

estos MetaDirectory

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1 Welcome to estos MetaDirectory

This help file will guide you through the Administration of estos MetaDirectory.

- For an overview of the essential features of the estos MetaDirectory, see the About estos MetaDirectory page.
- For instructions on how to install the estos MetaDirectory, see the Installation Notes page.
- For help with the estos MetaDirectory Administrator's dialogs, see Administration.
- For information about how to include contact data sources, see Include Data Sources.
- The configuration of application and device access to estos MetaDirectory is described in Configuration of Applications and Devices.
- Information on details and specific topics is summarized under Technical Notes.
- Links to software update and support can be found on the Product Support page.

Help can be accessed at any time from the estos MetaDirectory program windows via **Help**.

The following symbols will be used in the help file:

Symbol	Meaning
	Instruction
	Warning, caution
	A change in contrast with previous versions or notes about the system environment
	Note for use on Microsoft® Windows®

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2 About estos MetaDirectory

estos MetaDirectory combines various databases into a single, consistent LDAP directory, which can be used through the company. Thereby, relevant data like telephone numbers or contact data will become available to all employees throughout the company. Intelligent preparation of the data will make searches easier and presentation of the results quicker, even for very large and widely distributed databases.

Find everything everywhere in time.

The use of different database systems in a company often makes the search for employee and contact data very time-consuming. Often, the databases of each business unit need to be searched one at a time to find the data set you want. The estos MetaDirectory solves this problem by synchronizing the contents of all databases in a central data pool.

What is estos MetaDirectory?

The estos MetaDirectory is an LDAP (Light Weight Directory Access) server with intelligent data matching services and their presentation. It enables a central collection of relevant employee and customer contact data from various data sources, as well as an efficient search even in large and distributed data sets. Thanks to the standardized implementation of the LDAP protocol and database-independent formatting, search results are generated quickly and in a structured format for easy viewing and further processing.

Automated synchronization

The replicators specific to the databases create the connection to the individual data sources and provide proper data comparison when using estos MetaDirectory. Assigning the data from the sources to the fields used by estos MetaDirectory can be performed specifically for the project using a Field Assignment Wizard. Thereby, even fields specific to the company can be included in searches. The data stored in estos MetaDirectory can be updated at custom-scheduled replication intervals.

Always up-to-date

Because the contents of all databases will be collected into, and distributed from, estos MetaDirectory, all users will have access to every change to the database after replication cycle without any delays. The data provided will be independent of the location and database. Thereby, the company will benefit from the updated database. Interdepartmental processes will be able to be performed without long waiting periods and processing times will be reduced.

Standardized format

All search results, regardless of which database the contact data were originally created in, are provided in a uniform format (LDAP). This makes it easy and efficient to continue, as they are specifically optimized for communication applications such as estos ProCall or Microsoft Outlook®.

What are estos MetaDirectory's components?

estos MetaDirectory consists of three components. The estos MetaDirectory server makes the LDAP database and the web server available as a system service. Replicators incorporate the various database systems into the LDAP database. An administrator program allows for easy server configuration as well as replicator setup. Thanks to the modular design and replicators run independently from the server, the system is highly scalable and flexible. This also allows deployment in business-critical applications since data storage is performed separately from the data sources.


3 Installation

This MSI setup program will be executed to install estos MetaDirectory. A wizard will guide you through the installation process.

- For information about operating system and replicator requirements, see the System Requirements page.
- The installation notes page provides information about the installation process.

4 Installation instructions

To install estos MetaDirectory run this MSI setup. A wizard will guide you through the installation process.

 A server account in the estos UCConnect is required for the installation and operation of the estos MetaDirectory. The estos MetaDirectory must be able to connect to UCConnect during installation and be permanently connected during operation. Information on the releases required in the firewall can be found at the bottom of the page.

- Clicking on the *estos MetaDirectory_xx-XX.msi* will start the server installation.
- After the Welcome page, the license terms are displayed.
- Read and confirm the license agreement.
- On the next page the ServerID and the corresponding password from the server account in the estos UCConnect must be specified.
- In the next step it is checked whether the version can be installed and the result is output. For this in the UCConnect is checked whether a valid license for this version is registered, and/or whether there is a valid software maintenance contract (SPV).
- Next, the installation folder must be specified.
- In the next step, set the user name and password with which you want to log in to the estos MetaDirectory administration interface.

After that the installation of the estos MetaDirectory can be started.

- After installation, the administrator interface can be started automatically.

4.1 Connection to estos UCConnect

The following list shows what must generally be set up in the routers/firewalls. The routers/firewalls must be set up so that once a connection has been established, it remains open and all additionally required/requested ports can be used.

Source MetaDirectory

Destination *.ucconnect.de

Port 443, TCP

4.1.1.1 System requirements

- 1 GB RAM
- Microsoft® Windows Server® 2025
- Microsoft® Windows Server® 2022
- Microsoft® Windows Server® 2019
- Microsoft® Windows Server® 2016
- Microsoft® Windows® 11
- Microsoft® Windows® 10

DATEV Basis

DATEV Basis (DVD 9.1)

Microsoft® .NET Framework 4.8

Exact Online Replikator

Microsoft® CRM 2011/2013/2015

Microsoft® .NET Framework 4.8

Windows® Identity Foundation 3.5

Microsoft® Exchange Web Service (EWS) 2016/2019

Microsoft® .NET Framework 4.8

HCL Notes® 12

Swisscom Directories

Microsoft® .NET Framework 4.8

Salesforce

Salesforce Soap v38.0

Microsoft® .NET Framework 4.8

- 1 GB RAM
- Microsoft® Windows Server® 2025
- Microsoft® Windows Server® 2022
- Microsoft® Windows Server® 2019
- Microsoft® Windows Server® 2016
- Microsoft® Windows® 11
- Microsoft® Windows® 10

DATEV Basis

DATEV Basis (DVD 9.1)

Microsoft® .NET Framework 4.8

Microsoft® CRM 2011/2013/2015

Microsoft® .NET Framework 4.8

Windows® Identity Foundation 3.5

Microsoft® Exchange Web Service 2016/2019

Microsoft® .NET Framework 4.8

HCL Notes® 11/12 (discontinued)

Swisscom Directories

Microsoft® .NET Framework 4.8

Salesforce

Salesforce Soap v38.0

Microsoft® .NET Framework 4.8

- ↑ estos MetaDirectory in Connection with ProCall
If you want to use estos MetaDirectory with ProCall, you should install an up-to-date version of these products. In the case of LDAP access configured on the client, all you need to do is adjust the field mapping.
- ➔ You will need administrative rights in order to install estos MetaDirectory and the system services associated with it.

5 Info about estos MetaDirectory

estos MetaDirectory is a product of estos GmbH.

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For product updates visit <https://www.estos.com>

Frequently asked questions and answers and also support are available at <https://www.estos.com/help/FAQ/>

Support via e-mail is available from support@estos.com

6 Location

The locations are used to format phone numbers in the LDAP settings node

The location settings include all of the information necessary for formatting phone numbers and defining sorting sequences.

In the LDAP Advanced Settings node in Database Management, each node is assigned a location. This location is used in the following cases:

Search for Phone Numbers

When searching for phone numbers via LDAP, the phone number is converted to the supercanonical format. This allows you to search for phone numbers via LDAP, even if they are not available in the supercanonical format. Example: Location is Germany. A search by LDAP (searchNumber=0301234567) can be found at +49301234567, because the number you are looking for has been standardized with the location.

Formatting Phone Numbers in the Result

In the LDAP properties node, you can specify how the phone numbers are formatted in the search result. This allows the phone numbers to be dialed (with official retrieval) or formatted in a readable way.

Search Order in the Result

If a "Server Side Sort Control" is used in an LDAP search, the LDAP server already returns the results sorted. Depending on the language, different sorting rules exist.

7 estos MetaDirectory Administration

The estos MetaDirectory administrator is available to configure the estos MetaDirectory. With this program you can perform all settings and maintenance work.

The extensive logs help you to quickly spot errors, reduce their impact and fix problems.

The estos MetaDirectory administrator can be used on both the local computer and the network. However, in this case, you cannot set up replicators and do not have access to the log files. For more information, see Replicators.

You will find help for the individual configuration sections on the following pages:

- Accessprofile
- Usermanagement
- Database
- Search
- Services
- Phone Books
- Database Query
- Server Status

8 Configuration: General

You will find help for the General Settings on the following pages:

- License settings
- Events

8.1 Online licenses

Licensing of estos MetaDirectory is done in estos UCConnect, a cloud platform that also provides online services for estos ProCall.

Since the license for MetaDirectory is stored in UCConnect, MetaDirectory requires a permanent connection to UCConnect.

The following list shows what must generally be set up in the routers/firewalls. The routers/firewalls must be set up so that once a connection has been established, it remains open and all additionally required/requested ports can be used.

Source UCServer

Destination *.ucconnect.de

Port 443, TCP

Online licenses

The licenses stored in UCConnect are displayed in the Licenses table. The scope and term of the licenses are displayed.

Login data

The login details for UCConnect were specified during installation. If you want to change them, you must log out of UCConnect and log in again.

Click on the "Login data" button. The login data with which you are currently logged into UCConnect is displayed. Below you can see the connection status, which server you are connected to and when the last successful license check took place.

9 Events

estos MetaDirectory writes extensive log information for possible troubleshooting and troubleshooting. The entries in the log file are divided into the following categories:




- Informational Notices
- Warnings
- Errors
- Debug Information

Here you can specify which information to log and in which directory the log files should be stored. Log files are usually deleted at the turn of the day if they are not actively archived.


You can have errors automatically delivered via the SMTP server stored in E-Mail. This way, you'll always be notified immediately if you're having problems deploying or replicating the data. Replicators write their own log files for each replication operation. These are deleted at the turn of the day, just like the estos MetaDirectory log. You can prevent the replicators from writing their own event logs.

In parallel with the event log of the estos MetaDirectory, you can also leave errors and warnings in the Windows® Event Log.

Many estos MetaDirectory Administrator dialogs can be hidden upon request, if you only want to receive notes or warning notices.

-  **Note:** Deploying and deleting the log files and modifying or opening the log directory can only be performed if the administrator is connected to the local MetaDirectory.
-  Change the log settings to Log Everything only if there are problems. The volume of log data grows very quickly, especially during replication operations.
-  Configure e-mail delivery and enable the "Send errors by e-mail to administrator" option to be notified immediately of any errors.

10 Accessprofile

 Note: If no user management is active, this dialog is deactivated.

Users of MetaDirectory are assigned access rights to LDAP nodes via access profiles.

Accessprofile

You can add as many access profiles as you want. The *button It; Add... >* creates a new profile, and then opens the *profile properties*.

The LDAP nodes or data sources can be added to or removed from the profile using *drag-and-drop* and buttons.

If an access profile is activated, the user has read rights to the assigned node. A double click, or the *button It; Properties... >* open the "*Properties of a profile*" dialog. The *button It; Remove>* deletes the selected profile.

The *Default* and *Standard* profiles cannot be deleted.

The *Default* profile is always created and all existing data sources are always assigned automatically.

The *Default* profile can only be activated or deactivated, but not edited further.

There is always exactly one profile that is marked as *default*. This profile is automatically assigned to all newly created users and groups.

The *Standard* property can be assigned to any other profile via the context menu of the profiles.

Properties

Exactly one access profile can be associated with a user. Any number of LDAP nodes or data sources can be assigned to an access profile.

An accessprofile is identified by its name.

An accessprofile might have an description.

If an access profile is activated, reading is allowed on this profile.

Deactivated access profiles are displayed with a grey symbol.


The profile with the *Standard* property is displayed with a solid symbol.

Restrictions

Setting a restriction in the access profile means for a group: the restriction applies to all users of the group.

If the restriction is not set, this does not mean a general permission for all users of the group, but the individual setting in the access profile of the users applies.

11 Userdatabase

 Note: If no user management is active, this dialog is deactivated.

The estos MetaDirectory has a user management, which can be switched on or off as required. With inactive usermanagement, the LDAP nodes can be protected with a password via the database management.

- **No usermanagement**
The usermanagement is deactivated.
- **Integrated userdatabase**
If this option is activated, the user administration is active. The estos MetaDirectory manages the users in an internal database. The login is done by assigned user names and passwords. The administration of groups is not possible in this mode.
- **Use the UCServer user database**
If this option is activated, the user administration is active. The estos MetaDirectory imports the users from the estos UCServer. This setting cannot be used if the addressed UCServer gets its users from a *Microsoft® Active Directory®*. The estos MetaDirectory can then use the Active Directory® settings of the UCServer.

Here the **Administrator** of the UCServer and the CTI-Client-Port (**7222**, if not differently assigned) must be indicated as users.


- You can seek for hosts with the button "Search ..." as well.
- **User administration with Microsoft® directory service Active Directory®**
If this option is activated, the user administration is active. The estos MetaDirectory imports the users from the Microsoft® Active Directory®. Users log in with their windows domain credentials. Enter the access data server, port, authentication method as well as user name and password for access to Microsoft® Active Directory®.


Optionally, you can limit the reading of users and groups to individual OUs with the specification under "Base DN" or specify a filter.

If several OUs are to be read, they can be specified separated by semicolons. Example:
ou=Vertrieb,ou=Benutzer,DC=domain,dc=net; ou=support,ou=Benutzer,DC=domain,dc=net

All valid LDAP filters can be specified as filters. Example:

(&(objectClass=user)(objectCategory=person)(!userAccountControl:1.2.840.113556.1.4.803:=2)(department=Vertrieb))

Note: Access to estos UCServer- and Microsoft® Active Directory® usermanagement is exclusive readonly. Not any data will be written back. Users of these sources where replicated to estos  MetaDirectory. Then a discrete accessprofile ca be assigned.

Importing users and groups from estos UCServer and Microsoft® Active Directory® is scheduled  per default for every 5 minutes.


With the menu item *Extras->Synchronize* this process can be triggered manually in MetaDirectory.

12 Configuration: Usermanagement

 Note: If no user administration is active, the corresponding dialogs are hidden.

1. **Userdatabase**
To manage users choose a userdatabase first.
When selecting the *Integrated User Database*, new users can now be created.
By choosing one of the other methods, creating users happens automatically.
2. **Accessprofile**
Create access profiles in which you summarize data sources for access.
3. **User**
Finally assign users to created created accessprofiles.

13 User

 Note: If no user management is active, this dialog is deactivated.

Shows list of all available MetaDirectory users except user "LDAP root".

The icon indicates whether the user is enabled or not. If users are not enabled by a group membership, the activated group icon is displayed.

Username is the name with which the user logs on to the MetaDirectory and his display name.

Accessprofile attached to the user with symbol showing the actual profiles state.

13.1 User properties

13.1.1 User

If integrated user management is used, any number of users can be created. The *button It; Add... >* creates a new user, and then opens the *user settings*.

The *button It; Remove>* deletes the selected user.

A double-click or the *button It; Properties... >* open the "*Settings for Users*" dialog.

13.1.2 User properties

Accessprofile

- The user name (login) must be unique.
- If the integrated user database is activated, a password can be assigned to the user. For the other modes, the password input field is not visible.
- Exactly one access profile can be associated with a user. Disabled profiles are displayed with a gray icon. The nodes configured in the profile appear in the list below.
- Display of available data sources in profile:
 - Normal: Data source available via the assignment of your own profile.
 - *Italics*: Data source available via group membership profile.
 - Gray: Data source available via assignment of own profile, but profile not active.
- Nodes are accessed *additively* through the access profiles of the groups in which the user is a member, as well as from his own. The origin of the node is displayed in the tooltip.
- Inactive users show up with gray symbols.

Member of

If the user has been imported from the estos UCServer or Microsoft® Active Directory®, the list of groups in which he or she is a member is displayed.

14 Groups

 Note: If no or integrated user management is active, this dialog is deactivated.

The groups in the estos MetaDirectory are replicated by estos UCServer or Microsoft® Active Directory® to a built-in database. Access is readable. No data is written back to the source.

Groups are disabled by default.

A group is assigned to exactly one accessprofile. Activating a group causes additive inheritance of the accessprofile to its members.

Enabling a group activates all users, provided that these users are also at Active Directory® or UCServer are activated. A group can only be activated if licenses are available to all users in the group.

If not, the group will be deactivated immediately. An activated user, who is member of an activated group, will consume only one user license.

The user rights of a group are additive. A user also inherits the access rights of the groups in which he is a member, to the rights assigned to him or her.

15 Configuration: Database

You will find help for managing the database on the following pages:

- [Location](#)
- [Replicators](#)
- [LDAP Server](#)
- [Database Management](#)
- [Advanced LDAP Node Settings](#)
- [Database Fields](#)

16 Configuration: Telephone Books

estos MetaDirectory can integrate various telephone books and provide them through the integrated LDAP server. In this manner, you can resolve contacts, which will not be found in your integrated LDAP data sources. The telephone book CDs will be used both for searching for names as well as phone numbers (if available).

You will find help for using telephone books on the following pages:

- DasTelefonbuch Deutschland
- TVG Web-Service
- TwixTel
- 11880.com
- SwissCom Directories

➔ The telephone books will not be searched for VirtualListView and PagedResults requests. The corresponding telephone book CDs do not support such features.

17 Replicators

The replicators connect the various databases to the estos MetaDirectory. Depending on the available licenses, different data sources can be connected. Any number of replicators can be created for each unlocked data source.

The replicator interface in the administrator MetaDirectory shows the replicators that have already been configured. In addition to name, type, status, time parameters, the status of the last replication operation is displayed. The replicators can be managed using the buttons below the list as well as the context menu:

Add...

Starts the Wizard replicator to configure a replicator.

Delete

Removes the replicator or replicators, but not the data sets created by the replicators. The data files must be removed via database management.

Start

Starts the currently selected replicator, which will only be possible if the selected replicator is not in use.

Log file

Opens the most current log file for the selected replicator.

Edit


Allows the modification of the settings made to the replicator. Starts the Wizard replicator. This is only possible if the selected replicator is not active.

Advanced

Allows you to modify the start times and regular phone number formatting expressions.

➔ Replicators can only be setup and modified when they are locally connected with the server. The data sources will be opened from the server and must be configured locally for that reason.

➔ **Keep in mind that for some replicators additional software-components might be required.**
=> **Installation Notes**

 Deleting a replicator preserves the data sets created by the replicator. The data files must be removed via database management.

You will find information regarding individual replicators on these pages:

- Replicator for Active Directory® Server
- Replicator for DATEV Basis
- Replicator for google people
- Replicator for HCL Notes®
- Replicator for LDAP servers
- Replikator for MetaDirectory
- Replicator for Microsoft® 2011/2013
- Replicator for Microsoft® Dynamics 365
- Replicator for Microsoft® Dynamics NAV
- Replicator for Microsoft® Exchange Web Service
- Replicator for Microsoft® Dynamics Graph

- Replicator for ODBC Databases
- Replicator for Salesforce CRM
- Replicator for Steps Business Solution
- Replicator for Text CSV Files
- Export Replicator for Active Directory® Server
- Export Replicator for XML Files
- Export Replicator for CSV Files

18 Replicator for Microsoft® Directory Service Active Directory®

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

18.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Active Directory® database type.
2. Settings for the data source (selection of the server, the data structure that should be imported and so forth)

Server Information

- Active Directory® Server
A Windows® server with Active Directory® is always an LDAP server. Enter the server name or leave the field blank to use the default domain controller. The default port for Active Directory® is 389. The Global Catalog is the collection of user information from multiple Active Directory® servers in the enterprise.

Login Information

Select how to authenticate to the LDAP server.

- Manual Login
Enter the username, password and the authentication method for the LDAP server. The username must have a specific format. Examples are
cn=Username,cn=users,dc=company,dc=com or Administrator@company.com

Search Options

Enter where to search in the database.

- Search Base
The search base is the folder where the search begins. The search base is usually automatically read from the LDAP server.
- Filter
You may enter a filter for the entries in the database. For Active Directory® please use (objectCategory=person).
- Search only in the Search Base folder
If this option is selected, no subdirectories are searched.
- Do not replicate disabled objects
- Do not replicate expired objects
- Only replicate modified objects
When this option is selected, a replication run replicates only those contacts that have changed in the data source since the last replication (incremental replication).

Note: When an Active Directory® object is deleted, a small portion of the object is preserved for a specified period of time so that other domain controllers can replicate the changes. This period is called a "tombstone expiration time" and is configurable. During this time, the AD replicator can query the deleted contacts using the CommonName "Deleted Objects" (e.g. CN..B Deleted Objects,DC=estos,DC=en). The replicator user needs more rights than just querying the contact data! Whether

the replicator user has the necessary access rights can be used on the AD server with the ldp.exe or an LDAP browser. For this, the server control "1.2.840.113556.1.4.417" must be activated in the advanced LDAP settings.

3. Field mapping, which source fields are copied to which LDAP fields
4. Configure links to contact URL
5. Datasource location settings
6. Schedule replication plan
7. Defining additional applications to be started
8. Assigning a name for the new replicator

19 Replicator for DATEV Basis

- ❗ **The installation of a DATEV Basis workstation including a master data service capable of running is required for using the *DATEV SDD replicator*.**
- ❗ DATEV manages its communication connections (KV) from Phone Number, Email, Fax, and Internet in a dynamic list, MetaDirectory in statically assigned fields. The order of THE CT is not set in DATEV pro. The fields are therefore assigned after they occur.
If not all KV of a DATEV addressee can be accommodated in a MetaDirectory contact, a copy of the created data record is created, which contains the further CT data.

Thereby, the MetaDirectory fields will be filled sequentially as follows:

KV-medium *PhoneBusiness, PhoneBusiness2, PhoneHome, PhoneHome2,*
"telephone": *ISDNTelephoneNumber, CallbackTelephoneNumber, AssistantTelephoneNumber,*
PhoneMobile, CarTelephoneNumber, RadioTelephoneNumber,
PagerTelephoneNumber and TTYTTDTelephoneNumber.

KV-medium
"fax": *FaxBusiness and FaxHome*

KV-Medium
"email": *EMail, EMail1 and EMail2*

KV-medium
"internet": *WebPageURL*

Detailed information:

The KV entries, including their comment fields, are additionally stored in an XML structure in the *Custom0* field, with the exception of the fixed fields "Standard" or "Management", whose notes are written according to *Custom1* or *Custom2*.

An example entry in the *Custom0* field:

```
<Kommunikationsverbindungen>
<item>
<field>telephoneNumber</field> <!-- LDAP Feldbezeichnung -->
<value>+49815136856177</value>
<medium>1</medium> <!-- z. B. für KommunikationsMedium Telefon-->
<note>hier steht eine Notiz</note>
</item>
...
</Kommunikationsverbindungen>
```

- ➔ **By serially populating the phone numbers of a contact, the phone number fields in the search assistant should also be activated accordingly.**

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

19.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "DATEV Base".
2. Please enter the credentials which should be used to access the source database.
3. Select Use *communication link comments as the names of the contact persons* if you want the contact to use the content of the comment field instead of the displayed *name* of the addressee. You will then create your own records for each communication connection with a recorded comment and copy the comment to the *Displayed Name* field.
4. If "*Accept phone numbers marked with standard and management for all contact instances of a contact partner*" is selected, the fields marked with "Standard" or "GL" in DATEV are copied to the *Fields Primary telephone* or *Company main telephone*.
Note: If you search for these phone numbers, all generated records of the addressee also appear in the results list.
If you press *Next*, the connection to the master data service is established.
5. If *Replicate inactive addressees* is selected, they are also transferred to the MetaDirectory database.
6. Field mapping, which source fields are copied to which LDAP fields
This field assignment should not be changed.
7. Configure links to contact URL
8. Datasource location settings
9. Schedule replication plan
10. Defining additional applications to be started
11. Assigning a name for the new replicator

20 Replicator for Microsoft® Dynamics Navision

To use the *Microsoft® Dynamics 365* replicator, the following components are required:

- ➔ **Microsoft® .NET Framework 4.8**
- ➔ **Microsoft® Azure Active Directory® account**

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

20.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "Microsoft® Dynamics 365".
2. Define the credentials with which the data source can be accessed:
To do this, register an **Application-type** application in the Microsoft® Azure Portal <https://portal.azure.com>. For instructions, see the estos support portal at:
Commissioning of the replicator for Microsoft® Dynamics 365
3. Transfer the generated data to the *Microsoft® Dynamics 365 logininformation* dialog.
4. Select the entity to be replicated or enter a predefined *Fetch XML* statement.
5. Field mapping, which source fields are copied to which LDAP fields
6. Configure links to contact URL
7. Datasource location settings
8. Schedule replication plan
9. Defining additional applications to be started
10. Assigning a name for the new replicator

21 Replicator for Microsoft® Dynamics 365 Business Central

The following components are required to use the *Microsoft® Dynamics 365 Business Central (BC)* replicator:

- ➔ **Microsoft® .NET Framework 4.8**
- ➔ **Microsoft® Azure Active Directory® account**

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

21.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "Microsoft® Dynamics 365 Business Central".
2. Define the credentials with which the data source can be accessed:
To do this, register an application of type **Application** in the Microsoft® Azure Portal <https://portal.azure.com>. Instructions can be found in the estos Support Portal at: Commissioning of the replicator for Microsoft® Dynamics 365. The procedure is the same for Microsoft® Dynamics 365 Business Central.
3. Transfer the generated data to the *Microsoft® Dynamics 365 Business Central Login* dialog box.
4. Select the *Environment*. Reading the environments requires special permissions. If these permissions are not available, the list remains empty and *Environment* (e.g., "Production") must be entered.
5. Select a *Company*.
6. Select an *Entity*. If the "All Entities" checkbox is selected, all existing entities are read from the Dynamics BC schema. These entities may not contain any contact details.

A filter can be specified optionally.

1. Syntax: *Attribute Operator 'Value'*
2. Comparison operators such as *eq, ne, gt, ge, lt, le* are supported.
3. Logical operators *and / or* are supported.
4. String values must be enclosed in single quotation marks '...'

 See also *Microsoft® Learn: Using filter expressions in OData URIs*.

7. Field mapping, which source fields are copied to which LDAP fields
8. Configure links to contact URL
9. Datasource location settings
10. Schedule replication plan
11. Defining additional applications to be started
12. Assigning a name for the new replicator

22 Replicator for LDAP servers

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

22.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "LDAP".
2. Settings for the data source (selecting the server, the data structure to be imported, etc.)

Server Information

- Server Name
Enter the computer name or the IP address.
- Port
The default LDAP port is 389.
- LDAP Version
Specify which LDAP protocol version to use.
- Paged Search
This option collects the data in blocks. This option is required when a large number of contacts are fetched from this LDAP server. Not all LDAP servers support this option.

Login Information

Choose how to authenticate to the LDAP server.

- Login not required
If the LDAP server does not require credentials, select this option.
- Login automatically using domain authentication
The authentication domains are used.
- Manual Login
Enter the user name, password and the authentication method for the LDAP server. The username must have a specific format. Examples are
cn=Username,cn=users,dc=company,dc=com or Administrator@company.com

Search Options

Enter where to search in the database.

- Search Base
The search base is the folder where the search begins. The search base is usually automatically read from the LDAP server.
 - Filter
You may enter a filter for the entries of the database.
 - Search only in the Search Base folder
If this option is selected, no subdirectories are searched.
3. Field mapping, which source fields are copied to which LDAP fields
 4. Configure links to contact URL
 5. Datasource location settings
 6. Schedule replication plan
 7. Defining additional applications to be started
 8. Assigning a name for the new replicator

23 Replikator for MetaDirectory

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

23.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Choose the databsetype "MetaDirectory".
2. Settings for the data source (selecting the server, the data structure to be imported, etc.)

Server Information

- Server Name
Enter the computer name or the IP address.
- Port
The default LDAP port is 712.
- Search
You can find available MetaDirectory servers on the local network.

Login Information

Choose how the Authentication should take place on the LDAP server.

- Login not required
If the LDAP server does not require credentials, select this option.
- Manual Login
Enter the user name and password for the LDAP server. The user name must be in a specific format. Examples are
cn=username,cn=users,dc=company,dc=com or Administrator@company.com

Search Options

Enter where to search in the database.

- Search Base
As a search base, you should use a single data source from the MetaDirectory server.
3. Schedule replication plan
 4. Defining additional applications to be started
 5. Assigning a name for the new replicator

24 Replicator for Microsoft® CRM

To use the *Microsoft® CRM* replicator, the following components are required:

➔ **Microsoft® .NET Framework 4.0**

➔ **Windows® Identity Foundation 3.5**

Activate *Windows® Identity Foundation 3.5* from the control panel under *programs and features*, *activate or deactivate windows-Features*.

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

24.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Microsoft® CRM database type.
2. Define the credentials with which the data source can be accessed:
Sign in to your CRM system to get the address for the search service and organization name. Click under Settings - Customization - Developer Resources.
On the Developer Resources page, see The Address for the Search service under Service End Products and the organization's unique name under Organizational Information.
3. Select a stored *Fetch XML* query. You can also define them yourself here:
If *Fetch XML* is selected, the Default Entity field becomes editable and the XML code can be entered.
4. Field mapping, which source fields are copied to which LDAP fields
5. Configure links to contact URL
As the contact URL, use the link to the Microsoft® CRM Web Server that you can use to view a contact.
Use field "EntryID" as contact identifier.
Use "open contact in CRM" as description for this contact URL.
6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator


25 Replicator for Microsoft® Dynamics 365

The following components are required to use the *Microsoft® Graph* replicator:

- ➔ **Microsoft® .NET Framework 4.8**
- ➔ **Microsoft® Azure Active Directory® account**

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

25.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "Microsoft® Graph".
2. Define the credentials with which the data source can be accessed:
To do this, register an **Application-type** application in the Microsoft® Azure Portal <https://portal.azure.com>. For instructions, see the estos support portal at:
Register MetaDirectory in the Microsoft® Azure portal
3. Apply the generated data to the *Microsoft® Graph login information*. dialog
4. In the "Microsoft® Graph mailbox selection" dialog, select the mailboxes to use.
 Replicating contact images will significantly increase replication time.
5. In the "Microsoft® Graph folder selection" dialog, select the folders to be replicated.
6. Field mapping, which source fields are copied to which LDAP fields
7. Configure links to contact URL
8. Datasource location settings
9. Schedule replication plan
10. Defining additional applications to be started
11. Assigning a name for the new replicator

26 Replicator for Microsoft® Exchange Web Service

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

- ➔ **Microsoft® .NET Framework 4.7.2** is required to use the replicator.
- ➔ Microsoft® Exchange Web Services is accessed through your network. The profiles must be saved per user. Replication occurs in the context of a user for whom a Microsoft® Exchange account must be set up.
The scope of services depends on the version of the connected Microsoft® Exchange Server.

26.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Microsoft® Exchange Web Service database type.
2. Define the credentials under which the data source can be accessed
User login
Enter the user name and password.
The default setting for **Protocol** is *Tls12* and should only need to be changed in exceptional cases.
The URL can remain empty. It is then determined automatically.
3. Select the **folder** to import.
Click *Browse...* to open the folder view:

 - Select a folder from your local message store.
 - Select View Public Folder to select a public folder for replication. This process may take some time.
 - Select View Shared Folders to select a shared folder from another Microsoft® Exchange user for replication.
 - Determine to perform search in subfolders.
 - Only folders of type *contact (IPF.Contact)* can be chosen.
4. Field mapping, which source fields are copied to which LDAP fields
5. Configure links to contact URL
6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

27 Replicator for Microsoft® Dynamics NAV

➔ For the use of **Microsoft® Dynamics NAV replicator** a valid *Microsoft® Dynamics NAV* useraccount is needed.

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

27.1.1.1 Procedure for Adding a Replicator

1. Enter the name or IP address of your Microsoft® Dynamics host and port. The host name is specified without HTTP or HTTPS prefix.
2. If necessary modify the URL.
3. Enter your username and password.
4. Please press *Next*.
5. Field mapping, which source fields are copied to which LDAP fields [*]
6. Configure links to contact URL
7. Datasource location settings
8. Schedule replication plan
9. Defining additional applications to be started
10. Assigning a name for the new replicator

* Procedure to read the customerid from the field ETag:

- a. Map the *ETag* field for field assignment, for example.B to *Custom0*.
- b. Activate *Extended Settings* and press *Next*.
- c. Select the mapped field *User0*.
- d. When *searching*, enter the value **of the value of the +);[^;] {30}) ([^;] *);[^;] ***; and when *replacing* .
- e. Continue setting up the replicator.

 The access to *Microsoft® Dynamics NAV* is implemented over the OData-interface.

28 Replicator for HCL Notes®

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

28.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "HCL® Notes".
2. Define the credentials under which the data source can be accessed
3. Settings for the data source (selecting the server, the data structure to be imported, etc.)

Domino® Server

Enter the name of the HCL® Domino® server here. Find Server displays the available Domino® Servers in the list.

Database

Enter the name of the IBM Domino® server here. All available databases will be listed.


View Folder


Enter the name of the view folder, where the Notes records that should be used will be displayed. You will see all view folders contained in the selected database in the list. *Contacts* is the default view folder.

Form

Enter the name of the form that displays the entries. In the list, you can see all the forms that are included in the selected database. The default form for contacts is *Contact*.

4. Field mapping, which source fields are copied to which LDAP fields
5. Configuring Contact URL links
Use the Notes URL handler. "*notes://servername/names.nsf/People/lt; EntryID>? OpenDocument*" Use the server name, database name, and view name here.
6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

 User authentication is performed on HCL Notes® via a special DLL copied to the HCL Notes® directory. When the replicator is configured, the *nextpwd.dll* is copied to the HCL Notes® directory. Therefore, the user setting up the replicator must have write permissions in the HCL Notes® installation directory. The DLL is copied automatically, no user intervention is required. If there are problems accessing HCL Notes®, check if the *nextpwd.dll* has been copied.

 No special rights are required to replicate HCL Notes®. The HCL Notes® user must have access rights to the data assets to be replicated.

29 Replicators for ODBC databases

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

- ➔ For ODBC databases, please note the information on access rights from a system and user context.

29.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the ODBC database type.
2. Define the credentials under which the data source can be accessed
 - ➔ Please note that you may NOT access system data sources through a user account. For ODBC databases, please also note the information on access rights from a system and user context.

3. Settings for the data source (selection of the server, the data structure that should be imported and so forth)

Select the Database

An ODBC data source is defined by the ODBC Connect String. Use the **Browse...** button to launch the ODBC data source dialog, which represents the ODBC data sources provided by the system. You can choose file data sources or computer data sources. For more information about the file data source or computer data source, see Microsoft's online help, which can be accessed in the ODBC dialog using the **Help** button.

Select the Table

Once you have selected the database, the table selection dialog will appear. Use it to select the table containing the address information including telephone numbers. Relational address databases are not supported. The telephone numbers must be in the same table as the names.

See also Configuration of an ODBC replicator to connect a Microsoft Access® database.

Enter the SQL Select statement

You may optionally enter an SQL Select statement directly instead of selecting a table. By doing so, you can also filter or join complex data structures.

See also Advanced Configuration of an ODBC Replicator by entering a SQL Select statement.

- ➔ If you want to use data from a Microsoft® Excel table, the first row of the table must contain the field labels to which you assign meanings below. Before you include an Excel spreadsheet, you should mark the entire range that contains the data (that is, the entire entries and the first row with the headings) in Microsoft® Excel and declare it a "named range." You can create a named range by **inserting/defining name/define**.

4. Field mapping - Which source fields are copied to which LDAP fields
5. Configuring Contact URL links

6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

30 Replikator für nfon

The nfon replicator can import the nfon phonebook and the extension with the respective available information into the estos MetaDirectory.

 The contract ID and API key and password are required to use the *nfon* replicator.

API key and password can be requested from *nfon* support.

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

30.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "nfon".
2. (Optional) Enter URL to the nfon portal.
3. Enter your contract ID and API details.
4. Select which data you want to import:
PHONEBOOK: the nfon phone book of your telephone system is imported. You can specify whether the contacts marked as "restricted contacts" in the telephone system should also be imported.
EXTENSION: the extensions set up in the telephone system and the information stored there are imported.

In the next step the field assignment can be defined.

5. Field mapping, which source fields are copied to which LDAP fields
6. Configure links to contact URL
7. Datasource location settings
8. Schedule replication plan
9. Defining additional applications to be started
10. Assigning a name for the new replicator

31 Export Replicator for Microsoft® Active Directory® Service

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

31.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Active Directory® database type.
2. MetaDirectory Contacts
Which contacts do you want to export from the MetaDirectory?
Search Base
Select the Search Base here, which should be used for exporting the contacts. To export all contacts, select dc=meta.
Filter
You can specify an LDAP filter here if you only want to export certain contacts. To export all contacts in the search base, use "(objectclass=contactperson)".
3. Active Directory®
To which Active Directory® server should the contacts be exported?
Server Name
Enter the Active Directory® Server's computer name.
Port
Specify the port via which the Active Directory® Server can be accessed.
4. Logon information
Enter a user name and password that can be used to write to Active Directory®.
5. Target directory
Specify the path to which you want the data to be replicated. Caution: This path must be reserved exclusively for this replication. All other data in this path will be deleted if the Replicate Only Changed Objects option (incremental replication) is not selected.
6. Field assignment
The field assignment cannot be configured yet.
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

32 Export Replicator for XML Files

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

32.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the XML Data database type.
2. MetaDirectory contacts.
Which contacts do you want to export from the MetaDirectory?
Search Base
Select the search base from which you want to export the contacts. To export all contacts, select dc=meta.
Filter
You can specify an LDAP filter here if you only want to export certain contacts. To export all contacts in the search base, use (objectclass=contactperson)."
3. Selecting the XML File. To Which File should the Contacts be exported?
Enter a file name to an existing path.
4. Field assignment
The XML file schema has been pre-defined. With the help of an XSLT file, you can freely perform any transformations desired.
5. Schedule replication plan
6. Defining additional applications to be started
7. Assigning a name for the new replicator

33 Export Replicator for CSV Files

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

33.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the "CSV Data" database type.
2. MetaDirectory contacts.
Which contacts do you want to export from the MetaDirectory?
Search Base
Select the search base from which you want to export the contacts. To export all contacts, select dc=meta.
Filter
You can specify an LDAP filter here if you only want to export certain contacts. To export all contacts in the search base, use (objectclass=contactperson)."
3. Choose CSV file. In which file will you export your contacts?
 - CSV file. To which file do you want to export the contacts? Enter a file name in an existing path.
 - File format: Specify which separator is used on a line in the file.
4. Field assignment
The schema of the CSV file is fixed
5. Schedule replication plan
6. Defining additional applications to be started
7. Assigning a name for the new replicator

34 Replicator for Steps Business Solution

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

- ➔ For ODBC databases, please note the information on access rights from a system and user context.

34.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Steps Business Solution database type.
2. Define the credentials under which the data source can be accessed

➔ Please note that you may NOT access system data sources through a user account.
For ODBC databases, please also note the information on access rights from a system and user context.

3. Settings for the data source (selecting the server, the data structure to be imported, etc.)

Select the Database

An ODBC data source is defined by the ODBC Connect String. Use the **Browse...** button to launch the ODBC data source dialog, which represents the ODBC data sources provided by the system. You can choose file data sources or computer data sources. For more information about the file data source or computer data source, see Microsoft's online help, which can be accessed in the ODBC dialog using the **Help** button.

Select the Table

Once you have selected the database, the table selection dialog will appear. Use it to select the table containing the address information including telephone numbers. Relational address databases are not supported. The telephone numbers must be in the same table as the names.

4. Field mapping - Which source fields are copied to which LDAP fields
5. Configure links to contact URL
6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

35 Replicator for Salesforce CRM

The following components are required to use the *Salesforce* replicator:

➔ **Microsoft® .NET Framework 4.6.1**

➔ **A valid Salesforce user account.**

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

35.1.1.1 Procedure for Adding a Replicator

1. Select Data Source Type: Select the Salesforce database type.
2. Enter your Salesforce user name.
3. Enter your **password+securitytoken**. How to get the securitytoken:

Go to the Salesforce website.

Create an account if needed and login.

In the *My Settings* section, go to the menu item *Personal*

Choose *reset securitytoken* there.

You will receive an email with your securitytoken.

4. After changing the URL it can be reset to default with the *default* button. Normally changes here are not needed.
You can change the URL only by adapting the configfile *MetaDirectoryServer.xml*.
5. Select the Salesforce object to replicate. The default is '*Contact*'.
6. Field mapping, which source fields are copied to which LDAP fields
7. Datasource location settings
8. Schedule replication plan
9. Defining additional applications to be started
10. Assigning a name for the new replicator

36 Replicator for google people

For using *Google people* replicators, the following components are required:

➔ **Microsoft® .NET Framework 4.5**

➔ **A valid Google user account.**

⬆ The used API for the *Google Contacts Replicators* is obsolete!
It is therefore replaced by the *Google People Replicator*. The login procedure is also valid for the *Google People Replicator*, the login data can therefore be adopted.

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

36.1.1.1 Procedure for Adding a Replicator

1. If you already have an account on <https://developers.google.com/>, sign in to the Google website.
2. If not, create an account there.
3. Go there to the API Manager and create an OAuth-2.0-Client-ID.
4. Save the newly created OAuth-2.0-Client-ID as .json-file on your computer.
5. Create now a new replicator of type "Google People".
6. Press 'Client-ID' and choose the downloaded file.
7. Press *Next*. Your default browser will open the first time with the OAuth consent screen.
8. Grant access and press *next*.
9. Field mapping, which source fields are copied to which LDAP fields
10. Configure links to contact URL
11. Datasource location settings
12. Schedule replication plan
13. Defining additional applications to be started
14. Assigning a name for the new replicator

37 Replicator for Text CSV Files

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

- ➔ Text or CSV (Comma-separated Values) files contain one record per line. The fields of a record are separated by a separator (such as a comma). A field can be enclosed in quotation marks. The first line usually contains the names of the fields. Supported character sets are ASCII, UTF-8 and Unicode (UTF16-LE). The character set is determined by the BOM (Byte Order Marker) of the file.

37.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the "Text/CSV File" database type.
2. Define the credentials under which the data source can be accessed
3. Settings for the data source (Choose the file that will be imported, etc.)
File
 - Enter the path to the file
Specify which text or CSV file to use.
 - Encoding
Specify which encoding to use. Selecting Auto automatically attempts to determine the encoding based on the BOM (Byte Order Mark).
 - File format:
Enter which field separator is used in the file.
 - First line contains field names
This option should be on, if the first line in the file contains the names of the fields.
4. Field mapping, which source fields are copied to which LDAP fields
5. Configure links to contact URL
6. Datasource location settings
7. Schedule replication plan
8. Defining additional applications to be started
9. Assigning a name for the new replicator

38 Replicator for VW Cross

Please follow the general instructions for setting up a replicator on the Replicator Wizard page.

38.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the database type "VW Cross".
2. Data source settings:
 - Select the directory from which to import.
 - Specify the client number.
 - If "Continue replication on data errors" is selected, the line numbers of lines with errors are written to the *VWCrossReplicator_<timestamp>.txt* file in the log directory. Otherwise, replication will be aborted in case of data errors.
 - "expert options"
Use the checkbox to show or hide the input fields for the name patterns of the initial and delta files. This allows you to change the name patterns of the initial and delta files for updates or tests. If you make an accidental change, you can use the default buttons to restore the required pattern.
3. Configure links to contact URL
4. Datasource location settings
5. Schedule replication plan
6. Defining additional applications to be started
7. Assigning a name for the new replicator

Change to the delta file name:

The naming pattern for Delta files has been changed. Existing replicators can adjust the pattern as described under "Expert View". Newly created replicators use the default pattern by default.

38.1.1.2 The VW Cross Replicator imports all initial as well as delta files with the following specifications:

Property	Value
File format:	UTF-8
BOM (Byte-Order-Mark)	"0xEFBBBF" optional
Header with field label	present ; field label fix after Feldzuordnung
Separator	" "
Fields in quotes	no
Comment sign	none
Initial file name pattern	cti_<Mandant>_<1 character>_<13 characters>_<32 characters>.csv

Delta file name pattern <YYYYMMDD><HHMMSS>_cti_<Mandant>_delta\.csv

Outdated pattern cti_<Mandant>_delta.csv

*Client: 5-digit client or company number

38.1.1.3 Notes:

- Unlike other replicators, the field mapping is fixed.
- Initial files are always imported first, then the delta files.
- Initial files are renamed after successful import by appending "-<timestamp>.done" and thus are not replicated again.
- If neither an initial nor a delta file is found in the replication directory, replication reports an error.

38.1.1.4 Expert options

Use the checkbox to show or hide the input fields for name patterns for the initial and delta files. Hiermee kunnen de naam patronen van de initiaal- en delta-bestanden voor updates of tests worden gewijzigd. Bij onbedoelde wijzigingen kan het vereiste patroon via de standaardknoppen weer worden hersteld.

38.1.2 Field mapping:

CSV	MetaDirectory	LDAP-field
gptr	Primary key entryID	
	Displayname (<i>automaticaly generated</i>)	
name2	First name	givenName
name1	surname (<i>if gptyp_bez="Person"</i>)	sn
titel	Position	title
name1	Company (<i>if gptyp_bez="Firma"</i>)	company

	Department	department
	Room	physicalDeliveryOfficeName
street	Street	streetAddress
zip	PLZ	postalCode
location	location	l
	State	st
intpostkz	Country	c
	Street private	privateAddressStreet
	ZIP privat	privateAddressPostalCode
	Location privat	privateAddressCity
	State private	privateAddressState
	Country private	privateAddressCountry
	Street another	otherAddressStreet
	ZIP another	otherAddressPostalCode
	Location more	otherAddressCity
	State another	otherAddressState
	Country another	otherAddressCountry
	E-mail	mail
	E-mail 2	mail2
	E-mail 3	mail3
	SIP Address	sipAddress
	Website	url

telefonnr1	Tel. Business	telephoneNumber
telefonnr2	Tel. Business 2	otherTelephone
telefonnr3	Tel. Company	telephoneNumberCompanyMain
	Tel. assistant	telephoneAssistant
	Tel. private	homephone
	Tel. private 2	otherHomePhone
	Tel. Primär	telephonePrimary
	Tel. Mobil	mobile
	Tel. Mobil 2	telephoneCar
	Tel. Radio	telephoneRadio
	Tel. Pager	pager
	Tel. callback	telephoneCallback
	Tel. ISDN	telephoneISDN
	Tel. TTYTTD	telephoneTTYTTD
	Fax business	facsimileTelephoneNumber
	Fax private	otherFacsimileTelephoneNumber
	customer nr.	customerid
	Data to open the contact	directOpenContact
	Comment	info
gebdatum	User 0	custom0
	User 1	custom1

gpbetrieb	User 2	custom2
gp_wuens ch_vk	User 3	custom3
gp_wuens ch_kdb	User 4	custom4
letzte_kdb	User 5	custom5
amtkennz 1	User 6	custom6
amtkennz 2	User 7	custom7
amtkennz 3	User 8	custom8
modbezei chnung1	User 9	custom9
	picture	jpegPhoto
	Image path	imagePath
modbezei chnung2	User 10	custom10
modbezei chnung3	User 11	custom11
hauatermi n1	User 12	custom12
hauatermi n2	User 13	custom13
hauatermi n3	User 14	custom14
	User 15	custom15
	User 16	custom16
	User 17	custom17
	User 18	custom18
		custom19
loesch_kz	User 19	

39 Replicator Wizard

The Replicator Wizard provides support for integrating a data source into estos MetaDirectory.

Depending on the license available, you can set up import or export replicators.

Import replicators replicate contacts to the MetaDirectory.

Export replicators replicate contacts from the MetaDirectory to another database.

In principle, configuration uses the following steps:

1. Select the type of data source

- Select the source database. You can only select data sources for which licenses have been entered.

2. Define the credentials under which the data source can be accessed

- For some replicators, there is a choice of being started in either a user context or a system context. The datasource is then accessed in the context of these users or their rights. It is therefore important that the specified user also has access to this datasource.

➔ Connected network drives are unknown in a system and user context. If you want to access files on another computer, you must use fully qualified UNC paths (`\\server\share\file`). Note that the user or the system require access rights to this share and the corresponding files. With an ODBC access you have to enter the UNC path manually in the ODBC Connect String.

➔ It should be noted that the replicator configuration is always done in the context of a user. The Administrator will be started using your user rights, thus the Replicator Wizard will also be started with your rights. Access to the source database will be limited using your rights. If the replicator is run with other user rights or in a system context, the replicator will NOT be able to access the data source.

➔ If you can configure the replicator, but it does not work, check the log file to determine if the source database could be opened. If errors have been recorded then determine which user rights can open the data source.

3. Settings for the data source (selecting the server, the data structure to be imported, etc.)

- Data source settings are strongly tied to the respective data source. Depending on the replicator, you must provide different information regarding the location of the source

data.

4. Field mapping - Which source fields are copied to which LDAP fields

- The field assignment is the central part of the replicator connection. You have to assign which source fields are to be copied into which LDAP fields. Some replicators have a default field assignment that is automatically assigned when you configure the replicator. In some cases, however, you also have to define the field assignment manually. On the left you can see the source fields. The content of the first data record found is shown next to the field name. You can scroll through the data sets with the arrow keys below the source. On the right side you can see the LDAP target fields. The assigned fields are shown next to the field name. Below the target list are the buttons for deleting the entire assignment and, if available, for setting the standard field assignment. Both lists use small icons to indicate the field assignments:
 - Field not in use
 - Field used once
 - Field used multiple times

The buttons for loading and saving field assignments will be located in the lower left corner of the dialog. Notes for Field Assignments:

- The primary key must be assigned and must be unique for each source record.
- Each source database normally uses a corresponding primary key, which you should use.
 - ➔ If the source database does not offer a primary key, use database fields that can be assigned to an entry as clearly as possible. If necessary, concatenate fields to get a unique primary key. If several records have identical primary keys, all records will be lost after the first replication. As an alternative primary key you can e.g. B. Use email addresses.
- The replicator will always try to make an assignment for the "Displayed Name" field. If the field could not be filled from the specified source fields, the replicator tries to generate content from the surname, first name and company or email address.
- Fields can be concatenated. If it is a telephone number field, the source data are attached directly to one another. In all other cases a space is placed between them. The extended field mapping settings offer further configuration options.

→ Contactpicture

Contactimages may be imported by replication in the following ways:

- Contact pictures can be read in from an accessible file or network path by assigning the field *Image path*. (such as text, ODBC replicator)
- The replicator fills the contact picture field directly with picture data (e.g. Microsoft® Exchange Webservice replicator). The selection is made via the displayed checkbox.
- Mapping of a source image field such as B. "thumbnailPhoto" on the *picture* field by the user. (e.g. AD, LDAP replicator)
- No support for contact pictures, the fields *picture* and *picture path* are not displayed.

Which variant is used depends on the type of replicator. Some replicators allow mapping to *image* as well as *image path*.

5. Rules-Editor

6. Contact URL Links

- In each record three contact URL links can be configured, with which the contact can refer to other web pages. The first contact URL has a special use when estos MetaDirectory is used with estos ProCall. estos ProCall uses this URL for all content that could be opened outside the application without having to start the client. For example, this URL is used for missed calls. You can open the contact directly without starting estos ProCall. This URL is called when you open a contact in estos ProCall for editing.

At the LDAP level, the URL configured here is stored in the *directWebLink* database field. This link is also saved in *contactURL* for reasons of compatibility.

The link can contain all registered URL handlers. So not only http: links, but also e.g. outlook: links are possible.

The link can contain all fields of the contact, which can also be used in the template parser. These are, for example, <EntryID> <DisplayName>.

Web-based CRM

If the contact originates from a data source of a web-based CRM system, the link can be stored directly to the contact in the CRM system. For this purpose, the <EntryID> of the contact must usually be inserted in the URL.

Microsoft® CRM 3.0

If the contact is from Microsoft® CRM 3.0, you can use the URL <http://mscrmserver/sfa/conts/edit.aspx?id=<EntryID>> for the contact is possible.

Microsoft Outlook®

If the contact is from Microsoft® Outlook/Exchange, the URL outlook:<EntryID> can be used to open the contact with Microsoft Outlook®.

➔ Since Microsoft Outlook® 2007, Microsoft® no longer writes the Outlook® URL handler, which is required for this function, to the registry when Outlook® is installed.

- **HCL Notes®**
If the contact originates from Notes, the URL `notes://server/database.nsf/view/<EntryID>?OpenDocument` can be used to open the contact with Notes.

7. Datasource location settings

- The settings of the location of a data source are used for automatic formatting of phone numbers. During replication, the phone numbers from the database are converted into a canonical format. For example, the canonical formatting turns a phone number like "08151 368561" into the phone number "+498151368561". The formatting is done automatically and recognizes many phone number formats.
Country or region of the data source
Specify the country from which this data source originates. If a phone number without a country code is entered in the database (e.g. "030-1234567"), the replicator must know which country code is to be used. If "Germany" is now selected, this phone number becomes "+49301234567".
Area Code
Enter your own area code here. This area code can be used to add phone numbers from your own local network. If the database contains phone numbers without a prefix (e.g. "1234567"), the prefix is used to format the phone number. Enter the area code without prefix (e.g. "30" for Berlin).
Primary System Phone Number (system connection)
If the database contains internal phone numbers (e.g. "210"), the replicator must know to which connection this phone number belongs. Enter the basic call number of your connection. If the subscriber "210" can be reached under the call number "+49-30-12345-210", enter "12345" as the system call number.

8. Schedule replication plan

- Define when replication should be scheduled and at which intervals this process should be performed.


➔ Replicators can also be started via the *Windows® task scheduler*. In this case, the names of the replicators are taken as arguments of the "-r" parameter from `MetaServer.exe` or passed to an already running instance for startup.


1. `MetaServer.exe` is specified as the

program to be started, e.g. E.g.:

C:\Programs\estos\MetaDirectory\MetaServer.exe

2. Argument: **-q -r <replikator1> [<replikator2> <replikator3> ...]**

 The parameter "-q" must be specified! It prevents the opening of message boxes which would prevent the termination of the task. Several replicators - separated by spaces - can be specified one after the other. Replikatoren, die Leerzeichen enthalten, müssen in Hochkommata angegeben werden, z. B.: -q -r "Text CSV File"

3.  The **user account** to be used must be the one under which the MetaDirectory server was started. This is usually **[SYSTEM]**.

9. Defining additional applications to be started

- You can start other applications before and after the replication process. Specify the path to the corresponding application here. The applications are started by the replicator, so they run with the same rights as the replicator and may block other replicator calls if they run for a long time.

10. Assigning a name for the new replicator

- Specify a name for the new replicator. You will not be able to change the name later!

➔ Make sure you know the user context required to access the source database or whether access is possible in a system context.

40 LDAP Server

40.1.1.1.1 LDAP Server

LDAP root password

The password entered here is the root password for the LDAP server. With this password, you can view all data of the LDAP server independently of the passwords stored in the database management. The user name required for the password is *Administrator*.

Default DisplayName

If the *display name* is not explicitly assigned through the field mapping, a *display name* is generated from "last name, first name" or "first name last name" and imported into the MetaDirectory during replication. For unreplicated kontakte - for example, if they come from phone books - a *display name* is also generated according to this setting. If there is no "first name" or "last name", only the existing part is used as the *display name*. If both fields are empty, the company name is used as the *display name*.

Restart server

Restarts the MetaDirectory's LDAP server. This separates connected users.

Network interfaces

Shows a filtered view of the network interfaces that are relevant to the LDAP server.

→ For more information on this topic, see Network Interfaces.

41 Database Fields

estos MetaDirectory maps a contact over 61 predefined and 20 freely usable fields. You assign the source to the target fields when setting up a replicator.

Each database field can be given an individual name and abbreviation. This field name is then used throughout the administrator and the web server. The abbreviated field name is used when results of an LDAP request are displayed on a telephony end device.

If the web server interface is available in multiple languages, you must make the customizations in all languages. Additional languages can be added. Ask our support if you want to connect another language.

→ The configuration can be modified directly in the list shown. Click the field you want to change.

→ Use the additional database fields to store more contact details in the database, such as gender, cost centers, building number, substitution.

→ For the phone number resolution by the ProCall, all fields defined as "Phone number field" by default can be used. In addition, the "Custom" fields can be defined as phone number fields.

estos MetaDirectory uses the following field types:

- Name field
- Address field
- Number field
- Fax number field
- Miscellaneous field

You can change the type directly in the list by clicking in the "Field type" column.

All fields of type "Number field" and "Fax number field" are formatted as phone number during replication.

The field types are also used in the Search Assistant with the option "Automatically place wildcard (*) at the end of search terms".

42 Database Management

42.1.1.1 About the estos MetaDirectory Database

The estos MetaDirectory has an additional abstraction layer between the individual data stems created by replicators and the LDAP database. LDAP systems provide data in a tree structure. The introduced abstraction layer makes it possible to merge databases in the LDAP tree under one node. User groups can thus be offered data masters that are composed of different source databases.

Parts of the LDAP tree are architecturally fixed and cannot be modified. This concerns the nodes:

- dc=configuration
Saves LDAP-specific configuration settings such as the LDAP schema
- dc=meta
All locally generated databases will be automatically connected to this node.
Databases from replicators that are not running locally will not be automatically connected to the LDAP tree.
- dc=phonebooks
All activated phone directories will be automatically connected to this database node.
- dc=web
All locally generated databases and all activated phonebooks will be automatically connected to this node.

Additional LDAP nodes are created automatically during the initial installation:

- dc=phone
This database node is available for connecting LDAP-enabled terminals. Use the advanced LDAP node settings to configure the connection to an LDAP-enabled phone.

When an import replicator is executed for the first time, two subnodes are created for the corresponding data source, which contain the imported datasets. One node bears the name of the replicator and contains (after replication) the contact data available in the data source. The second subnode has the name of the replicator - extended by the abbreviation "deleted_Items" and contains "deleted" records, i.e. records that have already been replicated once but were no longer present in the data source during a subsequent replication. The subnodes for deleted records are not displayed in the database management of the estos MetaDirectory Administrator.

42.1.1.2 Database management in estos MetaDirectory Administrator

In the estos MetaDirectory Administrator, you can manage the LDAP tree under "*Database Management*". On the left side the LDAP database structure is shown, on the right side on top all available datasets, below a short dataset information about the currently selected dataset.

42.1.1.3 LDAP database structure

All database nodes are displayed with the databases mounted in each case. Nodes that cannot be manipulated are displayed in light gray. Nodes can be added, removed and edited via the buttons as well as via a context menu. Datasets can be added or removed by drag and drop from the list of available datasets or with the buttons to the right of the LDAP tree. If you want to mount a dataset multiple times, hold down the control key while dragging and dropping.

This list shows next to all available datasets the type and a short status information. An icon on the left side shows if the dataset has already been mounted manually:

- Database not in use
- Database used once
- Database used multiple times

Database Information

The list displays the most important information about the currently selected dataset from the dataset list or LDAP tree. At a glance you can see how many contacts are stored, added, modified or deleted during the last replication. Additional status information is provided for troubleshooting and analysis.


Advanced LDAP Node Settings


The advanced LDAP node settings can be opened via the context menu or the "Properties" button. Information about the extended LDAP node settings.

42.1.1.4 Operations for Available Databases

Create a New Database

The replicator belonging to this data source will be started by selecting this feature.

 Locally created datasets are automatically mounted under the LDAP node dc=meta.

 Phonebooks are not searched in VirtualListView and PagedResults requests to the server. The corresponding phonebook connections do not support such extensions.

43 Advanced LDAP Node Settings

Certain settings can be made in the root nodes of the LDAP database for result presentation and customization for specific LDAP-enabled endpoints. These settings include:

Network

Access to an IP address range can be restricted.

Languages, Sorting and Phone Number Formatting

Select a location here that you have set up under Location. The sorting of the results of a search query is done according to the rules of the country set in the location. When connecting from LDAP-capable end devices, it may be necessary to include abbreviations for field names in the results in some cases. These abbreviations will also be used for the language selected. Phone number formatting will also be performed for the search and the results according to this location.

Phone Number Formatting

estos MetaDirectory supports a variety of phone number formats. As soon as the location has been defined, you can choose between the following phone number formats:

- Unformatted:
The phone number will be displayed using the international dialing format: +49301234567
- Unformatted, reduced to internal numbers:

The phone number will be presented using the international dialing format, reduced to internal numbers: 567

- Legible:
The phone number will be displayed in an easily readable format: +49 (30) 1234-567
- Legible, reduced to internal numbers:
The phone number will be displayed in an easily readable format, reduced to internal numbers: 567
- Dialable:
The phone number will be formatted for direct dialing. It will be prefixed with a corresponding external code as well as the necessary country and city codes: 567.

End device support

Integrating special LDAP-capable end devices is supported by templates. In addition to the pre-defined templates, the various options permit integration of any other telephone systems desired. The options in detail include:

- Only searching phone books when there are not search results:
Telephone directories are searched only if no hits were found when searching other databases.
- Searching automatically for diacritical characters:
With this option, all diacritic special forms of a character are automatically searched for when searching in the LDAP database. Many LDAP terminals only support the ASCII character set. You cannot search for "Müller" on such a device. If this option is enabled, a search for "Muller" will also find the entry "Muller".
- Display only results with telephone numbers:
Only results that contain a phone number are output. All database fields that are declared as phone number fields in database-fields are used.
- End device only support one phone number per contact:
If a contact found contains several phone numbers, but the terminal device can only display one phone number for each contact found, a separate contact is output for each phone number. To make it clear on the terminal device which number it is, the name is appended with the corresponding abbreviation of the database field from which the number originates.
- Always sort results by:
The results are sorted by the selected attribute before they are sent.
- Restrict maximum length of results attributes to:
This option will reduce the length of attributes to a specified number of characters.

Schema Mapping

In addition to the options that can be configured in the interface, a schema substitution is also active when a predefined terminal is selected. Before the search request is passed to the LDAP server and the results are returned to the client, the estos MetaDirectory exchanges predefined attributes in the request and in the response. This makes it possible to connect a terminal device on which it is not possible to configure in which database fields which contents are searched. The schema mapping is stored in the terminal template files (*.termxml) in the *config/default* directory.

44 Fulltextsearch

The full text search (also Fulltextsearch or FTS) changes the search behavior of contact and individual search (attributes *searchContact*,

searchIndividual).

It allows to quickly search the MetaDirectory for one or more strings within a field.

The full text search uses the settings of the default search. If the full-text search is activated, the database fields used for the search are displayed. Wildcards are used in the full text search according to the settings of the standard search. However, they can also be specified explicitly. Leading wildcards are not valid and are therefore ignored.

➔ In a **defaultsearch** search, there will be a hit if the search pattern matches the field contents.
 If a field contains several names like *'Wolfgang Amadeus Mozart'*, you would get a hit with the search pattern *'Wolfgang'* when searching for *'Amadeus'* but not. The use of leading wildcards, in this case *'*Amadeus*'*, is unperforming and can therefore lead to a timeout of the database.

➔ Ist die **Volltextsuche** aktiviert, so kann nach jedem Wort innerhalb eines Feldes gesucht werden. Es können auch mehrere Wörter, wie *'Amadeus Mozart'*, zugleich und in beliebiger Reihenfolge, *'Mozart Amadeus'*, gesucht werden.
 If the 'Company' field is a search field for the name search, you can also search for the combination '*<Name> <Company>*' can be searched for.

Example with data from the sample folder in full-text search:

Pattern	Matches
"Amadeus"	Wolfgang Amadeus
"Amad*"	Wolfgang Amadeus
"Becke*"	"Becker Beate" and "Beckenbauer Alexander"
"A* Becke*" and "Becke* A*"	"Beckenbauer Alexander"

45 Configuration: Search

You will find help for search on the following pages:

- standard search
- Parameterized search
- Fulltextsearch

46 standard search

An LDAP client can query concrete LDAP attributes. The estos MetaDirectory also supports so-called standard searches for the abstraction of search queries. Since mostly name or phone number is searched, several fields can be combined to a standard search (contact, number or individual search).

An LDAP search query for the attribute

- *searchContact* for contactsearch
- *searchNumber* for numbersearch
- *searchIndividual* for individualsearch

searches all database fields checked for corresponding search.

➔ It is recommended not to select more than 10 to 15 fields in total. After a change, the MetaDirectory service should be restarted.

You can automatically place wildcards at the end of a search term. These wildcards are appended to the respective search terms for certain database field types in all search variants. For parameterized searches, the wildcards are appended to each argument that has the corresponding field type. The field types can be configured at Database Fields.


Default...

The *Default* button restores the default settings of the dialog.

Enhanced...

Further settings relevant for the search can be made via this dialog:

- Automatically place wildcard (*) at the end of search terms for *name fields*.
- Automatically place wildcard (*) at the end of search terms for *address fields*.
- Automatically place wildcard (*) at the end of search terms for *number fields*.
- Use server-side sorting:
If this setting is activated, the search results are already sorted by the database to obtain a homogeneously sorted hit list. However, the sorting is performed over the entire result list of the database and therefore may slow down the search.
If the server-side sorting is disabled, the result list is sorted only within one data source.

 Is fulltextsearch enabled, these settings will be adopted.

46.1.1 Remarks vor HTTP search requests:

A search request via MetaDirectory website

- which contains only numbers, a '-' or a leading '+' is automatically treated as a number search.
- which contains one or more commas will automatically trigger a parameterized search.
- which does not contain a comma or non-numeric characters will automatically trigger a contact search.

47 Parameterized search

The parameterized search allows to search for specific values in different fields. A comma-separated search term is split and the content is searched in the respective database field. In the lower part of the dialog you can see the currently selected order of the search terms.

Example: The set parameterized search defines the following sequence of search terms

Displayed name, last name, department, city, postal code, e-mail

If you want to search for Mr. Müller from the Sales department, enter the following search term in the WebServer:

"Müller,Sales"

If you want to find the contact to the e-mail address info@info.info enter the following search term in the WebServer:

",,,,,info@info.info"

For convenience, the current database field in which you are searching for a term is displayed in the WebServer. As soon as you have entered a comma, the web interface displays the individual fields of the parameterized search.

48 Configuration: Services

You will find help for configuring services on the following pages:

- Web-Server
- Web Services
- Default Web Service
- Web Service Settings
- Send Email
- Customizing the default webpage

49 WebServer

The estos MetaDirectory has an integrated WebServer that can be used to provide an intranet telephone directory. Through central installation on a server, all employees can immediately use the web-based search service of the estos MetaDirectory intranet phone book with all common browsers. The search portal is used for searching and presenting the results. This means that the contact data is available to all authorized persons at all times and in all places. Via an Internet connection, field staff, partners or customers can also search for contacts quickly and without installing software.

Use alternate directory

It is possible to specify an alternative directory for the content presented by the web server. If you want to specify an alternative directory, please copy all data from the *wwwroot* directory in the estos MetaDirectory installation directory.

HTTP-header dialog

By checking the first checkbox of a row, HTTP headers can be turned on and off.


Clicking on the name or value of a header opens the line in edit mode.

The header will only be send over HTTPS-connections if the TLS checkbox is set.

Clicking the <x>-button deletes the header.

Writing a header to the last line, generates a new empty line. Therefore you can always add new headers.

Recover defaults by pressing the *default*-button.

 Changing the HTTP headers can result in the MetaDirectory web pages no longer being displayed by clients. Changes should therefore only be made in exceptional cases.

Restart server

Restarts the WebServer of the MetaDirectory.

Network interfaces

Presents a filtered view of network interfaces that belong to the web-server.

→ You will find further information to this topic in chapter Network interfaces.

Customizing the default webpage

Here you can find information about customizing the default website.

50 Default Web Service

Each directory of the web server is a web service. The web service "Default" is the root directory of the web server. This contains a special configuration for the intranet address book of the MetaDirectory.

Enabling a Web Service

If the web service has been disabled, access to those pages will not be possible.

Use data from LDAP nodes

Define which data of the LDAP server is available for the web service. If you want to provide only a part of the contact data available in the LDAP server via the web service, configure a new LDAP node via the Database Management and select it here.

Result Presentation

In addition to the number of results for each view, you can also define a default view and default language.

The estos MetaDirectory allows the intranet users to save their own settings for the result presentation. If you want to allow users to choose their own settings, enable the "Save configuration locally on client in cookie" option.

Handling Telephony Links

You can dial telephony links from the web interface in connection with CTI software. The dialing handler, which will provide your CTI software for dialing by Click-to-Dial, can be defined here.

→ If you want to provide only a part of the contact data available in the LDAP server via the intranet phonebook, configure a new LDAP node via the database management and select it here.

→ The web server templates can be customized. The templates can be found in the *wwwroot* directory in the estos MetaDirectory installation directory. For more information about the template elements, see Template Parser.

51 Web services settings

The web services settings can be found under Services -> Web Services.

Here you select the desired service and click on the "Edit" button. Deactivated services can be recognized by a red circle in the first column, these must first be configured via the "Setup" button in order to edit them.

Enabling a Web Service


If the web service has been disabled, access to those pages will not be possible.

Use data from LDAP nodes

Define which data of the LDAP server is available for the web service. Some web services require their own LDAP node, which carries the name of the web service. You configure this via the database management.

Maximum Number of Results

The maximum number of results returned by a search.

 **Attention:** This is the maximum number of data records returned by the web service. This number may be further restricted by individual limitations of the various data sources (e.g. phonebooks). The restriction of your own LDAP database is stored in the MetaDirectoryServer.xml.

Default Language

Language in which the templates are processed. In the "Automatic" setting, the "HTTP Accept-Language" is used.

Handling Telephony Links

You can configure the syntax here if phone numbers are displayed as links in the templates.

→ The web server templates can be customized. The templates can be found in the *wwwroot* directory in the estos MetaDirectory installation directory. For more information about the template elements, see Template Parser.

52 Web Services

The WebServer makes its data available via the web services. Each directory of the WebServer is a Web service. Each web service has its own configuration.

The Default Web Service has a special configuration for the intranet address request of the MetaDirectory. The other Web service settings allow the configuration of the data source and the result presentation. This allows the WebServer to use different datasets on different pages.

By default, only the "Default" service is active. When the other services are set up, an LDAP node is automatically created with the recommended search and result settings.

XML pages are also available in addition to HTML pages. Templates have been supplied for the following web services:

Service Name	Path	Description
Default	<i>/index.html</i>	Standard access via web browser
cell	<i>/mobile/index.html</i>	Address book for mobile devices. See Setup for Mobile Devices.
miteladdress	<i>/miteladdress/search.xml</i>	Address book for XML browsers for the Mitel SIP phone. See Setup for Mitel SIP Telephones.
mitel68xxi	<i>/mitel68xxi/search.xml</i>	Address book for XML browsers for the Mitel SIP phone. See Setup for Mitel SIP Telephones.
ciscoaddress	<i>/ciscoaddress/ciscosearch.xml</i>	Address book for XML browsers for Cisco 79xx phones. See Einrichtung für Cisco CallManager.
ciscodirectory	<i>/ciscodirectory/ciscosearch.xml</i>	Phone directory for XML browsers for Cisco 79xx phones. See Einrichtung für Cisco CallManager.

Use the following features to modify the web service settings:

- **Set up...**
Configures the databases used for this web service.
- **New...**
Create templates for a new web service. Selecting this function creates default templates and infrastructure under a selected name. You can customize these templates. See Template Parser and
- **Copy...**
Copy the settings and templates of an existing web service as the basis for a new web service. Selecting this function creates the selected templates and infrastructure under a selected name. You can customize these templates.
- **Delete...**
Remove a web service. This function permanently deletes all settings and templates of the selected web service.
- **Edit...**
Change the settings as described in Web Services Settings.

53 E-mail notification

You can specify an email server through which email will be sent in the event of errors.

SMTP Server

Host name or IP address and port number of the mail server. Common port numbers are 25 (SMTP), 465 (SMTPS) and 587 (SUBMISSION). TLS encryption is used (except on port 25) if the mail server supports it.

SMTP user (optional)

User name for the SMTP connection (SMTP AUTH)

SMTP password (optional)

Password for the SMTP connection (SMTP AUTH)

Sender email address

Enter the email address for the sender here.

Address of the Email Recipient

Enter the email address to which the message should be sent here.

Permit emails with UTF-8 (UNICODE) content

Enables the server to send emails in UTF-8 encoding. If you disable this option, e-mails can send only characters known in the ISO Latin code page of the operating system,

Enforce TLS


Enables forcing TLS encryption. If the server does not provide encryption or the certificate is not trusted, the send fails. On port 25, TLS is used only if this option is set. Make sure that the host name of the SMTP server is included in the certificate.

Verify...

A test email will be sent. This can take up to one minute. A popup appears with information about success or failure (including any error message).

➔ Configure Events and enable the "Email errors to administrator" option to be notified immediately of any errors.

54 Customizing the default webpage

 Individual customization of **contact detail groups** and **list export** can be done via configuration files

- wwwroot\templates\contactdetails-groups.json
- wwwroot\templates\export-fields.json

in the MetaDirectory program directory.

Knowledge of the JSON data format is required for this!

Support is provided exclusively within the scope of Professional Service.

55 The telephone directory of the TVG publishing house - local

A "DasTelefonbuch Deutschland" is required to use this interface. You need a network or intranet version to use it. Make sure that you have enough licenses available for the "DasTelefonbuch für Deutschland". You need one license for each user!

TfD.dll provides access to Das Telefonbuch Deutschland. This file will be installed together with estos MetaDirectory.

The path to the "DasTelefonbuch Deutschland" installation is normally determined automatically. If this is not possible, please enter the path directly. Leave this field empty for automatic configuration.

- ➔ The telephone book data will be loaded from the server into RAM when using this feature, as needed. In some cases, this may include the entire telephone book database.
- ➔ It is strongly recommended to copy the phonebook database to the hard disk. If you leave the data on the DasTelefonbuch CD/DVD, the search will take many times longer.

56 TheTelephone Book of TVG Publishing Web Service

If you have already registered and activated your account, you can use the DasTelefonbuch web service of the TVG publishing house as a telephone book after entering your email, password and PIN.

After registration, after entering your email and password, you can press *Update info* to retrieve your user data.

If you aren't registered, follow these steps:

- Press *Register...*
 - Enter first and last name, email, city, company and a password and confirm with *Register*.
Note: You have to fill out all fields .
 - Your PIN will be send to the given email-address.
 - Enter your PIN into field *PIN*.
 - Press *Apply*.
 - The TVG Verlag web service can now be used as a linked phone book in MetaDirectory.
- ➔ Note: The 45-day trial is non-binding and expires without obligation 45 days after activation.
The activation of the web service by the customer is carried out exclusively by TVG Verlag.

- The TVG-Verlag web-service may be ordered from:
<http://www.telefoncd.de/Das-Telefonbuch-fuer-Ihre-Telefonanlage-mit-CTI-Software-Webservice.html>

57 11880.com

A 11880.com server will be required for using this interface. It will provide the necessary interface for accessing the data.

- 11880.com telephone directory CDs available in specialized stores or supermarkets cannot be used!

Note that you have enough licenses available for the 11880.com server. The provider's terms of use apply. You need one license for each user!

The 11880.com server is an independent Windows® service that will make the interface available over a network connection (TCP/IP). The 11880.com address server must have already been installed and started in order to establish this connection.

11880.com Server (Host Name)

Enter the computer name or IP address for accessing the 11880.com server. If the 11880.com server has not been installed on the same computer, then enter 'localhost'.

TCP Port

Enter the TCP port configured in the 11880.com server. (Default: 5000)

58 TwixTel

A TwixTel phone book will be required for using this interface. Please note that you will need a TwixTel network license.

The TwixTel installation path will normally be determined automatically. If this is not possible, please enter the path directly.

- Copying the phone book database to the hard disk is highly recommended. If you leave the data on the CD, searches will take significantly more time.
- The TwixTel data is accessed via the *twxapi32.dll*. When you install TwixTel, the DLL appropriate for the dataset is automatically copied, if the setup has found a previous version of the DLL. When you install estos MetaDirectory, the DLL is copied to the *System32* directory on Windows®. If you install TwixTel afterwards, the DLL will be updated to the required version.
- Even if you are already using a TwixTel installation, you will have to run the TwixTel setup again after running the estos MetaDirectory setup, in order to update the *twxapi32.dll*.


59 Swisscom Directories

To use the web service of *Swisscom Directories AG*, a user name and password are required as access data.

You can order the access data directly from *directoriesDATA* using the following link:

www.directoriesdata.ch/verzeichnisdaten/etv-inside

➔ The "Swisscom Directories" telephone directory is a web service of *Swisscom Directories AG*. It is accessed via the Internet. Therefore, the Internet must be accessible for the estos MetaDirectory.

 **Microsoft® .NET Framework 4.8** is required to use the Swisscom Directories phonebook.

Enter the credentials "UserID" and "Password" received from *directoriesDATA*.

Search type

- **Automatic:** If the MetaDirectory has generated or is entered a search pattern with a final '*', the search type '*Like*' is executed, otherwise '*Default*'.
- **Default:** Swisscom Fix-Match search.
- **Like:** Swisscom Like search
- **Phonetic:** Swisscom Phonetische search

Important note: The search types *Like*, *Phonetic* and thus also *Automatic* can have an influence on the response times of the functionality and on the effectiveness of the search results.

60 Database Query

Help on how to query and view the contact database can be found on the following pages:

- Database Query
- Database View

61 Database Query

To be able to check the data in the LDAP database, the database administration provides an LDAP search. The search uses the settings defined in the search wizard for contact search, number search, parameterized search and full text search.

Field Selection

You can remove the LDAP database fields displayed by default by removing individual columns from the view. Deleted columns can be added again by

dragging them from the field selection and dropping them on the column headers.

62 Database View

To be able to check the data in the LDAP database, the database admin provides a view of the LDAP database. Here you can navigate through all the nodes of the LDAP tree and view the respective records stored under them.

Field Selection

You can remove the LDAP database fields displayed by default by removing individual columns from the view. Deleted columns can be added again by dragging them from the field selection and dropping them on the column headers.

63 Server Status

You will find help regarding the event log and the current status of the server on the following pages:

- Status Monitor
- Server Log

64 Server Log

The estos MetaDirectory service creates log entries for many events depending on the settings chosen in Events. The log entries are divided into the following categories:

- Informational Notices
- Warnings
- Errors
- Debug Information

Each notification will be recorded with a time, a category and a message. The category will indicate information about which estos MetaDirectory component created the entry.

➔ You can set up a new log file or delete the current log file using the shortcut menu.

⬆ Unlike estos MetaDirectory version 1.x, the logfiles of replication operations are stored separately for each replicator. You can view the log files in the replicator configuration.

65 Status Monitor

The Status Monitor displays the status of the central estos MetaDirectory services in a compact format. The status icons depict the following services states:

- Service not started
- Service successfully started

- Service started with errors
- Service could not be started

The network port used for reaching the service will be displayed for network services. The number of active client connections and the available licenses will be displayed as long as they are relevant for the service.

The individual services and their tasks include:

- **Admin Clients**
Provide the interface for connecting to a estos MetaDirectory Administrator
- **Broadcast Receivers**
Respond to requests from clients that are searching a estos MetaDirectory server
- **LDAP Server**
Provides the LDAP server.
- **WebServer**
Provides the WebServer.


66 Connecting to Data Sources

Examples of how to include typical contact data sources into estos MetaDirectory (or from it to Outlook) can be found on the following pages:

- Configuring a CSV replicator for integrating a text file
- Configuring an ODBC replicator to include a Microsoft® Excel spreadsheet
- Configuration of an ODBC replicator to connect a Microsoft Access® database
- Advanced configuration of an ODBC replicator with SQL statement input
- Data transfer from LDAP server to Microsoft Outlook® address book

67 Configuration of an ODBC replicator to connect a Microsoft Access® database

How a Microsoft Access® database can be integrated as a data source for estos MetaDirectory will be shown in this application example. You will find the example database in the estos MetaDirectory installation directory the *Samples* folder.

 Under Microsoft® Windows® you must start the estos MetaDirectory Administrator to configure an ODBC system data source with extended rights. To get the necessary rights, you will find the entry "*Run as administrator*" in the context menu, which opens when you right-click on the application icon.

67.1.1.1 *Setting up estos MetaDirectory to use a Microsoft Access® database*

- Start the estos MetaDirectory Administrator on the computer where the server was also installed.
- Authenticate yourself on the server with the user data that you

specified during installation.

- Go to the **Configuration / General / Replicators** view.
- Use the context menu or **Add...** to start the Replicator Wizard to configure a data source.
- Select the data type "ODCB database" and confirm the selection with **Next**.
- In the user login, you specify how to access the data source. You can access the data source both from the context of the current user and from the system account. In this example, we use a SYSTEM account. For more information on this topic, see Replicator Wizard. Confirm the selection using the *Next* button.
- In the following step the ODBC connection to the Access database is configured.
 - The ODBC Connection Wizard provided by the system will open from the **Browse...** button.
 - Go to the **Computer Data Sources** tab page.
 - A new computer data source will be created using the **New...** button.
 - **Important:** In the following dialog, select "System data source" so that the data can be opened via the previously selected system account. Confirm the selection using the **Next** button.
 - Select the ODBC driver for accessing Microsoft Access® databases. Possibly different drivers in different languages are offered here. Use one of the offered Microsoft Access® drivers (*.mdb). Confirm the selection using the **Next** button and conclude the configuration of the ODBC driver using the **Done** button.
 - Enter a name for the selected driver. The configuration of the computer data source will be concluded using the **OK** button.
 - Select the computer data source just setup from the list of available data sources. Once you have confirmed the selection using the **Ok** button, a dialog will be opened, from which you can select the *Demo-Database.mdb* Access database located in the *Samples* folders in the estos MetaDirectory installation directory.

Once you have configured the ODBC connection, you will be able to make additional settings in the Replicator Wizard. Confirm the settings just made using the **Next** button.

- There are several tables in the Access database. Select the "Contacts" table. Confirm the selection with **Next**.
- In the following field mapping wizard it is determined which fields of the data source are copied to which target fields. Next to the sample Excel file you will find a saved field mapping. Load the field assignment "Demo-Database-mdb.fxm" using the button at the bottom left in the field assignment dialog. Confirm the settings with **Next**.
- Leave the settings in the country and region/location settings unchanged and confirm the dialog with **Next**.
- In the replication schedule, you can define the intervals and times for replicating the database. Make changes - if desired - otherwise leave the settings page with **Next**.
- Enter a replicator name. This name must be unique and cannot be changed afterwards.

Configuration of the replicator will be concluded using the **Done** button.

Once the replication process has been concluded, you can let the replicator run from the replicators list from the context menu or by using the **Start** button.

You can view replication results in Database Search or Database View.

68 Advanced configuration of an ODBC replicator for entering an SQL statement

In the application example Configuration of an ODBC replicator to connect an Access database the connection of a single table from an Access database was shown. Now other possibilities of extended data retrieval are shown.

The sample database *Demo-Database.mdb* must already be set up as a data source. Now edit the settings of this data source and open the page where the "Contacts" table was selected. Select "Enter SQL Select statement".

An SQL Select statement serves to request data. Records can be filtered using this statement and data united from multiple tables. You will find additional documentation about SQL on the Internet pages of the respective database vendor or in the Microsoft Access® help files. You can also use Microsoft Access® for creating these requests.

Creating a Filter for Records

The sample database contains a field "Title" in the contacts. Only the contacts that have the value "Woman" in the field are to be used. The SQL statement for this is:

```
SELECT * FROM Contacts WHERE Title = 'Frau'
```

Click on **Next**. In the field mapping you will now only see records that have the value "Woman" in the "Title" field.

Joining Data from Multiple Tables

The sample database does not contain a company name in the "Contacts" table. However, there is a field "CompanyID" which creates a reference to the data of the company in the "Company" table. The query is now extended so that the "CompanyName" field is assigned to the contact. The SQL statement for this is:

```
SELECT Contacts.*, Company.CompanyName FROM Contacts LEFT OUTER JOIN Company ON Contacts.CompanyID = Company.CompanyID
```

Click **Next**. In the field mapping, the "CompanyName" field is now also available in the source fields.

Duplicate Field Names when joining Multiple Tables

In the "Company" table there is a "Street" field that contains the address of the company. In the "Contacts" table there is a field with the same name. In order to distinguish the fields with the same name, the SQL statement "AS" is used to rename a field. The SQL statement for this is:

```
SELECT Contacts.*, Company.CompanyName, Company.Street AS CompanyStreet FROM Contacts LEFT OUTER JOIN Company ON Contacts.CompanyID = Company.CompanyID
```

Click on **Next**. In the field mapping, the "CompanyStreet" field is now also available in the source fields.

69 Configuring a CSV replicator for integrating a text file

This sample application shows how to use a text file with contacts in CSV (Comma Separated Values) format as a data source for estos MetaDirectory. The sample file can be found in the estos MetaDirectory installation directory in the *Samples* folder.

69.1.1.1 Setting up estos MetaDirectory for using a CSV File


- Start estos MetaDirectory administration on the computer where the server is installed.
- Authenticate yourself on the server with the user data that you specified during installation.
- Go to the **Configuration / General / Replicators** view.
- Use the context menu or **Add...** to start the Replicator Wizard to configure a data source.
- Select the data type "Text/CSV File" and confirm the selection with **Next**.
- In the user login, you specify how to access the data source. You can access the data source both from the context of the current user and from the system account. In this example, we will use a SYSTEM account. For more information on this topic, see Replicator Wizard.
Confirm the selection using the **Next** button.
- In the following step, the access to the file is configured.
 - Select the CSV file from the *Samples* folder in the estos MetaDirectory installation directory using the **Browse** button.
 - Select the "Windows® Text (semicolon separator)" file format. This indicates that the fields in each line of the file are separated by semicolons.
 - Set the option "First row contains field names".
 - Confirm the selection using the **Next** button.
- The following field mapping wizard defines which fields of the data source are copied to which target fields. Next to the sample text file you will find a saved field mapping. Load the field mapping *Demo-Namensliste-csv.fxm* via the button at the bottom left of the field mapping dialog. Confirm the settings with **Next**.
- Leave the settings in the country and region/location settings unchanged and confirm the dialog with **Next**.
- In the replication schedule, you can define the intervals and times for replicating the database.
Make changes - if desired. Then leave the settings page with **Next**.
- Enter a replicator name. This name must be unique and cannot be changed afterwards.
Configuration of the replicator will be concluded using the **Done** button.

Once the replication process has been concluded, you can let the replicator run from the replicators list from the context menu or by using the **Start** button.

You can view replication results in Database Search or Database View.

70 Configuring an ODBC replicator to include a Microsoft® Excel spreadsheet

This sample application shows how to use a Microsoft® Office Excel spreadsheet as a data source for estos MetaDirectory. The sample database can be found in the estos MetaDirectory installation directory in the *Samples* folder.

-  Under Microsoft® Windows® you must start the estos MetaDirectory administrator for the configuration of an ODBC system data source with extended rights. To do this, select the entry "Run as administrator" in the context menu that opens when you right-click on the application icon.

70.1.1.1 *Setting up estos MetaDirectory to use a Microsoft® Office Excel spreadsheet*

- Start the estos MetaDirectory Administrator on the computer where the server was also installed.
- Authenticate yourself on the server with the user data that you specified during installation.
- Go to the **Configuration / General / Replicators** view.
- Use the context menu or **Add...** to start the Replicator Wizard to configure a data source.
- Select the data type "ODCB database" and confirm the selection with **Next**.
- In the user login, you specify how to access the data source. You can access from the context of the current user as well as from the system account. In this example, we are using a SYSTEM account. For more information on this topic, see here. Confirm the selection using the **Next** button.
- In the following step, the ODBC connection to the Excel spreadsheet is configured.
 - With **Browse** the ODBC configuration wizard provided by the system opens.
 - Go to the **Computer Data Sources** tab page.
 - A new computer data source will be created from the **New** button.
 - **Important:** In the following dialog, select "System data source" so that the data can be opened via the previously selected system account. Confirm the selection using the **Next** button.
 - Select the ODBC driver for accessing Excel tables. Possibly different drivers in different languages are offered here. Use one of the offered Microsoft® Excel drivers (*.xls). Confirm the selection using the **Next** button and conclude the configuration of the ODBC driver using the **Done** button.
 - Enter a name for the selected driver. The configuration of the computer data source will be concluded using the **OK** button.
 - Select the computer data source just setup from the list of available data sources. Once you have confirmed the selection using the *Ok* button, a file selection dialog will open where you can select the *Demo-Namensliste.xls* Excel file in the *Samples* folders in the estos MetaDirectory installation directory.

After you have configured the ODBC connection, you can make further settings in the Replicator Wizard. Confirm the settings you have just made with **Next**.

- In the Excel spreadsheet you will find several named areas. The named range that contains the data to be replicated is called "Address list". Confirm the selection with **Next**.
- In the following field mapping wizard it is determined which fields of the data source are copied to which target fields. Next to the sample Excel file you will find a saved field mapping. Load the field mapping *Demo-Namensliste-xls.fxm* using the button at the bottom left of the field mapping dialog. Confirm the settings with **Next**.
- Leave the settings in the country and region/location settings unchanged and confirm the dialog with **Next**.
- In the replication schedule, you can define the intervals and times for replicating the database.
Make changes - if desired - otherwise leave the settings page with **Next**.
- Enter a replicator name. This name must be unique and cannot be changed afterwards.
Configuration of the replicator will be concluded using the **Done** button.

Once the replication process has been concluded, you can let the replicator run from the replicators list from the context menu or by using the **Start** button.

You can view replication results in Database Search or Database View.

71 Data transfer from LDAP server to Microsoft Outlook® address book

With the support of Microsoft Outlook® address book you are able to extend your address book with estos MetaDirectory contact information.

71.1.1.1 Setting up estos MetaDirectory with Microsoft Outlook® Address Book

- In the **Extras** select "Email accounts".
- Select "Add a new directory or address book".
- Select "Internet Directory Service (LDAP)".
- Enter the computer name where estos MetaDirectory has been installed and started.
- No further information is necessary for login.
- Click the **Advanced Settings** button.
- In the connection details set the port to "712" or to the port number you have set in the setup of estos MetaDirectory.
- Click the **Search** tab page.
- In the search options, specify *dc=meta* or another LDAP node you configured in Database Management under Search Base.
- Exit the dialog with **Ok**.
- With **Continue** and then **Complete** the LDAP connection is configured.
- In order for your settings to be applied, you must quit and restart Microsoft Outlook®.

71.1.1.2 Access to estos MetaDirectory with Microsoft Outlook® address book

- Make sure that the specified LDAP node contains data. You can use the *databaseviewsearch* or *databaseview* to view stored contacts.

- In the **Extras** menu, select "Address Book".
- Under "Show names from" you select your previously created directory entry. The name of the entry is the name of the computer you entered previously when setting up the LDAP directory.
- To search in the estos MetaDirectory, select "Search" under **Extras**.
- Enter the desired search parameter in the **Search** window that will now appear. Start the search using the **Ok** button.
- If no entries are found, check whether there are contacts in the specified LDAP node that match your search specifications.

➔ If you want to use only a part of the contact data available in the LDAP server in Microsoft Outlook®, configure a new LDAP node via the Database Management and select it for the Microsoft Outlook® address book connection.

72 Configuring Applications and End Devices

estos MetaDirectory can be accessed from various applications and end devices. You will find information about configuration on the following pages:

- Access using Web Browsers
- Access from Applications and End Devices
- Access from Telephones using XML Browsers

73 Access via web browser

Access to the estos MetaDirectory is possible via web browsers at the workplace and in mobile devices.

Access via web browser

Access via a web browser does not require any configuration on the client. Simply start a suitable web browser (html5-compatible e.g. Google Chrome™ browser or Mozilla Firefox) and enter the URL of the MetaDirectory server. For configuration instructions, see Setting up for web browsers.

Access via web browser in mobile devices

Access from a mobile device is also possible via HTTP. Special templates are provided for this purpose. For configuration instructions, see Setting up for mobile devices.

74 Access from Applications and End Devices

Access to the estos MetaDirectory is possible from applications and end devices that can access contact data of an LDAP server. Configure in the application or end device the LDAP server and port as well as the LDAP attributes to be used. The access setup is described for different applications and end devices on the following pages:

- Setup for Mitel OIP
- Setup for innovaphone
- Setup for Microsoft Outlook®
- Setup for Polycom (LDAP)
- Setup for Siemens Hipath 2000, 3000 and 5000

- Setup for Siemens OptiPoint Application Module
- Setup for Siemens OpenStage 60 and OpenStage 80
- Setup for Snom (LDAP)
- Setup for Special LDAP End Devices

For details on the estos MetaDirectory LDAP server, see LDAP Servers and Fields.

75 Access from Telephones using XML Browsers

Several telephones can access estos MetaDirectory through an integrated XML browser:

- Setup for Mitel SIP Telephones
- Setup for Polycom Telephones
- Setup for Snom Phones
- Setup for Cisco CallManager

76 Setup for HiPath PBX

The HiPath telephone systems from Unify (formerly Siemens Enterprise Communications) support a phone book on the phone via LDAP.

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **LDAP-nodes**
In Database Management, configure a new LDAP node named *hipath*. This node is accessed with the baseDN *dc=hipath*. Configure this LDAP node.

Authentication	Optional
Phone Number Formatting	Without formatting, internally abbreviated Note the location settings for the telephone equipment.
End Device Support	HiPath 2000/3000/5000

3. **Phone System**
Configure the LDAP access from the Hipath 3000 Manager. You can configure access to the LDAP server from Settings / System Parameters / LDAP.

LDAP Server IP Address	Specify the IP address of the MetaDirectory.
LDAP Access Port Number	Specify the TCP port of the MetaDirectory.
Base DN	Specify the LDAP node that you just configured (dc=hipath).

Search query	displayName=\$*
Name result attribute	displayName
Phone number result attribute	telephoneNumber
Sorting the search result	active
LDAP configuration code	This is the trunk code to be used for external calls. (Default is "0")
LDAP phone number prefix	Leave this field empty.

77 Setup for innovaphone

The innovaphone IP150, IP110, IP200 and IP230 telephones support a telephone book on the telephone via LDAP.

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **LDAP-nodes**
In the Database Management, configure a new LDAP node with the name *innovaphone*. This node is accessed with the baseDN *dc=innovaphone*. Configure this LDAP node.

Authentication	Optional
Phone Number Formatting	Unformatted Note the location settings for the telephone equipment.
End Device Support	innovaphone IP200

3. **Phone (firmware V5)**
Start configuring the telephone. You can configure the phone location from Config / Directory.

Country Code	"49" for Germany or "1" for USA
Area Code	"30" for Berlin or "706" for Toronto
Domestic Long-distance Code	"0" in Germany or "1" in USA
International Dialing Code	"00" in Germany or "011" in USA

Trunk Access Code Digit for obtaining an outside line on the telephone system (usually "0" in Europe).

Root Number The base number for a phone system connection with phone extensions. For the phone number +49(30)12345-678, the root number is "12345".

- Under Config / Directory / "LDAP from external Server" you configure the access to the LDAP server.

Enable External LDAP Server Access	Enabled
IP Address	IP address of the MetaDirectory
Port Number	TCP port of the MetaDirectory
Distinguished Name	Optional User Name
Password	Optional password
LDAP Mode	Paged Results
Sort by First LDAP Name Attribute	Enabled
Base	BaseDN of the LDAP node e.g. dc=innovaphone
Object Filter	(objectClass=contactPerson)
Attribute 1	displayName
Attribute 2	
Attribute 3	
Phone 1	telephoneNumber
Phone 2	homePhone
Phone 3	cell
Phone 4	

- Phone (firmware V6)**
You will find the configuration of LDAP Directories under Configuration / Registration / Directories.

Enable External LDAP Server	Enabled
-----------------------------	---------

Server	IP address or host name of the MetaDirectory
Port	TCP port of the MetaDirectory (712)
User Name	Optional User Name
Password	Optional User Name
Search Base	BaseDN for the LDAP node, e.g. dc=innovaphone
Mode	Paged Results
Sort Results	Enabled
Object Filter	(objectClass=contactPerson)
Name Attributes	displayName
Number Attributes	telephoneNumber, phoneHome, and mobile
Hold Server Connection	60

78 Setup for Mitel OIP

The Mitel Open Interfaces Platform (OIP) supports the connection of an LDAP server. This is used both for the number search when calling and for the name search.

Setup

- Data Source**
Configure a replicator or a phonebook.
- LDAP node**
You can use the LDAP node *dc=meta*. If you want to use custom settings for the node, configure a new LDAP node in Database Management.

Authentication	Optional
Phone Number Formatting	Unformatted
End Device Support	Default

- Phone System**
Open the OIP configuration app. Navigate to the OIP Services, LDAP Directory Service. Use the following configuration:

LDAP Server Address IP address or host name of the

	MetaDirectory server.
LDAP Port	TCP port of the MetaDirectory server (712)
Username	
Password	
LDAP Base-DN	dc=meta
LDAP object class	person
LDAP search filter	
Follow LDAP referrals	Disabled
First name	givenName
Middle Names	DEFAULT-MAPPING
surname	sn
Personal address - Street	privateAddressStreet
Personal address - ZIP code	privateAddressPostalCode
Personal address - City	privateAddressCity
Personal address - State	privateAddressState
Personal address - Country	privateAddressCountry
Company address - Street	streetAddress
Company address - ZIP code	postalCode
Company address - City	l
Company address - State	st
Company address - Country	c

Business phone number	telephoneNumber
Business fax	facsimileTelephoneNumber
Personal phone number	homephone
Personal fax number	otherFacsimileTelephoneNumber
Cell phone	cell
Pager	pager
Primary phone	telephonePrimary
Alias	displayName
Company	company
Position	DEFAULT-MAPPING
E-mail	mail
Personal email	mail2
Mobile email	DEFAULT-MAPPING
Website	url
Supervisor	DEFAULT-MAPPING
Assistant	DEFAULT-MAPPING
Department	department
Custom 1	Custom0
Custom 2	Custom1
Custom 3	Custom2
Custom 4	Custom3
Custom 5	Custom4
Remarks	info
Number of phone number items	20

79 Setup for OpenStage phones

The OpenStage 60 and OpenStage 80 phones from Unify (formerly Siemens Enterprise Communications) support the connection of an LDAP server as an address book. The phone must be configured for this purpose.

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **LDAP node**
In Database Management, configure a new LDAP node named *optipoint*. This node is accessed with the baseDN *dc=optipoint*. Configure this LDAP node.

Authentication Optional

Phone Number Formatting Unformatted

End Device Support OptiPoint Application Module

3. **LDAP Phone Templates**
The LDAP browser of the phone must be configured with a file. This file contains a description of which attributes are used. Details can be found in the phone's administration manual.
4. **LDAP Phone Server**
The LDAP server and port must be set in the phone configuration.

You may use a text file with the following content:

```
OpenStage LDAP TEMPLATE (v.1)
SEARCHBASE="dc=optipoint"
ATTRIB01="sn"
ATTRIB02="givenName"
ATTRIB03="telephoneNumber"
ATTRIB04="otherTelephone"
ATTRIB05="mobile"
ATTRIB06="homePhone"
ATTRIB07="company"
ATTRIB08="department"
ATTRIB09="l"
ATTRIB10="title"
ATTRIB11="mail"
EOF
```

80 Setup for Siemens OptiPoint Application Module

The Siemens optiPoint Application Module supports the connection of an LDAP server as address book. For this purpose, the Application Module and the optiPoint phone must be configured.

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **LDAP node**
In Database Management, configure a new LDAP node named

optipoint. This node is accessed with the baseDN *dc=optipoint*. Configure this LDAP node.

Authentication	Optional
Phone Number Formatting	Unformatted
End Device Support	OptiPoint Application Module

3. Application Module

The LDAP browser of the Application Module must be configured with a file. This file contains a description of which attributes are used. Details can be found in the administration manual of the telephone and the Application Module.

4. OptiPoint phone

The LDAP server and port must be set in the phone configuration.

You may use a text file with the following content:

```
optiPoint 410 LDAP TEMPLATE (V1)
SEARCHBASE "dc=optipoint"
SEARCHFILTER1 = "searchContact,Name oder Firma"
SEARCHFILTER2 = "l,Ort"
SEARCHFILTER3 = "department,Abteilung"
SEARCHATTRIB1 = "displayName,Name,0"
SEARCHATTRIB2 = "company,Firma,0"
SEARCHATTRIB3 = "department,Abteilung,0"
SEARCHATTRIB4 = "l,Ort,0"
SEARCHATTRIB5 = "telephoneNumber,Telefon G,1"
SEARCHATTRIB6 = "otherTelephone,Telefon G2,1"
SEARCHATTRIB7 = "homephone,Telefon Pr,1"
SEARCHATTRIB8 = "mobile,Mobil,1"
```

EOF

81 Setup for Microsoft Outlook®

Microsoft Outlook® can use an LDAP server as an address book. You can search this address book. It is used to resolve e-mail addresses.

Setup

1. Data Source

Configure a replicator or a phonebook.

2. LDAP node

You can use the LDAP node *dc=meta*. If you want to use custom settings for the node, configure a new LDAP node in Database Management.

Authentication	Optional
Phone Number Formatting	Unformatted or legible
End Device Support	Default

3. **Configuration in Microsoft Outlook®**

In Microsoft Outlook®, open Tools / Account Settings / Address Books. Add a new address book.

Select the Internet directory service (LDAP)

Server Name	IP address or DNS name of the estos MetaDirectory server.
Server requires logon	Optional
Additional Settings / Connection / Connection	TCP port of the estos MetaDirectory server (default 712)
Additional Settings / Search / Search Base	Enter the LDAP node DN (dc=meta)
Additional Settings / Search / Enable Searching	Enabled

82 Setup for Polycom (LDAP)

The Polycom telephones in the SoundPoint and Media Phone series can access contacts through LDAP.

The corresponding feature is called **Corporate Directory Access**. A license for the **Polycom Productivity Suite** will be need to use this feature.

Alternatively, you can use the phones to access the estos MetaDirectory via the Polycom XML Browser.

Setup

1. **Data Source**

Configure a replicator or a phonebook.

2. **LDAP node**

In Database Management, configure a new LDAP node named *polycom*. This node is accessed with the baseDN *dc=polycom*. Configure this LDAP node.

Authentication	Optional
Phone Number Formatting	Dialable Note the location settings for the telephone equipment.
End Device Support	Generic Address Book

3. **Telephone**

Configure LDAP access in the *sip.cfg* file.

If phonebooks are configured in the dc, Virtual List Views cannot be used. In this case, configure: *dir.corp.vlv.allow="0"*

A configuration example:

4. <directory>

```

5. <dirCorp dir.corp.address="ldap://metadirserver"
   dir.corp.port="712"
6.   dir.corp.transport="TCP"
   dir.corp.baseDN="dc=polycom" dir.corp.scope="sub"
7.   dir.corp.filterPrefix="(objectclass=person) "
   dir.corp.user="anonymous@meta"
8.   dir.corp.password="anonymous"
   dir.corp.pageSize="32" dir.corp.cacheSize="128"
9.   dir.corp.leg.pageSize="8"
   dir.corp.leg.cacheSize="32"
   dir.corp.autoQuerySubmitTimeout="0"
10.  dir.corp.viewPersistence="0"
   dir.corp.leg.viewPersistence="1">
11.  <attr1 dir.corp.attribute.1.name="sn"
   dir.corp.attribute.1.label="Last Name"
12.  dir.corp.attribute.1.type="last_name"
   dir.corp.attribute.1.filter=""
13.  dir.corp.attribute.1.sticky="0"
   dir.corp.attribute.1.searchable="1" />
14.  <attr2 dir.corp.attribute.2.name="givenName"
   dir.corp.attribute.2.label="First Name"
15.  dir.corp.attribute.2.type="first_name"
   dir.corp.attribute.2.filter=""
16.  dir.corp.attribute.2.sticky="0"
   dir.corp.attribute.2.searchable="1" />
17.  <attr3 dir.corp.attribute.3.name="company"
   dir.corp.attribute.3.label="Company"
18.  dir.corp.attribute.3.type="other"
   dir.corp.attribute.3.filter=""
19.  dir.corp.attribute.3.sticky="0"
   dir.corp.attribute.3.searchable="1" />
20.  <attr4
   dir.corp.attribute.4.name="telephoneNumber"
   dir.corp.attribute.4.label="Business"
21.  dir.corp.attribute.4.type="phone_number"
   dir.corp.attribute.4.filter=""
22.  dir.corp.attribute.4.sticky="0" />
23.  <attr5
   dir.corp.attribute.5.name="otherTelephone"
   dir.corp.attribute.5.label="Business2"
24.  dir.corp.attribute.5.type="phone_number"
   dir.corp.attribute.5.filter=""
25.  dir.corp.attribute.5.sticky="0" />
26.  <attr6 dir.corp.attribute.6.name="homephone"
   dir.corp.attribute.6.label="Home"
27.  dir.corp.attribute.6.type="phone_number"
   dir.corp.attribute.6.filter=""
28.  dir.corp.attribute.6.sticky="0" />
29.  <attr7 dir.corp.attribute.7.name="mobile"
   dir.corp.attribute.7.label="Mobile"
30.  dir.corp.attribute.7.type="phone_number"
   dir.corp.attribute.7.filter=""
31.  dir.corp.attribute.7.sticky="0" />
32.  <backGroundSync dir.corp.backGroundSync="0"
   dir.corp.backGroundSync.period="86400" />
33.  <vlv dir.corp.vlv.allow="1"
   dir.corp.vlv.sortOrder="sn givenName" />
34. </dirCorp>
35. </directory>

```

83 Setup for Snom (LDAP)

The Snom 300, 320, 360, 370, 820 and 870 telephones can access contacts through LDAP.

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **LDAP node**
In Database Management, configure a new LDAP node named *snom*. This node is accessed with the baseDN *dc=snom*. Configure this LDAP node.

Authentication	Optional
Phone Number Formatting	Dialable Note the location settings for the telephone equipment.
End Device Support	Snom

3. **Telephone**
Configure the LDAP access in the web configuration of the phone. Under Setup / Advanced / LDAP, configure access to the LDAP server.

LDAP name filter:	((searchContact=%))
LDAP number filter:	((searchNumber=%))
Server address	Specify the IP address of the MetaDirectory
Port	Enter the TCP port of the MetaDirectory (default 712)
Base	Specify the LDAP node you have just configured (dc=snom)
Username	
Password	
Maximum hits	50
LDAP name attributes:	cn sn displayName
LDAP number attributes:	telephoneNumber
LDAP display name:	%displayName
Country dialing code:	

Regional dialing code:

LDAP request for To
incoming call:

84 Setup for special LDAP end devices

If you are using special LDAP applications or endpoints where the default settings do not work easily, you have several options to customize the server for this. Usually it is because your LDAP system looks for certain attributes that the LDAP server does not know or waits in the result for certain attributes that are not delivered. Another problem can be the objectClasses that your application expects but are not delivered by the estos MetaDirectory.

Attribute assignment

Starting point for this are configuration files with the extensions *.termxml* in the installation directory under *config/default*. In these files you can specify mappings for the attributes of the LDAP server. By default, estos MetaDirectory only knows the LDAP attributes stored in the schema. In these mappings you can rename these attributes.

If your LDAP application searches or filters for special attributes in the estos MetaDirectory, you can change these attributes to the attributes used by the estos MetaDirectory. In the same way it is possible to rename the delivered attributes.

The assignment file will be divided into three areas in the XML file:

- QueryFilterMapping for the filter used by your system
- QueryAttributeMapping for the attributes sought by your system
- ResultAttributeMapping for the result attributes expected by your system

Example

```
<QueryFilterMapping>
<String Key="SAMAccountName">displayName</String>
</QueryFilterMapping>
<QueryAttributeMapping>
<String Key="SAMAccountName">displayName</String>
</QueryAttributeMapping>
<ResultAttributeMapping>
<String Key="displayName">SAMAccountName</String>
</ResultAttributeMapping>
```


The SAMAccountName transferred from you application will be assigned to the displayName for the request and the filter attributes, which will be used for searching and filtering. In turn, the displayName attribute will be assigned to SAMAccountName in the result.

Regular Expressions

The search filter values can be manipulated with the help of regular expressions. To do this, the assigned fields in the query filter must be extended by using the *regsearch* and *regreplace* attributes.

Example:

```
<QueryFilterMapping>
  <String Key="searchNumber" regsearch="^0(.*)"
  regreplace="$1">searchNumber</String>
</QueryFilterMapping>
```

 With version **estos MetaDirectory 4.0.3.5881** the module for regular expressions has been replaced.

Therefore, in the *regreplace* attribute, the operators "**\<num>**" must be replaced by "**\$<num>**" and "**&**" must be replaced by "**\$&**".

This replacement is done automatically. The original file is saved with the extension *.bak*.

In this example, the leading 0 is removed from all LDAP queries for the "searchNumber" filter.

Adding ObjectClasses

You can assign additional object classes associated with the supplied contacts to the server in addition to manipulating the attribute assignments. You can also store them in the *.termxml* files.

Example:

```
<AdditionalObjectClasses>
  <Class>inetOrgPerson</Class>
</AdditionalObjectClasses>
```

The *.termxml* files are re-read by the estos MetaDirectory at runtime when changes are made. You must re-establish the connection from the admin to the server after a change, so that the admin fetches the changed settings from the server. You can then immediately assign the new terminal profile in database management on a database node.

85 Setup for Mitel SIP Telephones

The Mitel phones of the 68xxi series and Aastra 5xi phones contain an XML browser. An address book is implemented in this browser.

URL <http://metaserver/mitel68xxi/search.xml>

Web Service mitel68xxi

or

URL <http://metaserver/miteladdress/search.xml>

Web Service miteladdress

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **Web-Server**
Enable the Web server.
3. **Web Service**
Configure the Web service. In the Database Management, configure the LDAP node used by this web service.
4. **Telephone**
Configure one of the phone's soft keys to start the address book.

Type XML

Label Meta

Value *or*
<http://metaserver/mitel68xxi/search.xml>
<http://metaserver/miteladdress/search.xml>

86 Setup for web browser

Access via a web browser is already preconfigured.

URL <http://metaserver/index.html>

Web Service Default

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **WebServer**
Enable the WebServer.
3. **Web Service**
Configure the Web service. In the database management, configure the LDAP node used by this web service.
4. **Web browser**
Start your web browser and enter the URL of the estos MetaDirectory server.

87 Setup for Cisco CallManager

The Cisco 79xx series phones include an XML browser. Two web services are available to use contacts in the phone.

Type Address book with contact details

URL <http://metaserver/ciscoaddress/ciscosearch.xml>

Web Service ciscoaddress

Type Phone list with one phone number per name

URL <http://metaserver/ciscodirectory/ciscosearch.xml>

Web Service ciscodirectory

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **Web-Server**
Enable the Web server.
3. **Web Service**
Configure the Web service. In the database management, configure the LDAP node used by this web service.
4. **CallManager**
Configure a Cisco IP phone service in the CallManager Administration under Features.

Service Name
Service URL (Address book)
<http://metaserver/ciscoaddress/ciscosearch.xml?device=#DEVICENAME#>

Service URL (phone list)
[http://metaserver/ciscodirectory/ciscosearch.xml?device=#\(phone DEVICENAME#list\)](http://metaserver/ciscodirectory/ciscosearch.xml?device=#(phone DEVICENAME#list))

88 Setup for Mobile End Devices

Special templates are supplied for mobile devices with web browsers. These templates are optimized for small displays and low data rates.

URL <http://metaserver/mobile/index.html>

Web Service cell

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **Web-Server**
Enable the Web server.
3. **Web Service**
Configure the Web service. In the database management, configure the LDAP node used by this web service.
4. **Web browser**
Start your web browser and enter the URL of the estos MetaDirectory server.

89 Setup for Polycom Telephones

The Polycom phones of the SoundPoint and Media Phone series contain an XML browser. An address book has been implemented with this.

URL <http://metaserver/polycom/search.xml>

Web Service polycom

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **Web-Server**
Enable the Web server.
3. **Web Service**
Configure the Web service. In the database management, configure the LDAP node used by this web service.
4. **Telephone**
Configure a function key in the phone to start the address book.

Context Enabled

Type URL for Actions

Number <http://metaserver/polycom/search.xml>

90 Setup for Snom Telephones

The snom phones 300, 320, 360 and 370 contain an XML browser. An address book is implemented in this.

URL <http://metaserver/snom/search.xml>

Web Service Snom

Setup

1. **Data Source**
Configure a replicator or a phonebook.
2. **Web-Server**
Enable the Web server.
3. **Web Service**
Configure the Web service. In the database management, configure the LDAP node used by this web service.
4. **Telephone**
Configure a function key in the phone. to start the address book.

Context Enabled

Type URL for Actions

Number <http://metaserver/snom/search.xml>

90.1 Registration

Enter the user name and password for the estos MetaDirectory administrator here.

User name and password are required to log in to the MetaDirectory management program. The program is used to make the MetaDirectory settings.

You can change the password later in the *Extras* menu.

91 Technical Notes

Information about details and special issues, which will be referred to from other help pages as a rule, have been summarized in this section. Several pages are only available in English.

- Template Parser
- LDAP Servers and Fields
- CGI Parameters
- Server Certificate

92 CGI Parameters

Template processing by the web server is controlled by several options, which will be transferred as CGI parameters.

The option may be submitted by HTTP GET and HTTP POST commands.

Parameter -q

This parameter contains the string to seek.

<http://metaserver/index.html?q=Dent>

starts a search for the name "Dent".

<http://metaserver/index.html?q=+49815136856177>

Starts a search for the phone number.

Parameter -e:utf8

This parameter can be used to specify that the search string is also transmitted UTF-8 encoded in addition to the URL encoding.

<http://metaserver/index.html?q=m%C3%BCller&e=utf8>

starts a search for the name "Müller".

Parameter -searchContact

Searches only the name fields as configured in the Search Wizard.

Parameter -searchNumber

Searches only the phone number fields as configured in the Search Wizard.

Parameter -searchpbxNumber

Search only in phone number fields as configured in the search wizard. The exchange code configured in the location is cut off from the phone number before the search. This means that only internal phone numbers are searched.

93 Server Certificates

A server certificate is required for encrypted communication via TLS (Transport Layer Security).

Server Certificates

A server certificate serves to uniquely identify a server. The certificate must have been issued to the Fully Qualified Domain Name (FQDN) for the server. The server certificate must have been issued by a trusted authority. Certificates are configured from the Microsoft® Management Console (MMC)'s Certificate Snap-in.

Certificate Storage

The used certificates must be stored in the memory "Local computer / Own certificates" and must contain a private key. You open the certificate store "Local computer" with the MMC console.

- Select **Run...** from the Windows® Start menu and enter *mmc.exe*.
- Select **File | Add/Remove Snap-In...**
- Select **Add**. From the list of available snap-ins, select **Certificates**. Select **Computer Account, Local Computer**, and press **Finish**.
- Go to Certificates (Local Computer) / Personal in the treeview.

94 Choose Language

You can choose between various languages in the estos MetaDirectory Administrator, as long as the corresponding DLLs have been stored in the program directory. Normally, only one language DLL will have been copied during setup. If you add additional language DLLs, the Administrator will make other languages available to you.

95 LDAP Servers and Fields

This information is only available in English.

The document describes the known LDAP fields exported by the LDAP server of the estos MetaDirectory and provides basic information about the server's features. It provides a brief introduction to the various LDAP contact attributes, the mandatory LDAP fields, the structure of the LDAP server search request and ways to adapt your own replicator to estos MetaDirectory.

Known estos MetaDirectory LDAP fields
 Attribute Assignment for Phone Books
 Search requests to estos MetaDirectory LDAP server:

estos MetaDirectory LDAP Server's Controls and Extensions
 How to adapt your own replicator to estos MetaDirectory

Known estos MetaDirectory LDAP fields:

LDAP Attribute	Readable fieldname Description	Type:	Mandatory Optional
<u>LDAP structure attributes</u>			
createTimestamp	Creation time of the LDAP element	Generalized Time syntax	M
modifyTimestamp	Modification time of the LDAP element	Generalized Time syntax	M
creatorsName	The name of the creator of this LDAP element	Distinguished Name syntax	O
modifiersName	The name of the modifier of this LDAP element	Distinguished Name syntax	O
subschemaSubentry	Path to the LDAP schema description	Distinguished Name syntax	M
attributeTypes	Description of the used attributes	Directory String syntax	O
objectClass	Entry type	OID syntax	O
objectClasses	Description of an objectClass attribute	Directory String syntax	M
name	Name of the current entry. Same value as cn, ou or dc depending on the element	Directory String syntax	M

cn	Common name. Name of the current cn	Directory String syntax	○
ou	Organisational unit. Name of the curent ou	Directory String syntax	○
dc	Directory context. Name of the current dc	Directory String syntax	○
namingContexts	Entry points to the LDAP tree	Distinguished Name syntax	○
defaultNamingContext	Default LDAP entry node dc=meta	Directory String syntax	○
metaVersion	MetaDirectory Version e.g. 2.0.0.176	Directory String syntax	○
databaseDescription	Additional description used by CTI software products for opening contacts in the source database. The field contains additional information for a database in its ou.	Directory String syntax	○
distinguishedName	Full qualified path to the current element within the LDAP server	Distinguished Name syntax	○ M
supportedLDAPVersion	Supported LDAP versions of the server	Integer syntax	○
supportedExtension	Supported extensions of	OID syntax	○

	this server		
supportedControl	Supported controls of this server	OID syntax	○

LDAP contact attributes

databaseName	Name of the database	Directory String syntax	M
--------------	----------------------	-------------------------	---

databaseType	Type of the source database	Integer syntax	M
--------------	-----------------------------	----------------	---

entryIDDB	Identifier for the type of source database	Directory String syntax	M
-----------	--	-------------------------	---

entryIDStore	Specific information about the data source	Directory String syntax	M
--------------	--	-------------------------	---

entryID	Unique identifier for the record from the data source	Directory String syntax	M
---------	---	-------------------------	---

cn	Common name	Directory String syntax	M
----	-------------	-------------------------	---

displayName	Display name	Directory String syntax	○
-------------	--------------	-------------------------	---

givenName	First name	Directory String syntax	○
-----------	------------	-------------------------	---

sn	Last name	Directory String syntax	○
----	-----------	-------------------------	---

title	Title	Directory String syntax	○
-------	-------	-------------------------	---

company	Company	Directory String syntax	○
---------	---------	-------------------------	---

department	Department	Directory String syntax	○
------------	------------	-------------------------	---



physicalDeliveryOfficeName	Office room number	Directory String syntax	○
----------------------------	--------------------	-------------------------	---

streetAddress	Company street address	Directory String syntax	○
postalCode	Company ZIP code	Directory String syntax	○
l	Company city	Directory String syntax	○
st	Business address state	Directory String syntax	○
c	Business address country	Directory String syntax	○
privateAddressStreet	Private address street	Directory String syntax	○
privateAddressPostalCode	Private address postal code	Directory String syntax	○
privateAddressCity	Private address city	Directory String syntax	○
privateAddressState	Private address state	Directory String syntax	○
privateAddressCountry	Private address country	Directory String syntax	○
otherAddressStreet	Other address street	Directory String syntax	○
otherAddressPostalCode	Other address postal code	Directory String syntax	○
otherAddressCity	Other address city	Directory String syntax	○
otherAddressState	Other address state	Directory String syntax	○
otherAddressCountry	Other address country	Directory String syntax	○
mail	E-mail	Directory String syntax	○
mail2	E-mail 2	Directory	○

		String syntax	
mail3	E-mail 3	Directory String syntax	○
sipAddress	sip address	Directory String syntax	○
url	Web page URL	Directory String syntax	○
telephoneNumber	Company phone	Directory String syntax	○
otherTelephone	Secondary company phone	Directory String syntax	○
telephoneNumberCompanyMain	Company main telephone	Directory String syntax	○
telephoneAssistant	Assistant telephone	Directory String syntax	○
homephone	Home phone	Directory String syntax	○
otherHomePhone	Secondary home phone	Directory String syntax	○
telephonePrimary	Primary telephone	Directory String syntax	○
cell	Phone mobile	Directory String syntax	○
telephoneCar	Car telephone	Directory String syntax	○
telephoneRadio	Radio telephone	Directory String syntax	○
pager	Phone pager	Directory String syntax	○
telephoneCallback	Callback telephone	Directory String syntax	○
telephoneISDN	ISDN telephone	Directory String syntax	○
telephoneTTYTTD	TTYTTD	Directory	○

	telephone	String syntax	
facsimileTelephoneNumber	Company fax number	Directory String syntax	○
otherFacsimileTelephoneNumber	Home fax number	Directory String syntax	○
customerid	Customer ID	Directory String syntax	○
directWebLink	Direct web link	Directory String syntax	○
directOpenContact	Data to open this contact	Directory String syntax	○
info	Comment	Directory String syntax	○
custom0	Custom 0	Directory String syntax	○
custom1	Custom 1	Directory String syntax	○
Custom2	Custom 2	Directory String syntax	○
Custom3	Custom 3	Directory String syntax	○
Custom4	Custom 4	Directory String syntax	○
custom5	Custom 5	Directory String syntax	○
custom6	Custom 6	Directory String syntax	○
custom7	Custom 7	Directory String syntax	○
custom8	Custom 8	Directory String syntax	○
custom9	Custom 9	Directory String syntax	○
custom10	Custom 10	Directory String syntax	○

custom11	Custom 11	Directory String syntax	○
custom12	Custom 12	Directory String syntax	○
custom13	Custom 13	Directory String syntax	○
custom14	Custom 14	Directory String syntax	○
custom15	Custom 15	Directory String syntax	○
custom16	Custom 16	Directory String syntax	○
custom17	Custom 17	Directory String syntax	○
custom18	Custom 18	Directory String syntax	○
custom19	Custom 19	Directory String syntax	○
contactURL	URL to edit the contact	Directory String syntax	○
contactURLDescription	Description for the contactURL link	Directory String syntax	○
contactURL2	2. URL to open the contact	Directory String syntax	○
contactURLDescription2	Description for the 2. contactURL link	Directory String syntax	○
contactURL3	3. URL to open the contact	Directory String syntax	○
contactURLDescription3	Description for the 3. contactURL link	Directory String syntax	○
jpegPhoto	Binary JPEG data for the	JPEG Image syntax	○

	contact picture	
imagePath	URL for the contact picture	Directory String syntax 
sourceModifyTimeStamp	Any timestamp information about when the data was changed in the data source	Directory String syntax 

Attribute assignments for phone books:

The following list shows the matching of phonebook database entries to the LDAP database entries. The address information is copied to the business address fields no matter if the source entry is a business or private contact.

Phone book entry	Legible LDAP field name	LDAP field
cn	Primary key	Record id for the phonebook database or an artificially created record id
displayName	Display name	This field value will be created while parsing the search results. You will not be able to search for this field value.
givenName	First name	Given name, if available
sn	Last name	Last name if available
company	Company	Company, if available
streetAddress	Company street address	Street address and house number if available
postalCode	Company ZIP code	ZIP code, if available
l	Company city	City, if available
telephoneNumber	Company phone	Company phone

		number, if available
otherTelephone	Secondary company phone	Secondary company phone number, if available
homePhone	Home phone	Home phone number, if available
otherhomePhone	Secondary home phone	Secondary home phone number, if available
facsimileTelephoneNumber	Company fax number	Facsimile business number if available
otherfacsimileTelephoneNumber	Home fax number	Facsimile home number if available
cell	Home phone	Cell phone number, if available

Search requests to estos MetaDirectory LDAP server:

The server can handle complex search requests to the backend LDAP databases. When searching databases created by replicators, you can search for any content within any field of the database. Searching phone books is subject to restrictions because search parameters sent to the phonebook APIs are limited. You cannot search phone books for display names, because the displayname field is being created while parsing the search results. Many LDAP database fields will not have any matching phone book database entry.

LDAP search requests, in general:

The search request parser can handle complex search requests. The LDAP backend knows the following comparison algorithms. Remember that phonebooks handle search requests differently and may not be able to find results to certain search requests.

Compare element supported / unsupported

and	supported
or	supported
not	supported
equality	supported
greaterOrEqual	supported
lessOrEqual	supported
present	supported

substring filter supported
 approx. matching unsupported
 extensible matching unsupported

Example search requests:

Search term	Result
(&(objectClass=contactperson) ((homephone=+49815136856177) (mobile=+49815136856177) (pager=49815136856177)))	Contacts with the telephonenumber "+49815136856177" in any of the fields homephone, mobile or pager.
(&(objectClass=contactperson) ((sn=*Name*) (displayName=*Name*) (company=*Name*)) ((homephone=+49815136856177) (mobile=+49815136856177) (pager=49815136856177)))	Contacts with "Name" at any Position in the LDAP Fields sn, displayName or company AND the telephonenumber "+49815136856177" in any of the fields homephone, mobile or pager.
(&(objectClass=contactperson) (searchContact=Name))	This search request lets the estos MetaDirectory search for a contact in the fields setup with the Searchassistant. Even the wildcards are added to the search request according to the settings from the Searchassistant. At the moment the searchresult does NOT contain an element searchContact!
(&(objectClass=contactperson) (searchNumber=+49815136856177))	This search request lets the estos MetaDirectory search for a number in the fields setup with the Searchassistant. Even the wildcards are added to the search request according to the settings from the Searchassistant. At the moment the searchresult does NOT contain an element searchNumber!
(&(objectClass=contactperson) (searchIndividual=Name))	This search request lets the estos MetaDirectory search for a contact in the fields setup with the Searchassistant. Wildcards are not added automatically to the search request for searchIndividual.

Controls and Extensions of the estos MetaDirectory LDAP server:

The following controls and extensions are supported by the LDAP server:

Type	Name	OID
Control	PagedResult	1.2.840.113556.1.4.319
Control	Virtual list view request	2.16.840.1.113730.3.4.9
Control	Virtual list view response	2.16.840.1.113730.3.4.10
Control	Server-side sort request	1.2.840.113556.1.4.473
Control	Server-side sort response	1.2.840.113556.1.4.474
Control	Request to not search phone books	1.3.6.1.4.1.10924.233.5
Control	Request to search phone books only	1.3.6.1.4.1.10924.233.6
Control	Notify client IP address	1.3.6.1.4.1.10924.233.7

Define the phone number output format

Control	<ul style="list-style-type: none"> • 0plain supercanonical • 1plain supercanonical, internal numbers shortened • 2Legible • 3Legible, reduced internal numbers 	1.3.6.1.4.1.10924.233.8		
	<ul style="list-style-type: none"> • 4dialable • 5DIN5008:2005 • 6DIN5008:2005, reduced internal numbers • 7plain supercanonical extension separated by - • 8plain supercanonical extension separated by -, internal numbers shortened 			
	Control		Search for items which are marked as 'deleted'	1.3.6.1.4.1.10924.233.9

entryIDDB values of the estos MetaDirectory LDAP server:

The following list shows the list of known database types:

entryIDDB	Name or type
DB03	Microsoft Outlook® / Exchange
DB05	HCL Notes®

DB06	ODBC
DB06	ODBC
DB07	LDAP
DB08	Active Directory®
DB14	Microsoft® CRM 1.2
	Phone books
	EntryIDStore Phone book name
DB16	00000001 11880.com
	00000002 DasTelefonbuch Deutschland
	00000003 Twixel
DB17	Steps Business Solutions

databaseType values for the estos MetaDirectory LDAP server:

The following list shows the list of known database types:

databaseType	Name or type
0	text
1	Act 2000
2	Microsoft Outlook®
3	Microsoft® Exchange
4	HCL Notes®
5	ODBC
6	LDAP
7	Active Directory®
8	Novell Directory
9	MetaDirectory
14	DATEV Basis
15	Microsoft® CRM 1.2 contacts

16	Microsoft® CRM 1.2 accounts
18	Steps Business Solutions
19	DasTelefonbuch Deutschland
20	TwixTel
21	11880.com
22	XML data
23	Active Directory®, outbound
24	XML, outbound
25	CSV, outbound
1000	Custom user replicator

How to adapt your own replicator to estos MetaDirectory:

To gain enough performance for replicating large contact archives the estos MetaDirectory does not support standard ways to write data into the archives. Custom LDAP extensions allow you to push contacts on block to the LDAP server. A software development kit describing how to use the custom extensions and how to write data to the LDAP archives is not yet written.

Contact us to get detailed information about using the LDAP extensions.

96 General Location

The general location settings will be configured from here.

Country/Region

Choose your country from this list.

Language (sorting)

Select your language from the list.

Area Code

Enter the area code of your local area network here. This is e.g. 30 for Berlin or 89 for Munich or 1 for Zurich (Switzerland).

Primary System Phone Number (system connection)

If you have a system connection with extensions, enter the master number of the system connection here. For example, if you have the phone number +49 (30) 12345-222, the system phone number is 12345. If you have a multi-device connection, please leave this field blank.

97 Phone System Location

97.1.1.1 Phone System

Location uses Telephone Equipment

If this option is selected, internal phone numbers are recognized and the trunk codes for dialable phone numbers can be used.

Internal Phone Numbers

- **Maximum Number of Digits for Internal Phone Numbers**
Enter the number of digits here that defines the length of your internal call numbers. If your internal call numbers are 121, for example, enter 3 here.

Outgoing PC Connection

An external line access code is the digit that you must dial on the telephone in order to make an external call. It may be necessary to enter this digit on the PC even if the telephone automatically picks up an outside line. Normally, the following three types of external line access digits are identical and should contain a "0".

- **External dialing code for local calls**
Enter the access code you need for local calls.
- **External dialing code for domestic long-distance calls**
Enter the access code you need for domestic long-distance calls.
- **External dialing code for international long-distance calls**
Enter the external dialing code you need for international long-distance calls.

98 Regular Expressions

You can store regular expressions in two places during replication, in order format your source fields complexly. Global rules can be stored for formatting phone numbers in addition to adjusting in the extended field mapping settings. This formatting is carried out according to the special rules stored for the individual source fields. These formatting rules are only applied to phone number fields that you can configure in the Search Assistant.

Phone numbers are normally automatically converted to a supercanonical format (+49301234567) according to the rules you defined in the site settings.

To the extent that there are no phone numbers in your database, which can be formatted, you can use regular expressions to specify the formatting rules.

The modification is done by search and replace, which works with regular expressions. You can check the result of your input by entering a phone number in the "Phone number from database" field. The result from the regular expression will be displayed in the **Result** field. If the phone number does not match the search expression, the automatic formatting rule will be applied during replication. If a phone is formatted using a regular expression, the automatic formatting will not be used any longer.

Search for

Enter a regular expression according to which the phone number will be sought.

Tip: The caret character "^" can be found in the upper left corner of the German keyboard.

Here is a brief review of the allowed expressions:

Character	Description
^	The beginning of the phone numbers. The expression "^0" finds the "0" only at the beginning of the phone number.
^	The caret "^" directly after the left bracket "[" is used to exclude the other characters inside the bracket. The expression "[^0-8]" allows only digits from 0 to 8.
\$	The dollar sign "\$" indicates the end of the phone number. The expression "152\$" is only valid for phone numbers that end with "152".
	The character " " allows both characters between which it is placed. The expression "8 9" allows "8" or "9".
.	The dot "." allows any character (or digit).
*	The asterisk "*" indicates that the character to the left of it must be present 0 times or more.
+	The plus "+" indicates that the character to the left of it must be present at least once.
{<num>}	The numerical value in the parenthesis indicates how often the character to the left of it must be present. The expression "^[a-e]{3}" is valid for strings starting with 3 characters from 'a' to 'e'.
?	The question mark "?" indicates that the character to the left of it must be present 0 or 1 times.
()	The round bracket marks the expressions available in the "Replace with" field.
[]	The square bracket "[and]" signals the number of characters allowed at this position.

Replace with

Enter the expression which should format the phone number for output.

Character	Description
\$1	acts as a placeholder for the first expression indicated by "()" for the "Search For" field.
\$2	acts as the second placeholder, and so forth.
\$&	acts as a placeholder for the whole input value.

 **Instruction**

With version estos MetaDirectory 4.0.3.5881 the modul for regular expressions has changed.
The replacement operators "**\<num>**" and "**&**" are now represented by "**\$<num>**" and "**\$&**".

Searches at the end of the input such as extraction of the last 3 digits of phone number +49 30 36856-177 must be changed as follows:

before

search `([0-9][0-9][0-9])$` replace: `$1` (resp. `\1`)

now

search `(.+)([0-9][0-9][0-9])$` replace: `$2`

Examples

Effect	Search for	Replace with
Suppress all call numbers that are signaled internally (3-digit)	<code>^[0-9][0-9][0-9]\$</code>	
Add a country code for all phone numbers with more than three digits.	<code>^([0-9][0-9][0-9].+)</code>	<code>+49\$1</code>
Adding the system base number (03012345) to all internal call numbers (1 to 3 digits)	<code>^([0-9][0-9]?[0-9]?)\$</code>	<code>+493012345\$1</code>
Adding your own area code to all phone numbers that do not start with a 0 and have at least 4 digits (not internal)	<code>^(^[^0][0-9][0-9][0-9].*)</code>	<code>+498151\$1</code>

99 Server Connection

You can select which server you want to administer during the start of the setup routine.

Local Server

This option connects to the server installed locally on this system. You can also view the event log and the connection log.

Remote Server

This option connects to a server that is not installed locally on this system. You cannot view the event log and the connection log.

Administrator Login

To administer the server, you must log in to the server. You have set the administrator's login during the installation. You can change it in the **Extras** menu.

For more information about ports, see Network Interfaces.

- ➔ Replicators can only be setup and modified when they are locally connected with the server. The data sources will be opened from the server and must be configured locally for that reason.

100 Import and export of configuration data

You have the possibility to save an existing MetaDirectory configuration and to restore it at a later time. This backup is used in particular to transfer existing settings to a higher MetaDirectory version.

The database, central configuration files as well as replicator settings will be part of the backup.

After installation, it is also possible to import or export via the *File/Configuration* menu.

Export configuration

When exporting the configuration, you will be prompted to specify a destination to which the created backup archive should be copied. For the export the MetaDirectory must not be terminated.

Import configuration

Select the backup archive to import. During the import of a previously exported archive, the server is restarted.

- ⓘ Since the paths of the imported configuration may have changed compared to those of the export, it is possible that especially the paths of those replicators that use the *"samples"* directory must be reassigned.

- ➔ While importing, a backup of the current configuration will be copied to the *"backup"* folder.

Importing from earlier version 3.5

Exporting data is possible with versions 3.5.25. or higher.

100.1.1 Network interfaces

The connection between the software on the workstations and estos MetaDirectory is made via *network interfaces*. The MetaDirectory provides several interface types on the server computer listed in column "type". Each network interface is bound to a combination of IP address and port number, shown in the field "Bound to IP" and "Port". If network interfaces are used encrypted, the configured certificate is listed. The configuration is shown at the fields "Encryption" and "Certificate". A coloured symbol with tooltip help indicates the actual state of the related network interface.


Default settings

The following values are assigned to the network interface types by default:

Type	Bound to IP	Port	Encryption	Certificate
------	-------------	------	------------	-------------

Administration	All available	7302	unencrypted
LDAP	All available	712	unencrypted
LDAPS	All available	714	TLS encrypted
HTTP	All available	80	unencrypted
HTTPS	All available	443	TLS encrypted

By default, ports are bound to all IP interfaces on the computer. If necessary, they can be limited to be used with specific IP addresses only.

You should change the port settings only if another server software uses the same port.
 If port conflicts occur, you will see this as an error message in the estos MetaDirectory event log.

With the button **Standard** settings can be reset to the default values.

Using the button **Add** a new network interface can be created.

Using the button **Remove** a network interface can be deleted.

Using the button **Properties** the configuration of a network interface can be changed.

101 Template Parser

 **This way of template customisation is obsolete and will work only on webpages of in *classic* wwwroot-folder!**

This information is only available in English.

This document will describe the behavior and options for the Template Parser, which renders the estos MetaDirectory web server templates. It will provide you with a brief introduction to how the parser handles commands and which options will be available with the command. Even if short samples have been included, you will understand the context much better when you look closer at the templates provided along with estos MetaDirectory.

Parser Behavior

All white space will be deleted when parsing the template file.
 If you feel you are in need of a white space use ` ` instead.
 This was done to increase the page transfer rate.

Command Composition

Each parser command has the following organization:

<!-- < fieldname attribute="value" attribute="value" att..-->

Fieldname describes the database field. The attributes indicate how the field, the data and the associated field name must be parsed.

Known estos MetaDirectory databasefields

Command	Database field	LDAP field
<!-- <Databasename/> -->	Database name	databaseName
<!-- <Distinguishedname/> -->	Distinguished name	distinguishedName
<!-- <DatabaseID/> -->	DatabaseID	entryIDDB
<!-- <StoreID/> -->	StoreID	entryIDStore
<!-- <EntryID/> -->	EntryID	entryID
<!-- <Displayname/> -->	Display name	displayName
<!-- <Firstname/> -->	First name	givenName
<!-- <Lastname/> -->	Last name	sn
<!-- <Title/> -->	Title	title
<!-- <Company/> -->	Company	company
<!-- <Department/> -->	Department	department
<!-- <Officeroomnumber/> -->	Office room number	physicalDeliveryOfficeName
<!-- <Businessaddressstreet/> -->	Company street address	streetAddress
<!-- <Businessaddresspostalcode/> -->	Company ZIP code	postalCode
<!-- <Businessaddresscity/> -->	Company city	
<!-- <Businessaddressstate/> -->	Business address state	st

<!-- <Businessaddresscountry/> - -->	Business address country	c
<!-- <Privateaddressstreet/> - -->	Private address street	privateAddressStreet
<!-- <Privateaddresspostalcode/> - -->	Private address postal code	privateAddressPostalCode
<!-- <Privateaddresscity/> -->	Private address city	privateAddressCity
<!-- <Privateaddressstate/> -- >	Private address state	privateAddressState
<!-- <Privateaddresscountry/> - -->	Private address country	privateAddressCountry
<!-- <Otheraddressstreet/> -- >	Other address street	otherAddressStreet
<!-- <Otheraddresspostalcode/> - -->	Other address postal code	otherAddressPostalCode
<!-- <Otheraddresscity/> -->	Other address city	otherAddressCity
<!-- <Otheraddressstate/> -->	Other address state	otherAddressState
<!-- <Otheraddresscountry/> - -->	Other address country	otherAddressCountry
<!-- <EMail/> -->	E-Mail	mail
<!-- <EMail2/> -->	E-mail 2	mail2
<!-- <EMail3/> -->	E-mail 3	mail3
<!-- <SIPadress/> -->	SIP adress	sipAddress
<!-- <WebpageURL/> -->	Web page URL	url

<!-- <Phonebusiness/> -->	Company phone	telephoneNumber
<!-- <Phonebusiness2/> -->	Secondary company phone	otherTelephone
<!-- <Companymaintelephone/> -- >	Company main telephone	telephoneNumberCompanyMai n
<!-- <Assistanttelephone/> -->	Assistant telephone	telephoneAssistant
<!-- <Phonehome/> -->	Home phone	homephone
<!-- <Phonehome2/> -->	Secondary home phone	otherHomePhone
<!-- <Primarytelephone/> -->	Primary telephone	telephonePrimary
<!-- <Phonemobile/> -->	Phone mobile	mobile
<!-- <Cartelephone/> -->	Car telephone	telephoneCar
<!-- <Radiotelephone/> -->	Radio telephone	telephoneRadio
<!-- <Phonepager/> -->	Phone pager	pager
<!-- <Callbacktelephone/> -->	Callback telephone	telephoneCallback
<!-- <ISDNtelephone/> -->	ISDN telephone	telephoneISDN
<!-- <TTYTTDTtelephone/> -->	TTYTTD telephone	telephoneTTYTTD
<!-- <Facsimilebusiness/> -->	Company fax number	facsimileTelephoneNumber
<!-- <Facsimilehome/> -->	Home fax number	otherFacsimileTelephoneNumb er
<!-- <CustomerID/> -->	Customer ID	customerid

<!-- <Directweblink/> -->	Direct web link	directWebLink
<!-- <Directopencontact/> -->	Direct open contact	directOpenContact
<!-- <Comment/> -->	Comment	info
<!-- <Custom0/> -->	Custom 0	custom0
<!-- <Custom1/> -->	Custom 1	custom1
<!-- <Custom2/> -->	Custom 2	custom2
<!-- <Custom3/> -->	Custom 3	custom3
<!-- <Custom4/> -->	Custom 4	custom4
<!-- <Custom5/> -->	Custom 5	custom5
<!-- <Custom6/> -->	Custom 6	custom6
<!-- <Custom7/> -->	Custom 7	custom7
<!-- <Custom8/> -->	Custom 8	custom8
<!-- <Custom9/> -->	Custom 9	custom9
<!-- <ContactURL/> -->	URL to edit the contact	contactURL
<!-- <ContactURLDescription/> -->	Description for the 1. contactURL	contactURLDescription
<!-- <ContactURL2/> -->	2. URL to open the contact	contactURL2
<!-- <ContactURLDescription2/> -->	Description for contactURL 2	contactURLDescription2
<!-- <ContactURL3/> -->	3. URL to open the contact	contactURL3
<!-- <ContactURLDescription3/> -->	Description for contactURL 3	contactURLDescription3

<pre><!-- <ContactPictureMeta/> --></pre>	<p>Will embed the picture for this contact</p>	<p>jpegPhoto</p>
<pre><!-- <ContactPicturePath/> --></pre>	<p>Contains a path to the picture, if configured from the replicator</p>	<p>imagePath</p>

Parser Commands and Attributes

Command	Potential Values	Description
fieldvalue	0/1	<pre><!-- <LastName fieldvalue="1"/> --></pre> <p>Smith</p> <p><i>The parser drops the associated field value</i></p>
fieldname	0/1	<pre><!-- <LastName fieldname="1"/> --></pre> <p>Last name</p> <p><i>The parser drops the associated field name in the language corresponding to the page the user is viewing</i></p>
skipifemptyvalue	0/1	<pre><!-- <LastName skipifemptyvalue="1" fieldname="1" fieldvalue="1"/> --></pre> <p><i>If LastName exists in the database:</i> Last name:Smith</p> <p><i>If the LastName is empty the parser will not add "Last name:" to the output</i> The parser will format the field value according to the format specified by the possible values</p>
formatvalue	plain phonelink	<pre><!-- <Company fieldvalue="1" formatvalue="plain" /> --></pre> <p>+4912345678</p> <pre><!-- <Phonebusiness fieldvalue="1" formatvalue="phonelink" /> --></pre> <p>+4912345678</p> <p><i>The phonelink handler can be defined from the estos MetaDirectory Administrator.</i></p>

		<!-- <EMail fieldvalue="1" formatvalue="maillink" /> -->
	maillink	info@estos.com
		<!-- <Custom0 fieldvalue="1" formatvalue="siplink" /> -->
	siplink	info@estos.com
		<!-- <WebPageURL fieldvalue="1" formatvalue="httplink" /> -->
	httplink	https://www.estos.com
		<!-- <WebPageURL fieldvalue="1" formatvalue="uri" /> -->
	uri	<i>Format as plain a href without additional formatting.</i>
		<!-- <WebPageURL fieldvalue="1" formatvalue="uriblack" /> -->
	uriblack	<i>Format as plain a href with target='_blank' without additional formatting.</i>
		<!-- <Custom0 formatvalue="custom" customformat="Open customer accounting"/> -->
	custom	Open customer accounting <i>You can easily connect your webbased crm software using custom links You can use the following placeholders to get the appropriate data:</i>
		<ul style="list-style-type: none"> • %name% - for the field name • %value% - for the field value • %phonenumber% - for the dial handler prefix
		<!-- <LastName fieldname="1" prefix=""/> -->
prefix	any	Last name
	apart or -->	<i>The parser adds a prefix to the value and or name content</i>
		<!-- <LastName fieldvalue="1" suffix="..."/> -->
suffix	any	Smith...
	apart or -->	<i>The parser adds a suffix to the value and or</i>

		<i>name content</i>
		<!-- <LastName fieldname="1" prefixname="->"/>
		-->
prefixname	any apart <!-- or -->	-->Last name
		<i>The parser adds a prefix to the name of the database field</i>
		<!-- <LastName fieldname="1" fieldvalue="1" suffixname=":" /> -->
suffixname	any apart <!-- or -->	Last name: Smith
		<i>The parser adds a suffix to the name of the database field</i>
		<!-- <LastName fieldname="1" fieldvalue="1" prefixvalue=":" /> -->
prefixvalue	any apart <!-- or -->	Last name: Smith
		<i>The parser adds a prefix to the value of the database field</i>
		<!-- <LastName fieldvalue="1" suffixvalue="..." /> -->
suffixvalue	any apart <!-- or -->	Smith...
		<i>The parser adds a suffix to the value of the database field</i>
		<!-- <LastName fieldname="1" fieldvalue="1" prefixvaluenotempty=":" /> -->
prefixvaluenotempty	any apart <!-- or -->	Last name: Smith
		<i>The parser adds a prefix to the value of the database field if it is not empty</i>
		<!-- <LastName fieldvalue="1" suffixvaluenotempty="..." /> -->
suffixvaluenotempty	any apart <!-- or -->	Smith...
		<i>The parser adds a suffix to the value of the database field if it is not empty</i>
		<!-- <fullresulttemplate configvalue="fullresult"/> -->
configvalue	any apart <!-- or -->	This attribute contains a special configuration value for the server. This attribute is used for configuration of the mail page template.
limitvaluelength	Integer 1 - n	<!-- <LastName fieldvalue="1" limitvaluelength="32"/> -->

Limit the length of the result value.













encoding	one of	<!-- <Displayname encoding="htmlansi"
	<i>htmlansi url xml</i>	fieldname="1"/> --> Encode data for html, url or xml output.

Conditional statements

Tag	Description
if	<p><!-- <if condition="1"/> --></p> <p>The condition is evaluated and the following text block will be included if the statement evaluates to 1. All Fields from the template parser are available in the statement.</p> <p>Examples:</p> <pre><!-- <if condition="UserAgent=="*Mozilla*" /> --> <!-- <endif/> --> <!-- <if condition="Lastname=='Anders*' AND Firstname=='Tom*" /> --> <!-- <endif/> --></pre>
elseif	<p><!-- <elseif condition="1"/> --></p> <p>The condition is evaluated and the following text block will be included if the statement evaluates to 1.</p> <p>Examples:</p> <pre><!-- <if condition="UserAgent=="*Mozilla*" /> --> <!-- <elseif condition="UserAgent=="*Opera*" /> --> <!-- <endif/> --></pre>
else	<p><!-- <else/> --></p> <p>The following text block will be included if the corresponding if statement did not evaluate to 1.</p> <p>Examples:</p> <pre><!-- <if condition="UserAgent=="*Mozilla*" /> --> <!-- <else/> --> <!-- <endif/> --></pre>
endif	<p><!-- <endif/> --></p> <p>Marks the end of the if condition text block.</p>

102 Symbols

Symbol	Description
--------	-------------

-  Accessprofile active
-  Accessprofile default (active)
-  Accessprofile inactive
-  User active
-  User activated by group
-  User inactive
-  User deactivated by AD or UCServer
-  Group active
-  Group inactive
-  Group deactivated by AD or UCServer
-  Datasource of replication
-  Datasource of phonebook

102.1 Authentication methods

Method	Description
Negotiate	This is a mechanism that allows the use of the best commonly supported authentication mechanism.
Simple	The default LDAP authentication mechanism. The user and password are transmitted as plain text with this method.
NTLM	NT Lan Manager is an authentication method from Microsoft®.

102.1.1 Network interface settings

The connection to the MetaDirectory is via network interfaces.

Type

The following types of network interfaces are available:

- The **Administration** is the application to configure MetaDirectory.
- With **LDAP** clients may send phonenumber- or contact searchrequests to MetaDirectory.
- **LDAPS** like LDAP over an encrypted TLS connection.

- **HTTP** Webrowsers or http-capable clients can post requests to MetaDirectory.
- **HTTPS** like HTTP over an encrypted connection.

IP-address and port

Each network interface is bound to its own combination of IP address and port number. The IP address is set to "All available" by default. However, it is also possible to select one of the discovered IP addresses. An overview of the default port numbers can be found in the chapter **Network Interfaces**.

You should change the port settings only if another server software uses the same port.



If port conflicts occur, you will see this on the status icon and as an error message in the event log of the estos MetaDirectory.

Encryption

The network interface may be configured with distinct security levels:

- **Unencrypted:** the estos MetaDirectory is using the network interface unencrypted.
- **Starttls optional:** the estos MetaDirectory is using the network interface encrypted, if available.
- **Starttls mandatory:** the estos MetaDirectory requires using the network interface encrypted.

Default

Check this box if all connections of the actual network interface type are using these interface as standard.

Certificate for TLS connections

If the network interfaces shall be used encrypted a **certificate** is required.

Using the button **Select certificate** a certificate can be configured to be used by the network interface for authentication. If no certificate is offered the network interface can be used unencrypted or a certificate needs to be installed at the system. A short guidance around certificates can be found at the chapter **certificate**.


More information about certificates can also be found at the online help of the *Microsoft® Management Console MMC* Snap-in for certificates "certmgr.msc".

Using the button **Delete certificate** a selected certificate can be removed out of the list.

DNS name for the network interface

Please specify the name under which this network interface will be resolved in the DNS Domain Name System (e.g. hostname.domain.com). When the software is started for the first time, the input field suggests a name that has been determined by this configuration page.

103 Rules-Editor

 **Hinweis:** Weitere Informationen zu den regulären Ausdrücken finden Sie auch unter Reguläre Ausdrücke.

The rules-editor allows complex manipulation of data to be replicated, even with multiple assigned fields.

The Field Mapping column shows the mapping as it was set up in the setup wizard. If you expand an LDAP database field (Target), you will see the source fields (Source) assigned to it.

An LDAP database field can be expanded and modified using the *edit* button.

The assigned source fields can be expanded and modified directly in the list.

The rules are always evaluated from the inside out, which means that the rules are first applied to the source fields and then to the database field with the resulting data.

The result of applying the rule can be checked directly in the *result* column for both the database field and the source field.

103.1 Prefix:

The prefix is inserted before the field value.

103.2 Suffix:

The suffix is appended to the field value.

103.3 Regular expression:

Action:

Auszuführende Aktionen mit regulärem Ausdruck:

- *Suchen und Ersetzen:* Durch Eingabe eines regulären Ausdrucks in *Suchen* und verwenden von *Ersetzen* kann der Zielwert manipuliert werden.
- *Kein Treffer: Feldinhalt löschen:* Kein Treffer im Feldinhalt zum regulären Ausdruck, so wird der Feldinhalt gelöscht.
- *Kein Treffer: Datensatz auslassen:* Kein Treffer im Feldinhalt zum regulären Ausdruck, so wird der Datensatz nicht repliziert.
- *Kein Treffer: Datensatz löschen:* Kein Treffer im Feldinhalt zum regulären Ausdruck, so wird der Datensatz aus der MetaDirectory Datenbank gelöscht.
- *Erstes, nicht leeres Feld verwenden:* Bei Zuordnung von mehreren Quellfeldern wird nur das erste Feld mit Inhalt verwendet. **Nur bei LDAP-Datenbankfeldern vorhanden!**

Die Icons neben dem Namen der Zuordnung zeigen den Auswertungstatus

des regulären Ausdrucks:

- regular expression syntactically correct, matching test-pattern
- regular expression syntactically correct
- Replacement text exists, search expression is missing
- incorrect regular expression syntax

103.3.1 Example of use:

Eine zu importierende Datenbank enthält ein Feld namens *deleted* welches angibt ob der Datensatz in der Quelle bereits gelöscht wurde. Ist der Wert des Feldes "Y", so soll der Datensatz nicht mehr repliziert werden:

- **Search:** `\b\S*[^Y]\S*\b`
- **Action:** *Kein Treffer: Datensatz auslassen bzw. Bei Treffer Datensatz löschen.*

Beim Importieren einer Datenbank sollen zur Datenbereinigung nur URLs importiert werden wenn diese mit http oder www beginnen, sonst soll das Feld leer bleiben.

- **Suchen:** `\b(www/http)`
- **Action:** *Kein Treffer: Feldinhalt löschen*

Eine zu importierende Datenbank enthält die Felder BusinessNumber1 und BusinessNumber2. Nun soll BusinessNumber1 verwendet werden wenn dort eine Rufnummer angegeben ist. Ist das Feld leer so soll BusinessNumber2 verwendet werden. Sowohl BusinessNumber1 als auch BusinessNumber2 wurden dazu dem LDAP-Datenbankfeld *Telefon Geschäftlich* zugeordnet. Nun Button *edit* in der Zeile LDAP-Datenbankfeld *Telefon Geschäftlich* drücken und

- **Action:** *Erstes, nicht leeres Feld verwenden.*

auswählen.

A database stores the street, house number, zip code and city in a database field, each separated by a "\$". For example, the database field contains: *"Street\$12\$12345\$City"*.

To use this database with the estos MetaDirectory you have to split this merged field and assign it to the LDAP database fields for street, house number, postal code and city. In the Field Mapping Wizard, you assign this one source field to all the target fields that will be populated. In our case these are the fields street, postal code and city. Activate the advanced settings to be able to carry out the configuration that is now necessary. From the list of LDAP data fields select the entry "Street". On the right side, enter the following information for the regular expressions:

- **Search:** `"(.*)(\$)(.*)(\$)(.*)(\$)(.*)"`
- **Replace:** `"$1 $3"`
- **Action:** *Suchen und Ersetzen*

You can immediately see from the regular expression icon whether it is valid. The result list now shows street 12.

The situation is similar for the LDAP data fields zip code and city.
Enter the following values for the "Postcode" field:

- **Search:** "(.*)(\\$(.*)((\\$(.*)((\\$(.*)((\\$(.)))))"))"
- **Replace:** \$5
- **Action:** *Suchen und Ersetzen*

For the "Location" field

- **Search:** "(.*)(\\$(.*)((\\$(.*)((\\$(.*)((\\$(.)))))"))"
- **Replace:** \$7
- **Aktion:** *Suchen und Ersetzen*

Now you have split the source field appropriately and the database fields will have the appropriate field content after replication.