

estos MetaDirectory

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1 Welcome to estos MetaDirectory






the Administration of estos MetaDirectory.

This help file will guide you through

- The About estos MetaDirectory page will provide you an overview of the essential properties of estos MetaDirectory.
- The Installation Notes page will provide you with notes about installing estos MetaDirectory.
- You will find about the estos MetaDirectory dialogs on the Administration page.
- You will find information about integrating contact data source on the Integrating Data Sources page.
- Configuring access from applications and end devices to estos MetaDirectory will be described on the Configuring Applications and End Devices page.
- Information about details and special topics have been summarized on the Technical Notes page.
- You will find links to software updates and support on the Product Support page.

The help file can be accessed at any time from the estos MetaDirectory window from the Help menu. As a rule, the help file will open with the topic corresponding to the feature you are actively using.

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



Usage notes for 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.

Searches for employees and contact data often require more time due to the use of various database systems in a company. Frequently, the databases for the individual company departments have to be searched one after the other in order to find the desired record. estos MetaDirectory solves this problem by synchronizing the database contents into one central pool of data.

What is estos MetaDirectory?

estos MetaDirectory is a Lightweight Directory Access Protocol (LDAP) server with intelligent services for comparing and presenting data. It collects data relevant to employees and customer from various data sources and enables it to be searched efficiently, even with very large data and widely-distributed databases. 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 are provided in a standardized format, regardless of which database the data was originally stored in. This allows further processing in a simple and efficient way by providing a data format optimized for communication products like 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 Notes

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

3.1.1.1 Systemrequirements

- 1 GB RAM
- Windows 8.1
- Windows 10
- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2

DATEV SDD

DATEV Pro (DVD 9.1)

Microsoft .NET Framework 4.0

Microsoft CRM 2011/2013/2015/Dynamics CRM Online 2016

Microsoft .NET Framework 4.5.2

Windows Identity Foundation 3.5

Microsoft Exchange Webservice (EWS) 2007 SP1/2010/2013

Microsoft .NET Framework 4.0

IBM Lotus Notes 7.04/8.5.3 FP6/9.0.1 FP4


Tobit David .FX/.FX Edition 2011/.FX12

Swisscom Directories

Microsoft .NET Framework 4.0

 estos MetaDirectory in Connection with ProCall

If you would like to use estos MetaDirectory with Version of ProCall, you should install the most current version of this product.

 You will need administrative rights in order to install estos MetaDirectory and the system services associated with it.

4 Info about estos MetaDirectory

estos MetaDirectory is a product of estos GmbH.

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

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

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

5 estos MetaDirectory Administration

One of the estos MetaDirectory administrators will be available to you for configuring estos MetaDirectory. With this program, you can make all of the settings and do all of the maintenance tasks.

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 as well as through the network. In this case, however, you will not be able to setup any replicators and will not have access to the log files. For more details, see the Replicators page.

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

- General
- Usermanagement
- Database
- Services
- Phone Books
- Database Query
- Server Status

6 Configuration: General

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

- License Settings
- Events

7 License Settings

You can use all of the estos MetaDirectory features over a trial period. Afterwards, you will have to purchase licenses, in order to be able to use certain features. The licenses can be combined in any manner desired, in order, for example, to allow more users to use a certain feature.

The trial period is limited to 45 days.

The features include the various Replicators for connecting to data sources as well individual core server components (such as the web server or Send Email feature). You can review which features are supported by the server through the administrator interface from the *"License Settings"* menu item.

MetaDirectory license


The Standard License includes import replicators, the LDAP server (TCP) and the web server (TCP).

MetaDirectory Professional License

The Professional License also includes export Replicators and the use of TLS with the web server.

MetaDirectory Enterprise License

The enterprise license enables estos MetaDirectory usermanagement. This is recommendable when different datasources should be provided to different users.

 You can purchase licenses through our web shop at <http://www.estos.com>.

8 Events

estos MetaDirectory will write extensive log information for potential error searches and the correction of problems. The log file entries have been divided into four categories:

- Informational Notices
- Warnings
- Errors
- Debug Information

From here, you can determine which information should be recorded and where the log files should be stored. Log files will normally be deleted at the end of each day, unless you choose to archive old log files.

You may automatically send errors through the SMTP server set from Send Email. By doing so, you will be immediately informed if problems occur during the data preparation or replication. The replicators will write their own log files for each replication process. The log files will be deleted just like the estos MetaDirectory log at the end of each day. The option for creating replicator log files may be turned off.

You can also allow errors and warnings to be stored in the Windows Event Log simultaneously with the estos MetaDirectory's log file.

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

➡ Only change the log settings to Log Everything when there are problems. The amount of log data will increase very quickly, especially during replication processes.

➡ Configure the Send Email settings and enable errors to be sent to administrators by email, so that they will be informed immediately about potential errors.

9 Accessprofile

 Remark: This dialog is deactivated when usermanagement is disabled.

Accessrights on LDAP-nodes for MetaDirectory users will be assigned over accessprofiles.

Accessprofile

Any number of accessprofiles can be added. The <Add...>-button adds a new profile and opens the *profile properties* dialog.

The *delete*-button removes the selected profile. The "Default"-profile cannot be removed.

Doubleclick or the *properties...* button opens the *profile properties* dialog.

Accessprofile properties

General

Each user is related exactly to one accessprofile. an accessprofile is related to any number of LDAP-nodes respectively datasources.

An accessprofile is identified by its name.

An accessprofile might have an description.

Reading is allowed on activated accessprofiles. The symbol of deactivated accessprofiles is gray.

LDAP-nodes

LDAP-nodes respectively datasources can be added or removed via *drag&drop*, or with the arrow-buttons as well. A user can read on every node assigned to an activated accessprofile.

10 Userdatabase

 Remark: This dialog is deactivated when usermanagement is disabled.

estos MetaDirectory disposes usermanagement which can be switched on and off.
If usermanagement is disabled, LDAP-nodes might be password-protected by the database-management.

- No usermanagement
Usermanagement is disabled.
- Integrated userdatabase
Is this option on, so usermanagement is activ. Password-protection over database-management is deactivated with this setting. estos MetaDirectory will manage users.
- Use UCServers userdatabase
Is this option on, so usermanagement is activ. Password-protection over database-management is deactivated with this setting. estos MetaDirectory imports users from estos UCServer.


Enter the administrative user Administrator of UCServer and the CTI-client-port (7222, in case of default).

- You can seek for hosts with the button "Search ..." as well.
- Usermanagement with Active Directory
Is this option on, so usermanagement is activ. Password-protection over database-management is deactivated with this setting. estos MetaDirectory imports users from Microsoft Active Directory.
Users log in with their windows domain credentials.
Enter your host, port, username and password to access Microsoft Active Directory.

Hint: 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 can be assigned.

11 Configuration: Usermanagement

 Remark: Is no usermanagement active, related dialogs are hidden.

1. Userdatabase
To manage users choose a userdatabase first.
When choosing *Integrated userdatabase* you can add new users .
By choosing one of the other methods, creating users happens automatically.
2. Accessprofile
Create an accessprofile to sum up datasources for access.
3. User
Finally assign users to created created accessprofiles.

12 User

 Remark: This dialog is deactivated when usermanagement is disabled.

The estos MetaDirectory users will be managed in an integrated database.

User

Any number of users can be created. The <Add...>-button opens the *user properties* dialog.

The *Delete*-button deletes the selected user.

Doubleclick or the <settings...>-button opens the *user properties* dialog.

User properties

General

Username (loginname) should be unique. If not, only one of these can be activated at once.

A user is related to exactly one accessprofile. The configured nodes of this profile will be shown.

Deactivated profiles show up with a gray symbol.

Inactive users show up with gray symbols.

Contactinformation

Contactinformation shows users contactdata. Imported users (from estos UCServer and Microsoft Active Directory) may change on replication. Therefore they are readonly.

13 Groups

 Remark: This dialog is deactivated when usermanagement is disabled.

The estos MetaDirectory groups will be replicated from estos UCServer or Microsoft Active Directory in an integrated database. The access is read-only. No data will be written back.

Groups are disabled by default.

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

Activation of groups doesn't induce activation of users. This will be done with *autoactivation*.

13.1.1.1 Autoactivation

For one group the feature "*autoactivation for users*" ca be switched on. Members of such a group will be enabled automatically. A user will be disabled removing him from this group.

Autoactivation can be used for only one group at once. If a group is chosen for autoactivation instead of another one, members of one group will get disabled, members of the other group enabled.

If the *autoactivation* feature is not used by any group, the feature will be switched off. Then, users can be enabled and disabled independant of any membership.

Remark: Even if *autoactivation* is active, only as many users will be enabled as many that are licensed.

14 Configuration: Database

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

- Location
- Replicators
- LDAP Servers
- Database Management
- Advanced LDAP Node Settings
- Database Fields

15 Configuration: TelephoneBooks

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
- Herold
- TwixTel
- KlickTel Server
- SwissCom Directories

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

16 Location

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

Each node will be assigned a location from the Advanced LDAP Node Settings in the Database Manager. This location will be used in the following cases:

Search for Phone Numbers

When searching an LDAP directory for phone numbers, the phone number will be converted into the international standard dialing format. By doing so, LDAP directories can be searched for phone numbers, even if they have not been stored in the international standard dialing format. For example: Germany is the location. Searching an LDAP directory for "searchNumber=0301234567" will find "+49301234567", because the phone number has been standardized for the location.

Formatting Phone Numbers in the Result

How the phone numbers in the search result will be formatted can be determined by the LDAP Node Properties. Thereby, the phone numbers can be selected (with the external code) or formatted with punctuation for readability.

Search Order in the Result

If a server-side sort control will be used for an LDAP search then the LDAP server will return the sorted results. Different sorting rules will be used depending on the language.

17 Replicators

Replicators connect the various databases to estos MetaDirectory. Different data sources may be integrated depending on the available licenses. Any number of replicators may be created for each active data source.

The replicator interfaces in MetaDirectory will display the replicators that have already been configured. In addition to name, type, status and the scheduling parameters, the status of the last replication process will be displayed. The replicators can be managed using either the buttons under the list or the context menu.

Add...

Starts the Replicator Wizard for configuring a replicator.

Delete

Deletes the replicator(s), but not the databases created by the replicator(s). The databases will have to be removed using the Database Management dialog.

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

Edits the settings made for the replicator. The Replicator Wizard will be started, which will only be possible if the selected replicator is not in use.

Advanced

Permits changes to be made to the starting times and to Regular Expressions for formatting phone numbers.

➡ 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

⚠ The databases created by a replicator will be retained after the replicator has been deleted. The databases will have to be removed using the Database Management dialog.

You will find information regarding individual replicators on these pages:

- Replicator for Lotus Notes
- Replicator for Abacus
- Replicator for DATEV
- Replicator for DATEV SDD
- Replicator for Tobit David Server
- Replicator for Steps Business Solution
- Replicator for Microsoft CRM 2011/2013
- Replicator for Microsoft EWS
- Replicator for Microsoft Dynamics Navision
- Replicator for Microsoft Outlook/Exchange
- Replicator for Active Directory Server
- Replicator for LDAP Servers

- Replicator for MetaDirectory
- Replicator for ODBC Databases
- Replicator for Text & CSV Files
- custom replicator
- Export Replicator for Active Directory Server
- Export Replicator for XML Files
- Export Replicator for CSV Files

18 Replicator for Abacus

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

- ➡ An Abacus data source will be created with the help of the ABADSN.exe> program (normally found under "C:\Abac\DF") for each client. The ABACUS7777 default client will normally already have been created.
- ➡ Client-side integration will be provided in combination with estos ProCall, which means you can open a contact directly in Abacus using estos ProCall (e.g. for an incoming call).

18.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Abacus database type.
2. Define login information to access the datasource
3. Settings for the data source (selection of the server, the data structure that should be imported and so forth)
Select the Database
An Abacus data source is defined through its client. Select the respective client from the list.
User Name
Name for the Abacus user
Password
Password for the Abacus user
Select the Table
The dialog for selecting a table will appear after you have selected the client. From there, select either the addresses (the PUBL_ADR table) or the contact people (the PUBL_AKP table). In rare cases, another table may be also created. To do so, select the Miscellaneous option and specify the table name.
4. Field Assignment: Which source fields will be 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 to the new replicator

19 Replicator for Active Directory Server

Please read the basic notes 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 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. Please provide the server name or leave this field empty to use the standard domain controller. The Active Directory standard port is 389. The Global Catalog is a collection of user information for several Active Directory servers used within a company.

Login Information

Define how to log on to the LDAP server.

- Manual Login
Enter the user name and password for the LDAP server. The user name must follow a specific format. Examples include: 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 in which the search is initiated. Normally, the search base is automatically retrieved 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
Sub-directories will not be searched, if this option has been selected.
- Do not replicate disabled objects
- Do not replicate expired objects
- Only replicate modified objects
If this option has been selected, only those contacts, which have been changed since the last replication process, will be replicated during a replication process (incremental replication).

Note: When an Active Directory object has been deleted, a small part of the object will be retained for a specified period, so that other domain controllers can replicate the modifications. This period is called the "tombstone lifetime" and can be configured. During this period, the Active Directory replicator will be able to query the delete contacts using the Deleted Objects CommonName (for example: CN=Deleted Objects, DC=estos, DC=de). The replicator user will require more rights than those for simply querying the contact data. The replicator user's access to the necessary rights can be determined from the Active Directory server using the ldp program. Will check an executable (EXE) file or an LDAP

browser. To do this, the server control, "1.2.840.113556.1.4.417", must be enabled in the Advance LDAP settings.

3. Field Assignment: Which source fields will be 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 to the new replicator

20 custom replicator

 For development or installation of *custom replicators* knowledge in programming and systemadministration are needed.

The *custom replicator* provides an interface for development of self-written replicators. We will gently offer a tutorial with sample project on demand. You will get support only in the context of [Professional Service](#)

21 Replicator for DATEV

Please read the basic notes 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 DATEV database type.
2. Please enter the credentials which should be used to access the source database.
3. Settings for the data source (selection of the server, the data structure to be imported and so forth).
Select DATEV version
Select DATEV version to be integrated:
 - o Compact DATEV Eigenorganisation
 - o Classic DATEV Eigenorganisation
 - o Comfort DATEV Eigenorganisation

Perform DATEV settings

Select the client types, which you want to replicate. If you want to replicate disabled clients, select the corresponding option.

DATEV Eigenorganisation allows you to use comments (saved with communication media) as a contact person or name extension.

If this option has been enabled, the contact name will be displayed as the company name and as display name with an attached note.

Configure the Compact version of DATEV Eigenorganisation for access from external applications

- o Log on as an administrator with DATEV and start the Compact version of DATEV Eigenorganisation.
- o From the workstation, open the *Client* submenu item under *My Company / Master Data* in the treeview structure.
- o From the Client Management window, close the automatically opened client from the *Client / Close* menu item.
- o If you have closed the client, will appear on the menu under *Tools / Manage External Users...* Select *Manage External Users...*
- o The dialog for creating an external user will be opened. Continue to the Configuring an External User topic.
- o In order to be able to access the client's contact data under the Compact version of DATEV Eigenorganisation, you will need an external user account that starts with "E_ZMSD_".

Configure the Classic version of DATEV Eigenorganisation for access from external applications

- o Log on as an administrator with DATEV and start the Classic version of DATEV Eigenorganisation.
- o From the workstation, open the *Client* submenu item under *My Company / Master Data* in the treeview structure.
- o Close the client automatically opened in client management via the *Client - Close* menu.
- o Once you have closed the client, *Manage external users...* will pop up in the menu under *Extras*. Select *Manage external users...*
- o The dialog for creating an external user will be opened. Continue to the Configuring an External User topic.
- o In order to be able to access the client's contact data under the Classic version of DATEV Eigenorganisation, you will need an external user account that starts with "E_ZMSD_".

Configure the Comfort version of DATEV Eigenorganisation for access from external applications

- Log on as an administrator with DATEV and open My Computer.
- Select the *Tools* menu and then select *Manage external users*.
- The dialog for creating an external user will open.
- In order to be able to access the client's contact data under the Classic version of DATEV Eigenorganisation, you will need an external user account that starts with "E_IDVS_".

Configuring an External User

- On the right side of the dialog window at the top, there will be an icon for adding new users.
- Please enter a user name and password.
- Refer to the help file for setting up an ODBC SQL connection to the DATEV database in the dialog for creating an external user.
The help file will describe how to setup access to the Datev database in complete detail. Open the help file from the dialog for creating new users and search for "Example: how to enable password-protected ODBC access (for reading) to the SQL data tables using Microsoft Access for Users".

Note the different database paths for the various versions of DATEV.

- Compact Datev Eigenorganisation:
Stored in the installation directory under *DATEN\ZMSD\DATA\STANDARD\ZMSD*
- Classic Datev Eigenorganisation:
Stored in the installation directory under *DATEN\ZMSD\DATA\STANDARD\ZMSD*
- Comfort Datev Eigenorganisation:
Stored in the installation directory under *DATEN\IDVS\DATA\STANDARD\KIS*
- Close the dialog by clicking Ok.


Select the DATEV Database


A DATEV data source will be defined by the ODBC Connection String. You will start the ODBC Data Source dialog, which will display the DATEV ODBC data sources provided by the system to you, by clicking the Search... button.

Under certain circumstances, DATEV data sources will only be visible to the user account that installed the DATEV client. Please read the notes about access rights from a System and User Account.

4. Field Assignment: Which source fields will be copied to which LDAP fields
The field assignment for this replicator has preset.
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 to the new replicator

22 Replicator for DATEV SDD

 The installation of a DATEV Pro workstation including a master data service capable of running is required for using the *DATEV SDD replicator*.

 DATEV manages communication connections in a dynamic list of Telephone Numbers, Email, Fax and Internet connections. MetaDirectory uses statically assigned field for this purpose. The order of communication connections is not preset in DATEV Pro. For that reason, the fields will be assigned as they appear.

If the communication connections for a DATEV recipient cannot be assigned to a MetaDirectory contact, an additional copy of the record will be created, which will contain the additional communication connection data.

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

Communication connections by phone: *PhoneBusiness, PhoneBusiness2, PhoneHome, PhoneHome2, ISDNTelephoneNumber, CallbackTelephoneNumber, AssistantTelephoneNumber, PhoneMobile, CarTelephoneNumber, RadioTelephoneNumber, PagerTelephoneNumber and TTYTTDTelephoneNumber.*

Communication connections by fax: *FaxBusiness and FaxHome*

Communication connections by email: *EMail, EMail1 and EMail2*

Communication connections by Internet: *WebPageURL*

Detailed information:

The communication connection records, including their comments, will also be stored in an XML structure in the *Custom0* field, with the exceptions of the specifically assigned Default and Management fields, whose comments will be written in the *Custom1* or *Custom2* fields.

An example entry in the *Custom0* field:

```
<Kommunikationsverbindungen>
  <item>
    <field>telephoneNumber</field> <!-- LDAP-Field LDAP Feldbezeichnung
    <value>+49815136856160</value>
    <medium>1</medium> <!-- zB. f. KommunikationsMedium Telefon-
    <note>hier steht eine Notiz</note>
  </item>
  ...
</Kommunikationsverbindungen>
```


- ➡ The phone number fields should also be correspondingly enabled in the Search Wizard through the sequential population of the contact's telephone numbers.

Please read the basic notes 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 DATEV SDD database type.
2. Please enter the credentials which should be used to access the source database.
3. Select *Use Communication Connection Comments as the Name of the Contact Partner*, if the contact should use the comment field's content instead of the *Display Name* for the recipient. Custom records will then be created for each communication connection, for which a comment is entered, and the comment will be copied to the *Display Name* field.
4. If *Accept Phone Numbers Marked as Default and Management for All Contact with a Contact Person* has been selected, the fields marked as Default or Management will be copied to the *PrimaryTelephone* or *CompanyMainTelephone* fields.
Note: If these phone numbers are sought, all of the records generated for the recipient will also appear in the result list.
If you click *Continue*, the connection will be added to the master data service.
5. Field Assignment: Which source fields will be copied to which LDAP fields
This field assignment should not be changed.
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 to the new replicator


23 Replicator for Exact Online

 In order to use the *Exact Online* Replicator you need an active Exact Online account with username, password and partnerkey.

You can create an account at *Exact Software Nederland B.V.*

Please follow the instruction on the Exact Online web page to create a partnerkey.

<http://www.exact.nl>

 The *Exact Online Replikator* uses the webservice of *Exact Software Nederland B.V.* over the internet. Therefore estos MetaDirectory needs access to the internet.

23.1.1.1 Fieldmapping of Exact Online data to MetaDirectoryLDAP schema:

- All *accounts* generate a contact record in the MetaDirectory.
- All *contacts* of an *account* also generate a contact record in the MetaDirectory.

Identifier	ID	Account	Contact
databaseName	01	GUID	GUID
entryIDDB	03	"DB31"	"DB31"
entryIDStore	04	CLASSID	CLASSID
entryID	05	Partnerkey + <Account code>	Partnerkey + <Contact number>
displayName	06	<Account><Name>	(generated by system)
givenName	07		<Contact><Firstname>
sn	08		<Contact><Lastname>
title	09		<Contact><Title>
company	10	<Account><Name>	<Account><Name>
department	11		
physicalDeliveryOfficeName	12		
streetAddress	13	<Account><Address> <AddressLine1> + <AddressLine2> + <AddressLine3>	

postalCode	14	<Account><Address><PostalCode>	
l	15	<Account><Address><City>	
st	16		
c	17	<Account><Address><Country code>	
privateAddressStreet	18		
privateAddressPostalCode	19		
privateAddressCity	20		
privateAddressState	21		
privateAddressCountry	22		
otherAddressStreet	23		
otherAddressPostalCode	24		
otherAddressCity	25		
otherAddressState	26		
otherAddressCountry	27		
mail	28	<Account><Email>	<Contact><Email>
mail2	29		
mail3	30		
sipAddress	31		
url	32	<Account><HomePage>	
telephoneNumber	33	<Account><Phone>	<Contact><Phone>
otherTelephone	34	<Account><PhoneExt>	<Contact><PhoneExt>
telephoneNumberCompanyMain	35		
telephoneAssistant	36		
homephone	37		
otherHomePhone	38		

telephonePrimary	39	
cell	40	<Contact><Mobile>
telephoneCar	41	
telephoneRadio	42	
pager	43	
telephoneCallback	44	
telephoneSDN	45	
telephoneTTYTTD	46	
facsimileTelephoneNumber	47	<Account><Fax> <Contact><Fax>
otherFacsimileTelephoneNumber	48	
customerid	49	<Account><code> <Account><code>
directWebLink	50	
directOpenContact	51	
info	52	
custom0	53	Xml-Structure: <Opportunities>[all opportunities of this account]</Opportunities>
custom1	54	Xml-Structure: <Invoices>[all invoices of this account]</Invoices>

 All other fields will not be filled or were automatically filled by the system.

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

23.1.1.2 Procedure for Adding a Replicator

1. Select database source type: Please select database type "Exact Online".
2. Please enter the credentials which should be used to access the source database.
3. Click *Next* to establish a connection to the *Exact Online Webservice*.
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 to the new replicator

24 Replicator for LDAP Servers


Please read the basic notes 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 LDAP database type.
2. Settings for the data source (selection of the server, the data structure that should be imported and so forth)
 - Server Information
 - Server Name
Enter a computer name or IP address.
 - Port
The default LDAP port is 389.
 - LDAP Version
Specify which version of the LDAP protocol should be used.
 - Paged Search
The data will be retrieved in blocks using this option. The option will be necessary, if a lot of contacts will be retrieved from this LDAP server. Only some LDAP servers support this option.
 - Login Information
Select the manner of authentication for the LDAP server.
 - Login not required
If the LDAP server does not require login information, select this option.
 - Login automatically using domain authentication
The domain authentication will be used.
 - Manual Login
Enter the user name and password for the LDAP server. The user name must follow a specific format. Examples include: 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 will start. Normally, the Search Base will automatically be read from the LDAP server.
 - Filter
You may enter a filter for the entries of the database.
 - Search only in the Search Base folder
Sub-directories will not be searched, if this option has been selected.
3. Field Assignment: Which source fields will be 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 to the new replicator

25 Replicator for Microsoft Outlook/Exchange

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

 Support for this replicator is discontinued. It is recommended to use EWS Replicator instead.

 Microsoft Exchange and Outlook are accessed via MAPI. MAPI profiles are stored for each user. Replication occurs in the context of a user for whom a MAPI profile must have been created. Be sure to set up the MAPI profile so that no additional passwords are needed.

25.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Microsoft Outlook/Exchange Server database type.
2. Define login information to access the datasource
User login
One of the current user's MAPI profiles is in use. Enter the password of this user.
3. Settings for the data source (selection of the server, the data structure that should be imported and so forth)
MAPI Profile
Enter the name of the MAPI profile, which you want to use, here. Select the profile using Search.... If access to the profile has been protected by a password then enter that password as well.
Folder
Enter the folder from which the contact should be used. You may determine if sub-directories should be searched as well. If the Login Failed message appears, you will have to configure the profile so that manual entry of a password is not required.
4. Field Assignment: Which source fields will be 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 to the new replicator

26 Replicator for MetaDirectory

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

26.1.1.1 Procedure for Adding a Replicator

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

Server Information

- Server Name
Enter the computer name or the IP address.
- Port
The default LDAP port is 712.
- Search
You may locate MetaDirectory servers in the local network.

Login Information

Select the manner of authentication for the LDAP server.

- Login not required
If the LDP server does not require any login information, select this option.
- Manual Login
Enter the user name and password for the LDAP server. The user name must follow a specific format. Examples include: 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 for the MetaDirectory server should contain only a single data source.
3. Schedule replication plan
 4. Defining additional applications to be started
 5. Assigning a name to the new replicator

27 Replicator for Microsoft CRM 2011/2013

Using *Microsoft CRM 2011/2013* replicator requires the following components:

➔ 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 read the basic notes for setting up a replicator on the Replicator Wizard page.

27.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Choose the Microsoft CRM 2011/2013 database type.
2. Enter the login information that should be used to access the data source:
To get discovery service address and organization unique name, sign in to your CRM org and click Settings, Customization, Developer Resources.
On Developer Resource page, find the discovery service address under Service Endpoints and organization unique name under Your Organization Information.
3. Select a predefined *Fetch XML*-statement. You can define yourself a statement as well:
Selecting the "*Fetch XML*" the field "Default Entity" gets enabled. XML-code can be entered now.
4. Field Assignment: Which source fields will be copied to which LDAP fields
5. Configure links to contact URL
Use link to Microsoft CRM 2011/2013 Web Server for displaying contacts as contact URL.
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 to the new replicator

28 Replicator for Microsoft EWS

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

- ➡ The use of this replicator requires Microsoft .NET Framework 4.0..
- ➡ Access to Microsoft Exchange Webservice happens over your network. Accessfiles are stored per user. Replicaton is done in context of one user, setup with correct Microsoft Exchange Webservice account. Scope of function depends from the version of the connected Exchange Server.

28.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select database-type "Microsoft EWS".
2. Define login information to access the datasource
User login
Enter corresponding username and password. URL may be empty and then determined automatically.
3. Choose specific folder for import.
Click on *browse...* to open the folder-view:

Choose a folder from your local messagestore.

Choose "show public folders" for selecting him for replication. This process may take some time.

Choose "show shared folders" for selecting a folder of a different user for replication.

Determine to perform search in subfolders.
Only folders of type *contact (IPF.Contact)* can be chosen.

4. Field Assignment: Which source fields will be 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 to the new replicator

29 Replicator for Microsoft Dynamics Navision

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

➡ To access Microsoft Dynamics Navision, you must set up a view to the required contact data fields. You can access this view using the SQL Server ODBC driver.

29.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the ODBC database type.
2. Define login information to access the datasource

➡ Please note that you may NOT access system data sources through a user account.
For ODBC databases, please read the notes about access rights from a System and User Context as well.

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 Connection string. The ODBC Data Sources dialog, which will display the ODBC data sources made available by the system, will be opened by clicking on the Browse... button. You may optionally select file data sources or computer data sources. You will find additional information about file and computer data sources in the online help from Microsoft, which you can open by clicking the Help button on the ODBC dialog. Select the SQL Server ODBC driver for accessing the view configured in Microsoft Dynamics CRM 3.0.
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 Assignment: Which source fields will be 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 to the new replicator

30 Replicator for Lotus Notes

Please read the basic notes 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 Lotus Notes database type.
2. Define login information to access the datasource
3. Settings for the data source (selection of the server, the data structure that should be imported and so forth)

Domino Server

Enter the name of the Lotus Domino server here. Use the Search Server option to list all available Domino servers.

Database

Enter the name of the Lotus 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

Specify the name of the form where the entries should be displayed. You will see all of the forms contained in the selected database in the list. *Contact* is the default form for contacts.

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

 Lotus Notes user authentication is carried out using a special DLL, which has been copied into the Lotus Notes directory. During replicator configuration, the *nextpwd.dll* is copied into the Lotus Notes directory. The user setting up the replicator is authorized to write into the Lotus Notes installation directory. The DLL is copied automatically and without any user action. If there are any problems accessing Lotus Notes, please check whether *nextpwd.dll* was copied.

 No special authorization is required for replicating Lotus Notes. However, the Lotus Notes user must have access privileges for the data to be replicated.

31 Replicators for ODBC Databases

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

➡ For ODBC databases, please read the notes about access rights from a System and User Context.

31.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the ODBC database type.
2. Define login information to access the datasource

➡ Please note that you will not be able to access system data sources using a user account.
For ODBC databases, please read the notes about access rights from a System and User Context as well.

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 Connection string. The ODBC Data Sources dialog, which will display the ODBC data sources made available by the system, will be opened by clicking on the Browse... button. You may optionally select file data sources or computer data sources. You will find additional information about file and computer data sources in the online help from Microsoft, which you can open by clicking the Help button on the ODBC dialog. Select the SQL Server ODBC driver for accessing the view configured in Microsoft Dynamics CRM 3.0.

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 for integrating an 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 using an SQL Statement.

➡ If you want to use an Excel table, the field names, to which you have assigned the following meanings, must be in the first row of the table. Before integrating an Excel table, you should select the entire range, which contains the data (thus all of the records and the first line with the names) in Excel and name this range. You can name a range from Insert / Name / Define.

4. Field Assignment: Which Source Fields will be 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 to the new replicator

32 Export Replicator for Active Directory Server

Please read the basic notes 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 Active Directory database type.
2. MetaDirectory contacts
Which Contacts should be exported from 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 username and a password with which write access is possible from the Active Directory.
5. Target directory
Enter the path where the data should be replicated. Note: this path must be exclusive reserved for this replication process. All other data in this path will be deleted, if the Only Replicate Modified Objects option (incremental replication) has not been enabled.
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 to the new replicator

33 Export Replicator for XML Files

Please read the basic notes 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 XML Data database type.
2. MetaDirectory Contacts.
Which Contacts should be exported from MetaDirectory?
Search Base
Select the Search Base from which the contacts should be exported. 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 to the new replicator

34 Export Replicator for CSV Files

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

34.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the CSV Data database type.
2. MetaDirectory Contacts.
Which Contacts should be exported from MetaDirectory?
Search Base
Select the Search Base from which the contacts should be exported. 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 CSV File. To Which File should the Contacts be exported?
Enter a file name to an existing path.
4. Field assignment
The CSV file schema has been pre-defined.
5. Schedule replication plan
6. Defining additional applications to be started
7. Assigning a name to the new replicator

35 Replicator for Steps Business Solution

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

➡ For ODBC databases, please read the notes about access rights from a System and User Context.

35.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Steps Business Solution database type.
2. Define login information to access the datasource

➡ Please note that you will not be able to access system data sources using a user account.
For ODBC databases, please read the notes about access rights from a System and User Context as well.
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 Connection string. The ODBC Data Sources dialog, which will display the ODBC data sources made available by the system, will be opened by clicking on the Browse... button. You may optionally select file data sources or computer data sources. You will find additional information about file and computer data sources in the online help from Microsoft, which you can open by clicking the Help button on the ODBC dialog. Select the SQL Server ODBC driver for accessing the view configured in Microsoft Dynamics CRM 3.0.
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 Assignment: Which Source Fields will be 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 to the new replicator

36 Replicator for Text & CSV Files

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

➡ Text or CSV (Comma Separated Values) files contain one dataset in each line. The fields of the dataset are separated with a separator (e.g. comma). A field may be enclosed by double quotes. The first line usually contains the names of the fields. Supported character sets include ASCII, UTF-8 and Unicode (UTF-16 LE). The character set will automatically be determined by the file's Byte Order Mark (BOM).

36.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Text/CSV File database type.
2. Define login information to access the datasource
3. Settings for the data source (Choose the file that will be imported, etc.)
File
 - Enter the path to the file
Enter which Text or CSV file should be used.
 - 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 Assignment: Which source fields will be 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 to the new replicator

37 Replicator for Tobit David Server

Please read the basic notes for setting up a replicator on the Replicator Wizard page.

- ➡ To establish a link to Tobit David, the Tobit Info Center must be installed.
- ➡ Access to Tobit can sometimes take a long time. Please wait for the Tobit API to respond when searching for archives or contacts in large data stores.
- ➡ Client-side integration is provided in combination with estos ProCall, which means you can open a contact directly in Tobit using estos ProCall (e.g., for an incoming call).
- ➡ Use of the Tobit David Replicator will remain free after the expiration of the trial period, as long as estos MetaDirectory is used together with ProCall. Please enter your ProCall license in the settings for the estos MetaDirectory license after the expiration of the trial period, in order to continue using the Tobit David Replicator.

37.1.1.1 Procedure for Adding a Replicator

1. Select the type of data source
Select the Tobit David database type.
2. Define login information to access the datasource
3. Settings for the data source (selection of the server, the data structure that should be imported and so forth)
 - Tobit server
Specify the name of the Tobit server here. If you do not specify a server, the default server will be used.
 - User Name
Enter the user name for establishing a connection to the Tobit server.
 - Password
Enter the user's password here.
 - David Archive
Name the archive from which you want to retrieve contact information.
4. Field Assignment: Which Source Fields will be 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 to the new replicator

37.1.2 Replicator Wizard

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

You may setup import or export replicators depending on the license available.

Import replicators replicate contacts to MetaDirectory.

Export replicators replicates contacts from MetaDirectory to another database.

In principle, configuration uses the following steps:

1. Select datasource-type

- Selecting the source database. Only data sources for which Licenses have been entered may be selected.
2. Enter the login information which will be used for accessing the data sources.
- Applications can be started in either a user context or a system context. The database is then accessed with the privileges defined by the application. It is therefore important for the system or respective user to have access to the data sources.
- ➡ Mapped network drives are not known in a system and user context. If you would like to access files on another computer, you will have to use fully qualified UNC paths (`\\ServerName\ShareName\File`). Please note that the user and the system access rights for this share and the corresponding files will be needed. You will have to manually enter the UNC path in the ODBC Connection String for access using ODBC.
 - ➡ 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 (selection of the server, the data structure that should be imported and so forth)
- 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 Assignment: Which Source Fields will be copied to which LDAP Fields
- Field assignment is the central component of replicator integration. You must assign which source fields should be copied to which LDAP fields. A default field assignment, which will automatically be assigned, has been stored for some replicators, when you configure the replicator. In part, you will still have to make the field assignments yourself. The source fields are located on the left. The contents of the first record found are displayed next to the field name. You can scroll through the records using the arrow keys below the source. You will see the target LDAP fields on the right. The assigned fields will be displayed next to the field names. The buttons for deleting all assignments and for setting the default field assignments, if they exist, will be located beneath the target list. 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 provide a primary key, you should use the database fields that will provide the most unique connection to a record possible. If necessary, you should combine fields in order to create a unique primary key. If several records have identical primary keys, all of the records will be lost after the first replication process. You may use email addresses, for example, as alternative primary keys.
- The replicator will always attempt to create an assignment for the Displayed Name field. If the field could not be filled from the pre-defined source fields, the replicator will attempt to generate content from the given name, surname and company or email address fields.
 - Fields can be combined. If a phone number field is involved, the source data will be combined together, one after the other. In all other cases, a space will be placed between the fields. The Extended Field Assignment Settings page will provide further configuration options.

5. Extended Field Assignment Settings

- The extended field assignment settings permit the integration of complex databases into estos MetaDirectory.

Using this configuration interface, database fields can be combined or separated. In order to be able to make extended field assignment settings, you will have to enable the Extended Settings checkbox in the Field Assignments Wizard.

You will see all LDAP database fields, which you have assigned to source fields, on the left. On the right, you will find the source fields that have been allocated to the respective database fields listed on the left.

You can assign any kind of prefix or suffix to the each of the source fields. Regular expressions for each source field provide the most extensive options for data modification. You can apply a regular expression to each assigned source field. If the expression does not apply, you can determine whether the original value should be set or a value should not be used.

An attempt will be made to assign an example value from the database to each source field. The first twenty records from the source database will be read for this. For that reason, values from different databases may be presented. Do not let this bother you.

Both lists use small icons to indicate the advanced settings:

- No advanced settings
- Valid advanced settings
- Incorrect advanced settings

Example:

A database stores the street address (including building number, city and zip code) in one database field, separating each with a "\$" character. Thus, an example database field might contain: "12\$Street\$City\$12345"

In order to be able to use this database with estos MetaDirectory, you will have to parse this

combined field and assign the fields for building number, street name, city and zip code. In the Field Assignment Wizard, you assign this one source field to all of the target fields. In our example, these are the Street, City and ZipCode fields. Then, you enable the extended settings, in order to set the configuration that will now be required.

You will then select the Street entry from the list of LDAP database fields. Then, enter the following information on the right for the regular expression:

- Search: "(.*)(\\\$)(.*)\\\$)(.*)\\\$)(.*)"
- Replace with: "\\1 \\3"

The icons for the regular expression will immediately indicate if the expression is valid. The entry, 12 Street, will now appear in the list of results.

A similar process is used for the ZIP code and city LDAP data fields.

You will enter the following values for the ZipCode field:

- Search: "(.*)(\\\$)(.*)\\\$)(.*)\\\$)(.*)"
- Replace with: "\\5"

For the City field:

- Search: "(.*)(\\\$)(.*)\\\$)(.*)\\\$)(.*)"
- Replace with: "\\7"

The source field contents have now been properly distributed and each corresponding field values will be stored in the database fields after replication.

You will find more information about regular expressions [here](#).

6. Contact URL links

- Three contact URL links, with which the contact can display other web pages, may be configured in each record. In this, the first contact URL has a special meaning, when estos MetaDirectory is used with estos ProCall.

estos ProCall uses this URL for all content that could be opened without having to start the client to do so. Thus, this URL will be used for missed calls, for example. You can open the contact directly without having to start estos ProCall. This URL will be opened if you have opened a contact to be edited in estos ProCall.

The URL configured here will be stored in the *directWebLink* database field at the LDAP level. This link will also be stored in the *contactURL* field for compatibility reasons.

The link may include all registered URL handlers. This may include not just HTTP: links but also Outlook: links as well.

The link may contain all fields for the contact, which can be used in the Template Parser. This includes: <EntryID> and <DisplayName>, for example.

Web-based CRM

If the contact originates from a Web-based CRM system data source, the link can be made directly with the contact in the CRM system. Normally, the contact's <EntryID> should be entered in the URL.

Microsoft CRM 3.0

If the contact originates from Microsoft CRM 3.0, opening the URL <http://mscrmsrver/sfa/conts/edit.aspx?id=<EntryID>> for the contact is possible.

Outlook

If the contact originates from Outlook/Exchange the contact can be opened with using with the outlook:<EntryID> URL.

➡ Since Outlook 2007, Microsoft has not been storing the Outlook URL handler required for this feature in the registry.

- Lotus Notes
If the contact originates from Lotus Notes, the contact can be opened with Lotus Notes with the URL `notes://server/database.nsf/view/<EntryID>?OpenDocument`.

7. Datasource location settings

- The location settings for data source assist with the automatic formatting of phone numbers. During replication, the phone number from the database will be re-formatted using the international standard dialing format. This format will convert phone numbers like "08151 368561" into "+498151368561". The formatting will be performed automatically and recognizes many phone number formats.

Country or region of the data source

Enter the country where this data source originated. If a phone number has been entered in the database without a country code (e.g. "030-1234567"), the replicator will have to know which country code should be used. If Germany were to be selected then this phone number would become "+49301234567".

Area Code

Enter your own area code here. Local phone numbers can be augmented with this area code. If phone numbers have been included in the database without an area code (e.g. "1234567"), this area code will be used for formatting the phone number. Enter the area code without a prefix (e.g. "30" for Berlin).

Primary System Phone Number (system connection)

If internal phone numbers have been included in the database (e.g. "210"), the replicator will have to know to which connection these phone numbers belong. Enter the base phone number for your connection. If the Participant 210 can be reached at +49-30-12345-210, then enter 12345 as the primary system number.

8. Schedule replication plan

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

9. Defining additional applications to be started

- You can start further applications before and after the replication process. Enter the path for the pertinent applications. The applications are started by the replicator, i.e. they run with the same rights as the replicator and may thus block other replicator call-ups during long running times.

10. Assigning a name to 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.

38 LDAP Servers

38.1.1.1.1 LDAP Servers

The LDAP server is an essential feature of estos MetaDirectory. Contacts, which are provided by replicators, can be sought through the LDAP server.

TLS Port & IP Interface

Specify the TCP port number and the IP interface through which the LDAP server should offer its services.

TLS Port & IP Interface

Specify the TLS port number and the IP interface through which the LDAP server should offer its TLS services. A certificate accepted by the TLS clients must be chosen.

LDAP root password

The password entered here will be the password for the LDAP server. With this password, you will be able to view all of the LDAP server's data regardless of the passwords stored in the Database Management system. The user name needed for the password is *cn=root, dc=meta*.

- ➡ A status display indicates the status of the LDAP server.
- ➡ The settings usually need to be altered only in special cases. Therefore, it is best to leave the settings unchanged.
 - Each instance of estos MetaDirectory running will require its own password.
- ➡ You will find additional technical information about LDAP servers on the LDAP Servers and Fields page.

38.1.1.1.2 Advanced Settings

Default DisplayName

If the *DisplayName* has not been explicitly set by the field assignment, a *DisplayName* consisting of Surname and Given Name or Given Name and Surname will be generated and imported to MetaDirectory during replication.

A *DisplayName* will also be generated according to this setting for non-replicated contacts, for example if such originate from telephone books. If a Given Name or Surname are not available, only the available component will be used as the *DisplayName*. If both fields are empty, the company name will be used as the *DisplayName*.

Include Pictures with Contacts

estos MetaDirectory can include pictures with the contact data. If you enable this option, the pictures for the contacts will be read from the source databases, or from a path configured in the replicator, and stored in the LDAP database during the replication process. They will subsequently be provided both through LDAP as well as from the integrated web server. The replicator for Active Directory will import the "jpegPhoto" Active Directory property (or "thumbnailPhoto", if "jpegPhoto" is not available). The export replicator for Active Directory will store the contact picture in the "thumbnailPhoto" Active Directory property. The picture data will not be verified.

39 Database Fields

estos MetaDirectory combines more than 61 pre-defined, and 20 freely usable, fields into a contact. You assign the source fields to the target fields while setting up a Replicator.

An individual name and an abbreviation can be given to each database field. This field name will subsequently be used everywhere in the Administrator and the web server. The abbreviated field name will be used, if the results of an LDAP query will be displayed on a telephony end device.

If the web server interface will be available in multiple languages, you will have to make adjustments in every language. Additional languages can be added at any time. When you want an additional language, ask our Support department.

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

➡ Use the additional database field to save additional contact details in the database, such as: gender, expense accounts, building number, representative or similar information.

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 on the Field Type column.

All Number Field and Fax Number Field type fields will be formatted as phone numbers during replication.

The field types will also be used automatically by the Search Wizard with the Place Wildcard (*) automatically at the End of Keywords option.

40 Database Management

40.1.1.1 *About the estos MetaDirectory Database*

estos MetaDirectory has an additional abstraction layer between the individual databases created by the replicators and the LDAP database. LDAP systems provide their data in a tree-like structure. The addition of the abstraction layer makes the combination of the databases in the LDAP tree under a single node possible. Thus, databases composed from various source databases can be provided to groups of users.

Parts of the LDAP tree are pre-determined by the architecture and fixed, and cannot be modified. This affects 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 will be automatically created during initial installation:

- dc=phone
This database node is available for linking LDAP-enabled end devices. You can configure the link to an LDAP-enabled phone using the advanced LDAP node settings.

When an import replicator is executed for the first time, two sub-nodes for containing the imported databases will be created for the corresponding data sources. The first node will be named for the replicator and contain the contact data present in the data source (after replication). The second sub-node will be named for the replicator with the addition of the term, `deleted_Items`, and will contain deleted records, meaning records that have been replicated once, but will not be present in the data source for subsequent replication any longer. This sub-node for deleted records will not be displayed in the estos MetaDirectory Administrator's Database Management system.

40.1.1.2 *Database Management in the estos MetaDirectory Administrator*

You can manage the LDAP tree in the estos MetaDirectory Administrator from *Database Management*. The LDAP database structure will be displayed on the left; all available databases on the upper right and brief database information about the currently selected database on the lower right.

40.1.1.3 *LDAP Database Structure*

All database nodes will be displayed with their integrated databases. Nodes which cannot be edited will be displayed in light gray. Nodes can be added, deleted and processed by using the buttons or via the shortcut menu. You can connect or remove databases from the list of available databases using drag and drop or the buttons to the right of the LDAP tree. If you want to connect a database multiple times, hold down the CTRL key while you drag and drop it.

This list will display the type as well as a short status information next to all available databases. An icon on the left will indicate if the database has already been manually added:

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

Database Information

The list will show the most important information about the currently selected database from the database list or the LDAP tree. At a glance, you will be able to see how many contacts have been saved or how many have been added, modified or deleted during the last replication. Additional status information will be provided for troubleshooting and analysis.

Advanced LDAP Node Settings

The advanced LDAP node settings can be opened from the context menu or the Properties button. Information about the Advanced LDAP Node Settings.


40.1.1.4 Operations for Available Databases


Create a New Database

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

Delete Data

All contact data that originates from this data source will be finally removed by selecting this feature and then no longer be accessible. The sub-node in the LDAP tree created for the data source will also be deleted.

 In contrast with estos MetaDirectory Version 1.x, the replicated databases are not just statically created in the LDAP tree, but can also be combined in any way desired or provided individually under various LDAP nodes.

 Locally generated databases will automatically be connected to the dc=meta LDAP node. Replicators that do not run on the local computer will generate databases that will NOT be connected automatically!

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

41 Advanced LDAP Node Settings

Certain settings for authentication, presentation of results and adjustments to certain LDAP-capable end devices can be made from the root node for the LDAP database. These settings include:

Authentication

To search the LDAP server, you will have to authenticate yourself for searching the LDAP server. The results will only be presented if the user name and password agree with the data in the LDAP node or with the LDAP Root Credentials. Access can be limited to an IP address range for certain end devices that do not support authentication.

Languages, Sorting and Phone Number Formatting

Select a location that you have setup from Location from here. The results of a search query will be sorted according to the rules for the country selected 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:
Phone books will only be searched if no results are found in other databases.
- Searching automatically for diacritical characters:
With this option, all special diacritical forms of a character will be automatically sought in the LDAP database. Many LDAP end devices only support the ASCII character set. You will not be able to perform a search for *Müller* using such an end device.
If this option has been enabled, the *"Müller"* record will also be found when searching for *"Muller"*.
- Display only results with telephone numbers:
Only the results that include a phone number will be displayed. For this, all database fields that have been defined as telephone numbers in the Search Wizard will be accessed.
- End device only support one phone number per contact:
If a contact containing more than one phone number is found, but the end device can only display one phone number per contact, a separate contact will be displayed for each phone number. To

clarify for the end device which number is concerned, the name will be displayed with the abbreviation matching the database field from which the number originated.

- Always sort results by:
The results will be sorted by the selected attribute prior to being 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 from the interface, a schema replacement will be active with the selection of a pre-defined end device. Before the search request is passed to the LDAP server and before the results are returned to the client, estos MetaDirectory will replace pre-defined attributes in the request and the response. Thereby, an end device incapable of configuring which content should be sought in which database fields can be integrated. This schema mapping will be stored in the end device template files (*.termxml) in the *config/default* directory.

42 Configuration: Services

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

- [Web Servers](#)
- [Web Services](#)
- [Default Web Service](#)
- [Web Service Settings](#)
- [Send Email](#)
- [Search Wizard](#)

43 Web Servers

estos MetaDirectory has an integrated web server through which an intranet phone book can be provided. All employees can use the web-based search service of the estos MetaDirectory intranet phone book immediately with all popular browsers through central installation on a server. The search portal performs searches and displays the results. It provides all authorized persons with easy access to contact data, no matter where they are. If an Internet connection is available, even sales representatives, partners or customers are able to search for contact data quickly and without the need to install any software.

You can specify the IP addresses which the web server interface should use for connecting in addition to the port through which the web should be accessible. By default, connections to the web server will be attempted through ports 80, 8080 or 7303.

The web server can also be operated as a TLS server. By default, connections to the web server will be attempted through ports 443, 8081 or 7304.

You will need a certificate for server authentication for TLS. See also Server Certificate.

A Professional License will be required for SSL mode.

Web Server Directory

An alternative directory may be specified for the content presented by the web server. If you want to specify an alternative directory, copy all data from the *wwwroot* directory to the estos MetaDirectory installation directory.

Web Services

Every directory on the web server is designated as a web service. Each Web Service may have its own configuration.

44 Default Web Service

Every web server directory is a web service. The Default web service is the master directory for the web server. It contains a special configuration for the MetaDirectory intranet address book.

Enabling a Web Service

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

Using Data from LDAP Nodes

Define which LDAP Server data should be available for the web service. If you only want to provide part of the contact data available from the LDAP server through the web service, you should configure a new LDAP node from Database Management and select it from there.

Result Presentation

In addition to the number of results for each view, you can also define a default view and default language. estos MetaDirectory allows intranet users to save custom settings for the presentation of results. If you want to allow users to choose their own settings, enable the Save Configuration locally on the Client in a 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.

Presence Status Integration

If you use Internet Explorer versions later than 5.5 as the browser and have installed Microsoft Office 2003 or later, the presence status of a contact can be displayed by the web server. If you use a different browser, the status will not be displayed. The presence status will be determined and displayed through various services, such as: Microsoft Exchange, Microsoft Live Communications Server in combination with Microsoft Office Communicator or Windows Messenger.

- ➡ If you only want to provide part of the contact data available from the LDAP server through the web service, you should configure a new LDAP node from Database Management and select it from there.
- ➡ The web server templates can be individually adjusted. You will find the templates in the *wwwroot* directory in the estos MetaDirectory installation directory. You will find additional information about the template elements on the Template Parser page.

45 Web Service Settings

Each web server directory is a web service. The data sources and options for the presentation of results will be configured there.

Enabling a Web Service

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

Using Data from LDAP Nodes

Define which LDAP server data should be provided for the web service. Some web services will require their own LDAP nodes, which will be named for the web service. You can configure them from Database Management.

Maximum Number of Results

The maximum number of results returned by a search.

Default Language

The language for processing the templates. The HTTP Accept Language setting will be used in the Automatic setting.

Handling Telephony Links

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

Presence Status Integration

Indicates if presence information for the contact should be displayed. Specify the field in Database Field, which should be used for the determination of the presence information. Normally, this will be either the SIP Address or the Email Address field in the database.

Presence information can be displayed for estos UCServer and Microsoft OCS/Lync contacts.

To use estos UCServer's presence integration feature, estos RESTful Web Service must have been installed.

Either *Microsoft Communicator* or estos ProCall must have been installed and started locally for the *Microsoft Presence Control* system. The *Microsoft Presence Control* system will only work with a current version of *Microsoft Internet Explorer*.

The URI (URL & web address) for RESTful Web Service, including "http://" or "https://", must be specified for estos UCServer presence integration.

This setting must be made for each web service.

➡ The web server templates can be individually adjusted. You will find the templates in the *wwwroot* directory in the estos MetaDirectory installation directory. You will find additional information about the template elements on the Template Parser page.

46 Web Services

The web server will provide its data through the web services. Each web service directory has its own configuration.

The Default Web Service has a special configuration for the MetaDirectory intranet address book. The other Web Service Settings permit configuration of the data sources and presentation of the results. In this manner, the web server can use different databases on various pages.

Only the Default service will be active by default. An LDAP node with the recommended search and result settings will be automatically created during the setup of the other services.

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>	Default access using web browsers
Default	<i>/communicator.html</i>	Display in the Office Communicator See Setup for Office Communicator.
cell	<i>/mobile/index.html</i>	Address book for mobile end devices (smart phones & PDAs). See Setup for Mobile End 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>	Addressbook for XML browser of Mitel sip-phones. Siehe Configuration for Mitel sip-phones.
ciscoaddress	<i>/ciscoaddress/ciscosearch.xml</i>	Address book for XML browsers for Cisco 79xx phones. See Setup for Cisco CallManager.
ciscodirectory	<i>/ciscodirectory/ciscosearch.xml</i>	Phone directory for XML browsers for Cisco 79xx phones. See Setup for Cisco CallManager.

Use the following features to modify the web service settings:

- Setup...
Configures the databases used for this web service.
- New...
Create templates for a new web service. By selecting this feature, default templates and infrastructure will be created using a selected name. You can adjust these templates according to your needs as described on the Template Parser and Templates for the Web Server pages.
- Copy...
Copies the settings and templates for an existing web service as the basis for a new web service. By selecting this feature, the selected templates and infrastructure will be created using a selected name. You can adjust these templates according to your needs, as described on the Template Parser and Web Server Templates pages.

- Delete...
Deletes a web service. All of the settings and templates for the selected web service will be finally deleted by this feature.
- Edit...
Edits the settings as described on the Web Service Settings page.

47 Send Email

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

SMTP Server

Enter your email servers hostname or IP-address and Portnummers. Usually used portnumbers are 25 (SMTP), 465 (SMTPS) and 587 (SUBMISSION). TLS-encryption will be used (except on port 25), if it is supported by your mailserver.

SMTP-user (optional)

username for the SMTP-connection (SMTP AUTH)

SMTP-password (optional)

Password for the SMTP-connection (SMTP AUTH)

Address of the Email Sender

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. Deselecting this option only emails with characters of ISO Latin-codepage known to the operating system may be send.

Enforce TLS

Enables enforcment of TLS-encryption. If the server doesn't offer encryption or the certificate is inconfidential, the transmission will fail. On port 25 TLS only be used if this option is set. Take care that the certificate contains the SMTP-servers name.

Verify...

A test-email will be sent. This can take up to one minute. A popup will inform you about success or failure (including details).

➡ Configure the Send Email settings and enable errors to be sent to administrators by email, so that they will be informed immediately about potential errors.

48 Search Wizard

The Search Wizard permits configuration of search requests to the LDAP server. estos MetaDirectory supports the abstraction of search requests. The client can query for specific values of certain LDAP attributes as usual, however generally a contact or a phone will be sought. An LDAP search request for *searchContact*, *searchNumber* or *searchIndividual* will search for a contact or phone number in the LDAP database. Which database fields will be searched by the corresponding request will be configured from the Search Wizard.

Parameterized search is an additional search variant. The web server supports all three search variants, which is why searches in the intranet phone directory are specifically configured from the Search Wizard.

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

You can automatically place wildcards at the end of the search term. These wildcards will be associated with each keyword for all search variants targeting specific database field types. The wildcards are associated with each argument of the relevant field type for parameterized searches.

The field types will be configured from Database Fields.

Contact Search

Contact searches will be performed, if any name desired has been transferred as the keyword. Enable all of the fields, which should be searched for the entered name in the *contactsearch* column.

Example: entering Meier will trigger a contact search.

Phone Number Search

Phone number searches will be performed upon entry of any number desired. Determine which fields should be searched for the phone number in the *numbersearch* column.

Example: entering 081512345 will trigger a phone number search.

➡ The fields selected for searches for contacts and phone numbers as well as the default fields (*telephoneNumber*, *otherTelephone*, *telephoneNumberCompanyMain*, *homephone*, *mobile* and *displayName*, *givenName*, *sn*, *company*) have been optimized for quick searching. Selecting more than 10 to 15 fields total is not recommended. After changing MetaDirectory service should be restarted.

Individual Search

Currently, individual search is only supported by the integrated LDAP server. This search request is provided with the *searchIndividual* attribute. You determine which fields should be searched from the third column, *Individual Search*.

Parameterized search

A parameterized search enables you to search for certain values in different fields. Search words separated by commas are accounted for separately, meaning all words are looked up in each database field. The lower part of the dialog shows the currently chosen order of search words.

Example: The entered parameterized search defines the following sequence of keywords: displayed name, surname, department, location, ZIP code and email.


If you want to search for Mr. Müller in the purchasing department, enter the following keywords: ",Müller,Purchasing"

If you want to find the contact for the email address info@info.info, enter the following keyword in the web server:

" ,,,,info@info.info"

For purposes of simplification, the current database field to be searched for a keyword will be displayed by the web server. As soon as you have entered a comma, the web interface will display the individual fields for the parameterized search.

Advanced Search

There is an icon next to the Search button on the web interface,  which will open the Advanced Search dialog. The fields from the parameterized search can be filled line-by-line from there.

Advanced...

This dialog enables to configure further search relevant settings:

- Automatically add a wildcard (*) at the end of a search term for *namefields*
- Automatically add a wildcard (*) at the end of a search term for *addressfields*
- Automatically add a wildcard (*) at the end of a search term for *numberfields*
- User serverside sort
Is this option activated, searchresults will be sorted at database level, which causes a homogeneously sorted resultlist. This sorting will be done over the complete database result and may slow down the search.
Is serverside sort deactivated, results are sorted only within a datasource.

The *Default*-button resets the dialog to default.

49 DasTelefonbuch Deutschland

A "DasTelefonbuch Deutschland" (phone book for Germany) will be needed to use this interface. You will need a network or intranet version to use it. Make sure you have enough licenses available for the "DasTelefonbuch für Deutschland". You will need one license per user.

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

The path for the installation of "DasTelefonbuch Deutschland" will normally be determined automatically. If this is not possible, 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.

50 DasTelefonbuch Deutschland Web Service

Alternatively, you can use TVG Verlag's DasTelefonbuch Deutschland web service. Access must be configured as follows. Enter your name, email address, city and company, as well as a password that you can remember. Finally, click the Register button.

Thereafter, you will receive an email message sent to the specified email address, which will contain a PIN. Enter this PIN in the PIN field and click the Activate button.

If you have already registered, you can query your user data after entering the email address and password by clicking the Update Info button.

The Activate button will first be able to be clicked when the Email, Password and PIN fields have been entered.

Use default-interface: in rarely cases a problem using the default-interface may occur (Message: "Unknown error when accessing an unknown file"). Mostly the problem can be solved with deactivating the checkbox.

➡ Note: the 45-day trial version is not contractually binding and will expire 45 days after activation without any obligations.

The customer can exclusively activate the web service through TVG Verlag.

51 Herold

A Herold phone book will be required for using this interface. Make sure you have enough licenses available for the Herold. You will need one license per user.

The pbapi.dll will access the Herold phone book. This file will be installed together with estos MetaDirectory.

As a rule, the path to the Herold installation will be located automatically. If this is not possible, please enter the path directly.

➡ Copying the Herold database to the hard disk is highly recommended. If you leave the data on the CD, searches will take significantly more time.

52 KlickTel Server

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

➡ The KlickTel telephone directory CDs sold in retail stores or supermarkets cannot be used.

Make sure you have enough licenses available for the KlickTel server. You will need one license per user.

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

KlickTel Server (Host Name)

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

TCP Port

Specify the TCP port that was configured in the KlickTel server (default: 5000).

53 TwixTel

A Herold 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 *twxapi32.dll* will access the TwixTel data. If you install TwixTel, the DLL appropriate for the database will automatically be copied, as long as the setup found a previous version of the DLL. The DLL will be copied to the *System32* directory under the Windows directory during the installation of estos MetaDirectory. If you subsequently install TwixTel, 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*.

54 Swisscom Directories

For use of the *Swisscom Directories AG* Webservice accessdata like Serviceld, userid and password are needed.

You can order accessdata by following the link to *directoriesDATA*: www.directoriesdata.ch/etvinside
www.directoriesdata.ch/etvinside

➡ The phonebook "Swisscom Directories" is a webservice of *Swisscom Directories AG*. Therefore access to the internet is required for estos MetaDirectory.

55 Database Query

You will find help about queries and views of the contact database on the following pages:

- Database Query
- Database View

56 Database Query

In order to check the data in the LDAP database, the Database Manager will make an LDAP search available. Thereby, the search will use the settings defined in the Search Wizard for contact searches, phone number searches and parameterized searches.

Field Selection

You can delete the LDAP database fields displayed by default by dragging individual columns away from the view. Deleted columns can be added again by dragging from the field selection and dropping it again on the column headings.

57 Database View

In order to check the data in the LDAP database, the Database Manager will make a view of the LDAP database available. From there, you will be able to navigate through all of the LDAP database nodes and view the respective records under them.

Field Selection

You can delete the LDAP database fields displayed by default by dragging individual columns away from the view. Deleted columns can be added again by dragging from the field selection and dropping it again on the column headings.

58 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](#)

59 Server Log


The estos MetaDirectory service will create log entries for many events depending on the settings selected from Events.

There are four types of log entries:

- 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 in estos MetaDirectory Version 1.x, the log files will be stored separately by replicator. You will be able to view the log files from Replicator Configuration.

60 StatusMonitor

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 Servers
Provide the LDAP server
- Web Servers
Provide the web server


61 Connecting to Data Sources

You will find examples for integrating typical contact data sources into estos MetaDirectory (or from it to Outlook) on the following pages:

- Configuring a CSV replicator for integrating a text file
- Configuring an ODBC replicator for integrating an Excel file
- Configuring an ODBC replicator for integrating an Access database
- Advanced configuration of an ODBC replicator for entering an SQL statement
- Transferring data from the LDAP server to the Outlook address book

62 Configuring an ODBC replicator for integrating an 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.

 You will have to start the estos MetaDirectory Administrator for configuring an ODBC system data source with advanced rights under Windows. You will find the *Run as Administrator* menu item on the context menu, which will open by right-clicking on the application icon, in order get the necessary rights.

62.1.1.1 Setting up estos MetaDirectory for using an 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.
- Start the Replicator Wizard from the context menu or Add... for configuring a data source.
- Select the ODBC Database data type and confirm the selection using the Next button.
- Specify how the data source should be access in the user login. From the context menu, you can access the data source from both the context for the current user or the system account. In this example, we will use a SYSTEM account. You will find additional information about this issue on the Replicator Wizard page.
Confirm the selection using the *Next* button.
- The ODBC connection to the Access database will be configured in the following step.
 - 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: Select System Data Source in the subsequent dialog so that the data can be opened through the previously selected system account.
Confirm the selection using the Next button.
 - Select the ODBC driver for accessing the Access databases. Potentially, various drivers will be offered in various languages there. Use one of the Access drivers offered by Microsoft (*.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.

- Several tables are in the Access database. Select the Contacts table. Confirm the selection using the Next button.
- Which data source fields should be copied to which target fields will be determined in the subsequent Field Assignment Wizard. You will find stored field assignment files next to the example Excel file. Load the Demo-Database-mdb.fxm field assignment file from the button at the bottom left of the Field Assignment dialog. Confirm the settings using the Next button.
- Leave the settings in the country and region Location Settings unchanged and confirm the dialog using the Next button.

- In the replication schedule, you can define the intervals and times for replicating the database. If desired, make changes. Otherwise exit the settings page using the Next button.
- 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 will be able to view the results of the replication process from the Database Search or Database View dialogs.

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

The connection to a single table from the Access database has been shown in the Configuring an ODBC Replicator for connecting to an Access Database application example. Additional options for advanced data queries will now be shown.

The *Demo-Database.mdb* example database must already have been setup as a data source. Edit the settings for this data source now and open the page, where the Contacts were selected. Select the Enter SQL Select Statement option.

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 example database contains a Title field in the Contacts. Only the contacts that have the value, "Frau", in this field should be used. The SQL statement for this is:

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

Click the Next button. You will now see several records in the field assignment, which have the value, "Frau" in the Title field.

Joining Data from Multiple Tables

The example database does not contain any company names in the Contacts table. However, the CompanyID field does exist, which will create a reference to the company data in the Company table. The query will now be expanded so that the CompanyName field will be 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 the Next button. The CompanyName field will now also be available in the field assignment in the source fields.

Duplicate Field Names when joining Multiple Tables

The Company table has the Street field, which contains the company address. A field with the same name also exists in the Contacts table. The AS SQL instruction is used to rename a field, in order to be able to distinguish the fields with the same name. 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 the Next button. The CompanyStreet field will now be available in the field assignment in the source fields.

64 Configuring a CSV replicator for integrating a text file

How to use a text file with contacts in Comma-Separated Values (CSV) format as a data source for estos MetaDirectory will be shown in this application example. You will find the example file in the *Samples* folder in the estos MetaDirectory installation directory.

64.1.1.1 Setting up estos MetaDirectory for using a CSV File


- Start the estos MetaDirectory Administration 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.
- Start the Replicator Wizard from the context menu or Add... for configuring a data source.
- Select the "Text/CSV File" data type and confirm the selection using the Next button.
- Specify how the data source should be accessed in the user login. You can access the data source from the current user context or from the system account. We will use a SYSTEM account in this example. You will find additional information about this issue on the Replicator Wizard page. 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 separators) file format. This indicates that the fields in every line of the file will be separated by semicolons.
 - Set the First Line contains Field Names option.
 - Confirm the selection using the Next button.
- Which data source fields will be copied to which target fields will be determined in the subsequent Field Assignment Wizard. You will find a stored field assignment file next to the example text file. Load the *Demo-Namensliste-csv.fxm* field assignment file from the button at the bottom left of the Field Assignment dialog. Confirm the settings using the Next button.
- Leave the settings in the country and region Location Settings unchanged and confirm the dialog using the Next button.
- In the replication schedule, you can define the intervals and times for replicating the database. Make changes, if desired. Then, exit the settings page using the Next button.
- 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 will be able to view the results of the replication process from the Database Search or Database View dialogs.

65 Configuring an ODBC replicator for integrating an Excel file

How to use an Excel table as a data source for estos MetaDirectory will be shown in this application example. You will find the example database in the *Samples* folder in the estos MetaDirectory installation directory.

 You will have to start the estos MetaDirectory Administrator for configuring an ODBC system data source with advanced rights under Windows. You will find the *Run as Administrator* menu item on the context menu, which will open by right-clicking on the application icon, in order to get the necessary rights.

65.1.1.1 Setting up estos MetaDirectory for using an Office Excel Table

- 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.
- Start the Replicator Wizard from the context menu or Add... for configuring a data source.
- Select the ODBC Database data type and confirm the selection using the Next button.
- Specify how the data source should be accessed in the user login. From the context menu, you can access the data source from both the context for the current user or the system account. In this example, we will use a SYSTEM account. You will find additional information about this issue on the Replicator Wizard page.
Confirm the selection using the Next button.
- The ODBC connection to the Excel table will be configured in the following step.
 - The ODBC Configuration Wizard provided by the system will be opened using the Browse button.
 - Go to the Computer Data Sources tab page.
 - A new computer data source will be created from the New button.
 - Important: Select System Data Source in the subsequent dialog so that the data can be opened through the previously selected system account.
Confirm the selection using the Next button.
 - Select the ODBC driver for accessing the Excel tables. Potentially, various drivers will be offered in various languages there. Use one of the Excel drivers offered by Microsoft (*.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.

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.

- You will find several named ranges in the Excel table. The named range that contains the data to be replicated is called "AddressList". Confirm the selection using the Next button.
- Which data source fields will be copied to which target fields will be determined in the subsequent Field Assignment Wizard. You will find a stored field assignment file next to the example Excel file. Load the *Demo-Namensliste.xls.fxm* field assignment file from the button at the bottom left of the Field Assignment dialog. Confirm the settings using the Next button.
- Leave the settings in the country and region Location Settings unchanged and confirm the dialog using the Next button.

- In the replication schedule, you can define the intervals and times for replicating the database. If desired, make changes. Otherwise exit the settings page using the Next button.
- 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 will be able to view the results of the replication process from the Database Search or Database View dialogs.

66 Transferring data from the LDAP server to the Outlook address book

You will be able to expand your address book using the estos MetaDirectory contact information with the help of the Microsoft Outlook address book.

66.1.1.1 *Setting up estos MetaDirectory with the MS-Outlook Address Book*

- Select the Email Accounts item from the Tools menu.
- Select Add a New Directory or Address Book.
- Select Internet Directory Server (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.
- Set the connection to 712 or to the port number that you set in the estos MetaDirectory setup in the connection details.
- Click the Search tab page.
- You will enter `dc=meta` or another LDAP node, which you have configured in the Database Management under Search Base in the search options.
- Exit the dialog using the Ok button.
- The LDAP connection will be configured using the Next and then the Done buttons.
- In order for the new settings to apply, you need to restart Outlook.

66.1.1.2 *Accessing estos MetaDirectory using the MS-Outlook Address Book*

- Make sure that the specified LDAP node contains data. You can view the stored contacts from the Database View or Database Search dialogs.
- Select Address Book from the Tools menu.
- Select your previously created directory entry from the Display Names From entry. The name of the entry will be the name of the computer that you previously entered during the setup of the LDAP directory.
- Select Search from the Tools menu, in order to search estos MetaDirectory.
- Enter the desired search parameter in the Search window that will now appear. Start the search using the Ok button.
- If an entry is not found, check if contacts have been stored in the specified LDAP node corresponding to your search specification.

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

67 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

68 Access using Web Browsers

estos MetaDirectory can be accessed using browsers on the workstation and from mobile end devices.

Access using Web Browsers

Access using a web browser will not require any configuration on the client. Simply start the web browser (e.g. Internet Explorer or Mozilla Firefox) and enter the MetaDirectory Server's URL. You will find notes about configuration on the [Setting up for Web Browsers](#) page.

Access using Web Browsers for Office Communicator

Access from a Microsoft Office Communicator may occur through the embedded web browser. You will find notes about configuration on the [Setup for Office Communicator](#) page.

Access using Web Browsers from Mobile End Devices

Access from a cell phone or PDA may also occur through HTTP. Special templates have been made available for this purpose. You will find notes about configuration on the [Setup for Mobile End Devices](#) page.

69 Access from Applications and End Devices

estos MetaDirectory can be accessed from applications and end devices, which can access contact data from an LDAP server. Configure the LDAP server and port as well as the LDAP attributes available in the application or end device. Setting up access will be described for various 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

You will find details about estos MetaDirectory's LDAP server on the LDAP Servers and Fields page.

70 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

71 Setup for Hipath 2000, 3000 and 5000

Siemens Hipath telephone equipment supports a telephone book on the telephone through LDAP.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *hipath* from the Database Management. Access to this node can occur using the BaseDN *dc=hipath*. You can 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 and 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 Enter the MetaDirectory IP address.

LDAP Access Port Number Specify the MetaDirectory TCP port.

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 external dialing code that should be used for making external calls (0 by default).

LDAP phone number prefix Leave this field empty.

72 Setup for Innovaphone

The Innovaphone IP150, IP110, IP200 und IP230 phones support a phone book in the phone via LDAP.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *innovaphone* from the Database Management. Access to this node can occur using the BaseDN *dc=innovaphone*. You can 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 the USA

Area Code 30 for Berlin or 706 for Toronto

Domestic Long-distance Code 0 in Germany or 1 in the USA

International Dialing Code 00 in Germany or 011 in the USA

Trunk Access Code The number for dialing numbers external to the phone system (generally 0 in Europe).

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

4. You can configure access to the LDAP server from Config / Directory / LDAP from External Servers.

Enable External LDAP Server Access Enabled

IP Address MetaDirectory's IP address

Port Number MetaDirectory's TCP port

Distinguished Name Optional User Name

Password	Optional User Name
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	

5. Phone (firmware V6)

You will find the configuration of LDAP Directories under Configuration / Registration / Directories.

Enable External LDAP Server Enabled

Server	MetaDirectory's IP Address or Host Name
Port	MetaDirectory's TCP Port (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

73 Setup for Mitel OIP

Mitel Open Interfaces Platform (OIP) supports the integration of an LDAP server. It will be used for searching for phone numbers as well as for searching for names.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
You can use the *dc=meta* LDAP node. If you want to make individualized settings for the node, you can configure a new LDAP node from the Database Management.

Authentication Optional

Phone Number Formatting Unformatted

End Device Support Default

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

LDAP Server Address MetaDirectory server IP address or host name

LDAP Port MetaDirectory server TCP port (712)

User Name

Password

LDAP Base-DN dc=meta

LDAP object class person

LDAP search filter

Follow LDAP referrals Disabled

Given 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
Email	mail
Personal email	mail2
Mobile email	DEFAULT-MAPPING
Web site	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

74 Setup for Siemens OpenStage Telephones

The Siemens OpenStage 60 and OpenStage 80 phones support integrating an LDAP server as an address book. The phone must be configured for this.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *optipoint* from the Database Management. Access to this node can occur using the BaseDN *dc=optipoint*. You can configure this LDAP node.

Authentication Optional

Phone Number Formatting Unformatted

End Device Support OptiPoint Application Module

3. LDAP Phone Templates
The telephone's LDAP browser must be configured using a file. This file contains a description of which attributes should be used. You will find details in the telephone'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
```

75 Setup for Siemens OptiPoint Application Module

The Siemens OptiPoint Application Module supports the integration of an LDAP server as an address book. The Application Module and the OptiPoint phone must be configured for this.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *optipoint* from the Database Management. Access to this node can occur using the BaseDN *dc=optipoint*. You can configure this LDAP node.

Authentication Optional

Phone Number Formatting Unformatted

End Device Support OptiPoint Application Module

3. Application Module
The Application Module's LDAP browser must be configured using a file. This file contains a description of which attributes should be used. You will find details in the telephone's and the Application Module's Administration Manuals.
4. OptiPoint phone
The LDAP server and port must be set in the telephone's 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

76 Setup for Microsoft Outlook

Microsoft Outlook can use an LDAP server as an address book. You can search this address book. It will be used for resolving email addresses.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
You can use the *dc=meta* LDAP node. If you want to make individualized settings for the node, you can configure a new LDAP node from the Database Management.

Authentication Optional

Phone Number Formatting Unformatted or legible

End Device Support Default

3. Outlook Configuration
Open Tools / Account Settings / Address Books in Outlook. Add a new address book.
Select the Internet directory service (LDAP)

Server Name The estos MetaDirectory Server's IP addresses or DNS names

Server requires logon Optional

Additional Settings / Connection / Connection estos MetaDirectory Server's TCP port to (Default 712)

Additional Settings / Search / Search Base Enter the LDAP node DN (dc=meta)

Additional Settings / Search / Enable Searching Enabled

77 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 access estos MetaDirectory using the telephone from the Polycom XML Browser.

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *polycom* from the Database Management. Access to this node can occur using the BaseDN *dc=polycom*. You can 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 telephone books have been configured in the dc, Virtual listviews will not be available for use. In this case, enter the setting *dir.corp.vlv.allow="0"*
A configuration example:

- 4.
5. `<directory>`
6. `<dirCorp dir.corp.address="ldap://metadirserver" dir.corp.port="712"`
7. `dir.corp.transport="TCP" dir.corp.baseDN="dc=polycom"`
`dir.corp.scope="sub"`
8. `dir.corp.filterPrefix="(objectclass=person) "`
`dir.corp.user="anonymous@meta"`
9. `dir.corp.password="anonymous" dir.corp.pageSize="32"`
`dir.corp.cacheSize="128"`
10. `dir.corp.leg.pageSize="8" dir.corp.leg.cacheSize="32"`
`dir.corp.autoQuerySubmitTimeout="0"`
11. `dir.corp.viewPersistence="0" dir.corp.leg.viewPersistence="1">`
12. `<attr1 dir.corp.attribute.1.name="sn"`
`dir.corp.attribute.1.label="Last Name"`
13. `dir.corp.attribute.1.type="last_name"`
`dir.corp.attribute.1.filter=""`
14. `dir.corp.attribute.1.sticky="0"`
`dir.corp.attribute.1.searchable="1" />`
15. `<attr2 dir.corp.attribute.2.name="givenName"`
`dir.corp.attribute.2.label="First Name"`
16. `dir.corp.attribute.2.type="first_name"`
`dir.corp.attribute.2.filter=""`
17. `dir.corp.attribute.2.sticky="0"`
`dir.corp.attribute.2.searchable="1" />`
18. `<attr3 dir.corp.attribute.3.name="company"`
`dir.corp.attribute.3.label="Company"`
19. `dir.corp.attribute.3.type="other" dir.corp.attribute.3.filter=""`

```

20.   dir.corp.attribute.3.sticky="0"
      dir.corp.attribute.3.searchable="1" />
21.   <attr4 dir.corp.attribute.4.name="telephoneNumber"
      dir.corp.attribute.4.label="Business"
22.   dir.corp.attribute.4.type="phone_number"
      dir.corp.attribute.4.filter=""
23.   dir.corp.attribute.4.sticky="0" />
24.   <attr5 dir.corp.attribute.5.name="otherTelephone"
      dir.corp.attribute.5.label="Business2"
25.   dir.corp.attribute.5.type="phone_number"
      dir.corp.attribute.5.filter=""
26.   dir.corp.attribute.5.sticky="0" />
27.   <attr6 dir.corp.attribute.6.name="homephone"
      dir.corp.attribute.6.label="Home"
28.   dir.corp.attribute.6.type="phone_number"
      dir.corp.attribute.6.filter=""
29.   dir.corp.attribute.6.sticky="0" />
30.   <attr7 dir.corp.attribute.7.name="mobile"
      dir.corp.attribute.7.label="Mobile"
31.   dir.corp.attribute.7.type="phone_number"
      dir.corp.attribute.7.filter=""
32.   dir.corp.attribute.7.sticky="0" />
33.   <backGroundSync dir.corp.backGroundSync="0"
      dir.corp.backGroundSync.period="86400" />
34.   <vlv dir.corp.vlv.allow="1" dir.corp.vlv.sortOrder="sn givenName"
      />
35. </dirCorp>
36. </directory>

```

78 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 Telephone Book.
2. LDAP-nodes
Configure a new LDAP node named *Snom* from the Database Management. Access to this node can occur using the BaseDN *dc=snom*. You can 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 telephone's web configuration. You can configure access to the LDAP server from Setup / Advanced / LDAP.

LDAP name filter:	((searchContact=%))
LDAP number filter:	((searchNumber=%))
Server address	Specify the MetaDirectory IP address
Port	Indicate the MetaDirectory TCP port (Default 712)
Base	Specify the LDAP node which you have just configured (dc=snom)
User Name	
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 incoming call: To

79 Setup for Special LDAP End Devices

If you are using a special LDAP application or end device, which does not immediately work with the default settings, several options are available for adjusting the server to this issue. Normally, this occurs when your LDAP system is searching for certain attributes that are not known to the LDAP server or waiting for certain attributes in the result that will not be supplied. The objectClasses expected by your application, but not supplied by estos MetaDirectory, may also be an additional problem.

Attribute assignment

Configuration files with the *.termxml* extension in the *config/default* under the installation directory are the starting point for making adjustments. You can set attribute assignments for the LDAP server attributes in these files. By default, estos MetaDirectory only knows the LDAP attributes stored in the schema. You can rename these attributes in the assignments.

If your LDAP application is searching for, or filtering, special attributes in estos MetaDirectory, you can assign these attributes to the attributes used by estos MetaDirectory. The attributes supplied can also be renamed. 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 your 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>
```

In this example, the leading zeroes will be removed for all LDAP requests 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 will be re-read by estos MetaDirectory at runtime for changes. After any modification, they will have to recreate the connection from the Admin to the server so that the Admin will retrieve the changed settings from the server. They can immediately assign the new terminal profile to Database Management to a database node.

80 Setup for Mitel SIP telephones

The 68xxi series Mitel phones as well as Aastra 5xi series include an XML browser. An address book is implemented in this program.

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

Web Service mitel68xxi

respectively

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

Web Service miteladdress

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management.
4. Telephone
Configure one of the phone's soft keys to start the address book.

Type XML

Label Meta

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

Value *respectively*

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

81 Setup for Web Browsers

Access from a web browser has already been pre-configured.

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

Web Service Default

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. Web Browser
Start your web browser and enter the estos MetaDirectory Server's URL.

82 Setup for Cisco CallManager

Cisco telephones in the 79xx series include an XML browser. There are two web services available, which can work with contacts in the telephone.

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 Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. CallManager
Configure a Cisco IP phone service in the CallManager Administration under Features.

Service Name MetaDirectory

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

Service URL (phone list) <http://metaserver/ciscodirectory/ciscosearch.xml?device=#DEVICENAME#>

83 Setup for Office Communicator

Microsoft Office Communicator can display web sites on a tab. MetaDirectory supplies a special template for this.

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

Web Service Default

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. Communicator
Follow the instructions from the Microsoft Office Communications Server documentation to display the web pages in Communicator. Add the estos MetaDirectory URL, which contains the tab URLs to the XML file.
5. Internet Explorer
Add the IP addresses or the DNS names for the estos MetaDirectory server to the list of trusted sites in the Internet Explorer settings. Office Communicator will only allow URLs from trusted site for tabs.

XML File Example:

```
<tab>
  <image>http://metaserver/media/images/metadirectory.png</image>
  <name>MetaDirectory</name>
  <tooltip>MetaDirectory</tooltip>
  <contenturl>http://metaserver/communicator.html</contenturl>
  <tabid>1</tabid>
  <userid>>false</userid>
  <contactid>>false</contactid>
  <method>get</method>
</tab>
```

84 Setup for Mobile End Devices

Special templates have been supplied for cell phones and PDAs with web browsers. These templates have been optimized for smaller displays and lower data rates.

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

Web Service cell

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. Web browser
Start your web browser and enter the estos MetaDirectory Server's URL.

85 Setup for Polycom Telephones

The SoundPoint and Media Phone series of Polycom telephones include an XML browser. An address book has been implemented with it.

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

Web Service polycom

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. Telephone
Configure a function key for starting the address book in the telephone.

Context Enabled

Type URL for Actions

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

86 Setup for Snom Telephones

The Snom 300, 320, 360 and 370 telephones include an XML browser. An address book has been implemented with it.

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

Web Service Snom

Setup

1. Data Source
Configure a Replicator or a Telephone Book.
2. Web Servers
Enable the Web Server.
3. Web Service
Configure the Web Service. Configure the LDAP node used by this web service from Database Management
4. Telephone
Configure a function key for starting the address book in the telephone.

Context Enabled

Type URL for Actions

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

87 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.

- [Templates for the Web Server](#)
- [Template Parser](#)
- [LDAP Servers and Fields](#)
- [CGI Parameters](#)
- [Server Certificate](#)

88 Templates for the Web Server

The web server can process various templates as search dialogs. You can also create custom templates for this.

index.html

This is estos MetaDirectory's default search dialog.

communicator.html

This search form has been optimized for use in a Microsoft Office Communicator tab.

mobile.html

This search form has been optimized for use with mobile devices, e.g. cell phones or PDAs.

MetaDirectory

sotse

The screenshot displays a list of contact cards in a MetaDirectory interface. The cards are arranged vertically, each featuring a profile picture, a name, and contact information. Annotations with arrows point to various parts of the interface:

- SmallResult-header.template**: Points to the top header area of the first contact card.
- SmallResult.template**: Points to the main content area of the fourth contact card.
- smallresult-spacer.template**: Points to the vertical space between the third and fourth contact cards.
- smallresult-footer.template**: Points to the bottom footer area of the last contact card.
- listprint.template**: Points to the bottom navigation bar.
- iframe: resultframe** and **html: resultleft.html**: A green oval highlights this code in the bottom right corner of the main content area.
- listexportcsv-header.template + listexportcsv.template**: Points to the bottom navigation bar.
- singlecontact**: Points to a button in the bottom right corner.

89 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 indicate that the search string will be transferred using UTF-8 encoding in addition to 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

Searches only the phone number fields as configured in the Search Wizard. The external dialing code configured for the location will also be trimmed from the phone number before the search. Therefore only internal numbers where searched.

90 Server Certificate

A server certificate will be need for encrypted communication through Transport Layer Security (TLS).

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 certificates in use must be stored in the Local Computer / Personal storage area and contain a private key. Open the Local Computer storage area using the MMC console.

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

91 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.

92 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 Field Name Description	Type:	Mandatory Optional
LDAP Structure Attributes			
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 attributes in use	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	Directory String syntax	M

	cn, ou or dc, depending on the element		
cn	Common name. Name of the current cn	Directory String syntax	0
ou	Organizational unit. Name of the current ou	Directory String syntax	0
dc	Directory context. Name of the current dc	Directory String syntax	0
namingContexts	Entry points to the LDAP tree	Distinguished Name syntax	0
defaultNamingContext	Default LDAP entry node dc=meta	Directory String syntax	0
metaVersion	MetaDirectory Version e.g. 2.0.0.176	Directory String syntax	0
databaseDescription	Additional description used by CTI software products for opening contacts in the source database. The field will contain additional information in its ou for a database.	Directory String syntax	0
distinguishedName	Fully qualified path to the current element within the LDAP server	Distinguished Name syntax	M
supportedLDAPVersion	Supported LDAP versions of the server	Integer syntax	0
supportedExtension	Supported extensions for this server	OID syntax	0
supportedControl	Supported controls for this server	OID syntax	0

[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	O
givenName	First name	Directory String syntax	O
sn	Last name	Directory String syntax	O
title	Title	Directory String syntax	O
company	Company	Directory String syntax	O
department	Department	Directory String syntax	O
physicalDeliveryOfficeName	Office room number	Directory String syntax	O
streetAddress	Company street address	Directory String syntax	O
postalCode	Company ZIP code	Directory String syntax	O
l	Company city	Directory String syntax	O
st	Company state	Directory String syntax	O
c	Company country	Directory String syntax	O
privateAddressStreet	Personal street address	Directory String syntax	O
privateAddressPostalCode	Personal ZIP code	Directory String syntax	O
privateAddressCity	Personal city	Directory String syntax	O
privateAddressState	Personal state	Directory String syntax	O

privateAddressCountry	Personal country	Directory String syntax	0
otherAddressStreet	Miscellaneous street address	Directory String syntax	0
otherAddressPostalCode	Miscellaneous ZIP code	Directory String syntax	0
otherAddressCity	Miscellaneous city	Directory String syntax	0
otherAddressState	Miscellaneous state	Directory String syntax	0
otherAddressCountry	Miscellaneous country	Directory String syntax	0
mail	Email	Directory String syntax	0
mail2	E-Mail 2	Directory String syntax	0
mail3	E-Mail 3	Directory String syntax	0
sipAddress	SIP address	Directory String syntax	0
url	Web page URL	Directory String syntax	0
telephoneNumber	Company phone	Directory String syntax	0
otherTelephone	Secondary company phone	Directory String syntax	0
telephoneNumberCompanyMain	Company main telephone	Directory String syntax	0
telephoneAssistant	Assistant's telephone	Directory String syntax	0
homephone	Home phone	Directory String syntax	0
otherHomePhone	Secondary home phone	Directory String syntax	0
telephonePrimary	Primary telephone	Directory String syntax	0
cell	Cell phone	Directory String syntax	0
telephoneCar	Car telephone	Directory String syntax	0
telephoneRadio	Radio telephone	Directory String syntax	0
pager	Pager phone number	Directory String syntax	0
telephoneCallback	Callback telephone	Directory String syntax	0

telephoneISDN	ISDN telephone	Directory String syntax	0
telephoneTTYTTD	TTYTTD telephone	Directory String syntax	0
facsimileTelephoneNumber	Company fax number	Directory String syntax	0
otherFacsimileTelephoneNumber	Home fax number	Directory String syntax	0
customerid	Customer ID	Directory String syntax	0
directWebLink	Direct web link	Directory String syntax	0
directOpenContact	Data for opening this contact	Directory String syntax	0
info	Comment	Directory String syntax	0
custom0	Custom 0	Directory String syntax	0
custom1	Custom 1	Directory String syntax	0
custom2	Custom 2	Directory String syntax	0
custom3	Custom 3	Directory String syntax	0
custom4	Custom 4	Directory String syntax	0
custom5	Custom 5	Directory String syntax	0
custom6	Custom 6	Directory String syntax	0
custom7	Custom 7	Directory String syntax	0
custom8	Custom 8	Directory String syntax	0
custom9	Custom 9	Directory String syntax	0
custom10	Custom 10	Directory String syntax	0
custom11	Custom 11	Directory String syntax	0
custom12	Custom 12	Directory String syntax	0
custom13	Custom 13	Directory String syntax	0
custom14	Custom 14	Directory String syntax	0
custom15	Custom 15	Directory String syntax	0
custom16	Custom 16	Directory String syntax	0

custom17	Custom 17	Directory String syntax	0
custom18	Custom 18	Directory String syntax	0
custom19	Custom 19	Directory String syntax	0
contactURL	URL for editing the contact	Directory String syntax	0
contactURLDescription	Description for the contactURL link	Directory String syntax	0
contactURL2	Secondary URL for opening the contact	Directory String syntax	0
contactURLDescription2	Description for the secondary contact URL link	Directory String syntax	0
contactURL3	Tertiary URL for opening the contact	Directory String syntax	0
contactURLDescription3	Description for the tertiary contact URL link	Directory String syntax	0
jpegPhoto	Binary JPEG data for the contact picture	JPEG image syntax	0
imagePath	URL for the contact picture	Directory String syntax	0
sourceModifyTimeStamp	Any timestamp information about when the data was changed in the data source	Directory String syntax	0

Attribute assignments for phone books:

The following list shows the phonebook database entries matching the LDAP database entries. The address information will be copied to the company address fields regardless of whether the source entry is a business or a personal 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, if available
postalCode	Company address ZIP code	ZIP code, if available
l	Company city name	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	Company fax number, if available
otherfacsimileTelephoneNumber	Home fax number	Home fax 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
<pre>(&(objectClass=contactperson) ((homephone=+49815136856177) (mobile=+49815136856177) (pager=49815136856177)))</pre>	<p>Contacts with the telephone number, "+49815136856177", in any of the fields: home phone, cell phone or pager.</p>
<pre>(&(objectClass=contactperson) ((sn=*Name*) (displayName=*Name*) (company=*Name*) ((homephone=+49815136856177) (mobile=+49815136856177) (pager=49815136856177)))</pre>	<p>Contacts with "Name" in any position in the LDAP fields: sn, displayName or company; AND the telephone number, "+49815136856177", in any of the fields: home phone, cell phone or pager.</p>
<pre>(&(objectClass=contactperson) (searchContact=Name))</pre>	<p>This search request lets the estos MetaDirectory search for a contact in the fields setup using the Search Wizard. The wildcards will also be added to the search request according to the settings from the Search Wizard. Currently, the search result will NOT contain a searchContact element.</p>
<pre>(&(objectClass=contactperson) (searchNumber=+49815136856177))</pre>	<p>This search request lets the estos MetaDirectory search for a number in the fields setup using the Search Wizard. The wildcards will also be added to the search request according to the settings from the Search Wizard. Currently, the search result will NOT contain a searchNumber element.</p>
<pre>(&(objectClass=contactperson)</pre>	<p>This search request lets the estos MetaDirectory search for a contact in the fields setup using the Search Wizard. Wildcards will automatically</p>

(searchIndividual=Name)) not be added 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"> • 0Unformatted international standard dialing format • 1Unformatted international standard dialing, reduced internal numbers • 2Legible • 3Legible, reduced internal numbers • 4dialable • 5DIN5008:2005 • 6DIN5008:2005, reduced internal numbers • 7Unformatted international standard dialing format, extensions punctuated using hyphens (-) • 8Unformatted international standard dialing format, extensions punctuated using hyphens (-), reduced internal numbers 	1.3.6.1.4.1.10924.233.8	
	Control	Search for items 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	Outlook / Exchange

DB05	Lotus Notes
DB06	ODBC
DB06	ODBC
DB07	LDAP
DB08	Active Directory
DB12	Abacus contacts
DB13	Abacus addresses
DB14	Microsoft CRM 1.2
	Phone books
	EntryIDStore Phone book name
	00000001 KlickTel Server
DB16	00000002 DasTelefonbuch Deutschland
	00000003 TwixTel
	00000004 Herold
DB17	Steps Business Solutions
DB19	Compact Datev EO
DB20	Classic Datev EO
DB21	Comfort Datev EO

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	Lotus Notes
5	ODBC
6	LDAP
7	Active Directory
8	Novell Directory
9	MetaDirectory
10	Tobit David
11	Compact Datev Eigenorganisation
12	Classic Datev Eigenorganisation
13	Comfort Datev Eigenorganisation
14	Datev Eigenorganisation SDD>
15	Microsoft CRM 1.2 contacts
16	Microsoft CRM 1.2 accounts
17	Abacus
18	Steps Business Solutions
19	DasTelefonbuch Deutschland
20	TwixTel
21	KlickTel Server
22	XML data
23	Active Directory, outbound
24	XML, outbound
25	CSV, outbound
26	Herold White Pages
27	Herold Yellow Pages
1000	Custom user replicator

How to adapt your own replicator to estos MetaDirectory:

To gain enough performance for replicating large contact archives, estos MetaDirectory does not support standard approaches to writing data to archives. Custom LDAP extensions allow you to push large quantities of contact data to the LDAP server. A software development kit describing how to use the custom extensions and how to write data to the LDAP archives has not yet been written.

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

93 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 your local phone area code here. For example, the area code is 30 for Berlin, 89 for Munich and 1 for Zurich (Switzerland).

Primary System Phone Number (system connection)

If you have a system connection with extensions, you should enter the system line's base number here. If, for example, you have the number +49 (30) 12345-222, the system phone number is 12345. If you have a multi-device line or do not know what is meant here, please leave this field empty.

94 Phone System Location

94.1.1.1 Phone System

Location uses Telephone Equipment

If this option has been enabled, internal phone numbers will be detected and the dialing code for an external line can be used for dialable numbers.

Internal Phone Numbers

- **Maximum Number of Digits for Internal Phone Numbers**
Enter the number of digits for internal phone number extensions for your PBX system. For example, if your internal numbers have three digits (e.g., 121), enter 3.

Outgoing PC Connection

An external dialing code is the number you must dial on the telephone in order to make an external call. The entry of this code may be required from the PC, even for automated external calling from the telephone.

Normally, the three following types of external dialing codes are identical and should contain a zero.

- **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.

95 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 individual source fields in the advanced Field Assignment Settings. These format settings will only be applied according to the special rules stored for the individual source fields. These formatting rules will only be applied to phone number fields, which you can configure from the Search Wizard.

Phone numbers will normally be converted automatically to an international standard dialing format (+49301234567) according to the rules that you have defined in the Location 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 search and replace feature, which works with regular expressions, will make the modifications. You can check the result of your entry, 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: you will find the caret sign (^) at the top left of the German keyboard.

Here is a brief review of the allowed expressions:

Character	Description
^	The beginning of the phone number. The expression, "^0", will find the zero only at the beginning of the phone number.
^	The caret (^) directly after the opening bracket ([]) has a special meaning. It is used for excluding subsequent characters between the brackets. The expression, "[^0-8]", will only allow digits between zero and eight.
\$	The dollar sign (\$) indicates the end of the phone number. The expression, "152\$" is only valid for phone numbers that end with 152.
	The pipe sign () allows the two characters on either side of it. The expression "8 9" will allow either an eight or a nine.
.	The period (.) will allow all characters (or any digit).
*	The asterisk (*) indicates that the character to its left must appear zero times or more often.
+	The plus sign (+) operates similar to the asterisk, except that the character to its left must appear at least once.
?	The question mark (?) indicates that the character to its left must appear zero times or once.
()	Parentheses indicate the expressions that will be available in the replacement field.

[] The brackets ([and]) indicate a set of characters that will be permitted at that position.

Replace with

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

\1 acts as a placeholder for the first expression indicated by parentheses for the Search For field.

\2 acts as the second placeholder, and so forth.

Examples

Effect	Search for	Replace with
Suppress all internal numbers having a three-digit extension.	<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>
Add the phone system base number (03012345) to all internal numbers (with one to three digits)	<code>^([0-9][0-9]?[0-9]?)\$</code>	<code>+493012345\1</code>
Add the area code to all phone numbers that do not start with zero and have at least four digits (except internal numbers).	<code>^[^0][0-9][0-9][0-9].*)</code>	<code>+498151\1</code>

96 Server Connection

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

Local Server

This option will connect to the server installed locally on this computer. You can also view the event log and the connection log.

Remote Server

This option will connect to the server which is not installed locally on this computer. You cannot view the event log and the connection log.

Administrator Login

In order to administer the server, you will need to have login to the server. You determined the administrator login during installation. You can change in from the Tools menu.

You will find additional information about ports on the TCP settings page.

➡ 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.

97 Configuration

Using the menu entries *File/Configuration/Import...* respectively *File/Configuration/Export...* you are able to backup an existing MetaDirectory configuration if you intend to restore it later. This backup is intended to migrate settings to a higher version of MetaDirectory.

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


Export configuration

When exporting a configuration you will be prompted to enter a target, where the backup-archive will be copied to. For export the MetaDirectory doesn't need to be stopped.

Import configuration

Choose the backup-archive which you want to import. While importing an previously exported archive, the server will restart.

 Because paths of the imported configuration in relation to the exported might have changed, sometimes it is necessary to reallocate them, in particular replicators if they use the "samples" folder.

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

98 estos MetaDirectory TCP Settings

You can determine which ports should access the various services of estos MetaDirectory from the TCP Settings. You can determine the ports for administration, the LDAP server and the web server during setup from here.

If you access the TCP settings after installation as an administrator, only the administrator port will be able to be configured. To configure web server and LDAP server services, use the respective setting menus.

The default ports should only be changed in exceptional cases.

➡ If you cannot set the ports, the cause will be insufficient rights for accessing the registry. The settings for the ports are stored in the HKEY_LOCAL_MACHINE registry path.

🌐 You will not be able to change the port settings under Windows without additional rights. The *Run as Administrator* entry on the context menu, which you can open by right-clicking on the application icon, will make these rights available.

99 Template Parser

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
<!-- <DatabaselD/> -->	DatabaselD	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	l
<!-- <Businessaddressstate/> -->	Company state	st
<!-- <Businessaddresscountry/> -->	Company country	c
<!-- <Privateaddressstreet/> -->	Personal street address	privateAddressStreet
<!-- <Privateaddresspostalcode/> -->	Personal ZIP code	privateAddressPostalCode
<!-- <Privateaddresscity/> -->	Personal city	privateAddressCity
<!-- <Privateaddressstate/> -->	Personal state	privateAddressState
<!-- <Privateaddresscountry/> -->	Personal country	privateAddressCountry
<!-- <Otheraddressstreet/> -->	Miscellaneous street address	otherAddressStreet
<!-- <Otheraddresspostalcode/> -->	Miscellaneous ZIP code	otherAddressPostalCode
<!-- <Otheraddresscity/> -->	Miscellaneous city	otherAddressCity
<!-- <Otheraddressstate/> -->	Miscellaneous state	otherAddressState
<!-- <Otheraddresscountry/> -->	Miscellaneous country	otherAddressCountry
<!-- <EMail/> -->	Email	mail
<!-- <EMail2/> -->	E-Mail 2	mail2
<!-- <EMail3/> -->	E-Mail 3	mail3
<!-- <SIPadress/> -->	SIP address	sipAddress
<!-- <WebpageURL/> -->	Web page URL	url
<!-- <Phonebusiness/> -->	Company phone	telephoneNumber
<!-- <Phonebusiness2/> -->	Secondary company phone	otherTelephone

<!-- <Companymaintelephone/> -->	Company main telephone	telephoneNumberCompanyMain
<!-- <Assistanttelephone/> -->	Assistant's telephone	telephoneAssistant
<!-- <Phonehome/> -->	Home phone	homephone
<!-- <Phonehome2/> -->	Secondary home phone	otherHomePhone
<!-- <Primarytelephone/> -->	Primary telephone	telephonePrimary
<!-- <Phonemobile/> -->	Cell phone	mobile
<!-- <Cartelephone/> -->	Car telephone	telephoneCar
<!-- <Radiotelephone/> -->	Radio telephone	telephoneRadio
<!-- <Phonepager/> -->	Pager phone number	pager
<!-- <Callbacktelephone/> -->	Callback telephone	telephoneCallback
<!-- <ISDNtelephone/> -->	ISDN telephone	telephoneISDN
<!-- <TTYTTDtelephone/> -->	TTYTTD telephone	telephoneTTYTTD
<!-- <Facsimilebusiness/> -->	Company fax number	facsimileTelephoneNumber
<!-- <Facsimilehome/> -->	Home fax number	otherFacsimileTelephoneNumber
<!-- <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 for editing the contact	contactURL
<!-- <ContactURLDescription/> -->	Description for the 1. contactURL	contactURLDescription
<!-- <ContactURL2/> -->	Secondary URL for opening the contact	contactURL2
<!-- <ContactURLDescription2/> -->	Secondary contact URL description	contactURLDescription2
<!-- <ContactURL3/> -->	Tertiary URL for opening the contact	contactURL3
<!-- <ContactURLDescription3/> -->	Tertiary contact URL description	contactURLDescription3
<!-- <ContactPictureMeta/> -->	Will embed the picture for this contact	jpegPhoto
<!-- <ContactPicturePath/> -->	Contains a path to the picture, if configured from the replicator	imagePath

Parser Commands and Attributes

Command	Potential Values	Description
fieldvalue	0/1	<p><!-- <LastName fieldvalue="1"/> --></p> <p>Smith</p> <p><i>The parser drops the associated field value</i></p> <p><!-- <LastName fieldname="1"/> --></p>
fieldname	0/1	<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> <p><!-- <LastName skipifemptyvalue="1" fieldname="1" fieldvalue="1"/> --></p>
skipifemptyvalue	0/1	<p><i>If LastName exists in the database:</i></p> <p>Last name:Smith</p>
formatvalue		<p><i>If LastName is empty the parser will not add "Last name:" to the output</i></p> <p>The parser will format the field value according to the format specified by</p>

		the possible values
	plain	<pre><!-- <Company fieldvalue="1" formatvalue="plain" /> --> +4912345678</pre>
	phonelink	<pre><!-- <Phonebusiness fieldvalue="1" formatvalue="phonelink" /> --> +4912345678</pre> <p><i>The phonelink handler can be defined from the estos MetaDirectory Administrator.</i></p>
	maillink	<pre><!-- <EMail fieldvalue="1" formatvalue="maillink" /> --> info@estos.com</pre>
	siplink	<pre><!-- <Custom0 fieldvalue="1" formatvalue="siplink" /> --> info@estos.com</pre>
	httplink	<pre><!-- <WebPageURL fieldvalue="1" formatvalue="httplink" /> --> http://www.estos.com</pre>
	uri	<pre><!-- <WebPageURL fieldvalue="1" formatvalue="uri" /> --></pre> <p><i>Format an href plainly, without additional formatting.</i></p>
	uriblack	<pre><!-- <WebPageURL fieldvalue="1" formatvalue="uriblack" /> --></pre> <p><i>Format an href with target='_blank', without additional formatting.</i></p>
	custom	<pre><!-- <Custom0 formatvalue="custom" customformat="Op en customer accounting" /> --></pre> <p>Open customer accounting</p> <p><i>You can easily connect your web-based CRM software using custom links You can use the following placeholders to get the appropriate data:</i></p> <ul style="list-style-type: none"> • <i>%name%</i> - for the field name • <i>%value%</i> - for the field value • <i>%phonelink%</i> - for the dial handler prefix
prefix	any apart	<pre><!-- <LastName fieldname="1" prefix="" /> --></pre> <p><i>Last name</i></p> <p><i>The parser will add a prefix to the value and/or name content</i></p>
suffix	any apart	<pre><!-- <LastName fieldvalue="1" suffix="..." /> --></pre>

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

Conditional statements

Tag	Description
if	<code><!-- <if condition="1" /> --></code> The condition is evaluated and the following text block will be included if the statement

evaluates to 1.

All fields from the template parser will be available in the statement.

Examples:

```
<!-- <if condition="UserAgent=='*Mozilla*'" /> -->
<!-- <endif/> -->
<!-- <if condition="Lastname=='Anders*' AND Firstname=='Tom*'" /> -->
<!-- <endif/> -->

<!-- <elseif condition="1" /> -->
```

The condition is evaluated and the following text block will be included if the statement evaluates to 1.

elseif

Examples:

```
<!-- <if condition="UserAgent=='*Mozilla*'" /> -->
<!-- <elseif condition="UserAgent=='*Opera*'" /> -->
<!-- <endif/> -->

<!-- <else/> -->
```

The following text block will be included, if the corresponding IF-statement did not evaluate to 1.

else

Examples:

```
<!-- <if condition="UserAgent=='*Mozilla*'" /> -->
<!-- <else/> -->
<!-- <endif/> -->
```

endif

```
<!-- <endif/> -->
```

Indicates the end of the IF-condition block.