access to using it (**Block**).
- **Roaming SMS inclusion list**

  A regular expression selecting numbers that it is always permitted to send text messages to when roaming.
- **Roaming SMS exclusion list**

  A regular expression selecting numbers that it is not permitted to send text messages to when roaming.
- **Roaming SMS exclusion list policy**

  If an excluded number is used for a text message when roaming, should the user be warned about it (**Warn**) or denied access to using it (**Block**).
- **Home operator MMS inclusion list**

  A regular expression selecting numbers that it is always permitted to send MMS messages to when using the home operator.
- **Home operator MMS exclusion list**

  A regular expression selecting numbers that it is not permitted to send MMS messages to when using the home operator.

- **Home operator MMS exclusion policy**

  If an excluded number is used for an MMS message, should the user be warned about it (**Warn**) or denied access to using it (**Block**).

- **Roaming MMS inclusion list**

  A regular expression selecting numbers that it is always permitted to send MMS to when roaming.

- **Roaming MMS exclusion list**

  A regular expression selecting numbers that it is not permitted to send MMS to when roaming.

- **Roaming MMS exclusion list policy**

  If an excluded number is used for an MMS message when roaming, should the user be warned about it (**Warn**) or denied access to using it (**Block**).

Appendix B: Self-provisioning

DME supports the concept of *self-provisioning*, meaning that users can request software and OTA configurations on demand. To achieve this, a user needs to know four items of information: An *SMS Code*, the server's *phone number* (the phone number of the Kannel modem), a *download code*, and a *PIN code*.

Please note that self-provisioning by SMS is not supported on installations where the Kannel SMS gateway is installed on Windows servers. Only Kannel on Linux and NowSMS on Windows are supported.

Setting up

You can set up self-provisioning for software and for OTA configurations.

❖ ***Setting up software for self-provisioning***

1. In the **Provisioning** tab, upload new software, or edit an existing software package by clicking the software in question. See Provisioning in the DME Web Administration Reference for more information.
2. In the **SMS Code** field in the **Software information** window, enter a short code which the users will use when requesting the software in question. This could for instance be **S60** for the latest DME client for Nokia S60 devices.
3. Specify whether the users should get the software as an **SMS** push or as a **WAP** push when they request the software by SMS.

When you click **Save**, the software is set up for self-provisioning.

❖ ***Setting up OTA configurations for self-provisioning***

1. In the **Devices** or **Provisioning** tab, create a new configuration (for instance a bookmark or an access point), or edit an existing configuration by clicking the configuration in question. See ***Send OMA configuration*** on page 64 in the DME Web Administration Reference for more information.
2. In the **SMS Code** field in the **Edit phone configuration** window, enter a short code which the users will use when requesting the configuration in question. This could for instance be

TDC for the common configuration settings for the TDC phone operator.

3. As of DME 3.6, there are 2 reserved SMS codes for self-provisioining:

   DME - Will send a bootstrap and install the default DME Client

   DM - Will send a bootstrap and install the default Basic MDM Client

When you click **Accept**, the configuration is set up for self-provisioning.

Requesting software or configuration

In order to be able to request software or phone configurations from the DME server, a user needs to know the following information:

- **An SMS Code**

  The SMS code is what you set up in the previous section.

- **The server's phone number**

  You can find the phone number of the server's SMS server in the **Server** tab - click **Server configuration** > **SMS modem**. The field **Modem phone number** field contains the number you need. See ***SMS modem*** on page 228 in the DME Web Administration Reference.

- **A download code**

  There are three different download codes: **TST**, **DWL**, and **CON**. For more information, see the examples below.

- **A PIN code**

  A PIN code may be required by the SMS modem. A separate PIN code can be set for software (in the field **SMS Service PIN**) and for configuration downloads (in the field **OMA PIN**).

- ***Testing that you have the right phone number for the SMS server***

1. Send the following SMS message to the number you believe belongs to the SMS modem:

   TST

If the phone number is correct, the server will reply with the message "This is a TEST reply".

❖ ***Requesting a software download***

1. Send an SMS to the server requesting a software download on the following form:

   `DWL <SMS code> [PIN]`

   The PIN code is only required if the SMS modem has been set up to require an SMS Service PIN.

The server will reply with an SMS and/or a WAP service message containing a temporary link to the requested software.

❖ ***Requesting a phone configuration***

1. Send an SMS to the server requesting a configuration download on the following form:

   `CON <SMS code> [PIN]`

   The PIN code is only required if the SMS modem has been set up to require an OMA PIN.

The server will reply with an SMS configuration message containing the requested configuration.

It is possible to send multiple requests in the same SMS - see the examples in the next section.

Examples

Use the examples below as a guide to using the SMS commands. The examples assume the following:

- Server modem phone number: **12345678**
- SMS code for DME software: **S60**
- SMS code for OTA configuration: **TDC**
- SMS service PIN: **1234**
- OMA PIN: **12345**

❖ ***Sending a test message to the server modem***

Send

`TST`

to **12345678**. The server should respond with the message "This is a TEST reply".

❖ ***Requesting DME software***

Send

`DWL S60 1234`

to **12345678**. The server should respond with a push to download the requested client.

❖ ***Requesting OTA configuration***

Send

```
CON TDC 12345
```

to **12345678**. The server should respond with a push to install the requested OTA configuration.

❖ ***Requesting both DME software and OTA configuration***

Send

```
DWL S60 1234
CON TDC 12345
```

to **12345678**. Note that the commands must be on separate lines.

Appendix C: File synchronization

With DME file synchronization you can synchronize files with devices in much the same way as with e-mail and calendar information.

This functionality can be used to distribute files or folders to a specified set of recipient devices - typically a group of devices (see Groups). Depending on how the synchronization is set up, the devices can be granted or denied access to synchronizing updated files back to the server. Files can also be synchronized one-way from the server for execution on the device (see ***Synchronization method*** on page 401).

Files can be synchronized with devices at three levels:

1. With *all devices*: Click **Devices** > **Default settings** > **Files**
2. With a *group of devices*: Click **Devices** > **Group list** > click a group heading > **Files**
3. With one *specific device*: Click **Devices** > click a device > **Files**

The method by which files are synchronized is the same in all three cases.

The combination of the location of the files to be synchronized and the method by which they are synchronized is called a *file sync rule*. Defining a rule involves two or three steps, which are described in the following:

1. Uploading files for synchronization, including permissions (optional).
2. Specifying which files should be synchronized.
3. Specifying a destination on the device.

❖ ***Defining a new synchronization rule - overall process***

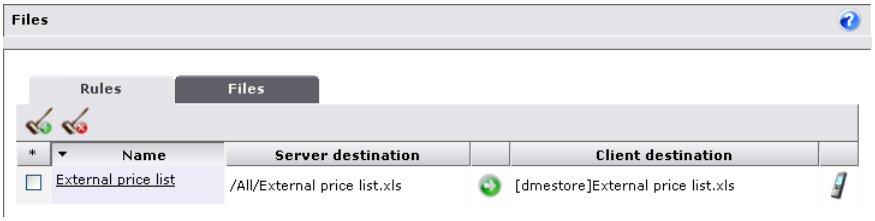
1. Determine the target group - which device or devices should synchronize the files you specify: All devices (default settings), a group of devices, or an individual device?
2. Click the appropriate function to edit the settings of the target group.
3. Click the **Files** section of the setup panel.

The **Files** section of the setup panel for your target group consists of a table with two tabs: **Rules** and **Files**. See the following sections for more specific instructions.

Please note that file synchronization is not supported on Apple iOS devices.

Rules

The **Rules** tab (default view) lists any file sync rules defined for the current target group (default , group , or device).



The columns show the following information:

- **Name**

  This is the name of the file sync rule. Depending on the level at which you are editing the file sync rule, you may click the name to edit the rule - see the field **Inheritance** below.

- **Server destination**

  This is the location of the file or folder to be synchronized.

- **Method**

  The icon in this column shows the file sync method applied to the current rule: **One-way**, **Two-way**, or **Execute**.

- **Client destination**

  This is the name of the file or folder on the device. A folder name has a slash or backslash at the end.

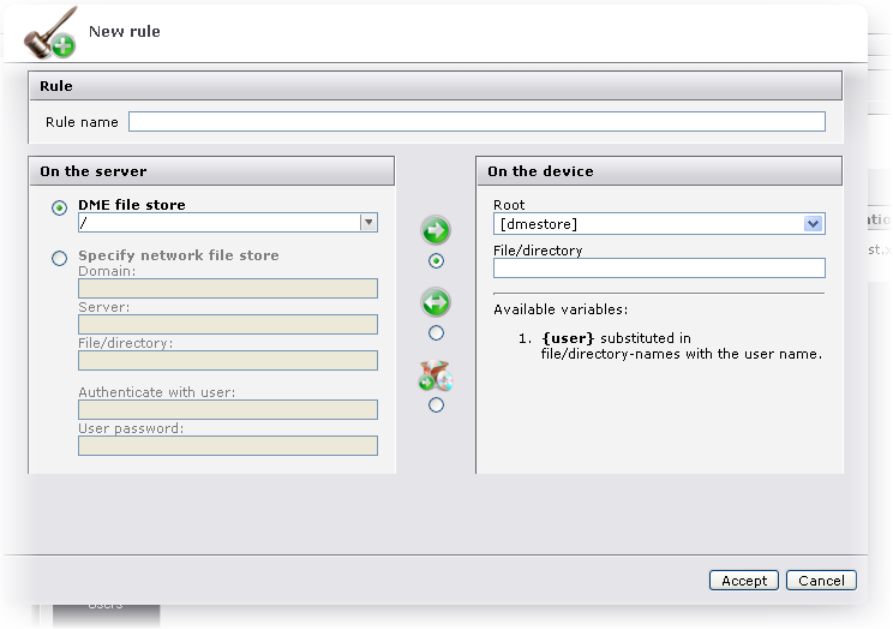
- **Inheritance**

  This icon shows if the current target group inherited this rule from default settings or a group, or if it only applies to this device. If file sync rules are inherited from a higher level (that is, default settings inherited to a group, or default or group settings inherited to an individual device), they are shown here as well, but you cannot edit them at this level.

This tab contains two actions.

New file sync rule

Click this icon to create a new file sync rule. The following popup window is shown.



Note that this window is the same as the window in which you edit an existing rule.

The window is divided into four sections.

Rule

In this section, enter a name for the new file sync rule, or edit the name of an existing rule. If you do not name a rule, it will simply be called **New rule**. The name is for your identification only, and it will not be seen on the device.

It is recommended that you enter a descriptive name so you can quickly see the nature of the rule. A name such as **Company policies for all employees (Word)** or **Pictures for Intranet** is a good choice.

On the server

In this section, you specify which file or folder should be synchronized in the current rule. There are two ways of making files available for synchronization:

- Upload files to the DME server, one at a time. The space reserved for files on the DME server is called the *DME file store*.
- Point to a file or a folder in a shared network location. This is called a *network file store*.

Files that have been uploaded to the DME file store are shown in the **DME file store** drop-down list. You can pick one file or folder from the list. For information about uploading files, see ***Files*** on page 405.

To define a synchronization rule which points to a network location for synchronization, click the **Specify network file store** option button. The user of the device to which the rule applies is subject to the usual network authentication. Examples of use:

- A user can access his or her private folder on the network and keep the contents synchronized with his or her device.
- A group of users can have a shared folder on the network and keep it updated with new files from their devices - for instance photos taken in connection with insurance cases.
- The latest brochures, specifications, etc. related to your company's products can be placed in a network folder accessible to all users.

When you click the **Specify network file store** option button, you can specify a network path in the following fields:

- **Domain**

  If the user is to be validated against another domain than the user's default domain (as found in the LDAP directory), specify it here.

- **Server**

  This is the name of the server hosting the network share.

- **File/directory**

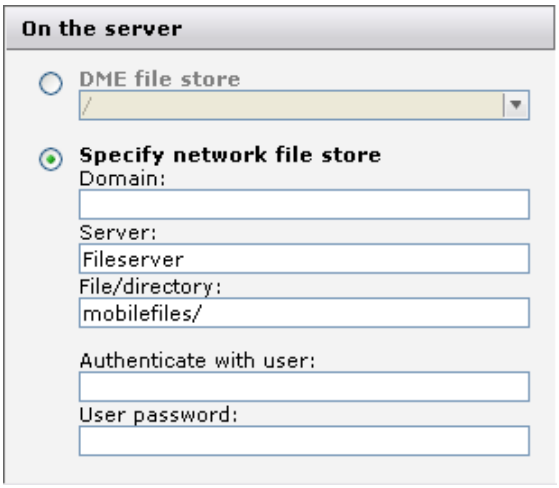
  Specify a file or directory on the specified server. The variable **{user}** in the path will be substituted with the actual user name (the LDAP shortname). You can specify a single file or a folder. The path entered in the corresponding field **File/directory** in the dialog section **On the device** (see ***On the device*** on page 403) must match your choice. If you specify a folder, you must append a slash (/) or backslash (\) to the path, both here and in the corresponding field in the section **On the device**. If you only want to synchronize a specific file, add the name of the file here.

- **Authenticate with user** and
- **User password**

  If you do not specify any user in this field, the user name and password are taken from the device that tries to sync the files. If this is not sufficient, you can create a user with access to the

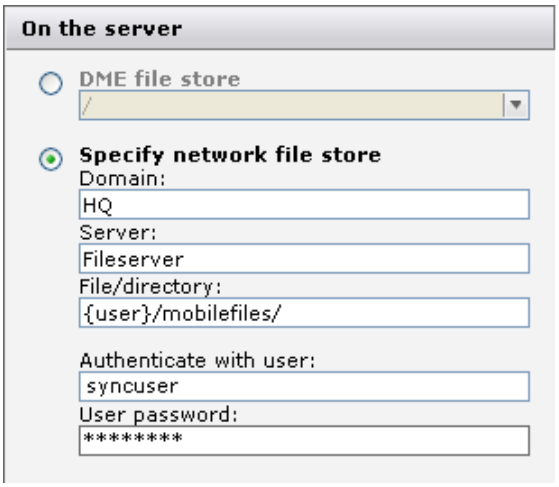
specified network location, and enter the user name and password of this user in these fields.

Example 1:



Example 1 specifies a fixed path to a folder on the server **Fileserver**. If the user holding the device performing the synchronization can be validated against the default domain, and if he has access to the **mobilefiles** directory, all files in the folder **mobilefiles** will be synchronized with the files in the corresponding folder in the specified device file store.

Example 2:



In Example 2, to synchronize the files, the user holding the device performing the synchronization must be validated with his password against the **HQ** domain. Any files in the folder **mobilefiles** in the user's folder on the server **Fileserver** will be synchronized with the files in the corresponding folder in the specified device file store.

Synchronization method

For each synchronization rule you can specify a method by which the file or folder should be synchronized between the server and the device. You can choose among three different ways to synchronize files:

- **One-way sync**

  
  With this method, the files to which the current rule applies are synchronized to the device. The files will not be updated on the server, even if they are changed on the device. Be aware that if a file is changed either on the server or on the device, the version on the server will be synchronized to the client again, overwriting any changes on the device.

- **Two-way sync**

  
  With this method, the files to which the current rule applies are synchronized to the device at the first sync. At subsequent synchronizations, each file on the server will be compared with its counterpart on the device. If any change has been made to a file, the newest file will overwrite the older, regardless of where the file is found. This corresponds to the regular synchronization of calendar items.

  Note that if a file is added manually to the device file store, the file will be synchronized to the server and become part of the current file sync rule.

- **Execute on client**

  
  This method corresponds to the one-way sync method above. However, after synchronizing, the file is opened on the device by the application associated with the file type in question, or the operating system if it is an executable file.

Implications of sync actions

The following schematic describes how different operations affect synchronized files on the server and on the client.

For example: In the case of a one-way sync rule, deleting a file on the server means that it will be deleted on the client at the next sync.

One-way sync				
Action	**S**	**C**	**Result, server**	**Result, client**
Create file in folder	✓		(file created)	File created at next sync
Delete file	✓		(file deleted)	File deleted at next sync
Rename file	✓		(file renamed)	File created with new name at next sync (original file remains) 1)
Update file	✓		(file updated)	File replaced from server
Create file in folder		✓	No effect	(file created)
Delete file		✓	No effect	File recreated at next sync
Rename file		✓	No effect	File recreated with original name at next sync
Update file		✓	No effect	File replaced by original copy from server

Two-way sync				
Action	**S**	**C**	**Result, server**	**Result, client**
Create file in folder	✓		(file created)	File created at next sync
Delete file	✓		(file deleted)	File deleted at next sync
Rename file	✓		(file renamed)	File created with new name at next sync (original file deleted) 1)
Update file	✓		(file updated)	File replaced from server
Create file in folder		✓	File created at next sync	(file created)
Delete file		✓	File deleted at next sync	File recreated at next sync
Rename file		✓	File created with new name at next sync (original file deleted) 2)	File recreated with original name at next sync
Update file		✓	File replaced from client	File replaced by original copy from server

Notes:

1. If a file is renamed in the DME file storage, it is handled as if the old file was deleted, and a new one was created.

   If the client filename is changed in the rule, the file will also be renamed accordingly at the next sync.
2. This is handled as if the old file is deleted, and a new one created, thus deleting the old file from the server.

On the device

In this section, you specify where the files involved in the current file sync rule are stored on the client. The file store specification consists of a base path and a relative path and/or a filename.

Please note that file synchronization is not supported on Apple iOS devices.

1. In the field **Root**, specify one of five *aliases*, which point to different locations on the device.
   - **dmestore]**: This path is specific to the device platform in question:
     Android: `/data/data/dk.excitor.dme/files/`
     Symbian: `C:\Data\Others\DME\PUBLIC\`
     Windows Mobile: `My Device\Program Files\Dme\Data\files\`
   - **internal]**: On the device, this will be translated to the name of the internal flash memory.
     Android: `/data/`
     Symbian: `C:\Data\`
     Windows Mobile: `My Device\`
   - **external]**: On the device, this will translated to the root of the external flash memory, such as a memory storage card.
     Android: `/sdcard/`
   - **internalroot]**: On the device, this will be translated to the name of the internal flash memory. On Symbian devices, this is the root of the system drive (C:); on other platforms, it corresponds to **[internal]**.
   - **externalroot]**: Same as **[external]**.
2. In the field **File/directory**, append a folder or filename, which is *relative to* the base path. Note that if you are synchronizing a single file, you can specify any filename as the device file store file name. The file will be renamed in the synchronization process.
3. Finally, append a slash (/) or backslash (\) to the path if you are synchronizing a folder. Do not append a slash or backslash if you synchronize a single file.

If a folder does not exist on the device, it is created at the first synchronization.

Examples of paths to the device file store:

- **[internal]syncdox**

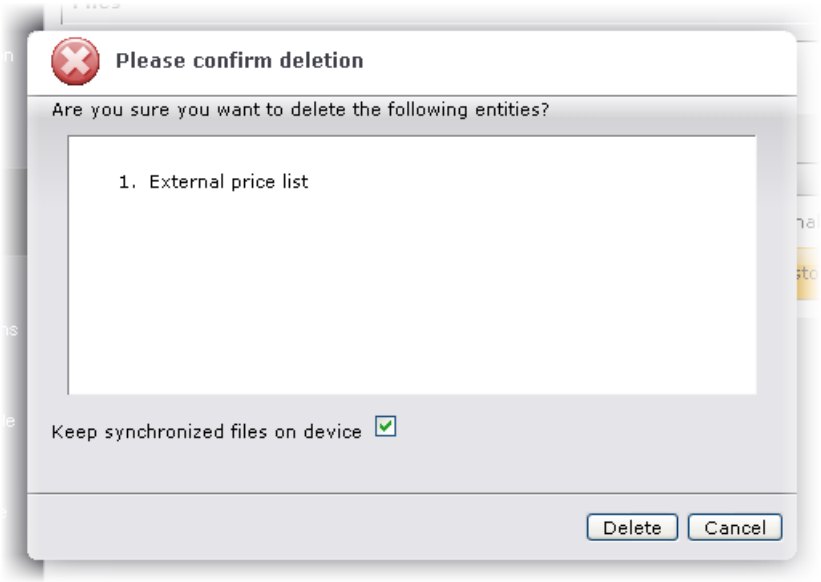
  The files on the server are kept in sync with files in the folder **syncdox** in the root of the internal flash memory drive.
- **[external]syncdox\currentprices.xls**

  The spreadsheet file **currentprices.xls** in the folder **syncdox** in the root of the external memory card drive is kept in sync with (or updated by) a file in the DME file store or a network file store.
- **[dmestore]currentprices.xls**

  The spreadsheet file **currentprices.xls** in the folder specified for the device platform in question is kept in sync with (or updated by) a file in the DME file store or a network file store.

Delete file sync rule

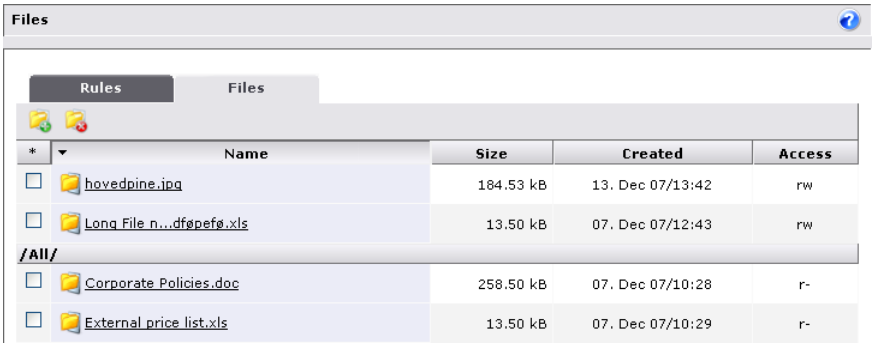
Click this icon to delete the selected file sync rule(s). The following popup window is shown.



Note the checkbox **Keep synchronized files on device**, which is selected by default. If this field is not selected, *all synchronized files* comprised by the rule will be deleted from all affected devices when you delete the rule. This can have adverse effects, for instance if you have synchronized a folder to the **[internal]** root folder without specifying further directories. If this field was not selected, all files in the **[internal]** directory would be deleted.

Files

The **Files** tab lists all files that have been made available for selection in file sync rules in the DME file store.



The columns show the following information:

- **Name**

  This is the name of the uploaded file. Click the name to edit the properties of the uploaded file. The files are automatically grouped by the folders in which they are placed on the DME file store. If you click the file icon, you download the file.

- **Size**

  This is the size of the file in Kb.

- **Created**

  The date and time the file was uploaded.

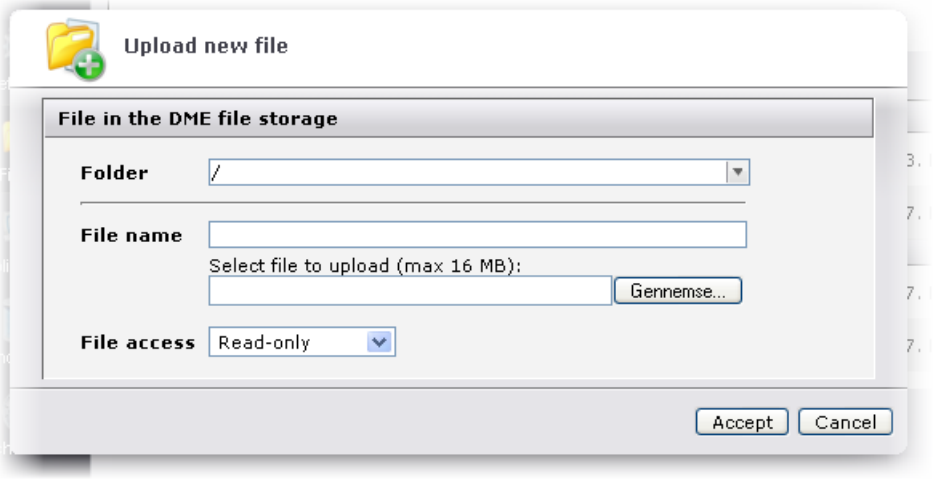
- **Access**

  This shows if the file is uploaded with read-only or read-write access.

This tab contains two actions.

New file

Click this icon to create a new file upload to the DME file store.



Note that this window is the same as the window in which you edit an existing file upload.

- **Folder**

  In this field, type the name of a new folder in the DME folder, or select an existing folder from the drop-down list. If you type the name of a new folder, it will be created on the server.

- **File name**

  In this field, type the name you want the file to have on the server. This is not necessarily the same name as the uploaded file.

  Click **Browse...** to locate the file which you want to make available for synchronization.

- **File access**

  In this drop-down list, choose to give read-only or read-write access to the uploaded file. Note that if a file is made read-only, it will not be updated from a device in a two-way synchronization. On the contrary, files updated on the devices will be overwritten by the file from the server at the next sync.

Click **Accept** to upload the file to the DME file store.

Maximum file size

The maximum file size permitted in a file sync rule is by default **16 MB**. However, you can change this limit in the **Data** section of the **Server configuration** page - see ***Data*** on page 225.

Delete file

Click this icon to delete the selected file or files. Note that when you delete files that are associated with file sync rules, you should delete the associated rules also in order to avoid synchronization errors.

Appendix D: Traffic logging

The DME server always collects and stores information about how the devices use DME.

In addition, some device platforms collect information about voice calls, messaging, and GPRS usage, and if you enable traffic logging on the clients, this information will be sent to the DME server. The information can be used for traffic analysis, either by using the built-in reports in the DME Administration interface or by using custom BIRT reports (see ***Analyzer reports*** on page 207). The results of the statistical analysis give an overview of expected costs of device usage, perhaps as a basis for negotiating new rates with your operator or for optimizing your use of network operators.

For more information about the presentation of the traffic logging data in the DME server, see Statistics and ***Analyzer reports*** on page 207.

Please note that the collection of statistics relies on a number of factors, including the ability of devices of different makes and models to collect and report the numbers correctly to the DME server. The DME server builds the statistics base on the received data, and DME cannot guarantee the correctness or completeness of this information.

The following types of usage information may be collected:

- Voice traffic
- GPRS (data) traffic
- Messaging (SMS and MMS) traffic

Each traffic type is described in the following.

Enabling traffic logging

Like most other settings, traffic logging can be enabled or disabled per device, per group, or generally.

To enable traffic logging, go to the **Settings** panel of a device or group, or choose **Default settings** in the page menu in the **Devices** tab (see ***Default settings*** on page 273).

In the **General** section, make sure that the option **Traffic logging** is **Enabled**, and click **Save**.

The devices collect the information regardless of this setting. The setting only controls whether the device is to send the information to the server. If *enabled*, the information is sent to the server at every system information synchronization, and is then deleted from the device. If *disabled*, the device automatically deletes the oldest traffic log entry as it adds the latest traffic log entry, after a device-specific, fixed upper limit to log content size has been reached. The process is automatic, and the device user cannot alter this setting.

Specific notes about client platforms:

- Windows Mobile devices require that the DME client is running to log data. To ensure this, the settings **Launch on startup** and **Lock device on logout** should be enforced by the server.
- Series 60 and UIQ devices log the data in a background process, even if the DME client is closed.
- Java devices are only able to log DME data usage (synchronizing etc.).
- iPhone devices are only able to log DME data usage (synchronizing etc.).

Voice traffic

Windows Mobile, Symbian, and UIQ 3.0 devices are able to collect information about voice usage. When a device user initiates or receives a call, the following information is recorded on the device:

- The device ID
- The current device user
- Whether the call was roaming
- Mobile country code (MCC) - the country of your location
- Mobile network code (MNC). Together with the MCC, the MNC uniquely identifies the mobile phone operator/carrier that handled the call at your end
- Name of operator as retrieved from the relay station. Note that since the operator name can be spelled differently depending on which relay station you pick it up from, you may want to edit the name in the database in order to be able to group properly by operator. Contact your DME partner about this.
- The phone number dialed or received
- The direction of the call - incoming or outgoing
- The starting date and time of the call, including time zone information
- The duration of the call

This information is used for building the statistics database on the server, if the logging functionality is enabled (see ***Enabling traffic logging*** on page 408).

GPRS traffic

Windows Mobile, Symbian, and UIQ 3.0 devices are able to collect information about GPRS usage. The device automatically logs the use of GPRS traffic. GPRS connections include WAP access and Internet communication such as DME synchronization and World Wide Web access, but exclude SMS and MMS traffic.

When a device user uses GPRS, the following information is recorded on the device:

- The device ID
- The current device user
- Whether the GPRS connection was roaming
- Mobile country code (MCC) - the country of your location
- Mobile network code (MNC). Together with the MCC, the MNC uniquely identifies the mobile phone operator/carrier that handled the GPRS connection at your end
- Name of operator as retrieved from the relay station. Note that since the operator name can be spelled differently depending on

which relay station you pick it up from, you may want to edit the name in the database in order to be able to group properly by operator. Contact your DME partner about this.

- The starting date and time of the GPRS connection, including time zone information
- The duration of the GPRS connection
- The number of bytes sent
- The number of bytes received

This information is used for building the statistics database on the server, if the logging functionality is enabled (see ***Enabling traffic logging*** on page 408).

Messaging traffic

Windows Mobile, Symbian, and UIQ 3.0 devices are able to collect information about messaging usage. The device automatically logs the use of messaging traffic. Messaging includes SMS (Short Message Service) messages and MMS (Multimedia Messaging Service) messages. Currently, there is no technical way to distinguish between the two types of messages.

The following information is recorded on the device:

- The device ID
- The current device user
- Whether the device was roaming
- Mobile country code (MCC) - the country of your location
- Mobile network code (MNC). Together with the MCC, the MNC uniquely identifies the mobile phone operator/carrier that handled the message at your end
- Name of operator as retrieved from the relay station. Note that since the operator name can be spelled differently depending on which relay station you pick it up from, you may want to edit the name in the database in order to be able to group properly by operator. Contact your DME partner about this.
- The number of messages (SMS and MMS)
- The date and time of the message, including time zone information
- The direction of the message - incoming or outgoing
- The phone number of the recipient or sender of the message
- The number of parts in the message - long messages are automatically divided into parts, and each part is chargeable

  In case of MMS messages, the following is also recorded:
- The duration of the GPRS connection required to send or receive the MMS
- The number of bytes sent
- The number of bytes received

This information is used for building the statistics database on the server, if the logging functionality is enabled (see ***Enabling traffic logging*** on page 408).

MCC, MNC and operator names

Lists of mobile country codes (MCC) and mobile network codes (MNC) are stored in tables in the DME server database. This is done as part of the DME server installation.

A list of operator names is also stored in a table in the DME server database. However, this list is built dynamically by gleaning the information from the data sent in by the devices. As part of the traffic logging, the device sends in the friendly operator name of the MNC. The first device to send in the operator name of a MNC wins - meaning that the name of that particular MNC will not be changed by other devices.

The device gets this operator name from the network relay station. However, the relay stations can contain errors, such as spelling mistakes or outdated operator names. For instance, a relay station may report the name of **MCC 238 - MNC 01** as **TDK-MOBIL**, but the operator now calls itself **TDC**.

If the list of MCC and MNC is flawed, or if the operator name is wrong, you can change the information in the DME server database. For more information, contact your DME partner.

Appendix E: myDME

myDME is every DME user's personal space on the DME server. It provides an overview of each user's devices, and provides a place where every user can store his or her personal S/MIME certificate.

To log in to **myDME**, open a browser, and enter the URL of the DME server. You can find the path to the DME server in the client - open **Settings** > **General**, and copy the path from the field **Server path**.

The path looks similar to this:

```
https://dme.your-domain.com:5011
```

If you are an administrator, but want access to **myDME**, you must add `/mydme/mydevices` to the path, like this:

```
https://dme.your-domain.com:5011/mydme/mydevices
```

You are presented with a login screen:

Enter your usual network credentials - the same as the ones you use when logging in to DME on the device. When you click **Login**, DME will check if you are an **Administrator** or a **User**. If you are a user, you are redirected to **myDME**.

This page shows a list of the devices that are connected with your user name. This could for instance be a Symbian phone and an iPad tablet. For each device, a number of features are available - these features are described in the following sections.

Furthermore, clicking **S/MIME certificates** in the page menu enables you to upload and manage your personal S/MIME certificates. They are used when sending and receiving encrypted e-mails. See ***Brief introduction to S/MIME*** on page 416 and subsequent sections.

Device overview

The primary screen on **myDME** is your device overview. Here you can see statistics for all devices you hold, if they have been connected to DME.

Your screen might look like this:

For each device, this screen shows a picture of your device, along with its model name, phone number, device ID (IMEI or Apple UDID), and the version of the DME client installed on the device.

The page menu (the menu along the left side of the screen) lets you perform various operations with your device. The most important of these functions is the **Delete device data** function, that lets you perform a device wipe in case you lose your device. You can also force a synchronization of the device.

The following device commands are available:

- **Delete device data**

  See ***Delete device data*** on page 55.

- **Force synchronization**

  See ***Force synchronization*** on page 62.

Furthermore, you can use this page to manage your S/MIME certificate. See the following sections.

Certificates

The **S/MIME certificates** function in the **Certificates** part of the page menu lets you manage your S/MIME certificate. This is required if you use signed e-mails.

As a user, all you need to know is that you must:

1. Upload your private certificate to the DME server using the **Import certificate** action. See ***User - S/MIME***.

   DME will store the certificate safely.

2. Enter the password for your private certificate on the device: **Settings** > **Security** > **Private key password**.

The following sections outline the basics of S/MIME, and provide more details about how DME manages S/MIME certificates.

Brief introduction to S/MIME

Secure Multipurpose Internet Mail Extensions (S/MIME) provides a secure method of sending e-mail and is incorporated into many popular e-mail applications. S/MIME provides confidentiality and authentication by using the RSA asymmetric key system, digital signatures, and X.509 digital certificates. S/MIME complies with the Public Key Cryptography Standard (PKCS) #7 format and has been proposed as a standard to the Internet Engineering Task Force (IETF).

With S/MIME, the sender of an e-mail can provide a guarantee to the recipient that the e-mail is in fact sent from the sender, and that the content of the e-mail has not been tampered with on the way to the recipient. S/MIME relies on a system of public/private keys and trust authorities.

To be able to send a signed e-mail (that is, provide a digital signature to the e-mail, ensuring that the e-mail was in fact sent from the person in question), you need to take contact with a trust authority, such as Verisign, Thawte, or a national trust authority (such as TDC in Denmark). The trust authority establishes your identity and issues a private key and an X.509 certificate to you. These keys are sent to you in a password-protected PKCS12 file. The X.509 certificate may contain various information about you, but certainly contains the e-mail address to which the keys are bound. Your public key is included in the X.509 certificate. It has now been established that the trust authority vouches for your identity.

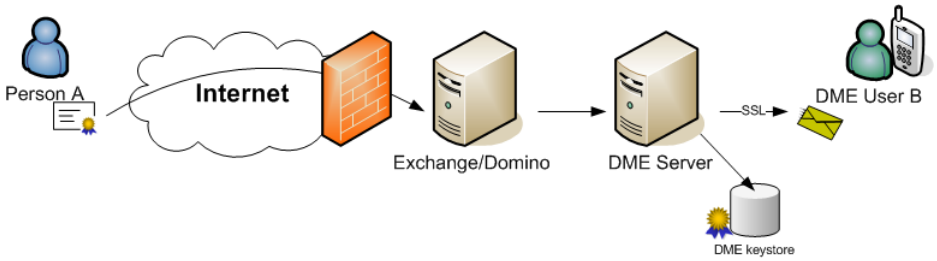
When you send an e-mail to another person, you can now sign the message. When the recipient receives the signed e-mail, he/she needs to be in possession of your public key to verify the signature (some messaging applications automatically attach your public key when you send a signed message). Using your public key, the messaging application will check if the certificate is trusted by an authority that it also trusts, and the application will then often prompt to store the certificate.

Now that the recipient has your public key, he/she can receive signed e-mail from you and send encrypted mail to you.

To send *encrypted* e-mail, you need the public key of the person you want to send to. You can obtain the public key of the recipient by asking him or her to send you a signed e-mail.

Receiving signed e-mail

The process of receiving signed e-mails can be illustrated as follows.



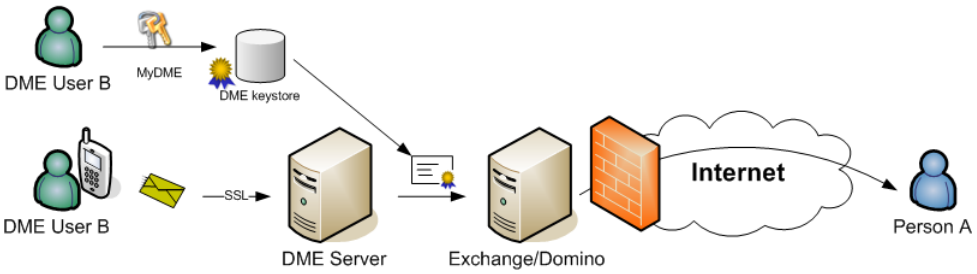
- Person **A**, who is external to the DME system, uses his private key to sign an e-mail, which he sends to user **B**. His e-mail application automatically attaches his public key.
- The signed e-mail is sent through the Internet to the corporate collaboration system of DME user **B**.
- DME sends a notification to user **B**'s device that a new e-mail has arrived.
- When user **B** synchronizes his DME client, the DME server will check if the public key of **A** exists on the server. If not, the key is extracted from the e-mail and stored in the DME server database.
- DME sends the e-mail to **B** through the usual secure SSL connection, with an indication that the e-mail has been signed by **A**.

Users of the DME system can now use the public key of **A** to send encrypted e-mail to **A**. See ***Sending encrypted e-mail*** on page 419.

Note that if user **B** chooses the **Reply** function in a signed e-mail in the client, the reply will by default be signed also. See ***Sending signed e-mail*** on page 418.

Sending signed e-mail

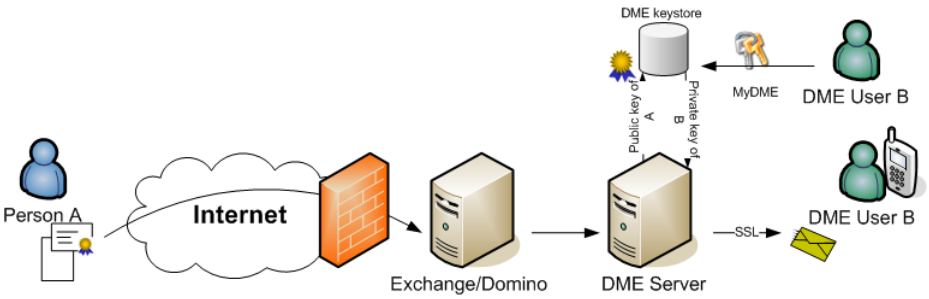
The process of sending signed e-mails can be illustrated as follows.



- In order to be able to send signed e-mails from his device, user **B** uses **myDME** to upload his personal certificate containing his public and private keys. This only has to be done once.
- User **B** then sends an e-mail to person **A** from his device, marked as *signed*, and synchronizes his device.
- Before delivering the e-mail to the collaboration system, DME verifies that user **B** has a valid personal certificate stored on the server.
- If this is the case, the e-mail is passed to the collaboration system to be signed and sent to **A**. If not, the e-mail is returned to **B** with an error message specifying the problem.

Receiving encrypted e-mail

The process of receiving encrypted e-mails can be illustrated as follows.

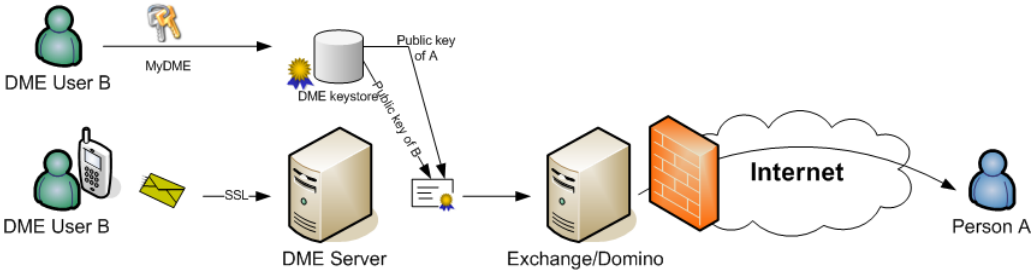


- Person **A**, who has the public key of **B** installed in his e-mail application, sends an encrypted e-mail with an attachment to user **B**.
- The encrypted e-mail is sent through the Internet to the corporate collaboration system of DME user **B**.
- DME sends a notification to user **B**'s device that a new e-mail has arrived.
- When user **B** synchronizes his DME client, the DME server will check if the private key of user **B** has been installed on the server (using **myDME** or otherwise). If not, **B** receives a message that the encrypted message could not be decrypted.
- If the private key exists, the message is decrypted on the DME server, and the message (without attachments) is transferred to **B** using the secure SSL connection. **B** can download the attachment separately (this would not be possible if the message had to be decrypted on the client).

Sending encrypted e-mail

If person **A** has sent a signed e-mail to a DME user at any point in time and in that way submitted his public key to the DME server, *every DME user* is able to send an encrypted e-mail to **A** using the e-mail address registered in **A**'s public certificate. Furthermore, the DME user must have a public key stored on the DME server. This is required for the user to be able to store an encrypted e-mail in his own Sent box.

The process of sending encrypted e-mails can be illustrated as follows.



- User **B** uses **myDME** to upload his personal certificate, if he has not already done so.
- User **B** sends an e-mail to person **A** from his device, marked as *encrypted*, and synchronizes his device.
- Before delivering the e-mail to the collaboration system, DME verifies both person **A** and user **B** have a valid public certificate stored on the server.
- If both these conditions are fulfilled, the e-mail is encrypted and passed to the collaboration system. If not, the e-mail is returned to **B** with an error message specifying the problem.

Signed and encrypted e-mail

A DME user can also receive and send e-mail which is both signed and encrypted.

To *receive* signed and encrypted e-mail, the DME user's personal certificate containing his public and private keys must be stored on the DME server through **myDME**.

To *send* signed and encrypted e-mail, the recipient's public key must furthermore be located on the DME server.

S/MIME and DME

Imagine the setup described above in a DME setting. For a user to read a signed and/or encrypted e-mail on a mobile device, the user would need to download and install certificates on the device. Furthermore, to send an signed e-mail, the user's private key would need to be installed on the mobile device. This is impractical for a number of reasons:

1. Security: If your mobile device is lost, your private key is in danger of being stolen. If that happens, another user could in theory digitally pose as you ("identity theft").
2. Security: Not all users in a mail system knows about certificates, S/MIME and all that, and may tend to just accept any prompt to install certificates.

3. Security: Spam and virus filters are unable to scan S/MIME e-mails.
4. Administration: Why should all users have the trouble of managing certificates on their mobile devices?

Instead of users storing certificates on their mobile devices, DME stores all certificates on the server. There are a number of advantages to this:

1. Certificates are not stored on the devices, and therefore they cannot be lost.
2. The administrator gets to decide which trust authorities to include in the trusted list.
3. Spam and virus filters can be applied to e-mails after decryption on the server.
4. If an *external person* (that is, a person identified by an e-mail address which is not part of the DME system) exists on the DME system, every user in the DME system can send encrypted messages to that external person. The public certificate from the external person is automatically accepted by the server.
5. The certificate part of a signed message sent to several DME users is stored on the DME server, and only the e-mail as such is passed on to the users - saving traffic costs. The last part of the e-mail's journey to the reader is subject to the heavy encryption and security schemes of DME anyway.
6. The attachments of encrypted messages sent to a DME user are stored encrypted on the server, and only the e-mail as such is passed on to the user - saving traffic costs and storage and processing power on the devices. The user can choose to download the decrypted attachments separately.

When DME administers the keys, the users' personal certificates holding their public and private keys must be uploaded to DME in order for the users to be able to send signed and encrypted messages. This is where **myDME** comes in. With **myDME**, users upload their own personal certificates with additional password protection. This additional password protection means that an administrator cannot access the private keys, even though he has physical access to the server on which the keys are stored.

In order to be able to send signed messages from or decrypt received messages on the device, the user needs to enter the password for the private key, which he entered when uploading the personal certificate. This password is entered in the security settings page of the client.

Appendix F: AdaptivePush™

AdaptivePush™ is a technology which enables mobile devices to receive notification of e-mail, calendar entries, contacts etc. as they occur in the collaboration system by network push (or: *IP push*) using the GPRS network, falling back to using SMS push in case the GPRS network is unavailable.

In large organizations, the cost of SMS push can be considerable. Therefore it makes good sense to make use of the GPRS network to connect the mobile device with the collaboration system. The price for one SMS is usually fixed; on the GPRS network, you pay according to the volume of traffic. According to most calculations, using the GPRS network pays off if you receive just a single e-mail a day.

Furthermore, sending commands over the GPRS network is much faster than sending via SMS.

Devices that are connected to the DME server using network push are shown with the following icon in the **Devices** tab:

Please note that special considerations apply for iPhone. See ***Notifications on iOS devices*** on page 263 for more information.

The technology behind AdaptivePush™

AdaptivePush™ works in the following way.

1. On the server, AdaptivePush™ is enabled for a client device.
2. The client receives the new setting at next synchronization.
3. In response to the new setting, the client initiates an HTTP connection to the server. This connection must be over a separate port from the port used for synchronization (which is **5011** by default). The default port used for network push is **5021** (**6011** in DME 2.0).
4. When initiating the connection, the client receives any commands that are ready for the client - such as e-mail sync commands, settings, or other commands, over the GPRS network.

5. The client does not break the connection, but keeps it open.

   However, the connection may be broken due to network problems, flight mode situations, or if the device is shut off.
6. The server tests whether the connection is still open according to a schedule of sign-of-life signals. First, a signal (an HTTP packet) is sent after one minute. Then, three packets are sent at intervals of 3 minutes. Then, five packets at intervals of 5 minutes. This scheme of ever-increasing intervals continues until a sign-of-life signal is sent every 30 minutes. The packet which is sent from the server contains information about when the server will contact the client again.
7. If the server does not contact the client after the specified period of time, the client tries to reconnect to the server every minute for 10 minutes before giving up.
8. When the client is turned back on or the network connection is restored, the HTTP connection with the server is also restored. Until then, the server pushes new e-mail commands and other commands by means of SMS messages (or, in the case of iPhone, possibly using APNS).

If, for some reason, the network push functionality is turned off on the server, the server tells the client to shut down the connection, and resorts to SMS push again.

To set up the server to enable network push, enable the setting **Network push active**, and configure the **Network push path** in **Settings** (see ***General settings*** on page 366).

For each resource in the notification framework, you can set up whether to use network push only or adaptive push (that is, with fallback to notification by SMS). See ***Notification*** on page 248.

Troubleshooting network push

Please read this section if you find that the network push connection over the network push port is not stable. As previously described, the interval between network push keep-alive signals should gradually build up to about 30 minutes. If this process is interrupted, it will begin over again and again, which can cause various problems on the device:

- Excessive battery drain
- General instability
- Out-of-memory situations
- Eventually device reboot

The problems appear differently on different devices.

Two things especially can cause problems:

1. The firewall/proxy through which the network push connection is routed to the DME server is unable to keep connections for long period of times. This can be a default configuration in the firewall/proxy or NAT settings.

   This is the most likely root to the problem. The firewall or network administrator is able to monitor the connections to the network push port on DME, and see where the connection is cut off after a time with no activity. If it is a global configuration, this could also affect any VPN connections that time out if they do not have a "server ping" setting to keep the connection alive.

   Solution: Configure the firewall to only cut the connection if the connection is idle for a period of time that exceeds the maximum keep-alive time. This keep-alive time is set in the **Connection** section of the **Client** setup panel of the **Server configuration** page. For more information, see ***Client*** on page 215.
2. The mobile network is not set up to allow long connections, and automatically disconnects after a fixed number of seconds/minutes - this is a mobile operator setting.

   If there is a lot of traffic on the local mobile network, or if you have a misconfigured GSM antenna or network, then the network is unable to service all clients. The network then disconnects any clients that are not actively using the data connection. The network will not close a data sync connection, but it may close the network push connection.

   Solution: To resolve this, you need to discuss a network upgrade with your mobile operator.

Appendix G: The Basic MDM client

Supported by: 

This appendix describes the *DME Basic Mobile Device Management client* – in the following called the Basic MDM client.

In many organizations, the users of mobile devices can divided into three groups:

- Some users need to have a continually updated copy of their corporate e-mail and calendar in their pocket. Such users need the full DME client on their devices - the number of features available can be controlled through the license file.
- Other users do not require advanced DME features on their mobile devices. However, the DME administrator wants to be able to manage the devices and monitor how they are used. Such users need the Basic MDM client on their devices.
- Yet other users have another system for e-mail synchronization installed on their devices. The system administrators want to be able to manage the devices and monitor data consumption etc. Such users also need the Basic MDM client on their devices.

The Basic MDM client is an economical way to add more mobile assets to the portfolio of devices that can be managed by DME. Apart from keeping track of your assets, you can track voice and data usage, block applications on the devices, transfer files to the devices (option), wipe the device in case of theft or loss, and provision software to the client. Furthermore, it is easy to upgrade to the full DME client for e-mail and PIM synchronization features.

Basic MDM client features

The Basic MDM client supports a core set of DME features. The user interface contains a splash screen/About box and the following menu items:

- **Synchronize** (triggering synchronization of all available types: system information, files, and traffic log)
- **Settings** (see below)
- **Tools**
  - **mport** (triggering synchronization of all available types: system information, files, and traffic log)
  - **og** (showing log of communication with server)
- **About** (showing version information)
- **Close** (hide the client)

The following is a brief description of the features of the Basic MDM client.

Settings synchronization

The Basic MDM client synchronizes settings with the DME server at every scheduled sync. The following settings can be set for the Basic MDM client.

- **User name**

  The user's ability to change the user name depends on the setting **Device allowed to switch user** on the server. See ***Anonymous users*** on page 429.

- **Phone number**

  The Basic MDM client is able to retrieve the phone number of the device by sending an SMS to the server's SMS modem, which responds with the number from which the SMS was sent. The phone number is necessary for SMS-based features, including DM actions, to work correctly on the device.

Please refer to **Appendix A - General settings** for a description for the following settings (see ***General settings*** on page 366):

- **Server path** (can be changed on device if permitted)
- **Launch on startup** (can be changed on device if permitted)
- **GPRS timeout** (can be changed on device if permitted)
- **Network push active** (can be changed on device if permitted)
- **Network push path** (can be changed on device if permitted)
- **Log traffic**
- **Background sync. when roaming**
- **Network push when roaming**

Apart from these settings, certain device specific settings may exist on the client (such as access points sequence on Symbian devices).

Please refer to **Appendix A -Security settings** for a description for the following settings (see ***Security settings*** on page 371):

- **Action on SIM card change** (can be changed on device if permitted)
- **Prevent uninstall of DME client**
- **Require trusted certificate**

Furthermore, all settings in the **File sync.** and **Scheduled sync.** sections are synchronized with the server, and they can be changed on the client (see ***File sync. settings*** on page 384 and ***Scheduled sync. settings*** on page 377).

Cost control

Statistics in the form of voice/data traffic and consumption are transferred to the server at every synchronization. These statistics can be used in combination with the Analyzer tool in any number of ways - you can for instance monitor for extraordinary usage patterns, use the data as input to budgets, or use the data when negotiating contracts with mobile operators. See ***Appendix D: Traffic logging*** on page 408 for more information.

Furthermore, you can specify various cost-reducing parameters to the use of the device when a user is roaming. See the **Roaming** section in the user guide for any DME 3.0 client (except iPhone).

Security

The Basic MDM client should always auto-start when the device is turned on. Only when the client is active can the DME administrator block applications, wipe the device in case of loss or theft, and specify an action in case of a SIM card change.

Asset management

The Basic MDM client will send in information about itself, just like regular DME clients do - information about the make and model of the device, firmware, etc. See ***Information*** on page 86 for more on this topic.

Furthermore, you can use the **Asset** panel section to register further information about the device throughout its lifetime (see ***Asset*** on page 97 for more information).

File synchronization

If the file synchronization add-on is enabled for the device, files can be synchronized between the device and the DME server file store.

To synchronize files between the device and a server that requires user-specific authentication, use the **Authenticate with user** option in the file sync rule. Due to the fact that the Basic MDM client user is anonymous, the client user cannot authenticate directly against a file server. For more information, see ***Appendix C: File synchronization*** on page 396.

Managing Basic MDM clients

Managing Basic MDM clients is much the same as for full DME clients, with one notable difference: the devices are not bound to real, identifiable users. Full clients are bound to an LDAP user in order to synchronize with the right mailbox. MDM clients, however, are only bound to the device, and can freely be moved between users.

The following sections describe how the MDM client is integrated into DME.

Deploying Basic MDM

The Basic MDM client can be provisioned to the devices in the same way as for regular DME clients, complete with the required root certificate and access points. The installation process is completely silent.

Due to the fact that there is no user authentication when using the Basic MDM client, it is recommended to set both the **Create device on first connect** setting and the **Client signature** setting to **True**. This will ensure that only clients that are known to the DME system can make a connection. For more information, see ***Authentication*** on page 217.

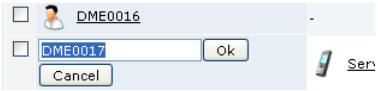
On Symbian devices, where a DME client is not installed already, the installation process evaluates any existing internet access points (IAPs) on the device, and chooses three access points which are entered in the **General settings** page on the device. For more information, see ***Access points*** on page 158. The user can change the selections later.

Anonymous users

The first time a device connects to the DME server, a "user name" is assigned to the device. DME creates user names sequentially - "DME0001", "DME0002", etc. For Windows Mobile users, the information in the device's **Owner information** field will be used as user name, if available.

In the **Devices** tab, the Basic MDM "users" are shown as wearing white shirts: 

If the setting **Device allowed to switch user** is enabled on the server (see ***Authentication*** on page 217), the user name of the device can be changed by the user of the device, and the new name will then be synchronized to the server. If the setting is disabled, only the DME administrator can change the user name. He or she can do this by clicking the user icon and changing the name (if a device is assigned to the user):



Clicking **OK** changes the user name. The user name is updated on the client at the next sync. For more information about changing users, see ***Switching users*** on page 80.

CHAPTER

Appendix H: DME Cost Control

Supported by: 

With DME, you can keep phone costs transparent and enforce corporate phone policies on *Android*, *Symbian*,*Windows Mobile*, and *BlackBerry* devices. This makes it safer for you to distribute phones to a wider circle of employees. DME calls this system DME Cost Control.

The DME Cost Control system is divided into two sets of features:

1. **Calculating the running costs of operating your fleet of devices.** This is done by defining *subscriptions* which define the costs incurred by placing or receiving calls, SMS or MMS messages, and using data traffic. The phone users can then keep an eye on their costs from the DME client, and see if they are approaching the limit. See ***Cost control*** on page 430.
2. **Blocking calls or traffic to certain numbers or countries.** This is done by fixing a limit (a *quota*) on the phone expense to individual phones, groups of phones, or all phones managed by DME, and by specifying rules for which numbers are OK to call and which are not. See ***Call blocker*** on page 431.

Cost control

With the cost control part of the DME Cost Control concept you can make the devices keep records of their consumption of voice calls, messaging, and data traffic, and have them send these records to the server at every sync.

In the **Server** > **Subscriptions** page you can create *subscriptions*, which are essentially a mapping of your existing telecom plans into DME. In a subscription you set a price on every phone call placed, SMS or MMS sent, and MB of data transferred by the user. Domestic and roaming prices are set separately. The price is specified in the currency of the operator home country.

A maximum *balance* - a *quota* - is also specified. The balance is reset at the beginning of every month, at the end of every month, or twice a month. The user can view his or her current balance on the phone at any time. The pricing of each call, SMS, etc. is an approximate price calculated by the client based on duration, roaming status, data traffic etc.

If you subscribe to a third-party TEM (Telecom Expense Management) provider system, such as TeleOpti, the exact amounts will be calculated via a web service at regular intervals, and the exact amounts are returned to the client. Thus the accurate balance is also shown in the client. This integration with a TEM provider is a DME add-on product.

When the quota is reached, you can choose to prevent the call, or just to give a warning to the user.

Call blocker

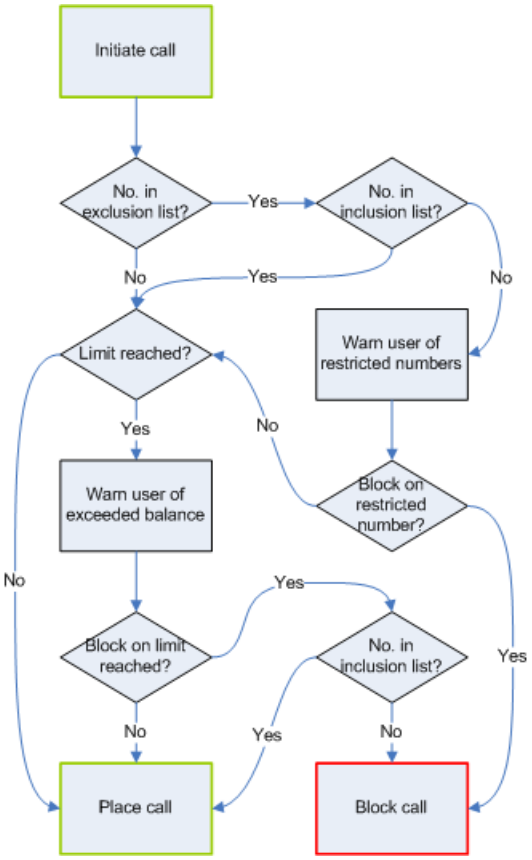
Apart from setting a price on every call, text message etc., you can set up an *exclusion list* and an *inclusion list*. The exclusion list consists of numbers that the user is not allow to call under any circumstances; the inclusion list consists of numbers that the user is always permitted to call. The numbers are specified as regular expressions. For instance, the exclusion list may contain the country code to certain countries that the user is not permitted to call, and the inclusion list may include numbers of business contacts, managers, etc. that the user should always be able to get a hold of.

To set up the Call blocker, you must perform the following steps in **Settings** (either Default settings or the settings for a group of devices):

1. Enable TEM integration.
2. Specify the quota in the currency of the home operator of the current subscription.
3. Set up inclusion and exclusion lists.
4. Set up warn/block policies.
5. Click **Save**.

The schematic below describes what happens when the user places a call from his or her phone.

Calls:



Is the number in the inclusion list: Charge the call, and place the call regardless of user balance.

Is the number in the exclusion list: Block the call (unless the number is also in the inclusion list).

If the number is in neither list: Check if the limit has been reached.

If limit is reached: Check which action is required by the administrator.

If **Block**, block the call.

If **Warn**, show a message to the user, charge, and place the call.

This happens both for outgoing calls and incoming calls when roaming.

SMS:

Uses the same scheme as for call checking. If the SMS is blocked, the outgoing SMS will be removed from the messaging Outbox. If an SMS is sent to multiple recipients, only the SMS to blocked recipients will be blocked.

On Windows Mobile devices, it is not possible to block SMS sent to restricted numbers. It is possible to issue a warning, however. This is due to a platform limitation.

MMS:

Uses the same scheme as for call checking. If the MMS is blocked, the outgoing MMS will be removed from the messaging Outbox. Note that sending MMS triggers data traffic.

On Symbian devices, if an MMS is sent to multiple recipients, and one recipient is blocked, the MMS is canceled for all recipients. This is due to a limitation in the Symbian platform.

On Windows Mobile devices, MMS are counted as SMS due to a platform limitation.

Data (GPRS/3G):

Uses the same scheme as for call checking. You should not set the Call Manager up to block data traffic, as this will block the DME client as well. On Symbian, only warning is possible.

DME keeps separate balances for each SIM card that is installed in the phone. If the user has multiple phones managed by DME, the user's balance will be aggregated from all of his or her phones.

The user is unable to reset his balance by changing the time of the phone to a new period, as DME uses an internal counter for checking when the balance is due to be reset. This internal counter is adjusted every time the DME client connects to the DME server.

Regular expressions in exclusion and inclusion lists

The regular expression patterns are written as Extended Regular Expressions (ERE). See http://en.wikipedia.org/wiki/Regular_expression. The following are some examples:

Block calls to certain countries (Pakistan in this example): Enter `\+92.+` (matches any string beginning with '+92); `0092.+` (matches any string beginning with '0092'); into the exclusion list.

Always enable calls to company headquarters: Enter `(\+45|)7021[0-9]{4}` into the inclusion list. This matches '+457021xxxx' and '7021xxxx', where x is any one-digit number.

Block calls to certain service numbers: Enter `90.{6}` (matches any string beginning with '90', followed by six digits) into the exclusion list.

Other examples:

`\+86(010|020).+` (matches any string beginning with '+86010' or beginning with '+86020')

`\+358(40)?123p132` (matches '+35840123p132' and '+358123p132')

The expressions must be listed on one line, each expression separated by semicolon (;).

Several websites can help you verify your regular expressions, for instance the "REGex TESTER" website: http://www.regextester.com/

Appendix I: Other methods of deployment

This appendix describes other ways of obtaining or deploying the DME client than the ones described in ***Installing software*** on page 108.

Ad-hoc installation

Ad-hoc installation refers to an unstructured, once-off way of installing DME on a client. For instance, if you work in the IT department and want to test a new version of DME on a device, you can choose to install the client directly on the device without first uploading in to the server and pushing it from there.

This method covers for instance:

- Transferring the client installation files to the device by means of bluetooth or cable, and running it from there.
- Doing a remote installation from a desktop using Nokia Ovi Suite, Sony Ericsson PC Suite, Active Sync, or similar.
- E-mailing the client installation files as an attachment to the user, who downloads and executes the files from the DME client (upgrades only; full DME clients only).

This method has the drawback that you cannot supply a server path or an access point with the installation files, so the user will have to enter these. However, this is not a problem in case of a client upgrade.

As the name implies, ad-hoc installation should be the exception for use by testers or supporters. Any general roll-out should be performed using other deployment methods as outlined above.

WM configuration tool

The following description applies to Windows Mobile Pocket PC devices only.

Excitor A/S can supply a separate product, the **DME Setup Configuration Tool**, to help setting up an installation kit which helps Windows Mobile users install not only the DME client, but any other options that may be required in a specific setup.

The intended use of the tool is to build a DME installation kit, using storage cards as a medium for distribution. This means that a user receives a storage card, plugs it into his or her device, the installation tool is run automatically, and it sets up DME as well as other settings on the device according to company specifications.

This is achieved by generating two files, **`DmeInstall.xml`** and **`Dmeconfig.xml`**, and placing them in a folder in the root of the storage card along with the files **`autorun.exe`** and **`setuphelper.exe`**, as well as any auxiliary files specified in **`DmeInstall.xml`**.

The following sections describe the use of the tool.

Setting up an installation

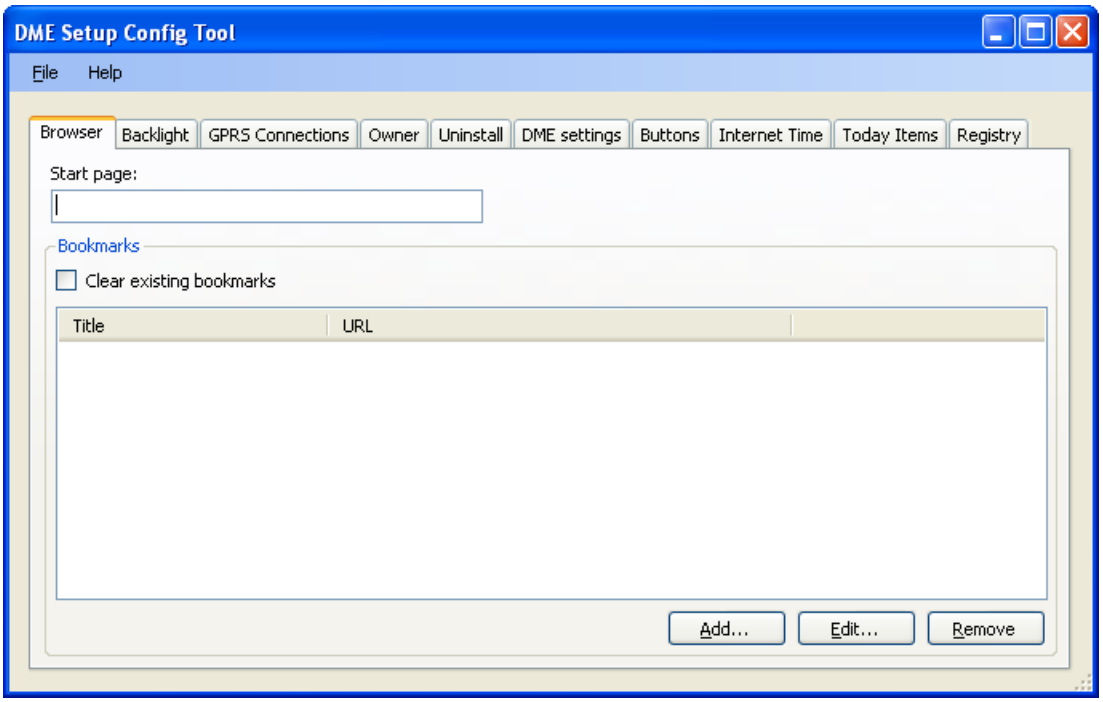
If you are an administrator setting up a uniform installation kit on a storage card, start the tool **`DmeSetupConfigTool.exe`** supplied by Excitor A/S. The following screen is shown:

Click **Configuration file** on page 437 to start defining the file **`DmeInstall.xml`**, or

Click **Installation file** on page 445 to start defining the file **`Dmeconfig.xml`**.

Configuration file

The image below shows the main window of the configuration file setup utility. The end result of using this utility is a file called **`DmeConfig.xml`**, which is used during installation to set up the device according to your choices in this utility.



The utility is divided into a number of tabs. Each tab lets you configure a feature on the target device. The configured settings will function as default values, and the individual users will be able to change them (unless they are protected by DME).

At any point you can select **Save** or **Save as...** in the **File** menu to save the configuration file you are creating with this utility. The file will always be called **`DmeConfig.xml`**. In a similar way, you can select **Open...** to open a previously saved configuration file, or you can click **New** to start a new configuration file project.

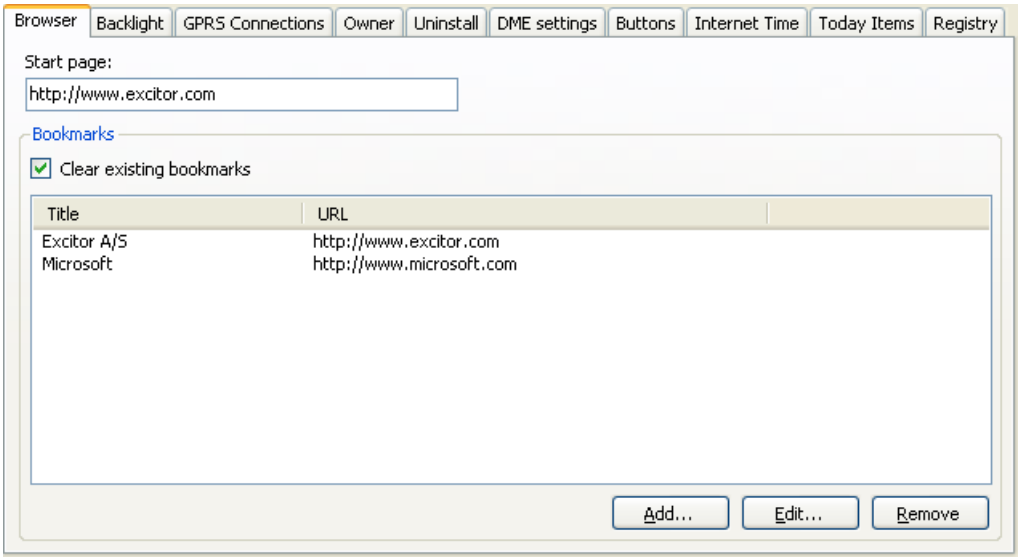
Furthermore, in the **File** menu you can select **Revert to saved**. If you select this option, the utility will undo any changes you have made in the configuration file since the last time it was saved.

After saving your configuration file, click **Close** in the **File** menu to close the utility.

The following sections explain each tab.

Bookmarks

In this tab you can specify bookmarks for the Internet Explorer browser on the target device.



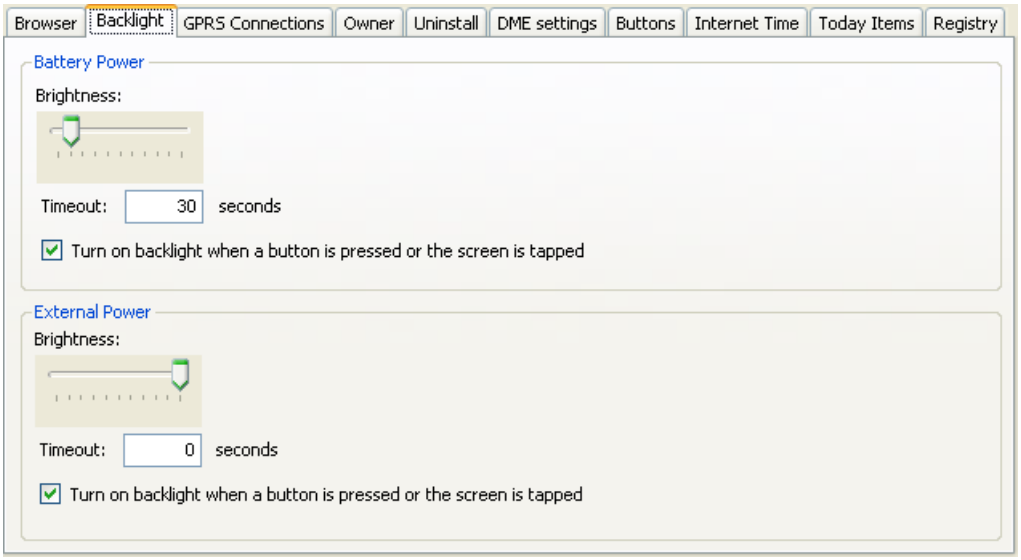
Enter a default start page in the **Start page** field. If you leave this field blank, any start page already defined on the target device will be preserved.

In the main part of the tab, you can build a list of bookmarks (favorites) to add to Internet Explorer's list of bookmarks. Use the buttons at the bottom of the tab to add, edit, and remove bookmarks.

If you select the field **Clear existing bookmarks**, any existing bookmarks on the target devices will be erased before the new bookmarks in the list are added.

Backlight

In this tab you can specify standard backlight settings on the target device. Backlight settings are important parameters for battery life.



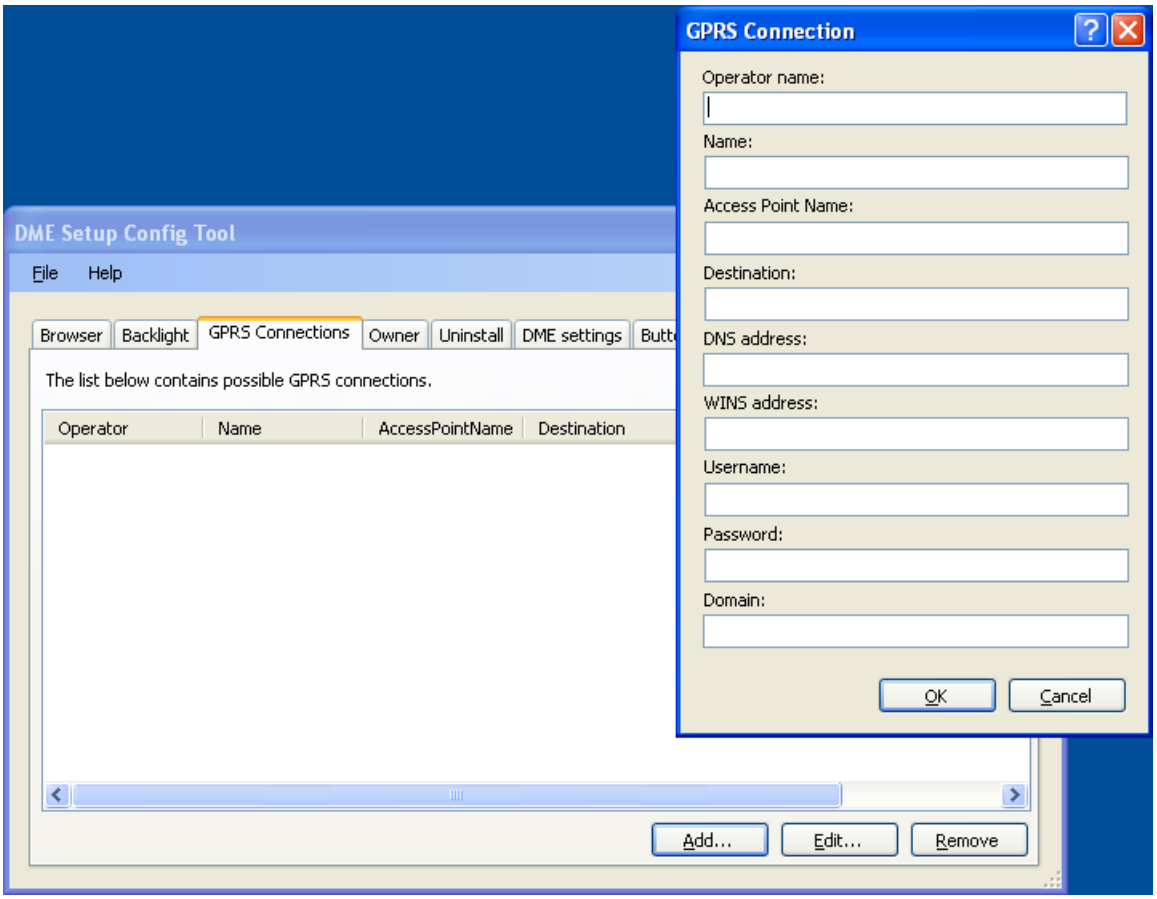
In the top part of the tab, you can set options for when the device is running on battery power. By default, the backlight is at setting two, and will be on for 30 seconds before being turned off. The backlight is turned on when a button is pressed or the screen is tapped.

In the bottom part of the tab, you can set options for when the device is running on external power, including when connected by cable to a PC. By default, backlight is set to maximum and will never time out (specified as 0 seconds).

GPRS connections

In this tab you can specify a list of GPRS connections that the target device may use.

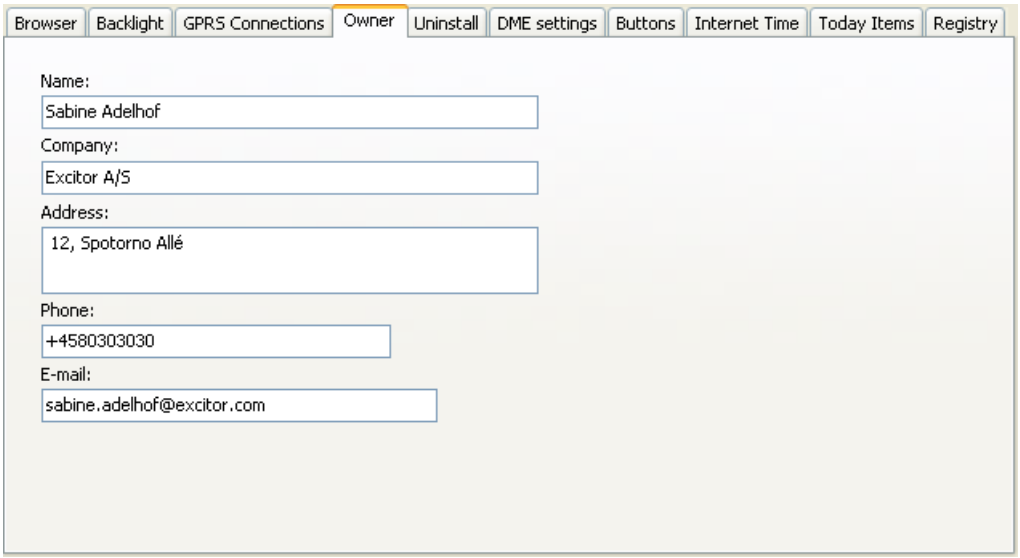
Use the buttons at the bottom of the tab to add, edit, and remove connections. When you add a connection, a window opens in which you can enter all required information about the new GPRS setting:



Add the required information, and click **OK** to save the new GPRS connection in the list.

Owner

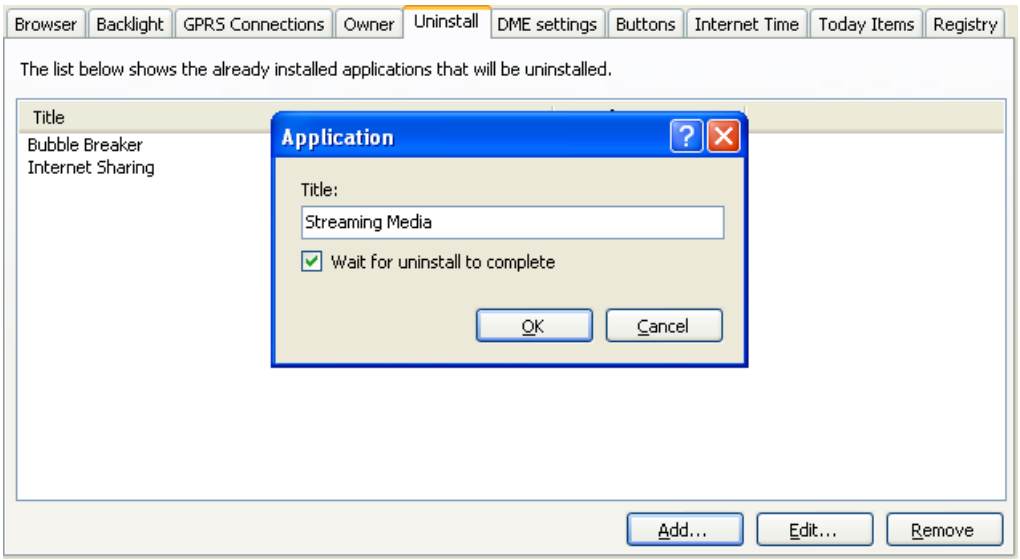
In this tab you can set the owner information for the target device.



In many cases the configuration file will be distributed to many users, and it will then not be relevant to add a specific user name and e-mail address, but it will often make sense to add the shared company information and main company phone number. You can leave any of the fields blank.

Uninstall

In this tab you can specify applications that must be uninstalled before the DME client is installed.



Use the buttons at the bottom of the tab to add, edit, and remove applications that need to be uninstalled. For each application, you can specify if the DME installer should wait for the uninstall to finish before DME is installed.

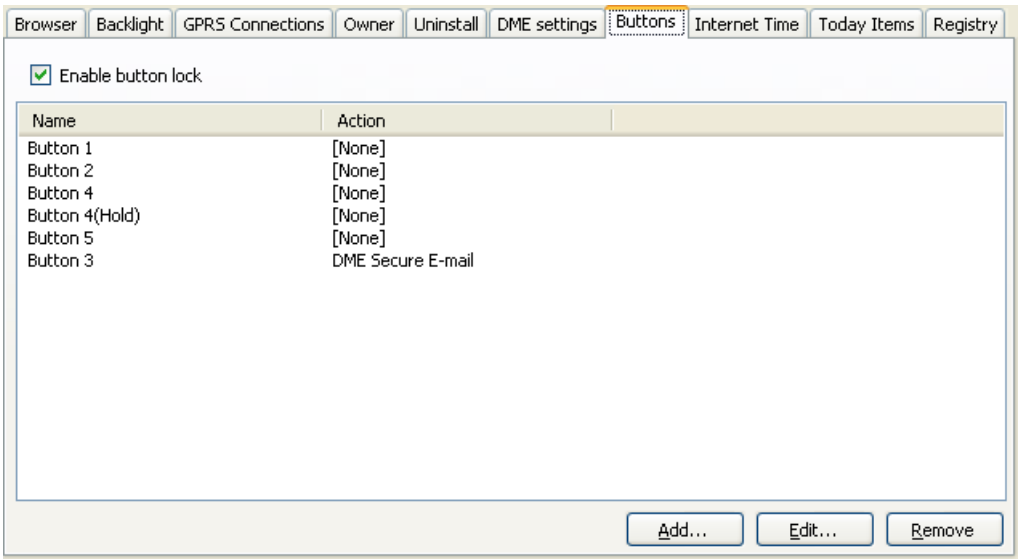
DME settings

In this tab you can specify DME settings that should be applied to the target device.

It is only necessary to specify the path (URL) to the DME server. Once a connection is established by the DME client to the server, all applicable settings will be transferred to the client from the server. For more information about applying settings to devices, see the DME Server Administration Reference manual.

Buttons

In this tab you can assign programs to buttons on the target device.



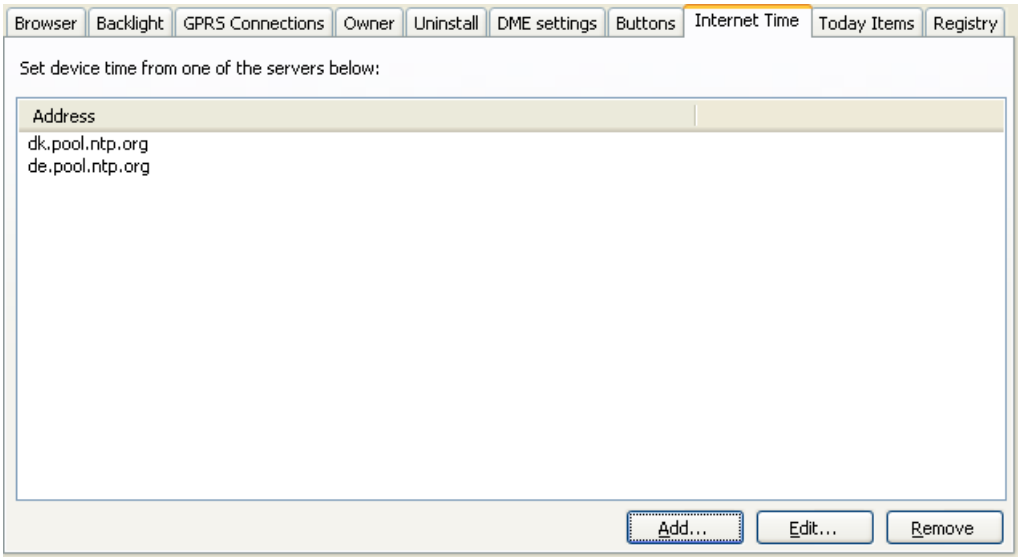
Buttons that have the action **[None]** in this tab are not affected on the target device. You can for instance use this tab to assign a button to **DME Secure E-mail** for all target devices.

Use the buttons at the bottom of the tab to add, edit, and remove button configurations.

Selecting **Enable button lock** corresponds to selecting the option **Lock buttons if device is locked** in the **Lock** tab in the WM **Buttons** settings application. Leaving **Enable button lock** unselected corresponds to selecting **Do not lock buttons**.

Internet time

In this tab you can specify an Internet time server (NTP server) which is be used for adjusting the time on the target device.

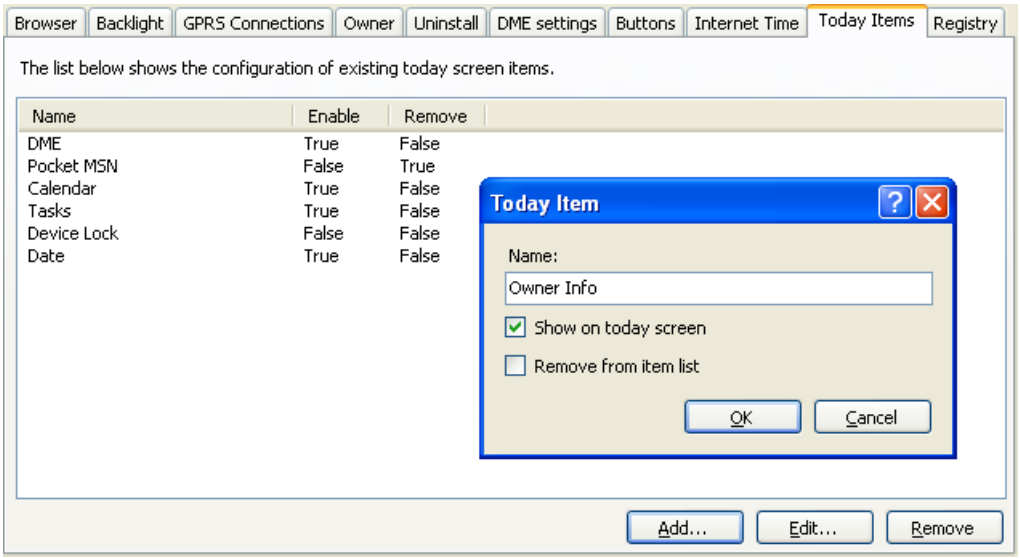


During the installation of DME, the installer will attempt to contact one of the listed time servers. If a working GPRS connection is specified, and the contact was successful, the DME installer will set the time of the device according to the chosen time server. If unsuccessful, the installer will try again the next time is it run using this tool.

Use the buttons at the bottom of the tab to add, edit, and remove Internet time servers.

Today items

In this tab you can define Today items on the target device.



The settings correspond to the settings a user can make in **Settings > Today > Items** on his or her device. Use the buttons at the bottom of the tab to add, edit, and remove items in the Today screen.

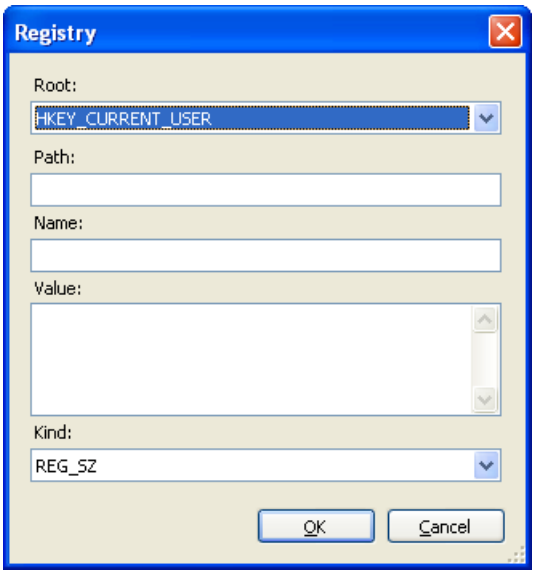
For each item, you can specify if it should be shown or not shown in the Today screen, and if it should be completely removed from the list in the Today setup screen on the target device or not. If you choose to remove a list item, it cannot be shown in the Today screen.

Registry

In this tab you can add keys and values to the registry in the target devices.

Use the buttons at the bottom of the tab to add, edit, and remove registry entries.

When you click **Add...**, or when you edit an existing setting, the following window appears:

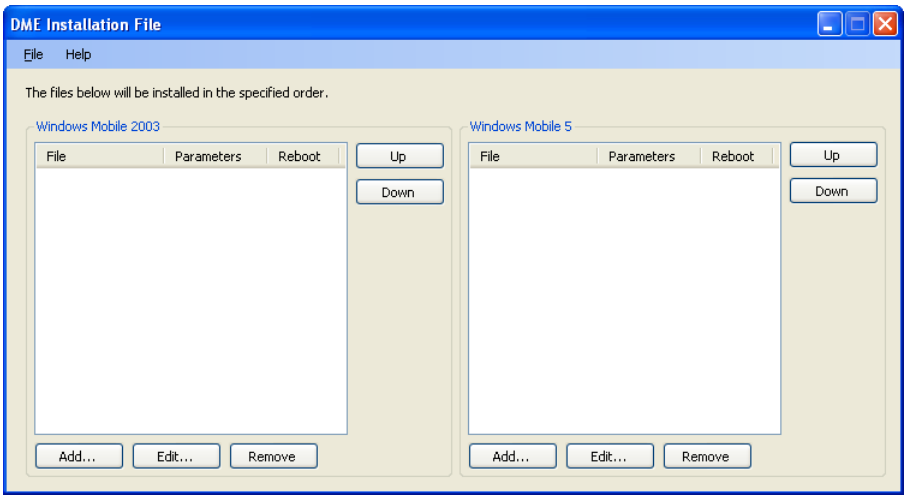


In this window you can create or edit a registry setting. You can choose to place the setting in the **HKEY_CURRENT_USER** or the **HKEY_LOCAL_MACHINE** part of the registry.

Click **OK** to add the new setting to the list or save the edited setting. Note that DME will import the registry setting on the target device without testing for its validity. Registry settings should be added with care as wrong settings may cause the device to malfunction.

Installation file

The image below shows the main window of the installation file setup utility.



The purpose of this utility is to generate a file called **DmeInstall.xml**, which holds information used by the installer to include the DME client software installer and additional setup files in the installation. Any files added will be executed on the device before the installation of DME. This is typically used in connection with the installation of the Microsoft .Net Compact Framework, which is required by DME.

The window is divided into two similar parts: One for Windows Mobile 2003 devices, and one for Windows Mobile 5 devices and later. The reason for this is that the two types of supported devices may require different files. Note that the .NET Framework is built During installation, the installer will detect which operating system the current device is running, and pick the appropriate files.

Use the buttons at the bottom of each part to add, edit, and remove files required for the installation of DME. Note that you can use this functionality to push files that are not directly relevant to DME to the device as well.

For each file you add, you can specify any parameters to be added to file when executed. For instance, you can add **/silent** to the .NET CF installer to make the installer run in silent mode.

Use the **Up** and **Down** buttons to change the installation order of the added setup files.

Choose **File > Save** when you are done, to save the file as **DmeInstall.xml**.

Putting it together

After generating the files **DmeConfig.xml** and **DmeInstall.xml**, do the following to create a working DME installation on a storage card:

1. Place the two XML files in a folder called **2577** in the root of the storage card. Windows Mobile automatically looks in this folder for files for automatic execution. The name **2577** is the internal code for the processor powering the device.
2. Place the files **autorun.exe** and **SetupHelper.exe** in the **2577** folder as well.

When a user inserts the storage card, Windows Mobile will automatically execute the **autorun.exe** file, which in turn will launch the DME installation process (the file **SetupHelper.exe**).

SetupHelper.exe first processes **DmeInstall.xml**, which installs the DME client software and any additional software.

The device is then configured using the settings made in **DmeConfig.xml**.

Symbian auto-installation

It is possible to put together an installation kit on a memory card. This option enables you to install the DME client or the DME Basic MDM client on any Symbian 3rd and 5th edition and Symbian^3 device. The client must be version 3.5 or higher. This method typically applies to help desk or other personnel preparing a new device for a user. This is done in the following way:

1. Prepare a memory card with the following files:
   - he DME client installation file
   - text file with setup instructions
2. Insert the memory card in the phone.
3. The DME client is installed silently, according to the options set in the setup file.

Preparing the memory card

To prepare the memory card for auto-installing DME on Symbian devices, do the following:

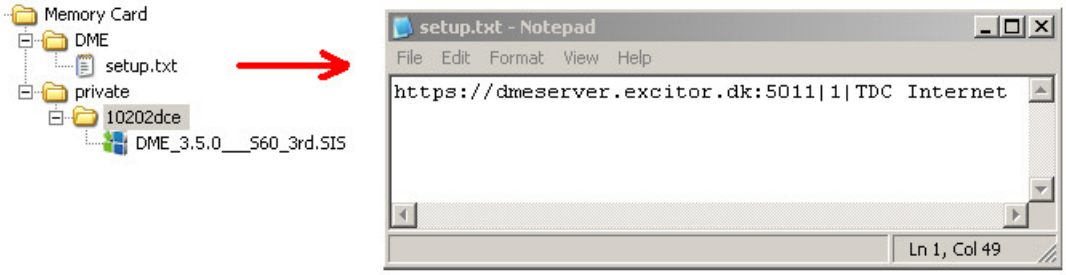
1. In the root of the memory card, create the folder **`private`**
2. In the private folder, create the sub-folder **`10202dce`**
3. Copy the DME installation file (**`.sis`**) to the folder **`10202dce`**
4. In the root of the memory card, create the folder **`DME`**
5. Prepare a text file called **`setup.txt`** (see below)
6. Copy **`setup.txt`** to the **`DME`** folder

The **`setup.txt`** file must be a plain text file with one line in the following format:

`[serverpath]|[launch on startup 0/1]|[IAP 1]|[IAP 2]|[IAP 3]`

- **`serverpath`**: This is the only mandatory option. Specify the server path to your DME server, including port number.
- **`launch on startup`**: Enter **`0`** for **No** or **`1`** for **Yes** (recommended). If enabled, the phone will automatically launch DME when the phone is rebooted, ensuring that the initial synchronization can be performed. If you do not wish to specify this, simply add a pipe character **`|`** before entering any access points.
- **`IAP 1-3`**: With these options you can specify access points 1 to 3 in DME. You can do this if you are certain that the access points in question exist on the phone. This way you can for instance ensure that your company WLAN access point is selected as first choice.

The illustration below shows the complete folder structure on the memory card and an example **`setup.txt`** file.



Auto-install process

To install DME using a memory card prepared as described above, do the following:

1. Turn the phone on.
2. Insert the memory card.
3. The phone detects the special setup on the memory card.
4. Wait until the DME installation is complete, and the DME client is started automatically.
5. When the login screen is shown, wait a few seconds for the configuration of DME to complete.
6. Remove the memory card.

The user may now log in and perform the initial synchronization.

Self-provisioning

DME supports the concept of *self-provisioning*, meaning that users can request software and OTA configurations on demand. To achieve this, a user needs to know four items of information: An *SMS Code*, the server's *phone number* (the phone number of the server's SMS modem), a *download code*, and a *PIN code*.

The following describes the steps necessary to set up self-provisioning on the DME server.

Setting up

You can set up self-provisioning for software and for OTA configurations.

❖ ***Setting up software for self-provisioning***

1. In the **Provisioning** tab, upload new software, or edit an existing software package by clicking the software in question. See Provisioning in the DME Web Administration Reference for more information.
2. In the **SMS Code** field in the **Software information** window, enter a short code which the users will use when requesting the software in question. This could for instance be **S60** for the latest DME client for Nokia S60 devices.
3. Specify whether the users should get the software as an **SMS** push or as a **WAP** push when they request the software by SMS.

When you click **Save**, the software is set up for self-provisioning.

❖ ***Setting up OTA configurations for self-provisioning***

1. In the **Devices** or **Provisioning** tab, create a new configuration (for instance a bookmark or an access point), or edit an existing configuration by clicking the configuration in question. See ***Send OMA configuration*** on page 64 in the DME Web Administration Reference for more information.
2. In the **SMS Code** field in the **Edit phone configuration** window, enter a short code which the users will use when requesting the configuration in question. This could for instance be **TDC** for the common configuration settings for the TDC phone operator.
3. As of DME 3.6, there are 2 reserved SMS codes for self-provisioining:

   DME - Will send a bootstrap and install the default DME Client

DM - Will send a bootstrap and install the default Basic MDM Client

When you click **Accept**, the configuration is set up for self-provisioning.

Requesting software or configuration

In order to be able to request software or phone configurations from the DME server, a user needs to know the following information:

- **An SMS Code**

  The SMS code is what you set up in the previous section.

- **The server's phone number**

  You can find the phone number of the server's SMS server in the **Server** tab - click **Server configuration** > **SMS modem**. The field **Modem phone number** field contains the number you need. See ***SMS modem*** on page 228 in the DME Web Administration Reference.

- **A download code**

  There are three different download codes: **TST**, **DWL**, and **CON**. For more information, see the examples below.

- **A PIN code**

  A PIN code may be required by the SMS modem. A separate PIN code can be set for software (in the field **SMS Service PIN**) and for configuration downloads (in the field **OMA PIN**).

- ***Testing that you have the right phone number for the SMS server***

1. Send the following SMS message to the number you believe belongs to the SMS modem:

   `TST`

If the phone number is correct, the server will reply with the message "This is a TEST reply".

- ***Requesting a software download***

1. Send an SMS to the server requesting a software download on the following form:

   `DWL <SMS code> [PIN]`

   The PIN code is only required if the SMS modem has been set up to require an SMS Service PIN.

The server will reply with an SMS and/or a WAP service message containing a temporary link to the requested software.

❖ ***Requesting a phone configuration***

1. Send an SMS to the server requesting a configuration download on the following form:

   `CON <SMS code> [PIN]`

   The PIN code is only required if the SMS modem has been set up to require an OMA PIN.

The server will reply with an SMS configuration message containing the requested configuration.

It is possible to send multiple requests in the same SMS - see the examples in the next section.

Examples

Use the examples below as a guide to using the SMS commands. The examples assume the following:

- Server modem phone number: **12345678**
- SMS code for DME software: **S60**
- SMS code for OTA configuration: **TDC**
- SMS service PIN: **1234**
- OMA PIN: **12345**

❖ ***Sending a test message to the server modem***

Send

`TST`

to **12345678**. The server should respond with the message "This is a TEST reply".

❖ ***Requesting DME software***

Send

`DWL S60 1234`

to **12345678**. The server should respond with a push to download the requested client.

❖ ***Requesting OTA configuration***

Send

`CON TDC 12345`

to **12345678**. The server should respond with a push to install the requested OTA configuration.

❖ ***Requesting both DME software and OTA configuration***

Send

```
DWL S60 1234
CON TDC 12345
```

to **12345678**. Note that the commands must be on separate lines.

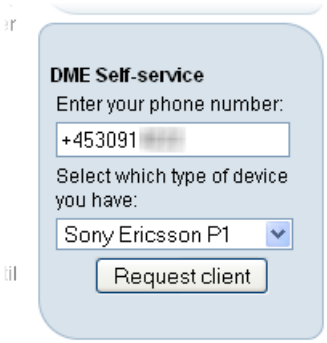
Web-based self-provisioning

In addition to SMS based self-provisioning, DME supports the use of the Web for self-provisioning. DME ships with a servlet called **dmePushInstall**, which can be used as a self-provisioning tool. By using this tool, a user can request a software push or an OTA configuration (such as an access point) without direct access to the DME Web Administration Interface.

The installation is received as an SMS push; OMA DM installation is not supported through this interface.

The typical use of the **dmePushInstall** tool is to let users, who have not yet been registered in the DME system, enter a phone number and select which device they have. Submitting the request will result in a software push from the DME server, effectively creating the user and his/her device in DME.

This mechanism will typically be published on a corporate intranet, branded as a DME self-service portal - such as below:



Please be advised that using the **dmePushInstall** tool requires some skills in web programming.

Furthermore, for a software package or an OTA configuration to be accessible to this kind of self-service, it must have an associated **SMS code** - see ***Self-provisioning*** on page 449.

Accessing the service

The **dmePushInstall** tool can be accessed using a server-based scripting language, such as JSP, Perl, PHP, or Ruby, or any programming language that is able to establish an HTTP connection and post information - such as Java, C#, or C++. A complete example of how to use the service is available from the Excitor Partner website.

In order to make use of the features in **dmePushInstall**, you need to do the following:

1. Establish a secure HTTP connection with the server.

   The way to do this depends on your choice of scripting language.

2. POST information to **dmePushInstall**.

   The information collected from the HTML form should be posted to the **dmePushInstall** service, along with authentication information.

For the sake of authentication, a special local user should be created in DME. This credentials of this user will then be posted along with the other information to **dmePushInstall** and used to gain access to the DME server for sending the push. Of course, existing users could be allowed to enter their own credentials, but as the service is often used by those who have not yet been created as users in DME, this would often not make sense.

Acceptable POST parameters

The **dmePushInstall** tool accepts the following POST parameters:

- **phoneNumber**
  Mandatory. Phone number of the device which should receive the DME install push.
- **swSmsCode**
  Mandatory. Parameter selecting which software package to push - this is the "SMS code" shown in the **Provisioning** tab of the DME Web Administration Interface, which is also used for SMS based self-provisioning.
- **smsMessage**
  Optional. A message sent to the device explaining what to do with the installation SMS.
- **otaSmsCode**
  Optional. Select an OTA configuration to push to the device, such as GPRS settings needed for DME. The SMS code for this is shown in the **Provisioning** tab > **Send OTA configuration** page of the DME Web Administration Interface.
- **sendServerPath**
  Optional. Choose whether an additional SMS with the DME server path should be sent to the device. Anything other than **no** or **false** results in this SMS being sent.

Note that these parameters correspond to the options which a DME administrator has when pushing a client to a device from the DME Web Administration Interface. Please see ***Self-provisioning*** on page 449 and the reference documentation at ***DME Documentation http://documentation.excitor.com***.

An example script, written in JSP, is available from the Excitor A/S Partner website (authentication required). Click **Technical** > **Clients & Tools** > **Tools**, and look for **Script for web-based self-provisioning**.

List of procedures

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