



## **GALSYNC® v5.1**

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### Manual

**NETsec**

11. March 2014

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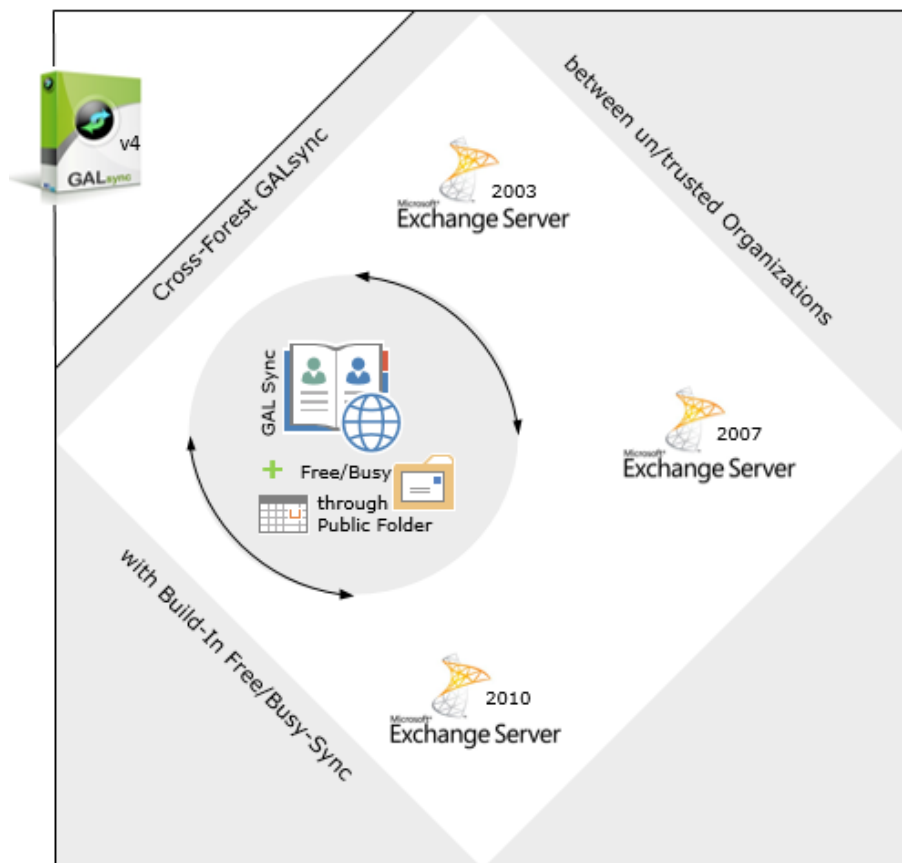
# Introduction

## What are the principles?

- Independency – each company only shares that information it wants to share
- No trust is needed between the companies
- The software is easy to install and easy to configure
- Exchanging the data you want to share should be very easy and secure – so we have chosen email as preferred transport between the companies.

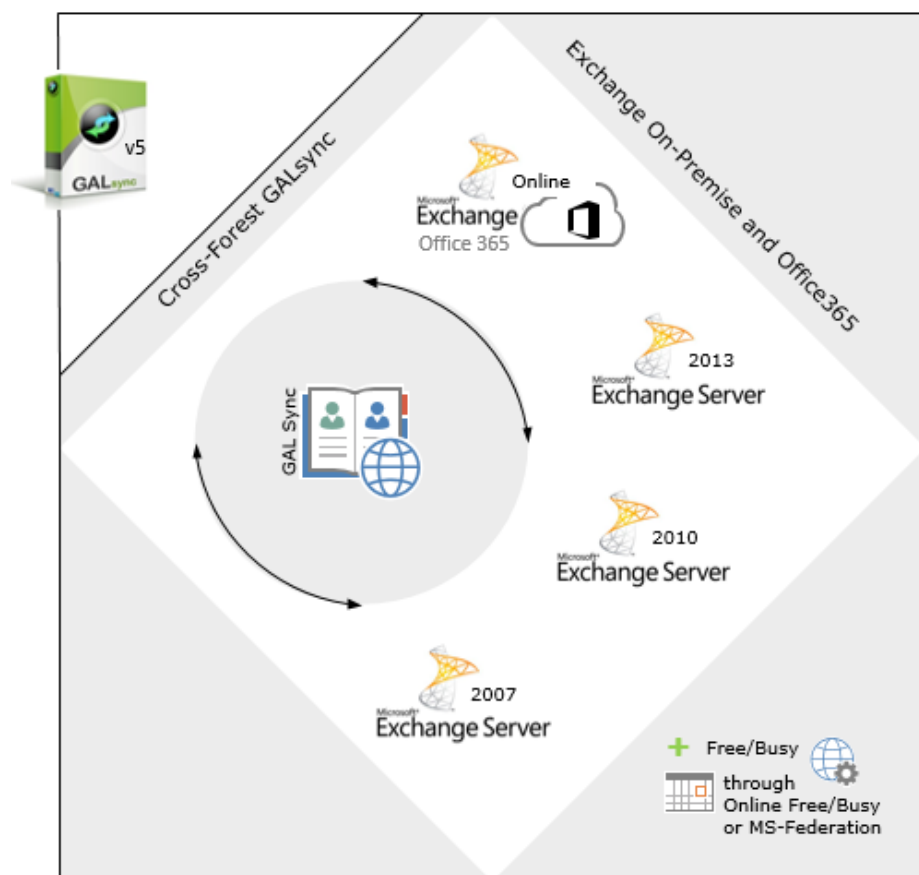
## Versions

GALsync 4\* supports environments with Exchange 2003, 2007 and Exchange 2010.



*\* MICROSOFT WILL STOP SUPPORTING EXCHANGE 2003 ON THE 8TH APRIL 2014. AS MUCH AS WE WOULD LIKE TO KEEP COMPATIBILITY UP FOR ALL VERSIONS, WE CANNOT SUPPORT AN ENVIRONMENT WHICH IS NO LONGER SUPPORTED BY THE MANUFACTURER HIMSELF. STARTING ON THE DEPRECATION OF EXCHANGE 2003, GALSYNC 4 WILL BE COMPLETELY REPLACED BY GALSYNC 5. WITHIN THE GIVEN SCENARIOS WE WILL SUPPORT BOTH GALSYNC 5 AND 4 UNTIL THE 8TH APRIL 2014.*

Up from GALsync 5 environments with Exchange 2007, 2010, 2013 and Exchange Online/Office 365 are supported.



### Compatibility

- If you test GALsync 5 please archive your GALsync 4 files (policies and data) so that you are able to fall back to this version in case of failure.
- An upgrade from a version 4\* installation to version 5 does involve the re-creation of your policies. This is due structural modifications implementing Exchange Online.
- The data files are compatible between versions 4\* and 5. So you are able to export directory information (no Free/Busy) from an Exchange 2003 organization by using GALsync 4\* to Exchange 2007/2010/2013 or Exchange Online by using GALsync 5.

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## Recommendations (Do's and Don'ts)

### Junk Mail Filter

If you chose email as transport to exchange data we strongly recommend that you configure the receiving mailbox not to block mails from your partner site. Especially in Exchange Online GALsync mails are often treated as junk mails.

### Suggestions to test GALsync policies

We recommended to test GALsync before using with your production accounts. This way you will prevent any unwanted changes or impacts you might not have considered during setup.

- First use some test accounts and groups
- Then use only 1-5 real accounts

### Never delete manually

Never manually delete synced accounts in the target organization after they have been used by clients! Outlooks NK2 CACHE / AUTOCOMPLETE CACHE respective the name resolution of Outlook will not take care of the new objects with the same CN without having the LEGANCYEXCHANGEDN of the former object as x500 address present.

### Schedule without overlaps

It is strongly recommended that you configure the scheduler in such a way, that exports and imports do not overlap. Try the time for each policy will run by a manual execution. After that configure your schedules.

### One import policy for exact one organizational unit (On-Premise only)

It is strongly recommended never to configure more than one import-policy to save the objects in the same organizational unit. Following the architecture of GALsync all previous objects would be deleted if they are not identical with one in the import set.

Example:

Import Policy 1: contains *user1@foresta.com* and *user2@foresta.com*;  
import Policy 2: contains *user1@foresta.com* and *group1@foresta.com*.  
Both policies are configured to import to OU GALimport. If now policy 1 runs *user1@foresta.com* and *user2@foresta.com* are created. If afterwards policy 2 runs then *user2@foresta.com* will be removed and *group1@foresta.com* is created.



### Performance (Exchange Online)

When using any Exchange Online related Policy in GALsync, please be aware of the possibility of some lag. This is due Exchange Online being a remote environment, which GALsync connects to using Remote PowerShell. This puts GALsync inside any existing limitation Microsoft might apply to the connection.

### Star Topology

Never use an Exchange Online partner as central hub. Exchange Online does not provide all attributes you find in Exchange On-Premise versions.

## Licensing

### Trial license

It is possible to run GALsync without license. Please note that in this case only up to 100 objects can be exported or imported.

If you try to export with email transport more objects than licensed, the message will not be transferred and an error is written to the log file.

If your license is not valid or version-compatibility is not given the message will not be sent, because in the target the import could lead to unwanted results in Active Directory.

Data files with more than 100 objects cannot be imported.


If you run GALsync as trial this is displayed in information bar at the bottom of the program window.

### How to add a license

Click **HELP** and select **ABOUT**.

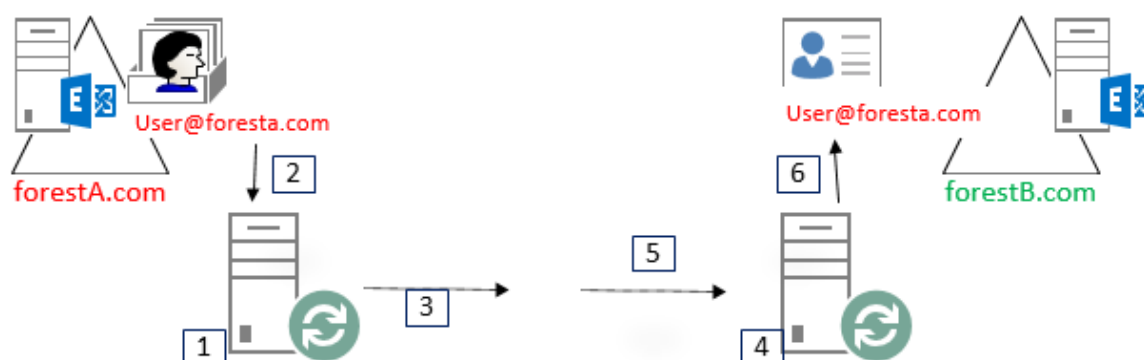
- GALsync will provide you with basic information about your current license status.
- To add a license you press the **ADD LICENSE** button, and then select the license file you received.

### How many objects are to be licensed?

-  **Counter** Create an export policy, choose the appropriate objects. Then you can count all of the objects which are valid for export and would be exported during a run. This can help you choose for how many sync objects you need to license.

## Quickstart

Here you test the basic steps for a successful first unidirectional synchronization. In this example the source and/or the target may be On-Premise or Exchange Online (only).



### 1 Prerequisites

- Your environment must be based on Exchange 2007 SP1 and higher or Exchange Online (only).
- The computer you want to install GALsync on
  - Must be a member of the domain if your side is On-Premise. It should have a good bandwidth to the next DC/GC and an Exchange Server with CAS role.
  - May be a standalone machine if your side is Exchange-Online.
  - Should have a dual-core processor and 2GB RAM.
  - Can be a client OS, i.e. Windows 7 Professional (64-Bit), for testing or a server OS, i.e. Windows 2008 R2 SP1 (64-Bit).
  - Must be configured with .NET Framework 3.5. Even if .NET Framework 4 is installed you have to add .NET Framework 3.5 (SERVER MANAGER -> ADD ROLES AND FEATURES -> FEATURES -> .NET FRAMEWORK 3.5 (includes .NET 2.0 and 3.0))
  - Must be configured with PowerShell 2.0 Engine note. Even if PowerShell 3.0 is installed you have to add PowerShell 2.0 Engine (SERVER MANAGER -> ADD ROLES AND FEATURES -> FEATURES -> WINDOWS POWERSHELL -> POWERSHELL 2.0 ENGINE)
- Create a mailbox in source and in target forest. Ensure that messages can be send between these mailboxes.
  - On-Premise: Provide the user of the mailbox with administrative permissions on the machine you want to install GALsync on. Provide the user of the mailbox in the target forest with administrative permissions on the machine you want to install GALsync on.

- Exchange-Online: The user of the mailbox must be member of the EXCHANGE ORGANIZATION MANAGEMENT role.
- GALsync must have direct access to the user mailbox via Exchange Web Services.

**NOTE: DIRECT ACCESS TO KIOSK USER MAILBOXES VIA EXCHANGE WEB SERVICES IS NOT PERMITTED. SEE <http://community.office365.com/en-us/forums/158/t/62635.aspx> AND <http://social.msdn.microsoft.com/Forums/en-US/exchangesvrdevelopment/thread/1758d5f8-be86-4dc9-b53c-d6eb38d2d7d2>**

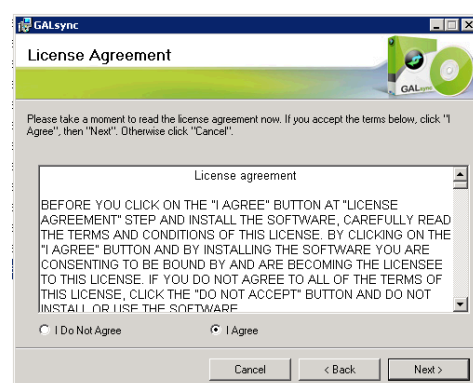
- Ensure that the mailbox is accessible (i.e. by Outlook Web Access), that the mailbox can send to and receive mails from the other organization and that incoming mails from the other organization do not get caught by your spam filter or firewall.

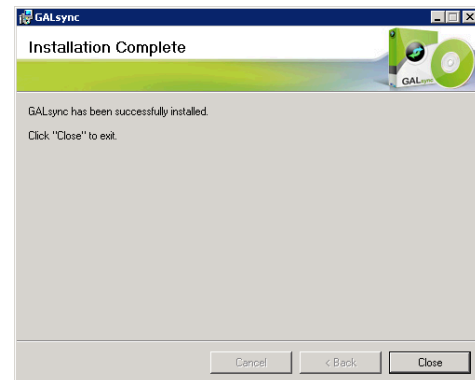
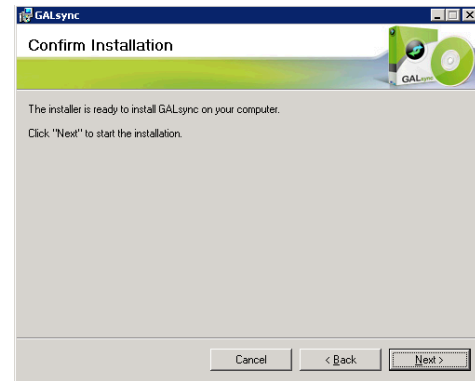
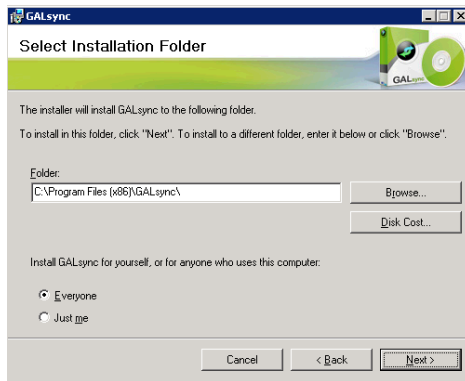
**NOTE: NEW CREATED EXCHANGE ONLINE ACCOUNTS NEED TO LOG ON AT LEAST ONE TIME TO RESET THEIR TEMPORARY PASSWORD. OTHERWISE REMOTE POWERSHELL WILL NOT WORK.**

- If your target side is On-Premise then create an Organizational Unit where you want to import the source objects. The GALsync Service Account needs write permissions in the Active Directory for the import OU. To grant this see chapter PERMISSIONS in section ACTIVE DIRECTORY PERMISSION FOR THE IMPORT OU.
- If your side is On-Premise, make sure that you can logon with the configured SA. Also it is required that the setup of GALsync can grant this account with local security permissions to LOG ON AS SERVICE. Also you may add the SA account to the local group REMOTE DESKTOP USERS.
- For testing purposes create some mailboxes and a group. Add the mailboxes as member to the group.

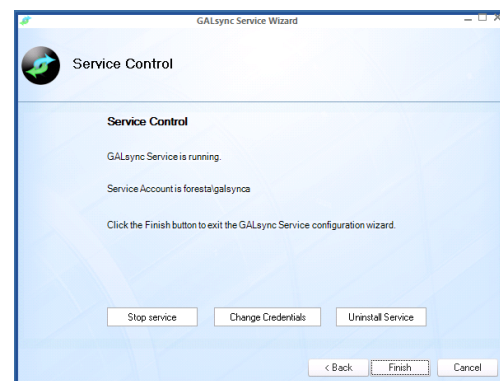
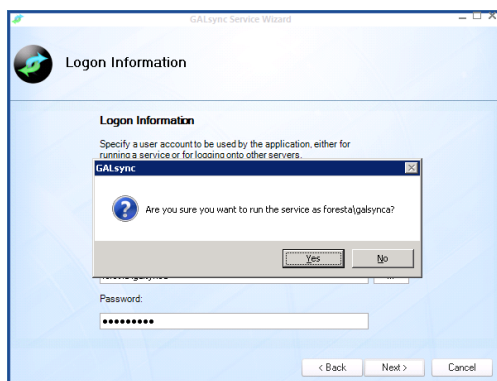
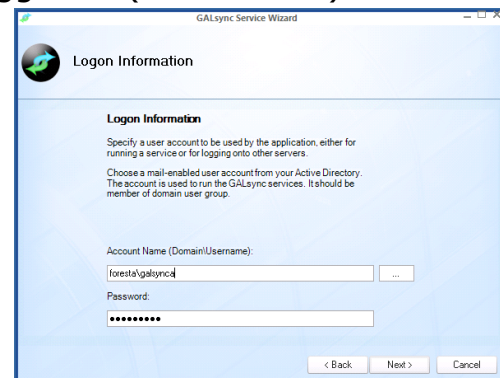
## 2 Install the software in the source forest

- Login with the user you created before. Run setup.

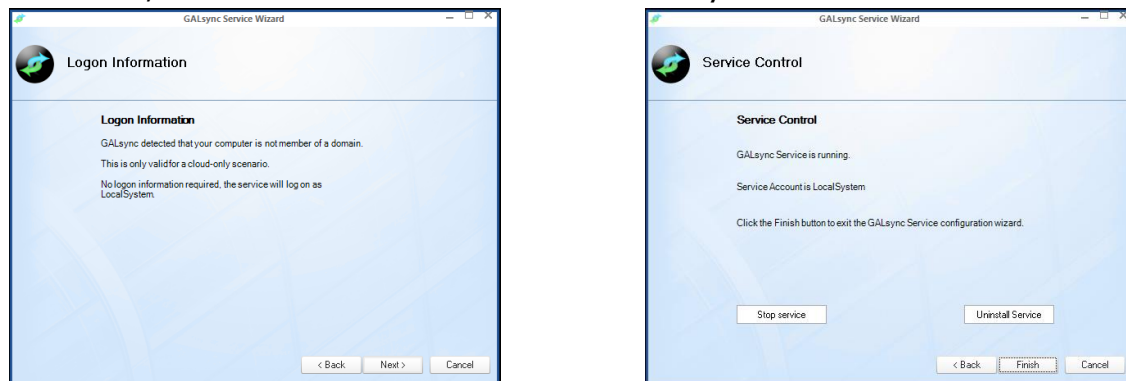




- Run GALsync the first time and configure a Service Account (SA) by taking the same account as you are logged in (On-Premise).

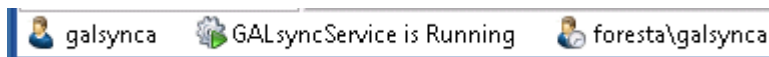


If the setup detects that GALsync was installed on a standalone machine, the SA will be added automatically as `LOCALSYSTEM`.

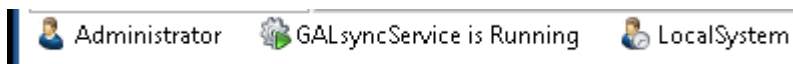


Running GALsync you can check the SA configuration and your log-in account at bottom left corner.

On-Premise



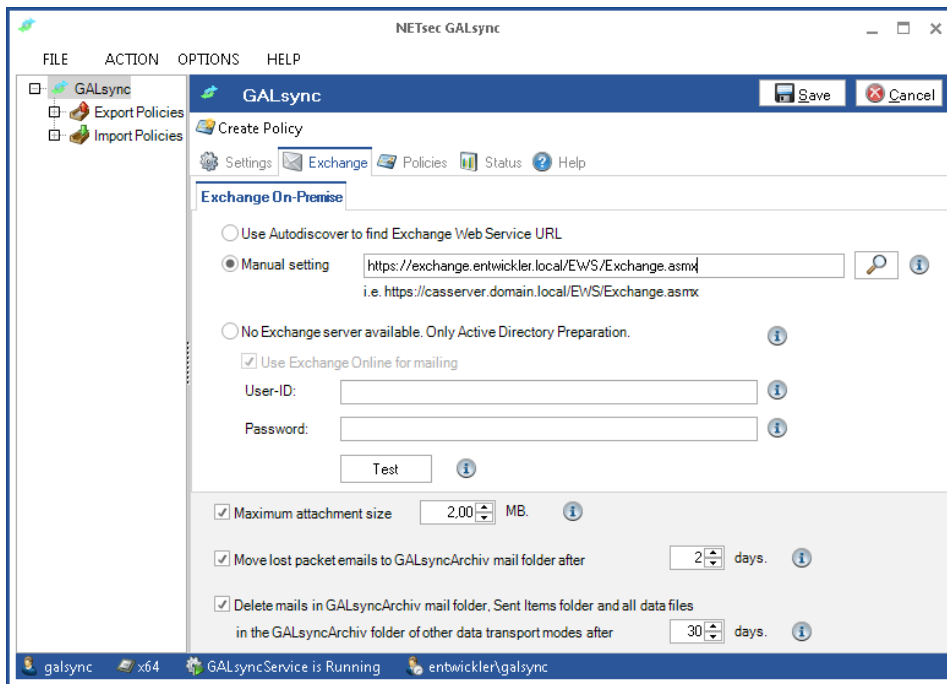
Exchange Online



- In menu **HELP** select **ABOUT** and add your license. See also chapter **LICENSING**.



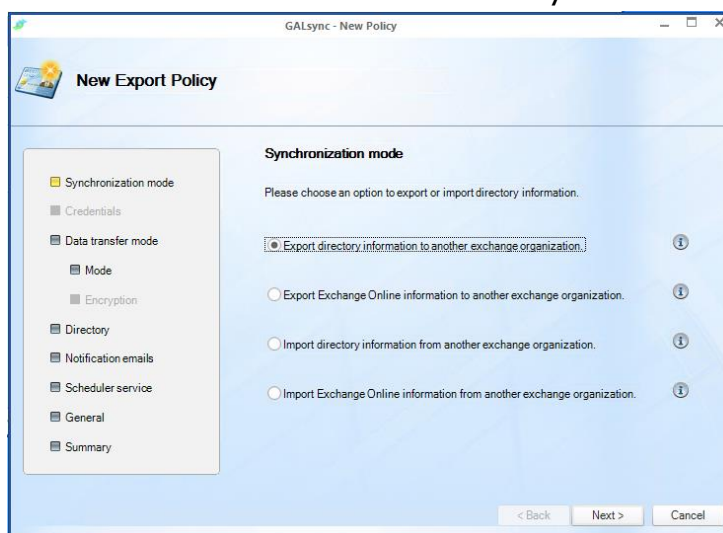
- On-Premise only: In menu **OPTIONS** select **EXCHANGE**.
- Configure the access to your Exchange Server. Click **MANUAL SETTING** and the **SEARCH** icon. Now GALsync tries to use autodiscover and displays the URI it discovers. If you get an error message please insert the correct URI for your environment.



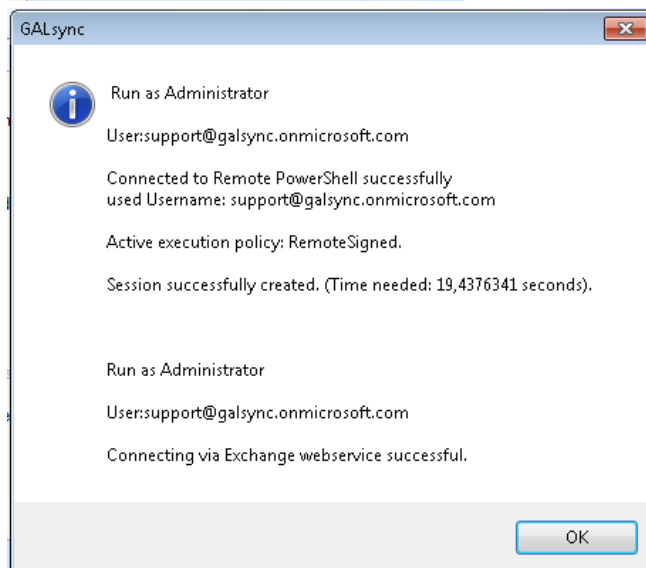
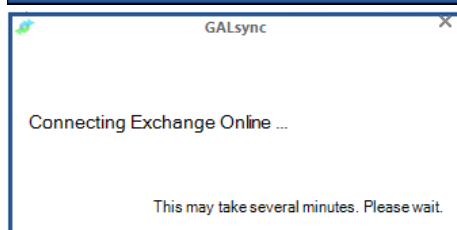
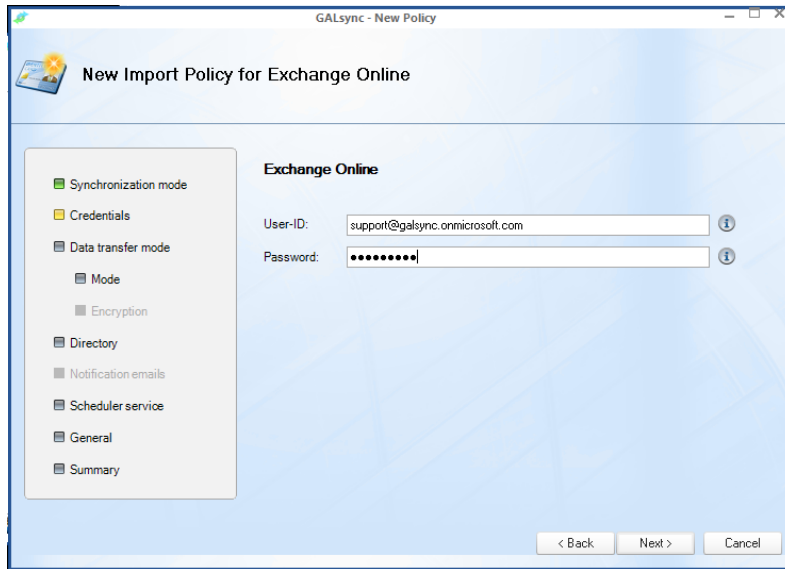
- Leave the other option unclicked.
- Confirm the first configuration by pressing the **SAVE** button.

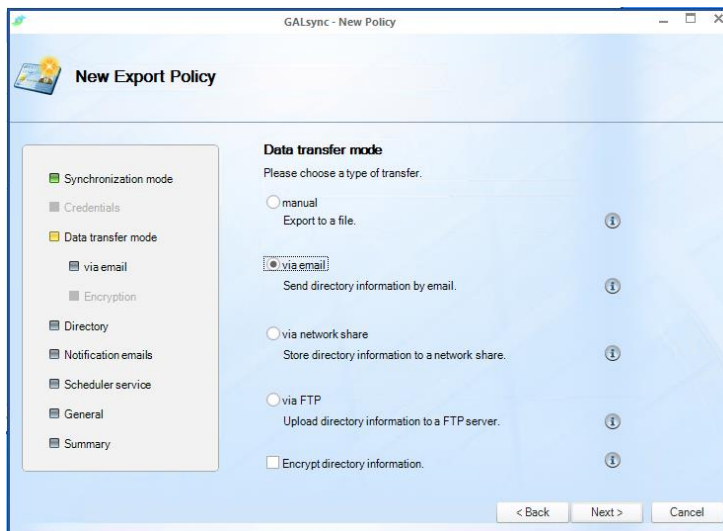
### 3 Create and run an export policy

- Create a first Export policy lead by the wizard
  - Choose to **EXPORT DIRECTORY INFORMATION** if you are On-Premise or choose **EXPORT EXCHANGE ONLINE** if you use Office 365. Click **NEXT**.

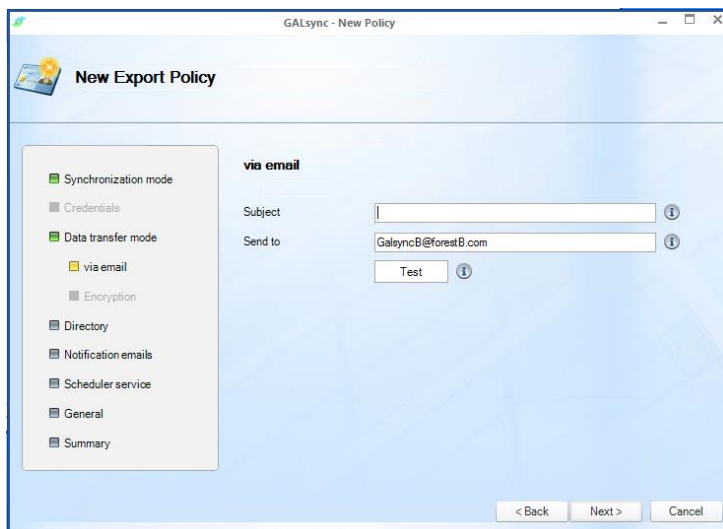


- If you are Exchange Online then insert the user-ID and password of an appropriate account in the cloud. Click **NEXT**. GALsync tries to connect to Exchange Online. This may take a certain time.



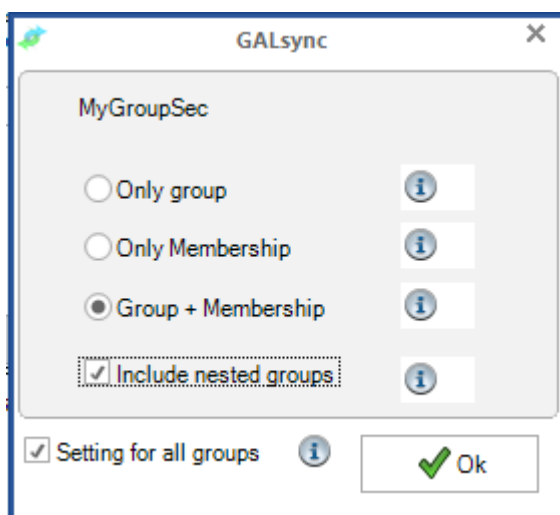
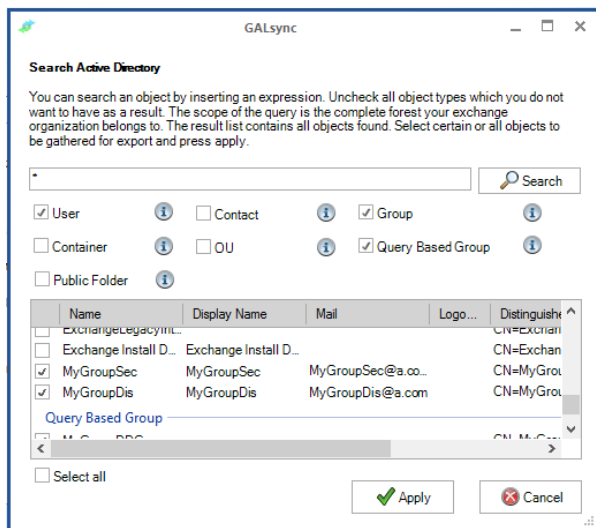


- Choose **VIA EMAIL** as data transfer mode. Insert the SMTP address of the mailbox in the target forest which will receive the data. Click **NEXT**.

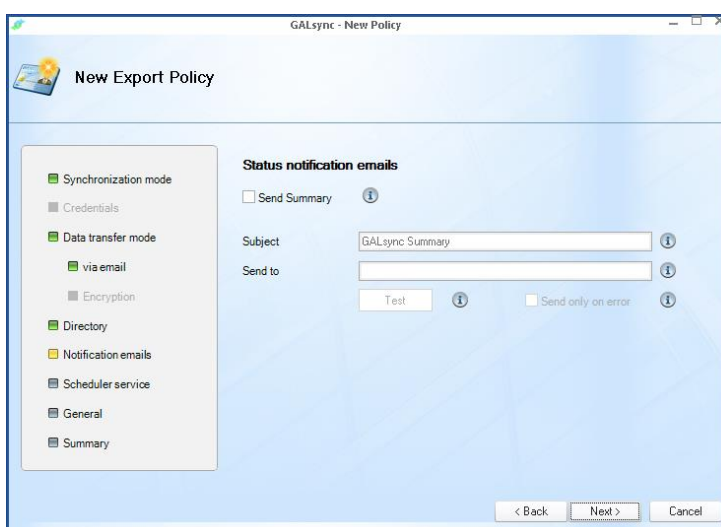


- As directory information **SEARCH** for the group which you created for test purposes with some test-mailboxes and groups as member. **APPLY** and click **NEXT**. Choose **GROUP + MEMBERSHIP**. Choose **INCLUDE NESTED GROUPS**. Choose **SETTINGS FOR ALL GROUPS**. Click **OK**. Click **NEXT**.

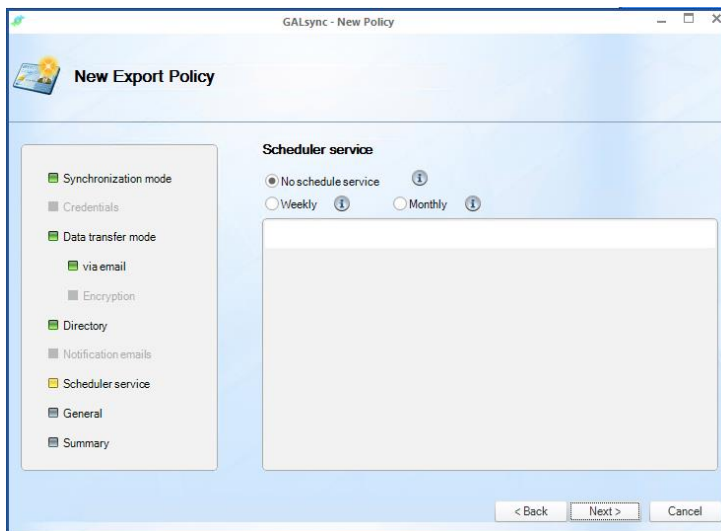




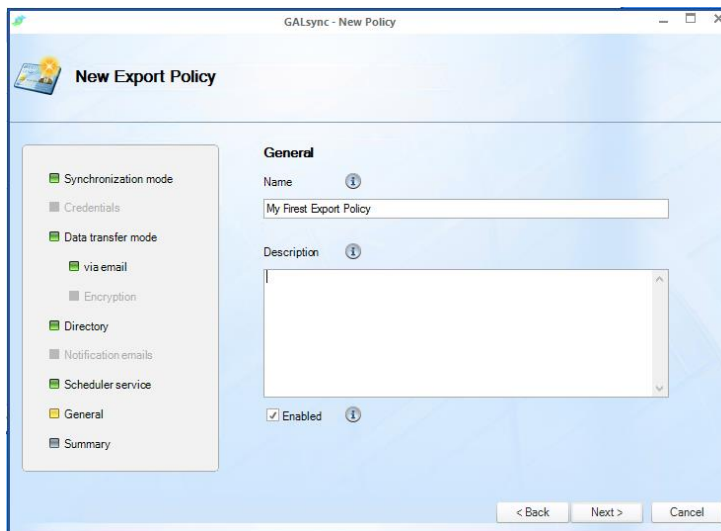
- Leave STATUS NOTIFICATION EMAILS unclicked and click NEXT.



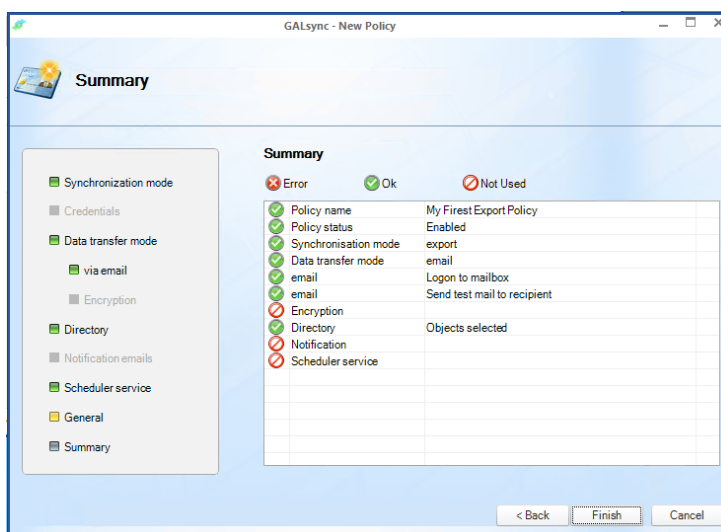
- Leave SCHEDULE SERVICE unclicked and click NEXT.



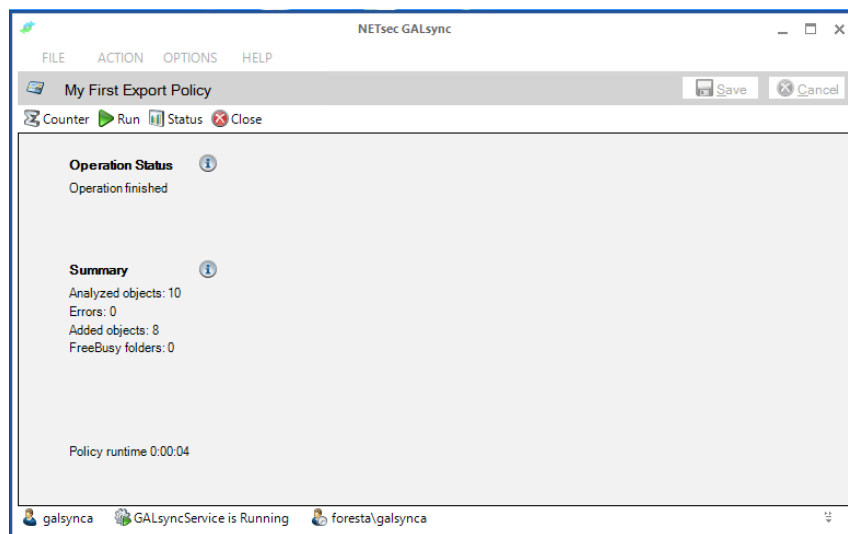
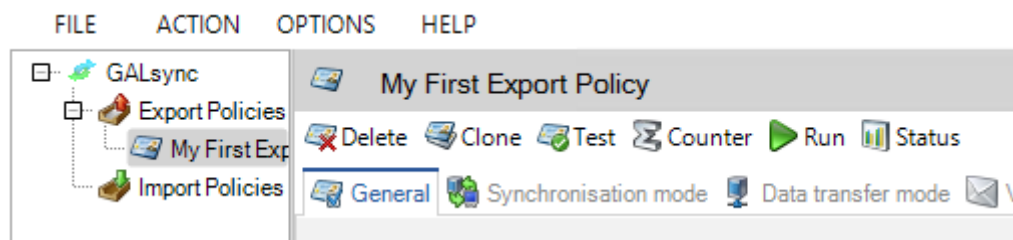
- In the GENERAL SECTION insert a name for the policy and click NEXT.



- After in SUMMARY SECTION all your configuration is validated click FINISH.



- Execute the policy by clicking **RUN** while mouse focus is set to the policy name in the hierarchy tree on the left hand side. The **OPERATION STATUS** displays the progress. After execution click **CLOSE**.

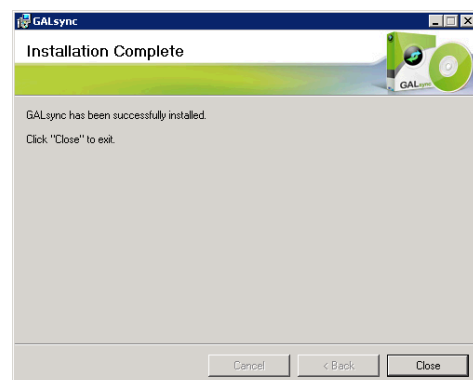
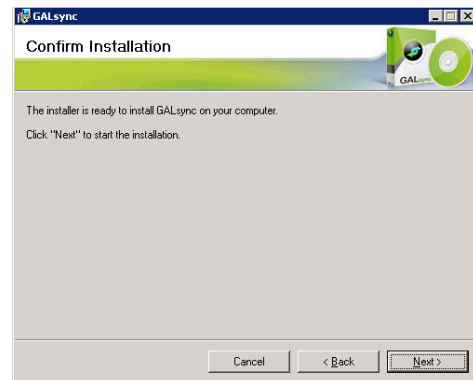
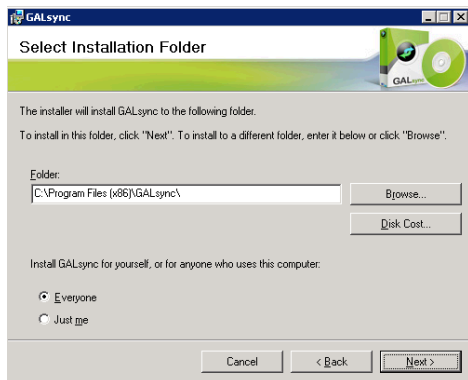
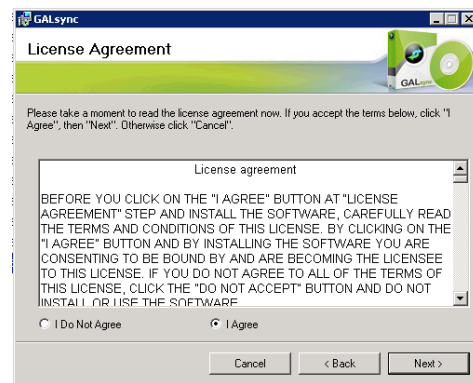


#### 4 GALsync sends the result to the target forest

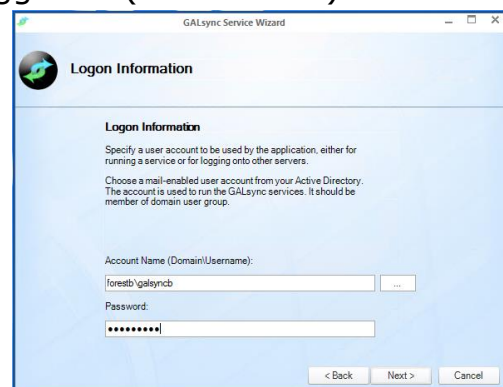
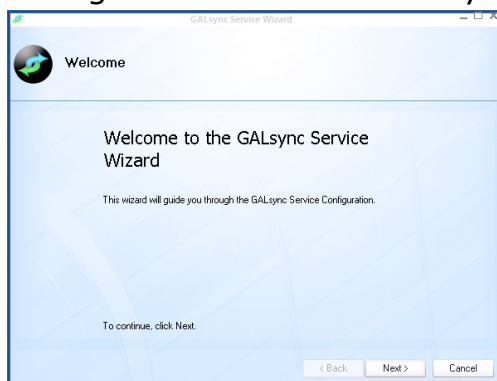
- This procedure is done by the GALsync software.
  - It sends the data of your source forest through the configured mailbox (i.e. service account if On-Premise).
  - The message is routed with the attached data to the recipient mailbox in the target forest.

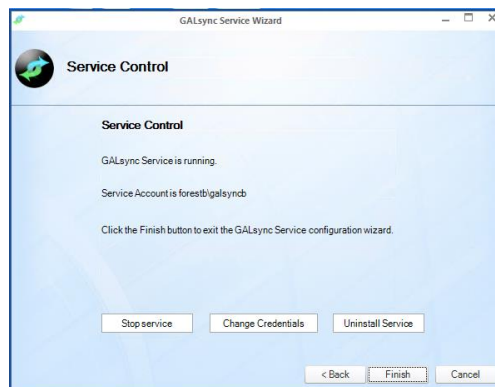
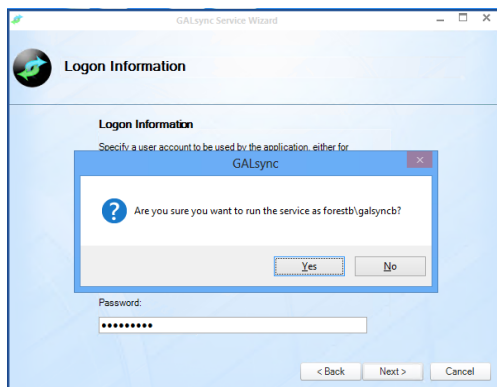
#### 5 Install the software in the target forest

- Login with the user you created before. Run setup.

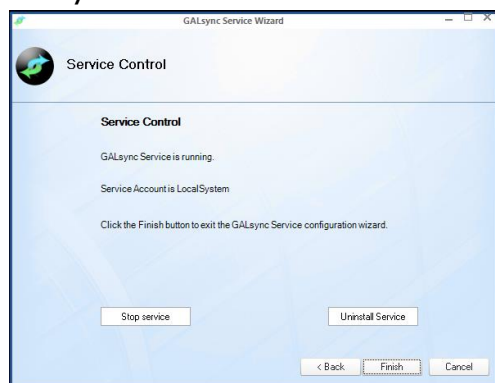
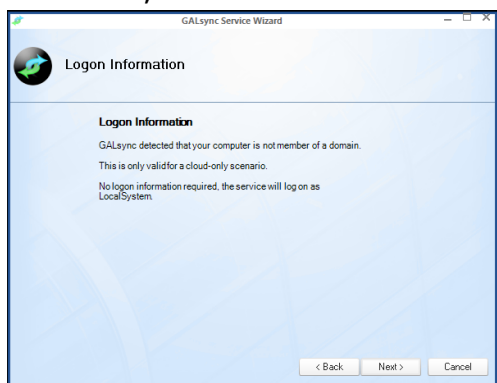


- Run GALsync the first time and configure a Service Account (SA) by taking the same account as you are logged in (On-Premise).



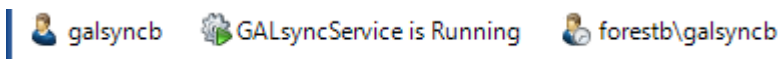


If the setup detects that GALsync was installed on a standalone machine, the SA will be added automatically as **LOCALSYSTEM**.

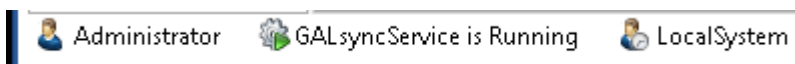


Running GALsync you can check the SA configuration and your log-in account at bottom left corner.

On-Premise



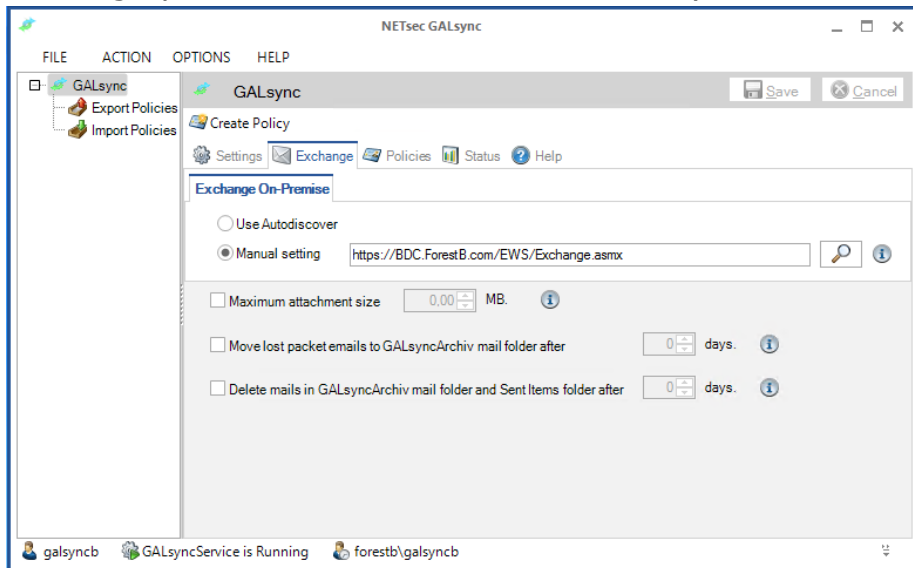
Exchange Online



- In menu **HELP** select **ABOUT** and add your license. See also chapter **LICENSING**.



- On-Premise only: In menu OPTIONS select EXCHANGE.
- Configure the access to your Exchange Server. Click "Manual setting" and the SEARCH icon. Now GALsync tries to use autodiscover and displays the URI it discovers. If you get an error message please insert the correct URI for your environment.



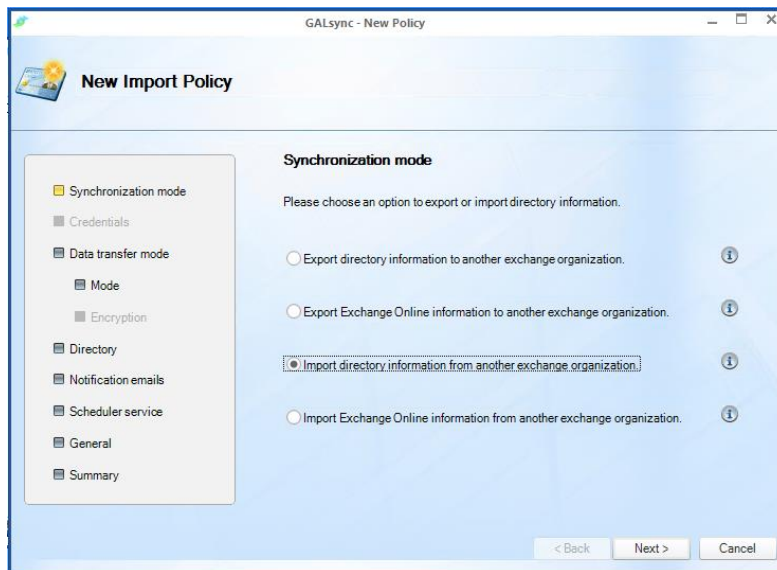
- Leave the other option unclicked.
- Confirm the first configuration by pressing the SAVE button.

## 6 GALsync receives the result from the source forest

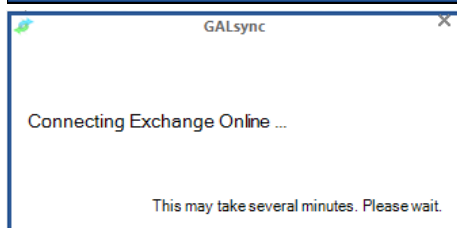
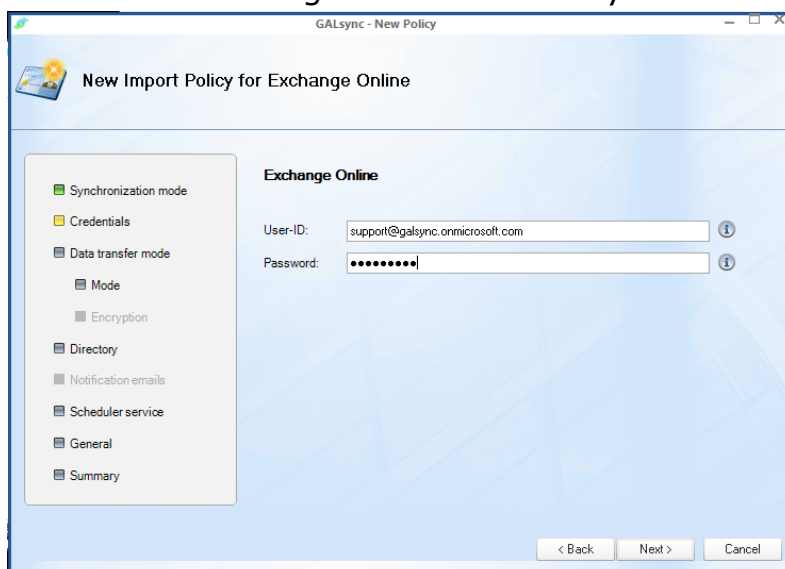
- This procedure is done by the GALsync software.
  - It receives the data of the source forest through the configured mailbox (i.e. service account if On-Premise).

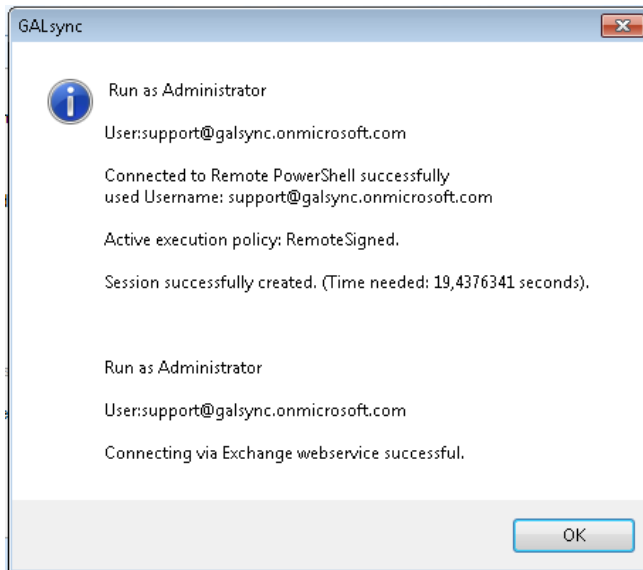
## 7 Create and run an import policy

- Create a first Import policy lead by the wizard
  - Choose to IMPORT DIRECTORY INFORMATION if you are On-Premise or IMPORT EXCHANGE ONLINE if you use Exchange Online. Click NEXT.

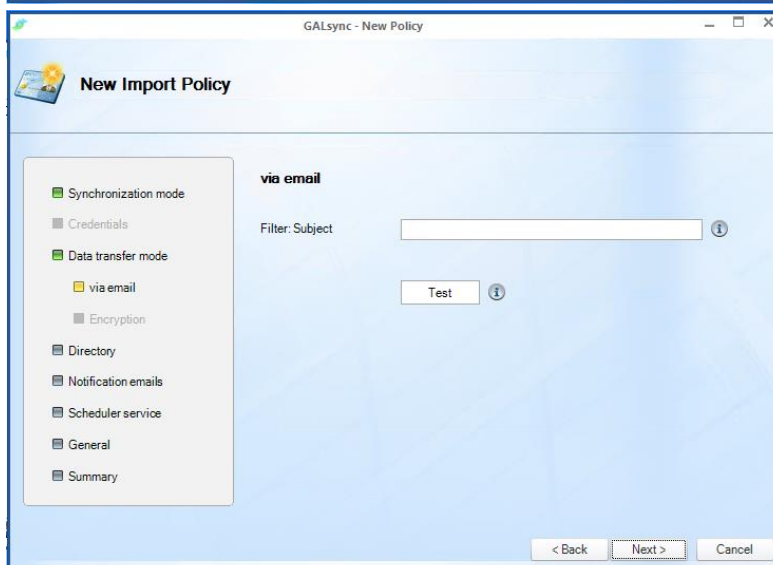
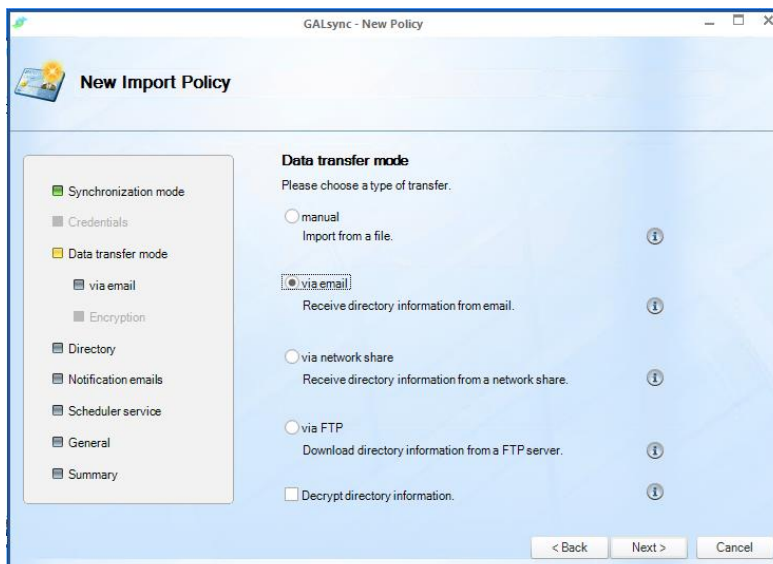


- If you are Exchange Online then insert the user-ID and password of an appropriate account in the cloud. Click NEXT. GALsync tries to connect to Exchange Online. This may take a certain time.



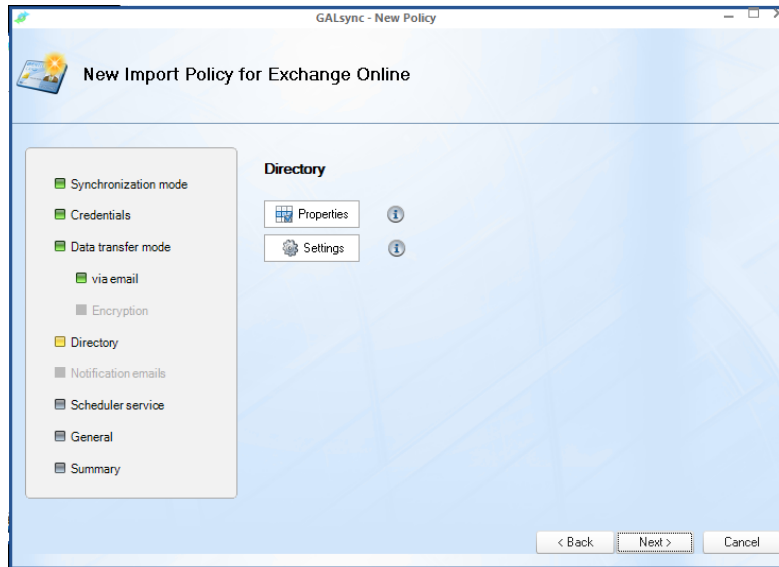


- Choose VIA EMAIL as data transfer mode. Leave the FILTER: SUBJECT blank. Click NEXT.

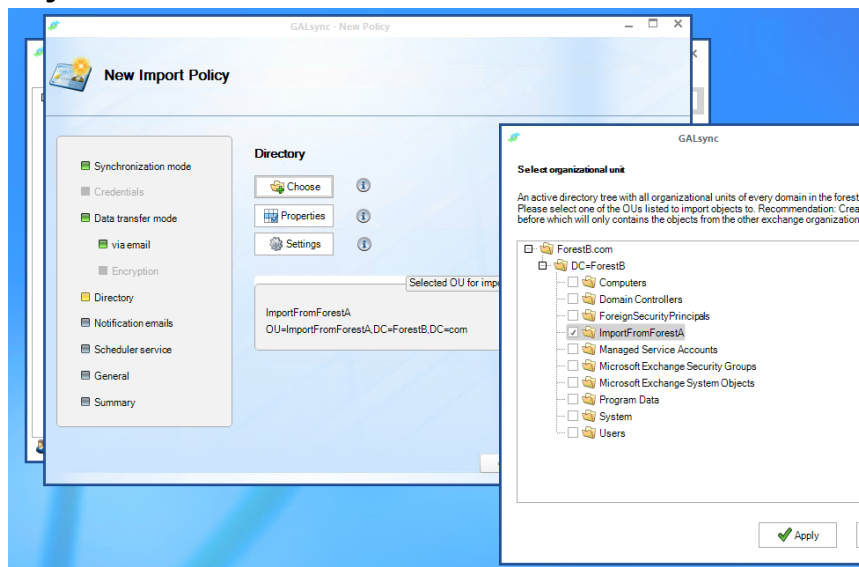




- If you are Exchange Online skip the Directory step with NEXT. If you are On-Premise choose (step DIRECTORY INFORMATION) the Organizational Unit where to store the new objects. Click NEXT.



- If you are On-Premise choose (step DIRECTORY INFORMATION) the Organizational Unit where to store the new objects. Click NEXT.  
Note: The SA must have sufficient permissions to create and modify objects in this OU.



- Leave STATUS NOTIFICATION *emails* unclicked and click NEXT.

**GALsync - New Policy**

**New Import Policy**

**Status notification emails**

☐ Send Summary ⓘ

Subject:  ⓘ

Send to:  ⓘ

☐ Send only on error ⓘ

< Back Next > Cancel

- Leave SCHEDULE SERVICE unclicked and click NEXT.

**GALsync - New Policy**

**New Import Policy**

**Scheduler service**

☒ No schedule service ⓘ

☐ Weekly ⓘ ☐ Monthly ⓘ

< Back Next > Cancel

- In the GENERAL SECTION insert a name for the policy and click NEXT.

**GALsync - New Policy**

**New Import Policy**

**General**

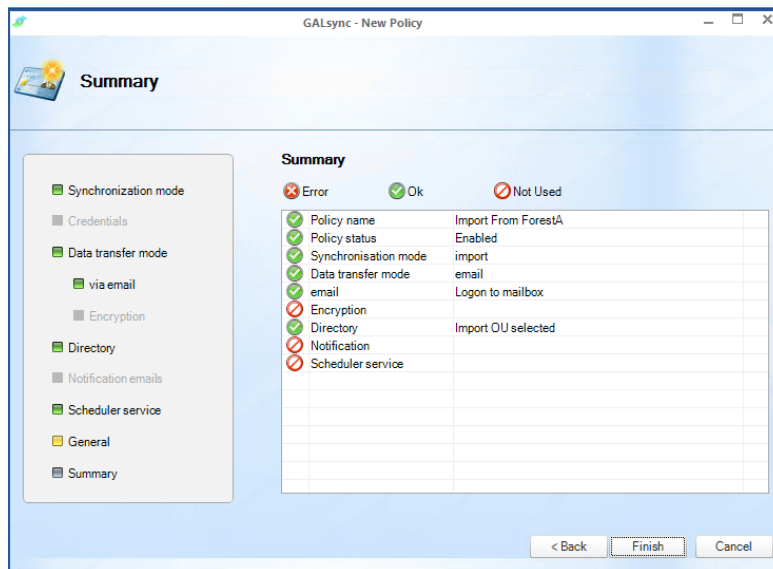
Name ⓘ

Description ⓘ

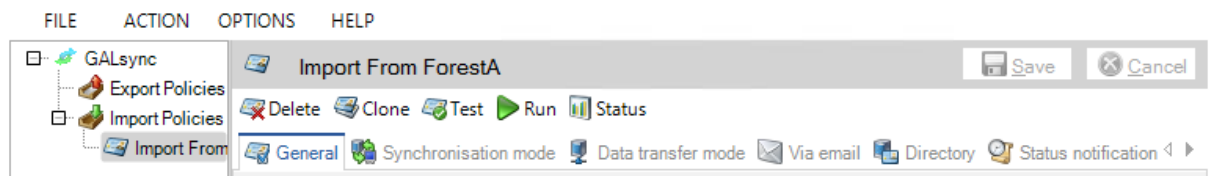
☒ Enabled ⓘ

< Back Next > Cancel

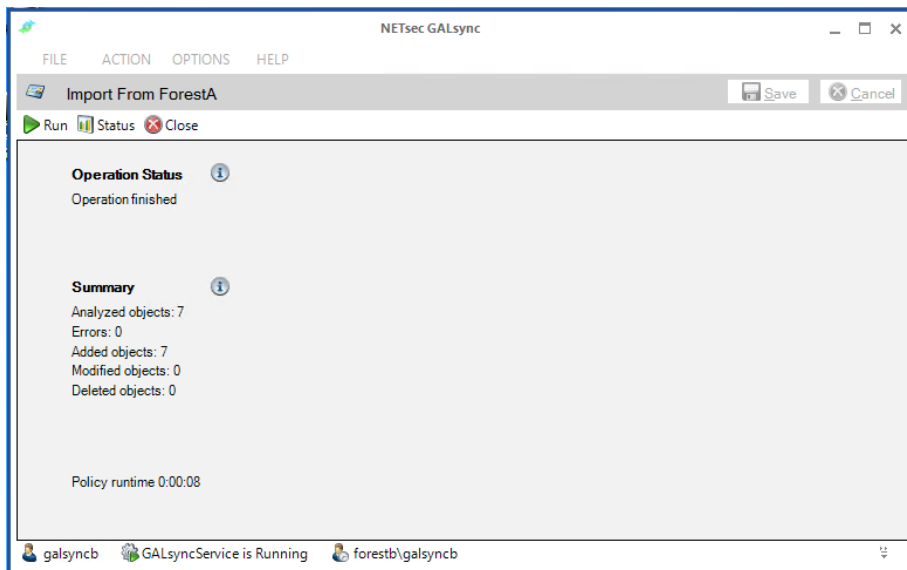
- After in SUMMARY section all your configuration is validated click FINISH.



- Execute the policy by clicking RUN while mouse focus is set to the policy name in the hierarchy tree lefthander.



The OPERATION STATUS displays the progress. After execution click CLOSE.



Now you should see the synchronized group and the group member as contacts in the GAL of the target forest. Please note that Exchange On-Premise sometimes requires a certain time to update the address lists.

# Deployment Guide

## Introduction

This chapter will help you to plan your GALsync installation. To simplify the description of each scenario below, only a unidirectional synchronization is focused. Based on this technique you may configure bidirectional (one-way) or multidirectional synchronizations.

Some key notes before

- You can synchronize a limitless number of Exchange Forests. We have customers with over 45 forests using GALsync. You may design a star-shaped architecture synchronizing all branch offices to the Headquarter and receiving all objects from HQ.
- In a single configuration policy there is no technical limitation in the number of objects you want to select for sync.
- You can create a limitless number of policies. Multiple policies must be scheduled for execution – no concurrent executions are possible. Policies are kept in a queue and will be run sequentially.
- If you have multiple forests you want to import from then every exporting site should use its own subject phrase (when transmitting the data via mail). So you can configure import policies using the same mailbox for receiving and still determine the correct data file per policy.

**NOTE: WE RECOMMEND TO CHOOSE EMAIL AS PREFERRED TRANSPORT METHOD.**

### Exchange 2003 <-> Exchange 2003

If your environment is based on Exchange 2003 and you want to sync with an Exchange 2003 partner please use GALsync version 4\*.

This version takes care of system public folders to query free/busy information.

You have to install an instance of GALsync on a domain member computer in each of both forests.

### Exchange 2003 <-> Exchange 2007-2010

If your environment is based on Exchange 2003 and you want to sync with a partner running Exchange 2007 or 2010 please use GALsync version 4\*. This version takes care of system public folders to query free/busy information.

### Exchange 2003 <-> Exchange 2013 or Exchange Online (Cloud Only)

If your environment is based on Exchange 2003 and you want to sync with an Exchange Online partner (cloud only) please use GALsync version 4\* on Exchange 2003 side. Use GALsync version 5 on Exchange 2013 / Online side.

Sharing Free/Busy information is not supported.

You have to install an instance of GALsync 4\* on a domain member computer in Exchange 2003 forest and an instance of GALsync 5 on a domain member computer in Exchange 2013 forest.

To get access to an Exchange Online (cloud only) environment you can also use a standalone server using GALsync 5.

### Exchange 2007-2013 <-> Exchange 2007-2013

If your environment is based on Exchange 2007, 2010 or 2013 and you want to sync with a partner running Exchange 2007, 2010 or 2013 please use GALsync version 5 to synchronize directory objects.

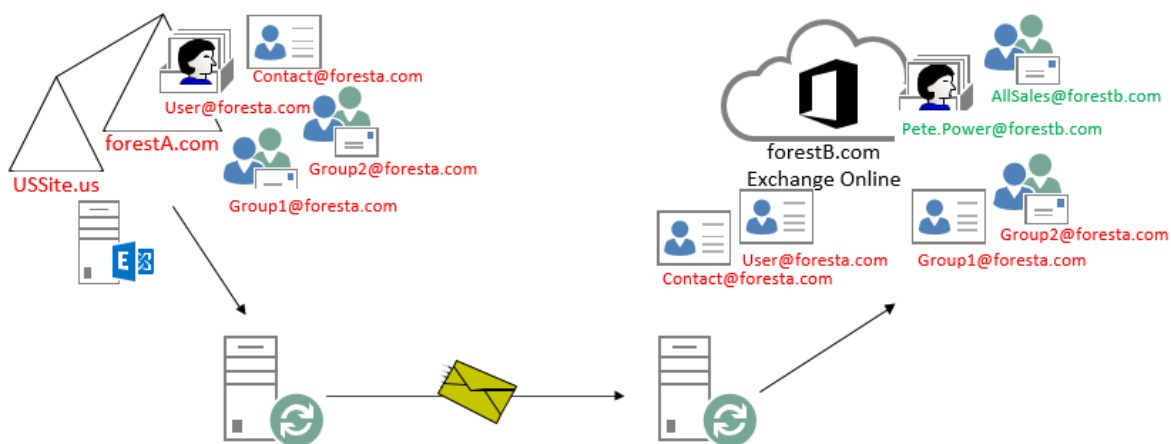
To query Free/Busy information you may configure Online Free/Busy or MS Federation.

Please have a look at the Whitepaper Cross-Forest Free/Busy Delegation [http://www.netsec.de/fileadmin/download/GALsync/Whitepaper\\_CrossForest\\_FreeBusy\\_Delegation\\_EN.pdf](http://www.netsec.de/fileadmin/download/GALsync/Whitepaper_CrossForest_FreeBusy_Delegation_EN.pdf)

You have to install an instance of GALsync on a domain member computer in each of both forests.

*\* MICROSOFT WILL STOP SUPPORTING EXCHANGE 2003 ON THE 8TH APRIL 2014. AS MUCH AS WE WOULD LIKE TO KEEP COMPATIBILITY UP FOR ALL VERSIONS, WE CANNOT SUPPORT AN ENVIRONMENT WHICH IS NO LONGER SUPPORTED BY THE MANUFACTURER HIMSELF. STARTING ON THE DEPRECATION OF EXCHANGE 2003, GALSYNC 4 WILL BE COMPLETELY REPLACED BY GALSYNC 5. WITHIN THE GIVEN SCENARIOS WE WILL SUPPORT BOTH GALSYNC 5 AND 4 UNTIL THE 8TH APRIL 2014.*

## Exchange 2007-2013 <-> Exchange Online (Cloud Only)



If your environment is based on Exchange 2007, 2010 or 2013 and you want to sync with a partner running Exchange Online (without On-Premise) please use GALsync version 5 to synchronize directory objects.

To query Free/Busy information you may configure MS Federation. Please have a look at the Whitepaper Cross-Forest Free/Busy Delegation [http://www.netsec.de/fileadmin/download/GALsync/Whitepaper\\_CrossForest\\_FreeBusy\\_Delegation\\_EN.pdf](http://www.netsec.de/fileadmin/download/GALsync/Whitepaper_CrossForest_FreeBusy_Delegation_EN.pdf)

You have to install an instance of GALsync 5 on a domain member computer in Exchange 2007, 2010 or 2013 forest.

To get access to an Exchange Online (cloud only) environment you can also use a standalone server.

**NOTE: YOU CAN ALSO USE ONLY THE GALSYNC SOFTWARE ON THE MACHINE YOU INSTALLED IN EXCHANGE 2007, 2010 OR 2013 FOREST TO ACCESS EXCHANGE ONLINE (CLOUD ONLY). BUT IN THIS CASE THE EXCHANGE ONLINE PARTNER MUST PROVIDE YOU WITH THE CREDENTIALS TO HIS ONLINE-ENVIRONMENT.**

## Exchange Online (Cloud Only) <-> Exchange Online (Cloud Only)

If your environment is based on Exchange Online (without On-Premise) and you want to sync with a partner running also Exchange Online (without On-Premise) please use GALsync version 5 to synchronize directory objects.

To query Free/Busy information you may configure MS Federation. Please have a look at the Whitepaper Cross-Forest Free/Busy Delegation [http://www.netsec.de/fileadmin/download/GALsync/Whitepaper\\_CrossForest\\_FreeBusy\\_Delegation\\_EN.pdf](http://www.netsec.de/fileadmin/download/GALsync/Whitepaper_CrossForest_FreeBusy_Delegation_EN.pdf)

To get access to an Exchange Online (cloud only) environment every side can use a standalone server as well a domain integrated computer.

**NOTE: YOU CAN ALSO USE THE GALSYNC SOFTWARE ONLY ON ONE MACHINE TO ACCESS BOTH EXCHANGE ONLINE ORGANIZATIONS. BUT IN THIS CASE THE EXCHANGE ONLINE PARTNER MUST PROVIDE YOU WITH THE CREDENTIALS TO HIS ONLINE-ENVIRONMENT. ALSO YOU MUST TAKE CARE OF THE GLOBAL SETTINGS (GALSYNC -> EXCHANGE) BECAUSE THEY ARE APPLIED TO ALL ORGANIZATIONS.**

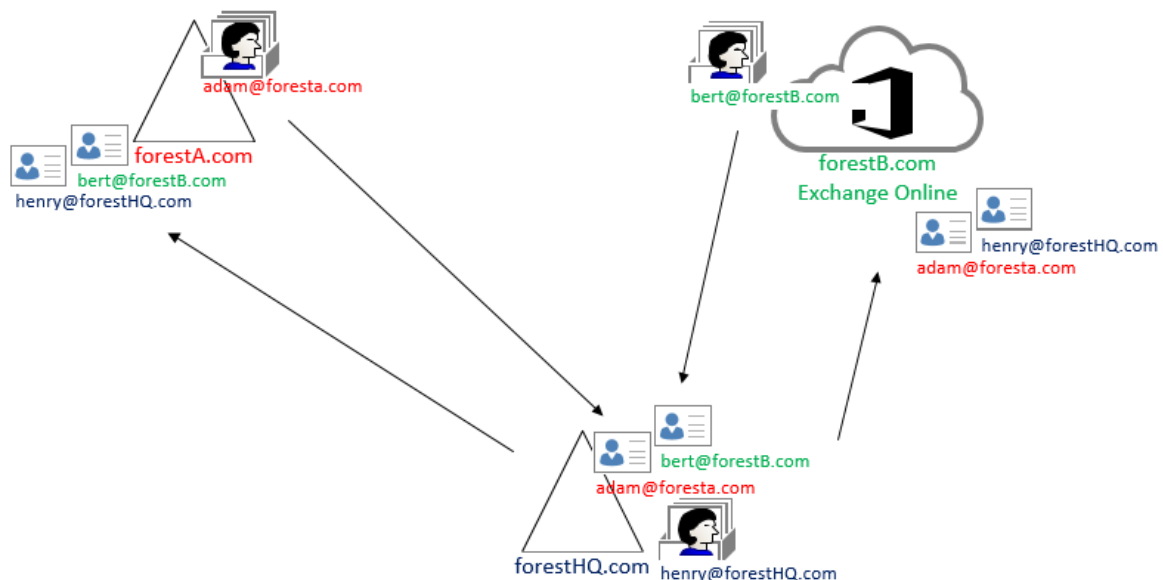
### Special: Multi-Forest-Synchronization (3+) in a star topology

In a multi-forest synchronization architecture you should configure a star topology.

**NOTE: THE MAIN GOAL OF A STAR TOPOLOGY IS THAT ALL NODES HAVE THE SAME INFORMATION.**

Every satellite-node sends its own objects via an export policy to the central-node. The central-node receives the data by configured import policies.

The central-node now sends via one or multiple export policies all wanted objects back to the satellite-nodes, which then import the data by configured import policies.



You realize this by one of two methods. If you have only some partner organizations and the run-time of the policies is short we recommend the



first method. If you have a lot of satellites and long-running policies use method 2.

Method 1: Using this method you need one import policy for each partner. You can use the subject field to distinguish the sending forest. If the receiving organization gets directory information not only from you, but from multiple exchange partners, you can use a certain phrase to be used as email subject, which identifies your own organization (see also in chapter **TRANSPORT OPTIONS TO TRANSFER DATA VIA EMAIL** in the **TECHNICAL GUIDE**).

Method 2: Using this method you only need one import policy. To do this you should configure import policies with the option *Create sub-OUTs for each sending domain* (available only for On-Premise). GALsync creates sub-OUTs depending on the original domain names (see also chapter **SPECIAL OPTIONS** in **TECHNICAL GUIDE**).

**NOTE: WE STRONGLY RECOMMEND THAT ALL SATELLITES EXPORT TO THE CENTRAL NODE AT THE SAME TIME AND IMPORT FROM CENTRAL NODE AT ANOTHER TIME AT THE SAME TIME.**

To obtain Free/Busy information you must choose appropriate techniques like Online-Free/Busy or MS-Federation.

Please have a look at the Whitepaper Cross-Forest Free/Busy Delegation [http://www.netsec.de/fileadmin/download/GALsync/Whitepaper\\_CrossForest\\_FreeBusy\\_Delegation\\_EN.pdf](http://www.netsec.de/fileadmin/download/GALsync/Whitepaper_CrossForest_FreeBusy_Delegation_EN.pdf)

**NOTE: NEVER USE AN EXCHANGE ONLINE PARTNER AS CENTRAL HUB. EXCHANGE ONLINE DOES NOT PROVIDE ALL ATTRIBUTES YOU FIND IN EXCHANGE ON-PREMISE VERSIONS.**

# Technical Guide

## System Requirements

Components	Required
OS (64Bit)	Windows 2008 R2 SP1 Server Windows 2012 Server  In small environments or for testing purposes you can also install GALsync on a client computer running Windows 7 Professional or Windows 8 Pro.
Hardware	Processor: minimum dual core RAM: minimum 2GB
Software	.NET Framework 3.5 <b>Note:</b> Even if .NET Framework 4 is installed you may have to add .NET Framework 3.5 PowerShell 2.0 Engine <b>Note:</b> Even if PowerShell 3.0 is installed you may have to add PowerShell 2.0 Engine
Recommendations	<b>Exchange On-Premise:</b> We recommend to install GALsync on a member server within the domain (i.e. dedicated GALsync server, file server or backup server). The machine should be uncritical (i.e. may be restarted without complications). The GALsync server must have a high bandwidth connection to the DC/GC. <b>Exchange Online:</b> See recommendations for On-Premise; but you can use a standalone computer.
Supported Exchange Versions	Exchange 2007 SP1 and higher Exchange 2010 SP1 and higher Exchange 2013 Exchange Online (Office 365)

## Prerequisites

### Service Account

If you run GALsync in the context of a domain then create a service account which will be owner of the GALsync service.

- The service account must be a domain user of the same domain, the GALsync server is member to.
- Make sure that the service account is member of the `LOCAL ADMINISTRATORS` group.
- The service account needs the local right to `RUN AS A SERVICE` (this right is added to the service account during the installation).
- Make sure you can logon as the service account. It is possible that the user requires membership in the group Remote Desktop Users.
- On-Premise only: Make sure that the service account has all permissions to insert and modify objects and their properties in your defined import-OUs.

- In order to install GALsync you need administrative permission. Setup will also install the GALsync Scheduling Service on the computer you setup GALsync on.

**NOTE: WE STRONGLY RECOMMEND LOGGING ON AS THE SERVICE ACCOUNT TO RUN THE GALSYNC GUI.**

*IMPORTANT: IF YOU CONFIGURE THE LOGON INFORMATION FOR THE SERVICE ACCOUNT IN THE GALSYNC GUI USING EXCHANGE ON-PREMISE, THEN ALWAYS USE THE FORMAT DOMAIN\USERNAME.*

If you run GALsync on a standalone machine (this is only valid in an Exchange Online (Cloud-Only) scenario) then no logon information is required because the GALsync service will be run as the LOCALSYSTEM account.

#### *Mailbox*

At the Exchange on-premise side create an Exchange Mailbox, which will run all GALsync policies from now on. If you are in a domain then this mailbox should be owned by the GALsync service account. The mailbox cannot be hidden from Exchange address lists.

At the Exchange online side create an Exchange Mailbox, which will be used from all GALsync policies. The mailbox user must be member of the Global Administrators administrative role.

**NOTE: BY DEFAULT, THE EXCHANGE ONLINE PASSWORD HAS TO BE CHANGED WITHIN 30 DAYS. TO ENSURE, THAT GALSYNC WORKS PROPERLY, YOU HAVE TO CONFIGURE USER PASSWORDS TO NEVER EXPIRE. TO CONFIGURE YOUR PASSWORD PLEASE FOLLOW THE STEPS DESCRIBED IN THE FOLLOWING ARTICLE:**

**HTTP://ONLINEHELP.MICROSOFT.COM/EN-US/OFFICE365-ENTERPRISES/HH534387.ASPX**

- GALsync must have direct access to the user mailbox via Exchange Web Services.

**NOTE: DIRECT ACCESS TO KIOSK USER MAILBOXES VIA EXCHANGE WEB SERVICES IS NOT PERMITTED. SEE <http://community.office365.com/en-us/forums/158/t/62635.aspx> AND <http://social.msdn.microsoft.com/Forums/en-US/exchangesvrdevelopment/thread/1758d5f8-be86-4dc9-b53c-d6eb38d2d7d2>**

- Ensure that the mailbox is accessible (i.e. by Outlook Web Access).
- Ensure that the mailbox can send to and receive mails from the other organization.
- Ensure that incoming mails from the other organization do not get caught by your spam filter or firewall.

#### *Execution Policy (Exchange online only)*

If you configure a policy which needs the parameter ExecutionPolicy to be set to RemoteSigned, a message is displayed requiring your confirmation.

The reason for this is a security setting built into Windows PowerShell called execution policy. Execution Policy determines how (or if) PowerShell runs scripts. By default, PowerShell's execution policy is set to Restricted; this means that scripts will not run. GALsync requires that scripts can be run.

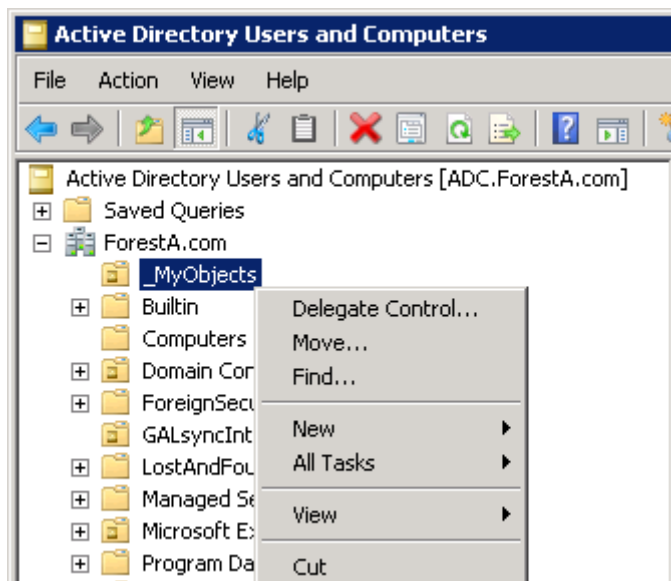
[HTTP://TECHNET.MICROSOFT.COM/EN-US/LIBRARY/HH849821.ASPX](http://technet.microsoft.com/en-us/library/HH849821.aspx)

#### *Active Directory Permission for the Import OU (On-Premise)*

The GALsync Service Account needs write permissions to all Organizational Units where you want to import data to with GALsync.

**NOTE: THE RESULTING PERMISSIONS MUST BE FOR "THIS OBJECT AND ALL DESCENDANT OBJECTS" AND FOR ALL PROPERTIES.**

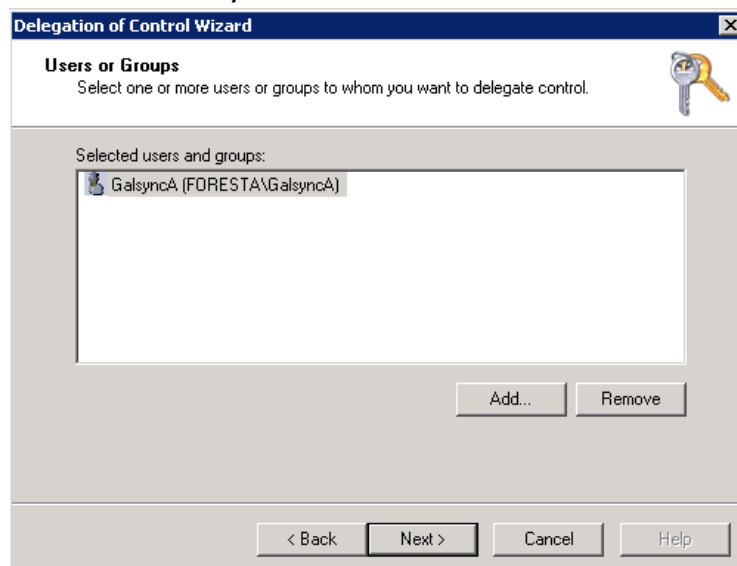
- Use ACTIVE DIRECTORY USERS AND COMPUTERS. After creating the OU right click the OU and choose DELEGATE CONTROL.



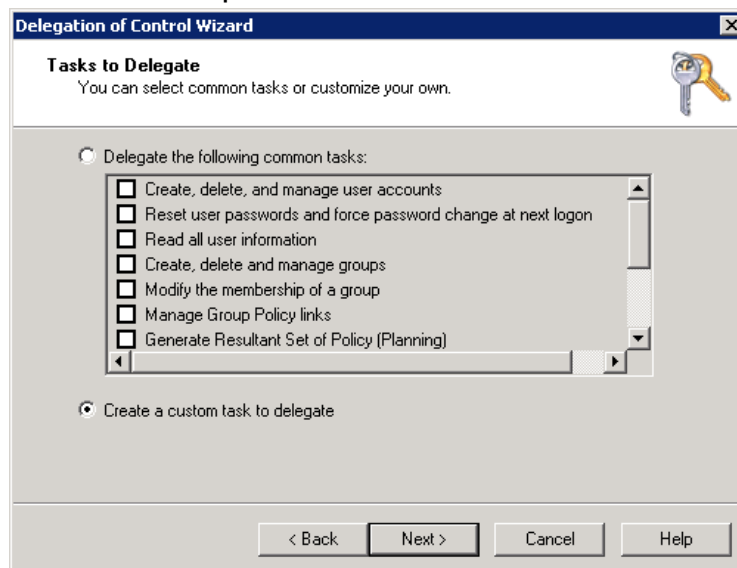
- Follow the wizard and click NEXT.



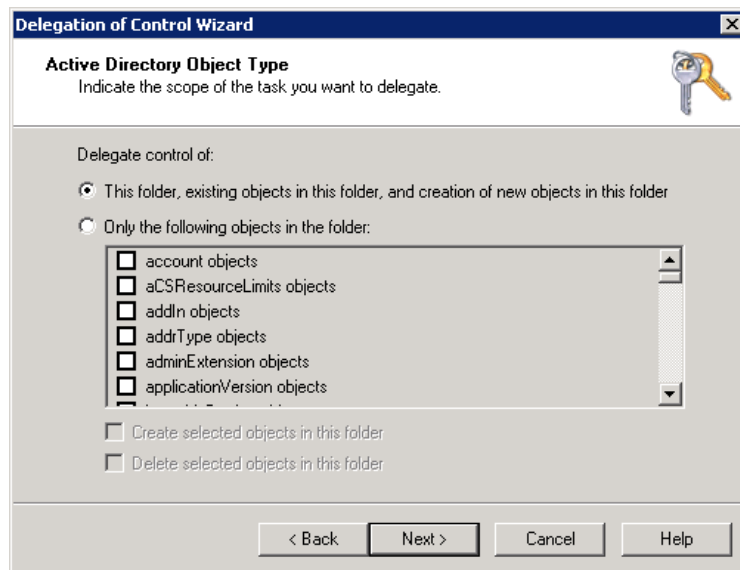
- Add the GALsync Service account to the list and click NEXT.



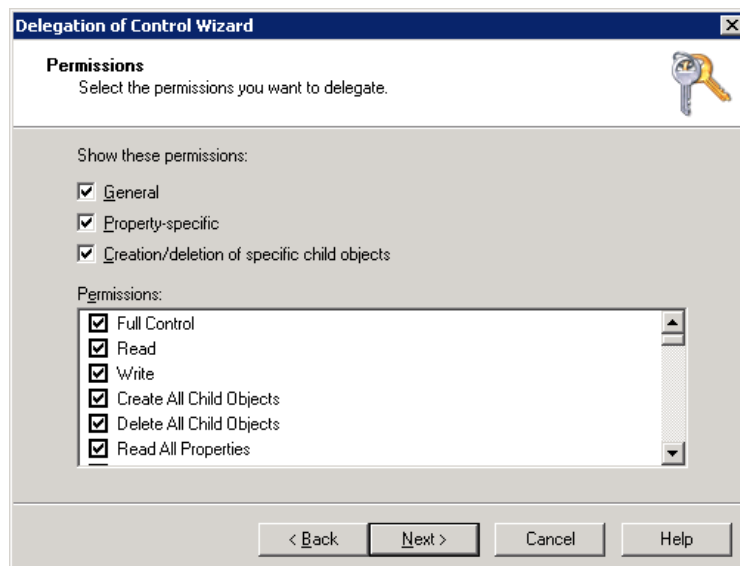
- Choose the option **CREATE A CUSTOM TASK** *to delegate* and click NEXT.



- Leave the next window as it is and click NEXT.



- In the next dialog select **FULL CONTROL** in the **PERMISSIONS:** list and click **NEXT**.



- You complete the wizard clicking *Finish*.



## Running GALsync Policies via command line

Start a GALsync policy with the following command:

Syntax:

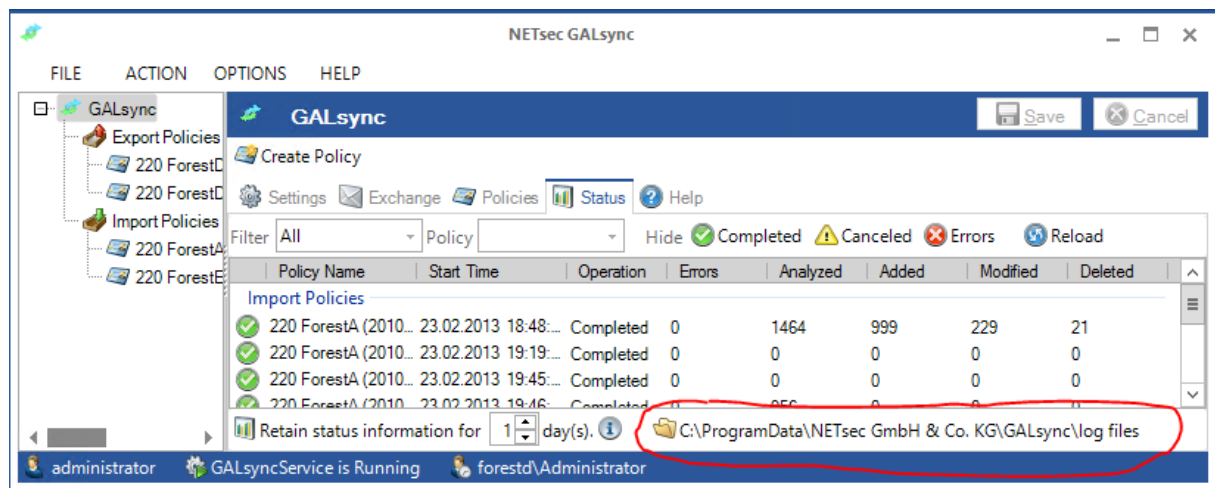
```
<GALsync program folder>\GALsync\  
<CommonApplicationDataPath>\GALsync\policies\<policy file>
```

Example:

```
cd "C:\Program Files\GALsync\  
GALsyncPolicyExecuter.exe "C:\ProgramData\NETsec GmbH & Co. KG\GALsync\policies\policyname.xml"
```

```
C:\Program Files (x86)\GALsync>GALsyncPolicyExecuter.exe "C:\ProgramData\NETsec  
GmbH & Co. KG\GALsync\policies\1GALSyncEO nach Office365.xml"  
Performing policy: 1 GALSyncEO nach Office365 EX. Please wait.  
Zipping/transferring data...  
Policy executed...
```

You can find the `COMMONAPPLICATIONDATA` path one level up from the log file folder of GALsync which you can find on the `STATUS` tab.



## GALsync components

### Files

The executables are stored by default in `C:\PROGRAM FILES (X86)\GALSYNC`, but you may change this during setup routine. This folder will be removed if you uninstall the software.

Files containing your configured policies, created encryption keys, logfiles and so on are placed in folder `%PROGRAMDATA%\NETSEC GMBH & Co. KG\GALSYNC`.

**NOTE: THE FOLDER `%PROGRAMDATA%` USUALLY IS HIDDEN. YOU MAY ACTIVATE THE OPTION 'SHOW HIDDEN FILES, FOLDERS, AND DRIVES' IN FOLDER 'OPTIONS' OF THE WINDOWS EXPLORER.**

### Policy

Policies are the core logical component. A policy defines

- which data you want to share with your partner, (filter the objects of your own directory),
- the way you want to transfer the data to your partner (mail, ftp, share including encryption),
- to which target you want to send the data included in this policy,
- to which email address you want to send an administrative report,
- at what times you want the policy to be executed automatically.

### GUI

The Graphical User Interface is used to configure, import and export policies. You can also test and execute policies manually.

**NOTE: IF YOU RUN A POLICY USING THE GUI THE POLICY RUNS IN THE CONTEXT OF THE USER THAT IS LOGGED IN. THEREFORE IT IS RECOMMENDED TO LOG IN WITH THE SAME ACCOUNT WHICH IS CONFIGURED FOR THE GALSYNC SERVICE.**

The GUI is executed as process named `GALSYNC.EXE`.

The GALsync Console also provides Wizards for simplifying the tasks of creating export and import policies. The Wizards walk you through each step in order to create a usable policy that you can run manually or scheduled. If you go through the wizard GALsync provides you with different information



Indicates a positive validation



Indicates that some conditions in this step have not been



validated yet



Feature is not used



Indicates a configuration process

### Service

The GALsync Service is only used to execute the scheduled policies. You can prevent the execution of a policy by unchecking its **ENABLE** option.

The GALsync Service checks once a minute if there are enabled policies to be executed. These policies will be added to the execution queue and run sequentially. If there is more than one policy in the queue the policies will be run in alphabetical order.

The service is executed as a process named **GALSYNCSERVICE.EXE**.

Every scheduled policy runs in the context of the user that is used by the GALsync Service.

## Basic Architecture of Import & Export

### Adding

If an object in the source is added and matches the export conditions it will be exported. If the object's SMTP-address is not present in the target forest, it will be created.

In Exchange On-Premise it will be created in the OU you configured for imports.

**NOTE: YOU CAN MARK OBJECTS FOR INSERT. IN THIS CASE THE OBJECT WILL BE ADDED, A NOTIFICATION WILL BE WRITTEN TO A CUSTOMIZABLE ATTRIBUTE SAYING THAT THIS OBJECT HAS BEEN INSERTED.**

### Deleting

If an object in the source is deleted, it will not be present in the export file any more. So it will be removed during the next import.

In Exchange On-Premise it only will be removed if the object is still placed in the target's Import OU.

**NOTE: YOU CAN MARK OBJECTS FOR DELETION, HOWEVER THE OBJECT WILL NOT BE DELETED, BUT A NOTE WILL BE WRITTEN TO A CUSTOM ATTRIBUTE SAYING THAT YOU MAY NOW DELETE THIS OBJECT MANUALLY.**

### Moving (On-Premise)

If an object in the source is moved to another OU but still matches the export conditions it will be exported. If an object in the target is moved from the original Import OU to another OU and retains its SMTP-address, the object will not be imported a second time.

### Modifying

If you modify an object's attribute value in the source this value will be modified in target during the next import.

**ATTENTION: YOU MODIFY THE PRIMARY *SMTP* ADDRESS OF A SOURCE OBJECT WHICH IS ALREADY SYNCHRONIZED TO THE TARGET. IN THIS CASE GALSYNC CANNOT DISCOVER THE ALREADY SYNCHED OBJECT AND WILL DELETE THE OBJECT IN THE TARGET. THE MODIFIED SOURCE OBJECT THEN WILL NEWLY BE CREATED IN THE TARGET (SEE BELOW "DUPLICATES").**

**NOTE: YOU CAN MARK OBJECTS FOR MODIFICATION. IN THIS CASE THE OBJECT WILL BE MODIFIED AND A NOTIFICATION WILL BE WRITTEN TO A CUSTOM ATTRIBUTE SAYING THAT THIS OBJECT HAS BEEN MODIFIED. SO YOU ARE ABLE TO DISPLAY ALL MODIFIED OBJECTS WITH AN APPROPRIATE TOOL (LIKE EXCHANGE MANAGEMENT CONSOLE) AND CREATE A REPORT.**

### Duplicates

If GALsync does not find an object having the same SMTP-address as the object to be imported, it will create a new contact.

In Exchange On-Premise the new object is created in the configured import-OU.

While creating the object GALsync checks if the CN of the object to be imported is already present (in the import-OU). If yes the object will be created with a serial number in the CN. Additionally the MAILNICKNAME is checked. If there is another object having the same nickname the object to be imported will be created with a serial number in the MAILNICKNAME.

For Exchange Online GALsync is trying to create an object. Here, conflicts that occur are logged. If the object already exists, an error message comes that another object already has the same email or the CN matches. This conflict can occur only in objects that were not previously treated with GALsync.

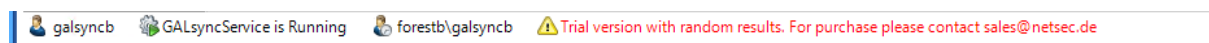
## Installation and Initial Configuration

**NOTE: THE INSTALLATION OF GALSYNC DOES NOT REQUIRE A REBOOT OF THE MACHINE.**

- If you want to remove the Schedule Service from your computer you will find in the Menu *Action -> Configure Service*. Thereafter, you can uninstall GALsync via the Control Panel, without restarting the computer. Note: Uninstalling does not remove configuration files, or the License. See also chapter [LICENSING](#).

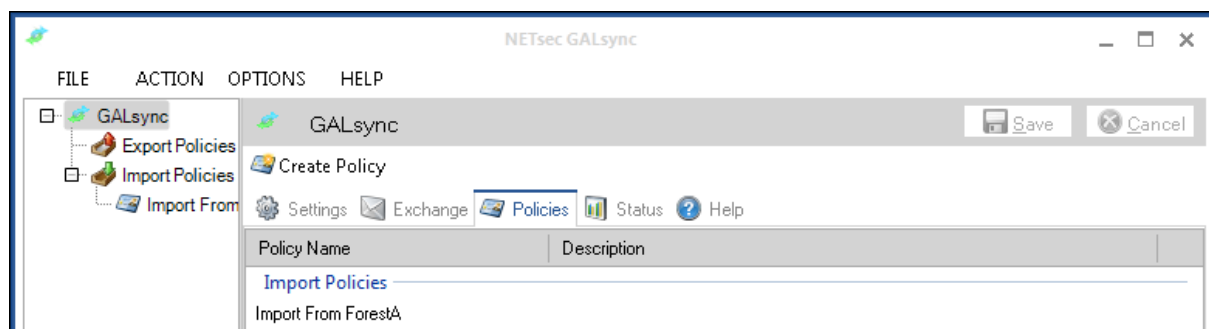
### Information Bar

The bar at the bottom of the GALsync window shows information about the user account running the GALsync Graphical User Interface (GUI), and the status of GALsync Service. Additionally, it will indicate if you are using a trial version.



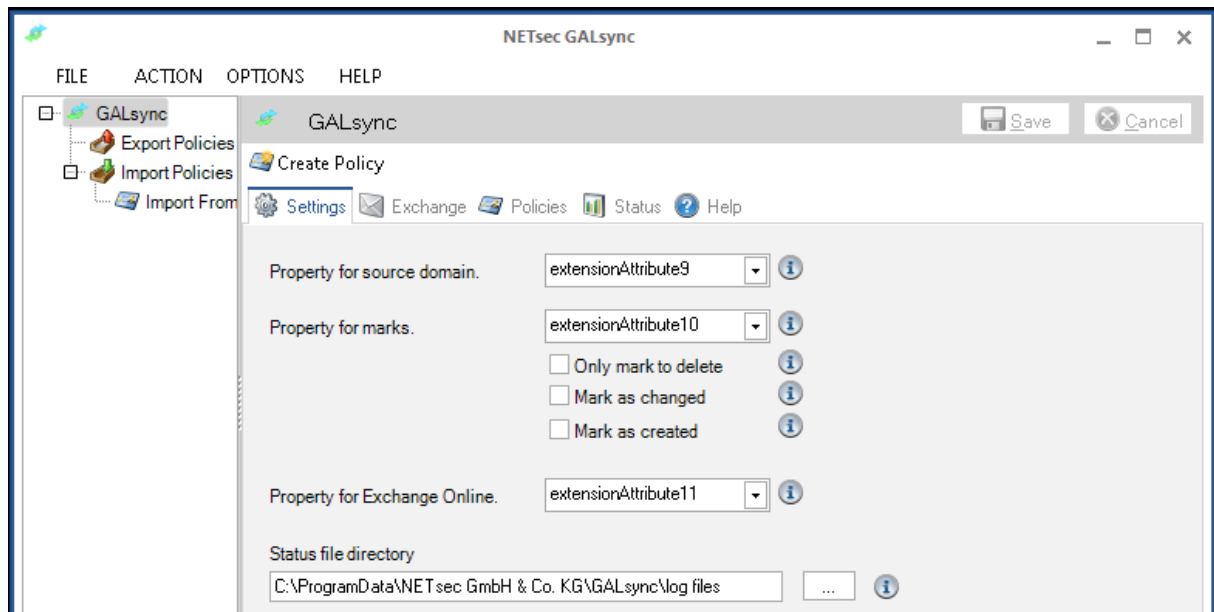
### Global Settings

The Global Settings are available if you click the source node named GALSYNC in the left hierarchy tree. The content pane now displays the TABs *SETTING*, *EXCHANGE*, *POLICIES*, *Status* and *HELP*.



### TAB Settings

Here you can configure general settings used in all policies.



### Property for source domain

This feature is used to distinguish between objects being imported from multiple source organizations. As value, the objects' `DISTINGUISHEDNAME` (DN) will be present. Please choose an appropriate attribute where to store the DN.

### Property for marks

This feature is used to store marks as history about actions taken or to be taken concerning imported objects. Please choose an appropriate attribute where to store the marks. GALsync provides three different types of marking:

#### Mark objects for deletion

Select this option if you do not want objects deleted automatically. Instead they will be marked for deletion.

**NOTE: IF YOU CHOOSE THIS OPTION YOU WILL HAVE OBJECTS IN YOUR AD, WHICH ARE NOT RELATED TO OBJECTS IN YOUR PARTNER'S AD ANYMORE.**

#### Mark objects that have been modified.

Select this option, if you want to mark modified objects for later viewing. You can list all modified objects by creating a new Saved Query with a custom search in MMC ACTIVE DIRECTORY USERS AND COMPUTERS.

#### Mark newly created objects.

Select this option, if you want to mark new inserted objects for later viewing.

Check this option if you want to list all inserted objects by creating a new Saved Query with a custom search in MMC ACTIVE DIRECTORY USERS AND COMPUTERS.

#### *NoGALsync (internal mark)*

If you do not want a special object to be exported, you may insert the value NOGALSYNC in any of the custom attributes (EXTENSIONATTRIBUTE1 - EXTENSIONATTRIBUTE15). This prevents GALsync from adding this object to the export list.

#### *galsync:joe.dole@netsec.de (internal mark)*

If you change the primary SMTP address of already synchronized objects GALsync cannot match the appropriate contact during import. It will delete the existing contact and create a new one with the modified SMTP address.

To prevent this behavior you can change the primary SMTP address of an object in the source environment and note the old primary SMTP address in one of the custom attributes (EXTENSIONATTRIBUTE1 - EXTENSIONATTRIBUTE15) using the prefix GALSYNC:  
i.e.: GALSYNC:JOE.DOLE@NETSEC.DE

Now the existing contact in the target environment will not be deleted and recreated, but GALsync will match the contact and change the primary SMTP address.

#### *Property for Exchange Online*

This property is used by GALsync to store a special value. The value indicates if there is any modification made to the object and a new synchronization is required.

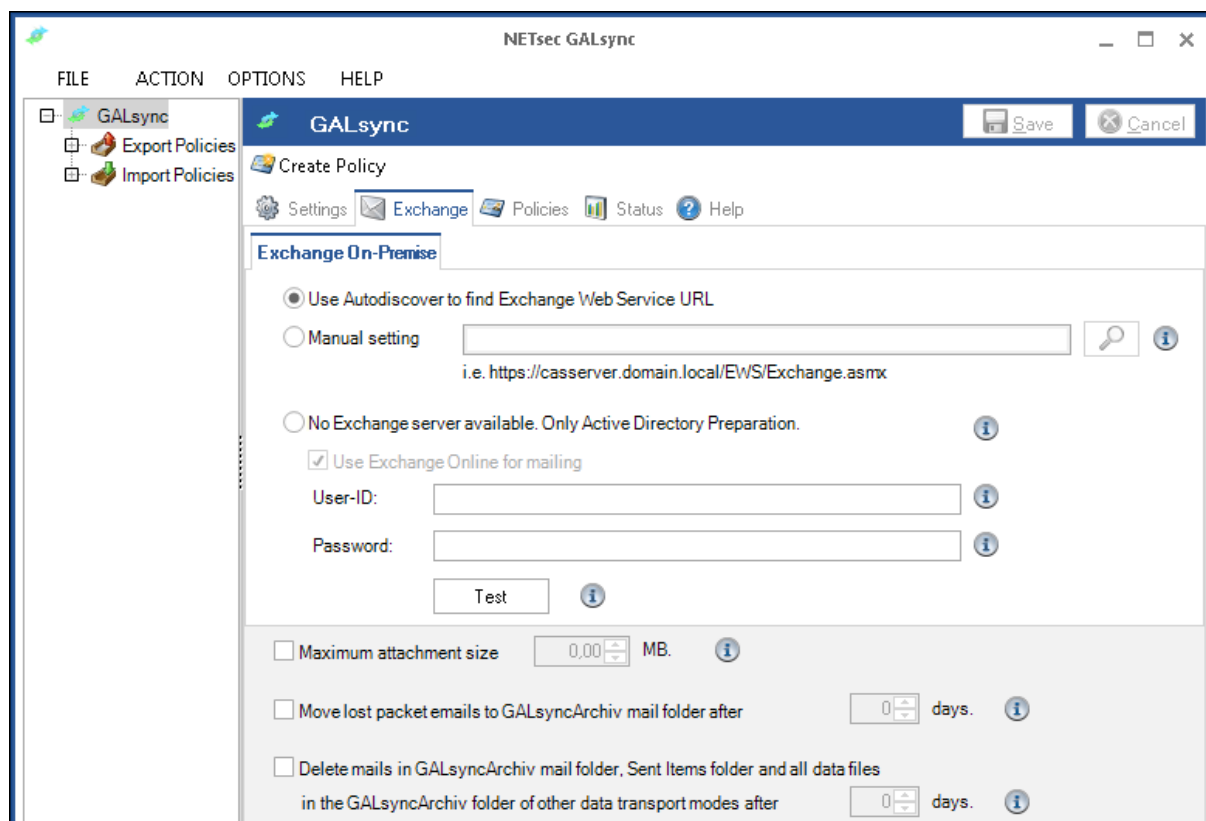
**NOTE: THIS CONFIGURATION IS ONLY USED IN EXCHANGE ONLINE ORGANIZATIONS AND DOES NOT HAVE ANY IMPACT TO THE ATTRIBUTE IN EXCHANGE ON-PREMISE ORGANIZATIONS.**

#### *Status file directory.*

GALsync stores the log files in the application data of the program for all users. If the log files are stored somewhere else the suitable directory path can be put down here.

## TAB Exchange

Here you can configure general Exchange settings used in all policies.



### Exchange On-Premise

If you work with Exchange On-Premise you can choose **USE AUTODISCOVER** to find the **EXCHANGE WEB SERVICE (EWS)**. If Autodiscover does not work you may set the value for EWS manually. If you click the **SEARCH** icon then GALsync tries to discover the Autodiscover settings.

You can import / export objects using an Active Directory forest without installing Exchange. In order to do so you need to update the schema to actually have email properties (start Exchange Setup with the flag **/ADPREP**). If you work with such a forest you can choose **NO EXCHANGE SERVER AVAILABLE. ONLY ACTIVE DIRECTORY PREPARATION**. In this case you can not use an internal Exchange server for mailing, you can use an Exchange Online account selecting the option **USE EXCHANGE ONLINE FOR MAILING**.

**NOTE: THIS OPTION IS NOT ACTIVATED BY DEFAULT.**

### Maximum attachment size

This setting enables you to limit the attachment size of the data GALsync sends via email. Once the data file gets larger than set here the limited size, GALsync will send the data via multiple emails.

**NOTE: THIS OPTION IS NOT ACTIVATED BY DEFAULT.**

Move lost packet emails to GALsyncArchiv mail folder after x days.

If your partner is sending GALsync data in chunked emails, this setting enables moving lost chunk emails to the GALSYNCArchive mailbox folder, so they get deleted according the setting DELETE MAILS IN GALSYNCArchive.

**NOTE: THIS OPTION IS NOT ACTIVATED BY DEFAULT.**

Delete mails in "GALsyncArchiv" mail folder and Sent items folder and all data files in the "GALsyncArchiv" folder of other data transport modes after x days.

Emails used for GALsync on the import side are stored in the GALSYNCArchive folder. To keep the mailbox small in size, you can configure when emails should be deleted out of this folder.

On the Export side all GALsync emails within the SENT ITEMS folder are also deleted in the same interval.

GALsync deletes data files in GALSYNCArchive folder after the amount of days configured.

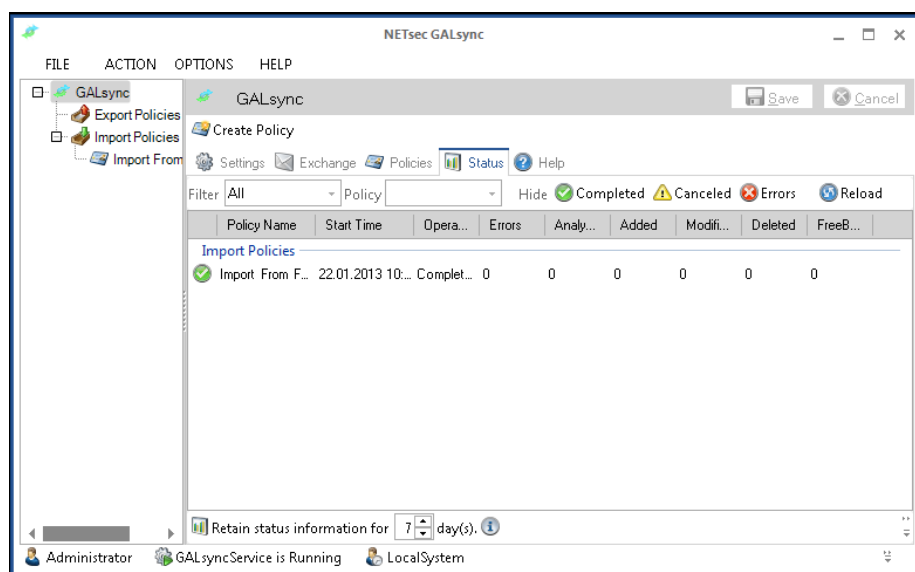
**NOTE: THIS OPTION IS NOT ACTIVATED BY DEFAULT.**

#### TAB Policies

The POLICIES tab lists all existing export and import policies. Select a listed policy to see or modify configuration. After initial setup, if there is no policy created yet, so this list is empty.

#### TAB Status

The STATUS tab shows quick reports about the status of reports that were executed during the log retention timespan.



For support purposes you may export the status files (see menu ACTION EXPORT STATUS).

**NOTE: IF A POLICY JUST IS RUNNING ACCESS TO THE STATUS FILE MAY NOT BE POSSIBLE. THE STATUS FILE WILL BE DISPLAYED AT THE TOP OF THE LIST AND IS INDICATED WITH "ERROR".**

#### Retain status information

Here you can configure how long status information (log files) is stored on your machine. Logs older than the specified number of days will be deleted. You will find a link to the folder where the log files are stored. Please keep in mind that windows explorer usually hides this folder by default. If you do not see this link, please open the window symbol at the bottom on the right.

#### TAB Help

The **HELP** tab provides you with a hyperlink for downloading the latest manual as well as mail-addresses and phone numbers for support and sales.

#### Transport Options to transfer data

In order to synchronize GALsync data you may choose from the following options to transfer the data file:

##### Manual

In an export policy GALsync extracts the selected objects from your active directory and stores this information into a local file. In an import policy GALsync extracts the information from a local file and stores this information into your active directory (Exchange on-premise or Exchange online).

Please choose a drive, folder and file name.

The directory information is not handed over automatically to the other exchange organization.



**Path:** Choose a file on your local drive where directory information will be stored.

**Compress Data:** Compresses the data to a .ZIP file.

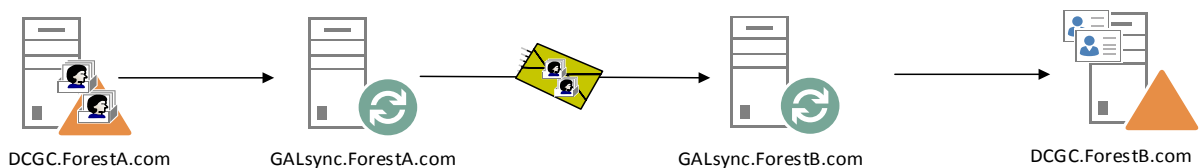
**Import all files placed in the selected folder:** When enabled, GALsync will import all data files placed in the given folder, other than just



importing the one file specified. To do so, the account which runs the application (and service) needs modify permissions on the folder selected.

#### Via email

In an export policy GALsync extracts the selected objects from your active directory and automatically sends the directory information as an email-attachment to the destination exchange organization. In an import policy GALsync extracts the information from an attachment in an email and stores this information into your active directory (Exchange on-premise or Exchange online).



**Subject:** The text specified here will appear in the subject field of the email containing the directory information GALsync sends to the other exchange organization.

**NOTE:** *IF THE RECEIVING ORGANIZATION GETS DIRECTORY INFORMATION FROM MULTIPLE EXCHANGE ORGANIZATIONS, YOU CAN USE A CERTAIN PHRASE FOR SUBJECT, WHICH IDENTIFIES YOUR OWN ORGANIZATION.*

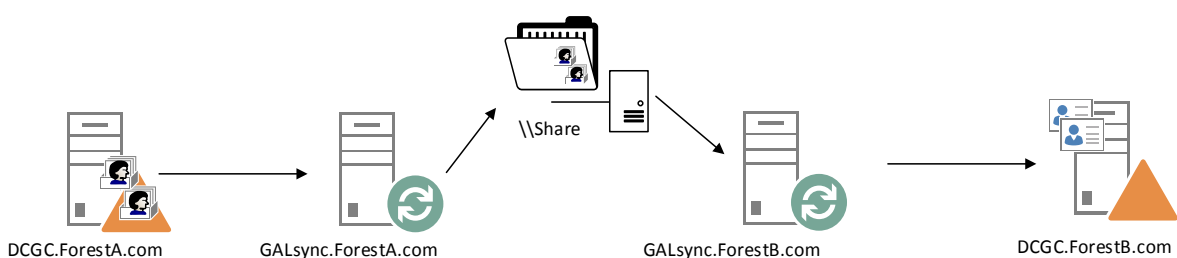
The GALsync instance at the receiving site will recognize the string by using the “starts with” operator.

**Send to:** Directory information is sent by email to the recipient. The recipient usually is the mailbox of the other exchange organization which has been configured to be used by GALsync.

**Test:** This automatically sends a test email to the mailbox.

#### Via network share

GALsync automatically stores the directory information on a network share that is accessible for both organizations. For export you need write access to the share.



**Path:** The path specifies the qualified name of the share and file name where you want to store directory information.

**Domain:** This is the domain the user belongs to who wants to access the specified network share. Usually this is the NETBIOS name of the domain.

**User Name:** This is the user who wants to access the specified network share.

**Password:** This is the password of the user.

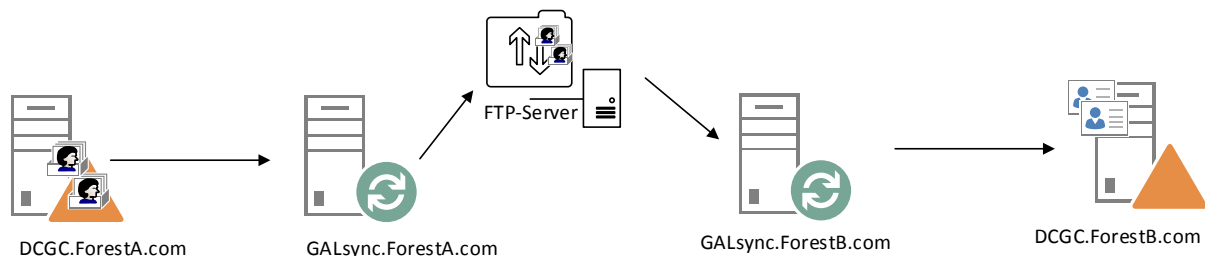
**Test:** Pressing this button GALsync will validate the access to the share.

**Compress Data:** Compresses the data to a .ZIP file.

**Import all files placed in the selected folder:** When enabled, GALsync will import all data files placed in the given folder, other than just importing the one file specified. To do so, the account which runs the application (and service) needs modify permissions on the folder selected.

#### Via FTP

GALsync automatically stores the directory information to a FTP server that is accessible for both exchange organizations. For export you need write access to the FTP server.



**URI:** The Uniform Resource Identifier (URI) specifies the qualified name of the FTP server and file name where you want to upload the directory information.

**User Name:** This is the user who wants to access the specified FTP server.

**Password:** This is the password of the user.

**Address/Port:** If your environment uses a proxy server to gain access to the FTP server please type the name of the proxy server and the port which should be used.

**Domain:** This is the domain the user belongs to and who wants to access the specified proxy. Usually this is the NETBIOS name of the domain.

**User Name:** This is the user who wants to access the specified proxy.

**Password:** This is the password of the user.

**Test:** Pressing this button GALsync will validate the access to the FTP server and proxy (if configured).

**Compress Data:** Compresses the data to a .ZIP file.

**NOTE: THE USED SERVICE ACCOUNT HAS TO BE GRANTED READ AND WRITE PERMISSIONS IN THE FTP DIRECTORY.**

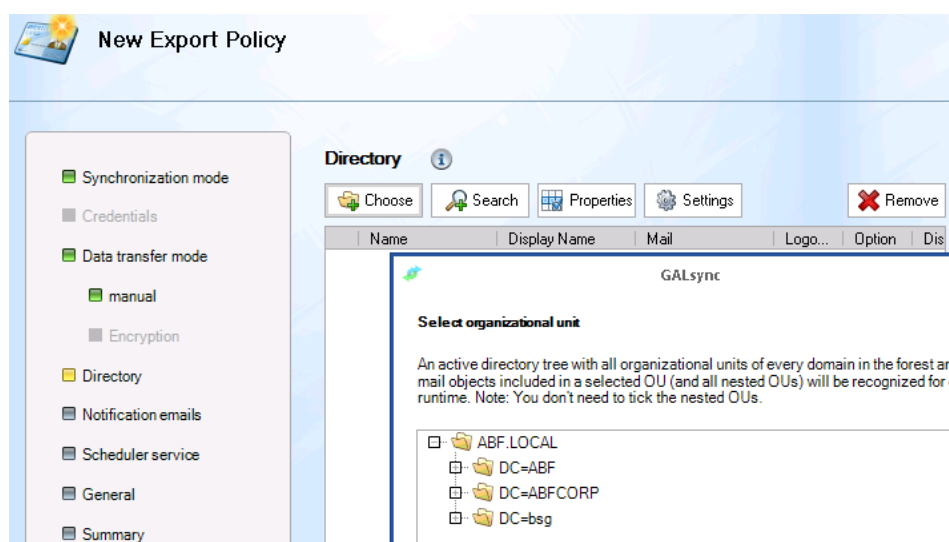
### Filter objects for export

In the Directory TAB of export policies you select the active directory objects you want to export. Search scope is a single object type all over the domain or selected organizational units in the local domain. Additionally you may exclude certain object properties that are not transferred to the other exchange organization. You may also remove a selected entry from the list.

#### Choose (On-premise)

Here you may pick a dedicated Organizational Unit in the listed domains. An active directory tree with all domains and organizational units will be listed. All mail objects included in a selected OU (and all nested OUs) will be recognized for export at runtime.

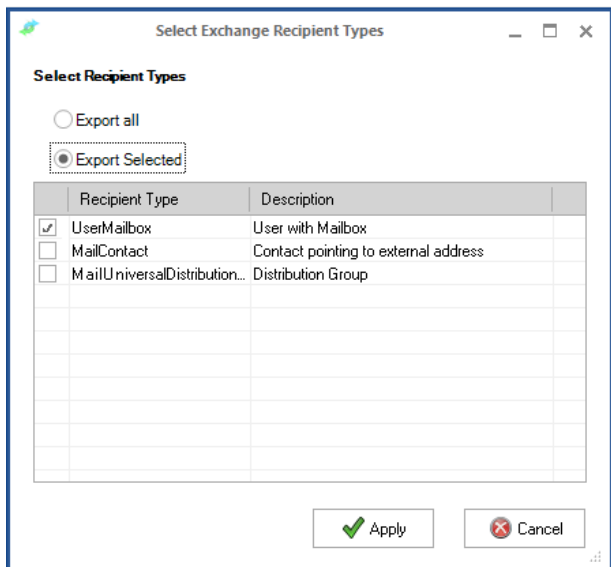
In forests with multiple domains all domains are displayed.



**NOTE: YOU DO NOT NEED TO CHECK THE NESTED OUs.**

### Choose (Exchange Online)

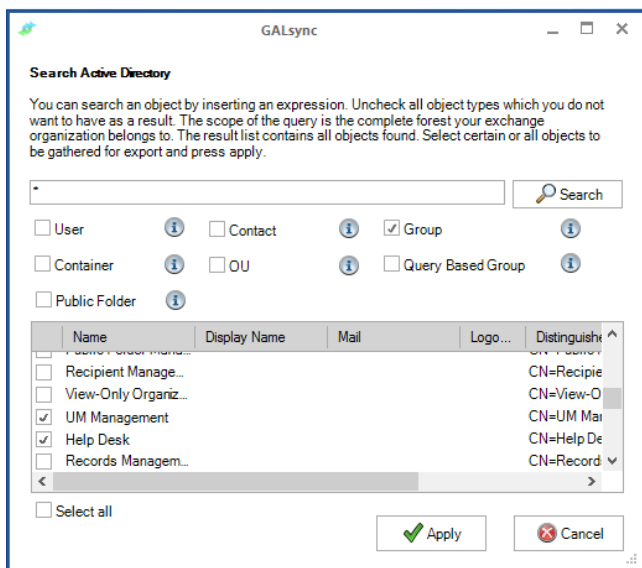
Here you may pick either all objects or specify a filter by choosing a recipient type.



### Search (On-premise)

You can search an object by inserting an expression. Un-check all object types which you do not want to have as a result.

**NOTE: THE SCOPE OF THE QUERY IS THE FOREST.**



The result listed contains all objects found. Select certain or all objects to be gathered for export and press *Apply*.

With \* you can find all objects which you want to have as a result. For example, you check only PUBLIC FOLDER and you will have all Public Folders as a result.

### User

You can search for user objects and select dedicated users for export matching the inserted expression.

**RECOMMENDATION: SELECT DEDICATED USERS ONLY IF YOU ARE SURE THEY WILL NEVER BE DELETED FROM ACTIVE DIRECTORY. CONSIDER TO TAKE OBJECTS WITH 'DYNAMIC' MEMBERS AS OUS, GROUPS ETC.**

### Contact

You can search for contact objects and select dedicated contacts for export.

**RECOMMENDATION: SELECT DEDICATED CONTACTS ONLY IF YOU ARE SURE THEY WILL NEVER BE DELETED FROM ACTIVE DIRECTORY. CONSIDER TO TAKE OBJECTS WITH 'DYNAMIC' MEMBERS AS OUS, GROUPS ETC.**

**IMPORTANT: DO NOT INCLUDE CONTACTS WHICH ARE ORIGINATED BY A GALSYNC IMPORT!**

### Container

You can search for container objects to export all objects in this container matching the inserted expression.

### OU

You can search for Organizational Units to export all objects in this OU matching the inserted expression.

If you do not want to choose Organizational Units including all nested OUs (by taking the CHOOSE method described below), you can select individual Organizational Units only.

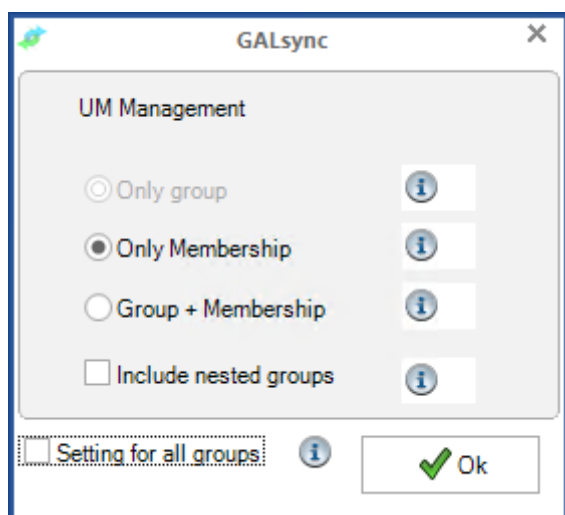
### Query Based Distribution Groups

Query-Based Distribution Groups (in Exchange 2007 called DYNAMIC DISTRIBUTION GROUPS) provide a type of Distribution Group with a flexible method to dynamically define the membership to this type of group. It is not a static membership like regular groups.

Search for Query Based Groups matching the inserted expression and select if you want to export all members of this group.

### Groups

Search for local, global and universal Groups of type security group or distribution group.



If you select a listed group which is mail-enabled you will be prompted for choice between a defined group (and it's SMTP-address) itself or only the members of this group (ONLY MEMBERSHIP) or both (GROUP + MEMBERSHIP) to be exported. If you select groups which are not mail-enabled the option ONLY GROUP is not available.

**NOTE: YOU CAN SORT FOR COLUMN MAIL IF YOU ONLY WANT TO MARK THE MAIL-ENABLED GROUPS.**

If you check SETTING FOR ALL GROUPS the configuration will be applied to all listed and selected groups. Otherwise you will be asked for every selected group.

#### Public Folder

You can search for mail-enabled Public Folders and choose any Public Folder you want to export. The Public Folder will be created as a contact in the target environment.

#### Search (Exchange Online)

Here you may pick either all objects or specify a filter by choosing a recipient type. With \* you can find all objects which you want to have as a result. For example, you check only CONTACTS and you will have all contacts as a result.

The result listed contains all objects found. Select certain or all objects to be gathered for export and press APPLY. It is very important that you change this option if you want to export more than 500 objects.

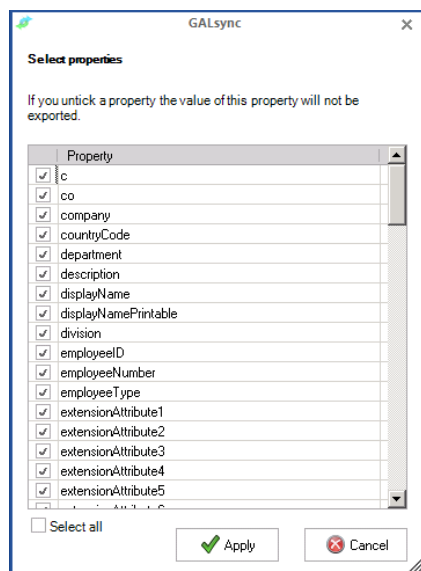
You can limit the results which you want to be exported.

**NOTE: WE STRONGLY RECOMMEND TO CONFIGURE MULTIPLE POLICIES IF YOU HAVE A LOT OF OBJECTS TO SYNCHRONIZE (DO NOT USE THIS TECHNIQUE IN AN EXCHANGE ON-PREMISE ENVIRONMENT!). THE DEFAULT 500 IS SET TO PREVENT YOU FROM A LONG-TIME SEARCH. IF**

**YOUR RESULT IS LARGER THAN THE GIVEN VALUE, THE NOT LISTED OBJECTS ARE NOT INCLUDED IN THE POLICY!**

## Properties

Select which properties are to be exported.



In detail:

*These attributes are mandatory:*

### Exchange Online

Guid, DistinguishedName, ObjectClass, EmailAddresses, ExternalEmailAddress, Alias, Name, FirstName, LastName

### Exchange On-Premise

GUID, DistinguishedName, Cn, ObjectClass, Proxy addresses, TargetAddress, Mail, MailNickname, Name, GivenName, Sn

*These attributes are optional:*

### Exchange Online

City, Company, CustomAttribute1, CustomAttribute2, CustomAttribute3, CustomAttribute4, CustomAttribute5, CustomAttribute6, CustomAttribute7, CustomAttribute8, CustomAttribute9, CustomAttribute10, CustomAttribute11, CustomAttribute12, CustomAttribute13, CustomAttribute14, CustomAttribute15, Department, DisplayName, Fax, HomePhone, Initials, MobilePhone, Notes, Office, OtherFax, OtherHomePhone, OtherTelephone, Pager, Phone, PostalCode, PostOfficeBox, SimpleDisplayName, StateOrProvince, StreetAddress, Title, WebPage

### Exchange On-Premise

C, Co, Company, CountryCode, Department, Description, DisplayName, DisplayNamePrintable, EmployeeID, EmployeeNumber, EmployeeType, ExtensionAttribute1, ExtensionAttribute2, ExtensionAttribute3, ExtensionAttribute4, ExtensionAttribute5, ExtensionAttribute6, ExtensionAttribute7, ExtensionAttribute8, ExtensionAttribute9, ExtensionAttribute10, ExtensionAttribute11, ExtensionAttribute12, ExtensionAttribute13, ExtensionAttribute14, ExtensionAttribute15, FacsimileTelephoneNumber, HomePhone, Info, Initials, IpPhone, L, Mobile, MsExchHideFromAddressLists, OtherFacsimileTelephoneNumber, OtherHomePhone, OtherIpPhone, OtherMobile, OtherPager, OtherTelephone, Pager, PersonalTitle, PhysicalDeliveryOfficeName, PostalCode, PostOfficeBox, St, StreetAddress, TelephoneNumber, Title, Url, WWWHomePage

*These attributes have to be selected explicitly for export:*

#### Exchange On-Premise

msRTCSIP-DeploymentLocator, msRTCSIP-FederationEnabled, msRTCSIP-InternetAccessEnabled, msRTCSIP-OptionFlags, msRTCSIP-PrimaryHomeServer, msRTCSIP-PrimaryUserAddress, msRTCSIP-UserEnabled, msRTCSIP-UserPolicies, msExchExtensionAttribute16 – msExchExtensionAttribute45

**NOTE: IF YOU ALREADY HAVE RUN A SYNCH (I.E. WITH PHONE NUMBER SELECTED) AND AFTERWARDS YOU MODIFY THE POLICY AND YOU UNSELECT THE PROPERTY (I.E. WITH PHONE NUMBER NOW UNTICKED), THEN THE ALREADY SYNCHED VALUE WILL NOT BE MODIFIED IN THE TARGET!**

### Filter and Modify objects for import

Configure all import related directory settings.

#### Choose (On-premise only)

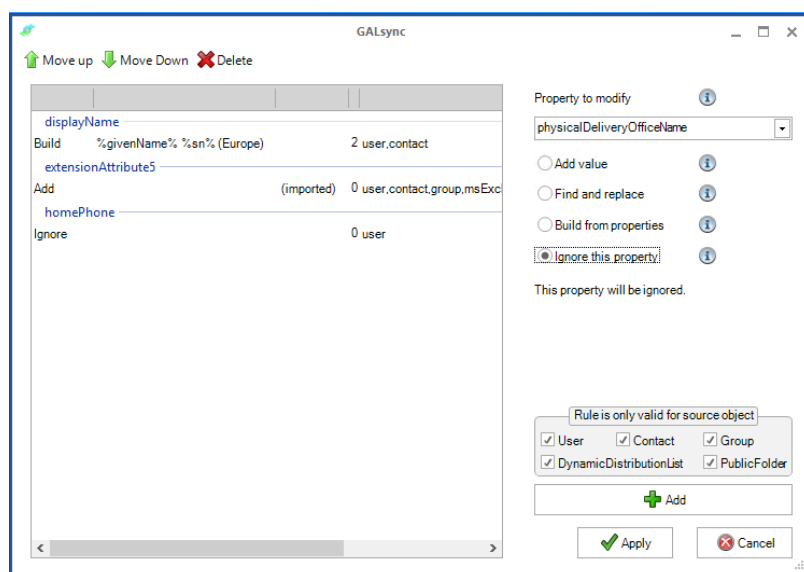
Choose an Organizational Unit you want to store the imported directory information in.

**RECOMMENDATION: CREATE A SPECIAL ORGANIZATIONAL UNIT FOR IMPORT. DO NOT BIND ANY GROUP POLICY TO THIS OU, WHICH COULD LEAD TO UNEXPECTED RESULTS. GRANT THE GALSYNC SERVICE ACCOUNT FULL PERMISSIONS TO THIS OU.**

#### Properties

Modify the values for the Import Policy. The modified objects are prioritized during the import.

Usually in your import list, there are different classes of objects (i.e. **USER**, **CONTACT** and **GROUP**). Because these classes have different attributes rules are apply related to the object class. Because all object classes have the attribute `DISPLAYNAME` the first rule displayed in the screenshot will be apply to all classes. Because a group does not have an attribute `TELEPHONENUMBER`, the second rule is only apply to users and contacts.





### Property to modify

These attributes can be modified before import:

#### Exchange On-Premise

Company, Department, DisplayName, DisplayNamePrintable, ExtensionAttribute1, ExtensionAttribute2, ExtensionAttribute3, ExtensionAttribute4, ExtensionAttribute5, ExtensionAttribute6, ExtensionAttribute7, ExtensionAttribute8, ExtensionAttribute9, ExtensionAttribute10, ExtensionAttribute11, ExtensionAttribute12, ExtensionAttribute13, ExtensionAttribute14, ExtensionAttribute15, FacsimileTelephoneNumber, GivenName, HomePhone, Info, Initials, IpPhone, L, Mobile, Pager, PersonalTitle, PhysicalDeliveryOfficeName, PostalCode, Sn, St, StreetAddress, TelephoneNumber, Title, WWWHomePage

#### Exchange Online

We support this matrix:

Active Directory (Exchange On-Premise)	Active Directory (Exchange Online)
Guid	Guid
DistinguishedName	DistinguishedName
TargetAddress	ExternalEmailAddress
ObjectClass	ObjectClass
ProxyAddresses	EmailAddresses
GivenName	FirstName
Sn	LastName
MailNickname	Alias
Initials	Initials
PhysicalDeliveryOfficeName	Office
TelephoneNumber	Phone
WWWHomePage	WebPage
L	City
St	StateOrProvince
Title	Title
PostalCode	PostalCode
PostOfficeBox	PostOfficeBox
FacsimileTelephoneNumber	Fax
DisplayName	DisplayName
Info	Notes
Department	Department
Company	Company
StreetAddress	StreetAddress
DisplayNamePrintable	SimpleDisplayName
Name	Name

Department	Department
HomePhone	HomePhone
Mobile	MobilePhone
Pager	Pager
ExtensionAttribute1 - ExtensionAttribute15	CustomAttribute1 - CustomAttribute15
OtherFacsimileTelephoneNumber	OtherFax
OtherHomePhone	OtherHomePhone
OtherTelephone	OtherTelephone
Manager	Manager
Member	Member
GroupType	GroupType
SAMAccountName	SAMAccountName
ObjectCategory	ObjectCategory

### Add Value

You can add a text to a property. Choose the property that you want to add a value to, and then choose the option **ADD VALUE**.

You then have the option to add your value before the property (**PREFIX**) or after it (**SUFFIX**).

### Find and Replace

You can replace a specific string with a new value. Choose the property, select **FIND AND REPLACE**.

In the find textbox insert the text which you wish to replace and in the replace textbox insert the new text.

You can use Regular Expressions.

Example, you have the string **DUEREN GERMANY**, however want to switch the words and separate them with a comma.

You expect the following string as an outcome **GERMANY, DUEREN**, and then insert:

```
(?<first>\S+) (?<last>\S+)
```

into the **FIND** field.

In the **REPLACE** field, add the following text:

```
${last},${first}
```

Here are a few Regular Expressions, which are allowed to be used:

\$&	matched text
\$_	original source string
\$`	text before match
\$'	text after match
\${group_name}	text matched by named group
\$1, \$2	text matched by numbered group
\$\$	the literal "\$"

#### *Build from Properties*

You can create values by concatenating other property values. Choose the property and select the option `BUILD FROM PROPERTIES`.

In the textbox `BUILD FROM PROPERTIES`, add a string, how the property value should be built. Via the `ADD PROPERTY` button, you can choose which properties are used.

For Example, you want to generate the property, `DISPLAYNAMEPRINTABLE` from the last name, and first name comma separated. Choose the property `SN` and the property `GIVENNAME` and insert a comma and space between them in the textbox `BUILD FROM PROPERTIES`.

Thereafter, all values in property `DISPLAYNAMEPRINTABLE` will be created from a comma separated `SN` and `GIVENNAME`.

#### *Ignore this Property*

If you do not want to import a specific property, then you can select `IGNORE THIS PROPERTY`.

**NOTE: VALUES WHICH ARE ALREADY ASSIGNED TO THE OBJECTS PROPERTY WILL NOT BE MODIFIED BY GALSYNC.**

**TIP: YOU EXPORT A PROPERTY AND YOU WANT TO IMPORT A DIFFERENT PROPERTY IN THE TARGET ENVIRONMENT. BY COMBINING THE OPTIONS 'BUILD FROM PROPERTIES' AND 'IGNORE THIS PROPERTY' YOU CAN EITHER COPY OR MOVE A PROPERTY VALUE TO A DIFFERENT PROPERTY.**

#### *Copy Property*

You can copy a property by choosing the end property and selecting the option `BUILD FROM PROPERTIES`. Then choose the property you wish to copy via the `ADD PROPERTY` dialog. Add the rule with the button `ADD`.

#### *Move Property*

You can move a property by doing the following:

1. Choose the end property and selecting the option **BUILD FROM PROPERTIES**. Then choose the property you wish to copy via the **ADD PROPERTY** dialog. Add the rule with the button **ADD**.

2. Choose the initial property and select the option **IGNORE THIS PROPERTY**, and add the rule by clicking the **ADD** button.

Ergo the property value moved from the initial property to the end property.

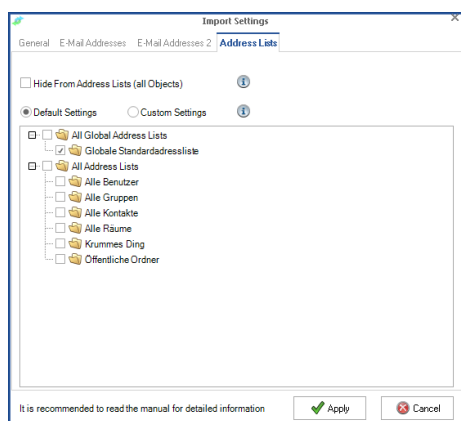
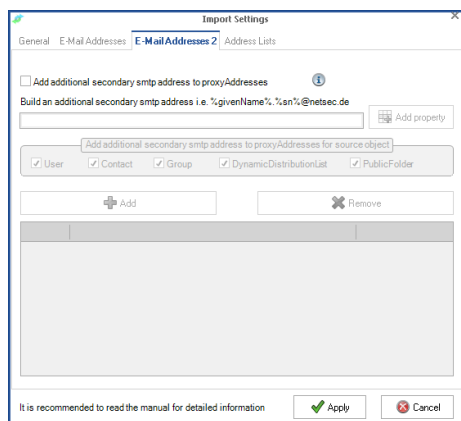
## Special Options

### Export Exchange On-Premise

### Export Exchange Online

### Import Exchange On-Premise

### Import Exchange Online



### Synchronize Manager

If this option in the **DIRECTORY SETTINGS** of an export policy is selected GALsync will export also the manager's object (if there is a value present). The manager will be exported even if the object is not in the scope of the export query.

For example, if all users placed in OU **DEVELOPERS** are to be exported, but a manager of one object is placed in OU **MANAGERS**, manager is exported too.

If this option in the **DIRECTORY SETTINGS TAB GENERAL** of an import policy is selected GALsync will create the manager as contact.

### Disabled objects (On-Premise only)

GALsync will export all mailbox- or mail-enabled objects no matter if they are enabled or not. User or groups must have a SMTP proxy address value; contacts must have a target address value.

### Include hidden objects (On-Premise only)

If this option in the **DIRECTORY SETTINGS** of an export policy is selected the objects, which are hidden from the GAL, are also exported.

If you select this option in the **DIRECTORY SETTINGS TAB GENERAL** of an import policy all imported contacts are hidden from address book. If you

unselect this option all hidden, imported contacts will be visible after running the policy. We recommend concerning this requirement to configure a different export policy containing only the affected objects. In the target forest create a special OU which is used to import all contacts which should be hidden from address book.

*IMPORTANT: WITH THE SYNCHRONIZATION OF OBJECTS WHICH ARE ALSO HIDDEN AS A CONTACT FROM THE GAL, IT IS POSSIBLE THAT THERE CAN BE PROBLEMS, BECAUSE GALSYNC CANNOT CORRECTLY DETERMINE, WHETHER THE CONTACT OF THE OBJECT WHICH SHOULD BE IMPORTED, DOES ALREADY EXIST OR NOT.*

#### Export 'MasteredOnPremise' objects (Exchange Online only)

Allow you to export objects from Exchange Online (Office 365), which are synchronized with Microsoft Directory Synchronization tool. Microsoft Directory synchronization allows identities to be mastered on-premises and all updates to that identity are synchronized to Office 365.

**NOTE: BY DEFAULT GALSYNC EXPORTS ONLY OBJECTS FROM EXCHANGE ONLINE (OFFICE365) WHICH ARE NOT STAMPED WITH "MASTEREDONPREMISE".**

#### Synchronize Picture (On-Premise only)

If this option in the DIRECTORY SETTINGS of an export policy is selected the user's photos stored in the source directory are exported as well. Photos usually are stored in attribute THUMBNAILPHOTO. This option is only available in an On-Premise export policy.

If this option in the General tab of the DIRECTORY SETTINGS of an import policy is selected the transferred photos are stored in the attribute THUMBNAILPHOTO in the target directory.

Please read the article SETTING ACTIVE DIRECTORY THUMBNAILPHOTO ATTRIBUTE PERMISSIONS on how to set Active Directory THUMBNAILPHOTO attribute permissions for the GALsync service account.

<http://www.thumbnailphoto.net/2010/11/active-directory-thumbnailphoto-attribute-permissions/>

#### Support cross-forest delegation (On-Premise only)

Cross Forest Delegation was introduced in Exchange 2007. It enables a user in forest A to manage a calendar of a user in forest B.

Prerequisites are

- GALsync
- Forest Trust between Forests
- Cross-Forest Availability

An object with the `RECIPIENT TYPE` of `CROSS-FOREST MAIL CONTACT` is created and you can use this contact to assign delegated permissions.

You may create this type of contact manually - some attributes need to have certain values, described in MCS UK Unified Communications Blog

<http://blogs.technet.com/b/msukucc/archive/2011/10/12/exchange-server-2010-cross-forest-delegation.aspx>

GALsync supports to sync all attributes which you need to realize a Cross Forest Delegation.

If the option `SUPPORT CROSS-FOREST DELEGATION` in the `DIRECTORY SETTINGS` of an export policy and of an import policy is selected GALsync handles the contact sync according to the chapter `MANUALLY CREATING A CROSS-FOREST MAIL CONTACT` of this article:

<http://blogs.technet.com/b/neiljohn/archive/2011/10/12/exchange-server-2010-cross-forest-delegation.aspx>

**NOTE: IF YOU HAVE A SHARED ADDRESS SPACE BETWEEN SOURCE AND TARGET FOREST SO YOU HAVE ALSO TO USE THE OPTION `MODIFY TARGET ADDRESS WITH DOMAIN` (ON-PREMISE ONLY)**

Please have a look at the whitepaper `CROSS FOREST FREE/BUSY DELEGATION` at our website <http://www.netsec.de/en/documents/galsync/>

### Modify primary SMTP address with domain

If this option in the DIRECTORY SETTINGS TAB EMAIL ADDRESSES of an import policy is selected you can replace the domain-part of the SMTP address by another value.

Example: If you insert @SECOND.BIZ in the textbox then GALsync will look for the first instance of @SECOND.BIZ in the PROXYADDRESSES and will set it as primary SMTP address for the imported contact.

Export	Import
<div>ProxyAddresses</div> <div>SMTP: John.smith@export.com</div> <div>smtp:John.smith@second.biz</div> <div>smtp:js@second.biz</div>	<div>ProxyAddresses</div> <div>smtp: John.smith@export.com</div> <div>SMTP:John.smith@second.biz</div> <div>smtp:js@second.biz</div>
<div>TargetAddress</div> <div></div>	<div>TargetAddress</div> <div>SMTP:John.smith@second.biz</div>
<div>Mail</div> <div>John.smith@export.com</div>	<div>Mail</div> <div>John.smith@export.com</div>

#### NOTE:

**IF YOU ACTIVATE THE OPTION "MODIFY PRIMARY SMTP ADDRESS WITH DOMAIN", THEN RUN AN EXPORT/IMPORT AND THEN DEACTIVATE THE OPTION. : A WARNING MESSAGE APPEARS, BECAUSE THIS LEADS TO A TOTAL DELETION AND RECREATION OF THE OBJECTS IMPORTED.**

### Import only primary SMTP address

If this option in the DIRECTORY SETTINGS TAB EMAIL ADDRESSES of an import policy is selected you will import the primary SMTP Address only. This is required in some scenarios (i.e. if more than one SMTP address is present within the PROXYADDRESSES).

Export	Import
<div>ProxyAddresses</div> <div>SMTP: John.smith@export.com</div> <div>smtp:John.smith@second.biz</div> <div>smtp:js@second.biz</div>	<div>ProxyAddresses</div> <div>SMTP: John.smith@export.com</div>
<div>TargetAddress</div> <div></div>	<div>TargetAddress</div> <div>SMTP: John.smith@export.com</div>
<div>Mail</div> <div>John.smith@export.com</div>	<div>Mail</div> <div>John.smith@export.com</div>



### Retain targetAddress of users

GALsync exports the values found in attribute `PROXYADDRESSES` as well as the value of the attribute `TARGETADDRESS`.

By default during import the `TARGETADDRESS` of mailbox-users and mail-users is stamped with the value of the source primary SMTP address value. If the option `RETAIN TARGETADDRESS OF USERS` is selected the `TARGETADDRESS` of the source object is retained.

### Modify target address with domain (On-Premise only)

You find this option in the `DIRECTORY SETTINGS` TAB `EMAIL ADDRESSES` of an import policy. To modify the attribute `TARGETADDRESS` correctly it may be possible that we need to take a value out of the `PROXYADDRESSES` attribute from the source, which is not the main SMTP address.

For Example, the mailbox in the source has multiple SMTP Addresses. The main domain is: `@EXPORT.COM` and secondary domain is: `@SECOND.BIZ`. You would like to use the `@SECOND.BIZ` domain as the `TARGETADDRESS` attribute after the import.

Insert the filter `@SECOND.BIZ` into the textbox next to the option `MODIFY TARGET ADDRESS WITH DOMAIN`.

GALsync will use the first found instance of `@SECOND.BIZ` in the `PROXYADDRESSES` and set it as the `TARGETADDRESS` for the imported contact.

Export	Import
<div>ProxyAddresses SMTP: John.smith@export.com smtp:John.smith@second.biz smtp:js@second.biz</div>	<div>ProxyAddresses SMTP: John.smith@export.com</div>
<div>TargetAddress Mail John.smith@export.com</div>	<div>TargetAddress SMTP: John.smith@export.com Mail John.smith@export.com</div>

### Modify mail address with domain (On-Premise only)

You find this option in the `DIRECTORY SETTINGS` TAB `EMAIL ADDRESSES` of an import policy. To modify the attribute `MAIL` correctly it may be possible that we need to take a value out of the `PROXYADDRESSES` attribute from the source, which is not the main SMTP address. For Example, the mailbox in the source has two SMTP Addresses, the main address is: `@EXPORT.COM` and a secondary address: `@SECOND.BIZ` and you would like to use the `@SECOND.BIZ` address as the `MAIL` attribute after the import.

Insert the filter @ SECOND.BIZ into the textbox next to the option MODIFY MAIL ADDRESS WITH DOMAIN. GALsync will use the first found instance of @SECOND.BIZ in the PROXYADDRESSES and set it as MAIL attribute for the imported contact.

Export	Import
<b>ProxyAddresses</b> SMTP: John.smith@export.com smtp:John.smith@second.biz smtp:js@second.biz	<b>ProxyAddresses</b> SMTP: John.smith@export.com smtp:John.smith@second.biz smtp:js@second.biz
<b>TargetAddress</b>  	<b>TargetAddress</b> SMTP: John.smith@export.com
<b>Mail</b> John.smith@export.com	<b>Mail</b> John.smith@second.biz

#### Import X500 addresses (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB EMAIL ADDRESSES of an import policy. Sometimes it is required to synchronize the X500 addresses in the PROXYADDRESSES. This helps if you get NDRs (Non-Delivery Reports) due to earlier migrations.

#### Import SIP addresses (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB EMAIL ADDRESSES of an import policy. Sometimes it is required to synchronize the SIP ADDRESSES in the PROXYADDRESSES. This will import all of the addresses in the PROXYADDRESSES attribute marked as SIP ADDRESS.

#### Add suffix to MailNickname (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB EMAIL ADDRESSES of an import policy. Sometimes it is required to extend the MAILNICKNAME, because the LEGACYEXCHANGEDN will be created with the EXCHANGE ADMINISTRATIVE GROUP and the MAILNICKNAME. This will add a suffix to the MAILNICKNAME only when GALsync creates a new contact.

**NOTE: PLEASE NOTICE THAT THE MAILNICKNAME HAS A LIMIT OF 64 CHARACTERS AND ALLOWED CHARACTERS: A-Z A-Z 0-9 AND . \_ - +.**

#### Add additional secondary smtp address to proxyAddresses (On-Premise only)

Use this to add custom secondary smtp addresses to certain object types as needed.

Please note the following allowed characters: A-Z A-Z 0-9 and . \_ - +

Please make sure not to use attributes on object types that don't have them.

### Assign Address Lists to imported objects (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB ADDRESS LISTS of an import policy.

#### Hide from Address Lists (all Objects)

If you select this option all imported contacts are hidden from address book.

If you unselect this option all hidden (this is the default), imported contacts will be visible after running the policy.

We recommend concerning this requirement to configure a different export policy containing only the affected objects. In the target forest create a special OU which is used to import all contacts which should be hidden from address book.

*IMPORTANT: WITH THE SYNCHRONIZATION OF OBJECTS WHICH ARE ALSO HIDDEN AS A CONTACT FROM THE GAL, IT IS POSSIBLE THAT THERE CAN BE PROBLEMS, BECAUSE GALSYNC CANNOT CORRECTLY DETERMINE, WHETHER THE CONTACT OF THE OBJECT WHICH SHOULD BE IMPORTED, DOES ALREADY EXIST OR NOT.*

#### Default Settings

GALsync sets the default global address lists (GALs).

#### Custom Settings

GALsync sets the chosen address lists.

**NOTE: THIS WILL NOT CHANGE ANY RECIPIENT FILTERS OF OTHER ADDRESS LISTS. YOU MAY WANT TO CHANGE YOUR GLOBAL ADDRESS LISTS (GALS) RECIPIENT FILTER TO NOT INCLUDE THESE OBJECTS, AND THE RECIPIENT FILTER OF THE CHOSEN TO INCLUDE THEM.**

### Create sub-OUs for each sending domain (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB GENERAL of an import policy. You can choose to import all objects into one import OU with different sub OUs. GALsync creates sub-OUs depending on the original Active Directory domain names. Therefore, you are able to create one Import OU and GALsync will create for each received domain a sub-OU. GALsync also can read the names of the sub-OUs from a Custom Attribute (SETTINGS of an Import-Policy, PROPERTY FOR SOURCE DOMAIN). In this case the name must be present at time of export.

### Use MAPI rich text format (On-Premise only)

You find this option in the DIRECTORY SETTINGS TAB GENERAL of an import policy. Here you choose whether to use MAPI-RTF for the contacts you will import. The following options are available:

**Never:** If you select this option, messages sent to this recipient convert to plain text.

**Always:** If you select this option, messages sent to this recipient will be in the MAPI rich text format (RTF).

**Use Default Settings:** If you select this option, messages sent to this recipient are in either MAPI RTF or plain text, depending on the settings of the client computer.

See: <http://technet.microsoft.com/en-us/library/aa997434.aspx>

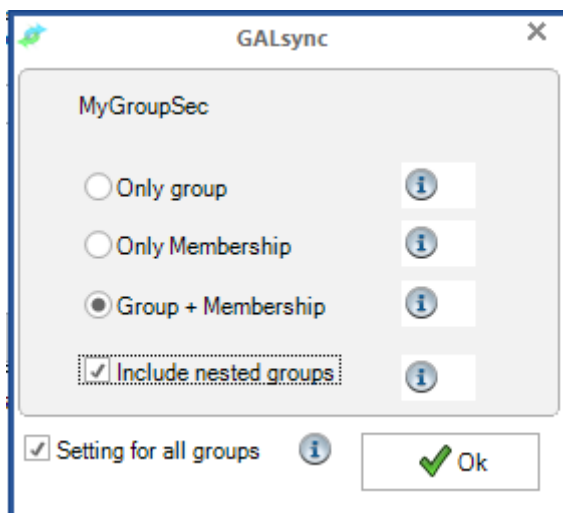
**NOTE: IF THE OPTION "SUPPORT CROSS-FOREST DELEGATION" IS ENABLED, IT IS NOT POSSIBLE TO CHANGE THIS OPTION.**

## Synchronizing Groups

### Export Groups and members

If you choose a mail-enabled group (local, global, universal of type security, distribution) or dynamic distribution group you can configure

- **ONLY GROUP.** Only the group by itself is exported. If the group is not mail-enabled the option is deactivated. Members of the group will not be exported.
- **ONLY MEMBERSHIP.** Only the mail-activated members of the group are exported. The group by itself will not be exported.
- **GROUP + MEMBERSHIP.** Both, group and group members will be exported.
- **INCLUDE NESTED GROUPS.** If a group has other groups as members also the nested groups (and their members) are exported. This feature is not available for the option *Only Group*.



### Import Groups and members (On-Premise)

By default, a group will be created in the target as mail-enabled contact referring to the original SMTP-address of the source group. If someone writes against the group the membership will be resolved in the source Exchange organization.

If this option in the **DIRECTORY SETTINGS TAB GENERAL** of an import policy is selected GALsync creates the group as mail-enabled group with the same type and scope as in source. But you can also choose the type and the scope, the group should have in target. If this option is not selected GALsync will create group and members as contact.

If the sub-option **CREATE GROUPS WITHOUT MEMBERS AS CONTACT** *is selected* (default) then the group by itself is created as contact. If you select the option **CREATE GROUPS WITHOUT MEMBERS AS GROUPS** the group objects are created as groups.

If you select mail-enabled groups or distribution lists for synchronization, only the objects themselves will be exported. Users will be able to see

these objects in GAL and can send mails to these addresses but they are not able to look up their memberships.

#### *Groups and members (Exchange Online)*

If you import a group to Exchange Online, the group will be created as contact by default. If someone writes against this object the membership will be resolved in the source Exchange organization.

If the option in the **DIRECTORY SETTINGS TAB GENERAL** of an import policy is selected GALsync creates the group as mail-enabled distribution group. If someone writes against the group the membership will be resolved in Exchange Online.

Normally GALsync syncs groups as contacts, but with this option it will create **MAILDISTRIBUTIONGROUPS** and assign the synchronized contacts to those groups. If you choose to import groups as groups, the **TARGETADDRESS** of the created group will change according to Exchange Online restrictions.

The resulting email-address will be:

`<GROUPNAME>.<SUBDOMAIN>.<TOPLEVELDOMAIN>@<EXCHANGE ONLINE DOMAIN>.ONMICROSOFT.COM`

e.g. Importing the group `USERS@NETSEC.DE` to Exchange Online

`(@NETSECONLINE.ONMICROSOFT.COM)` will become `USERS.NETSEC.DE@NETSECONLINE.ONMICROSOFT.COM`

Please keep in mind, that only by this way successfully synchronized members will be able to get emails sent to this particular group.

#### *Attributes*

As far as possible all attributes that are related to contacts are exported. In the target the exported objects are created as contacts, ergo no further attributes can be used from the source. You may configure during exports which of these attributes should be transmitted to the target. Required are only a few attributes. By default most attributes are marked as exportable. In the target, you can modify most attributes before importing them by adding a suffix, prefix, or by replacing a found string by a given value.

## Error-Handling

### Maximum errors to transfer data file

In the **DIRECTORY SETTINGS** of an export policy you can set a limit how many errors may occur when creating a data file before sending. If this limit of errors is exceeded, the effected data file will not be sent to the recipient.

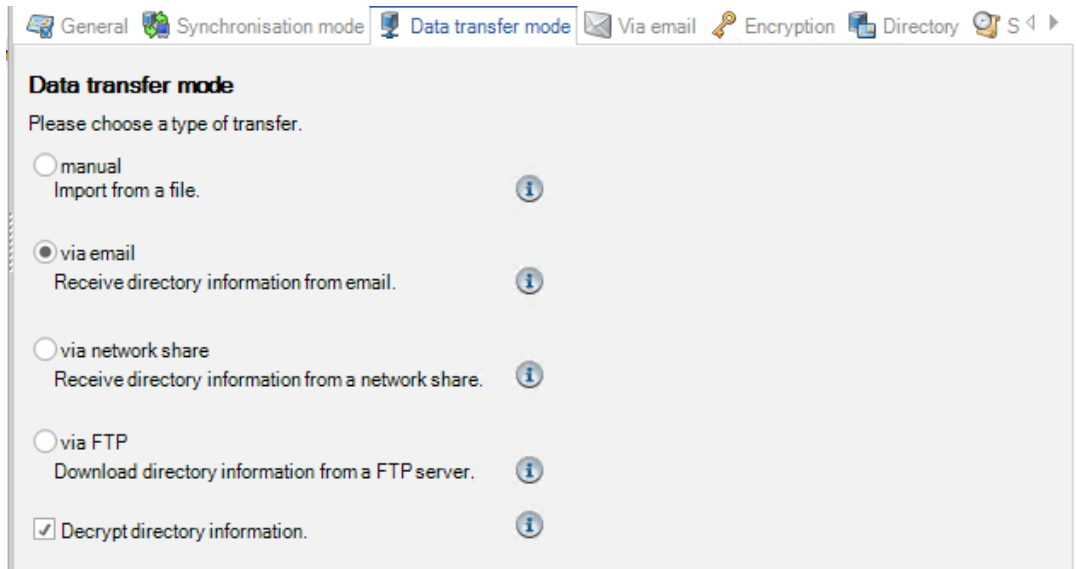
### Minimum objects to transfer data file

In the **DIRECTORY SETTINGS** of an export policy you can define a minimum number of objects to be written to the data file before sending to the recipient. As long as the data file contains less objects it will not be sent at all.

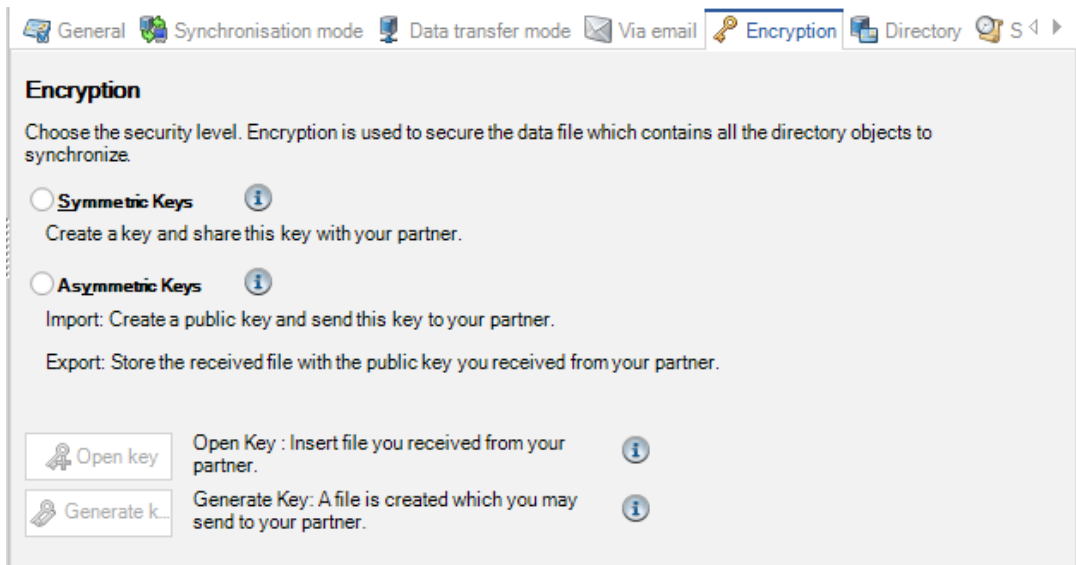
For example if you expect to export over 11000 objects, you can set a minimum of number of objects to 11000. Assuming that a network error occurs at runtime and GALsync identifies only 8000 objects for export (because of unavailability of your domain controller). The data file will not be sent to the recipient. Otherwise, in the target environment the missing number of contacts would have been deleted even though they still exist in the source.

## Encryption

The Active Directory Information can be encrypted. This option, **ENCRYPT DIRECTORY INFORMATION**, can be activated while selecting the **DATA TRANSFER MODE**.



After setting up the **DATA TRANSFER MODE** you can setup the Encryption.





### Symmetric Keys

If you choose `SYMMETRIC KEYS` a single key is used for both, encryption and decryption. This means sender and receiver use the same key.

#### Procedure

Once you create an export policy create a key-file and hand it over to your partner organization. Then your partner creates an import policy. Imported information will be accessible after using the key-file.

If you want to use this key in any other of your own policies simply refer to the created key-file.

### Asymmetric Keys (Public Key)

If you choose `ASYMMETRIC KEYS` the key for encrypting the message is different to the key for decryption. This means you use a public key to encrypt the message, whereas the private key is kept secretly and will be used to decrypt the message. If you want the other exchange organization to send encrypted directory information to you, you have to generate a pair of keys and hand over the public key to the other exchange organization first. They will use the key for encryption and send you the encrypted file. The private key is stored directly in the policy file.

**NOTE: USING AN ASYMMETRIC KEY THE PRIVATE KEY IS BUILT UPON THE MACHINES GUID. AS SOON AS YOU MOVE GALSYNC TO ANOTHER MACHINE YOU HAVE TO RENEW YOUR EXISTING KEY.**

#### Procedure

If you create an import policy create a key-file and hand it over to your partner organization. Your partner himself creates an export policy to be opened with the key-file.

Once you create an export policy, first you should receive a key-file generated by your partner's organization inside the appropriate import policy at their hand side.

#### More information

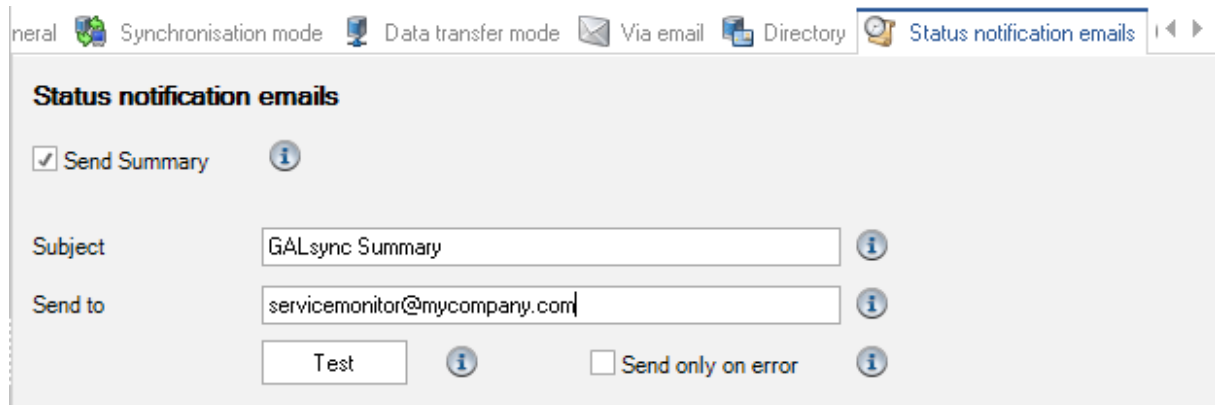
For more information see

[http://en.wikipedia.org/wiki/Symmetric-key\\_algorithm](http://en.wikipedia.org/wiki/Symmetric-key_algorithm)

[http://en.wikipedia.org/wiki/Asymmetric\\_key\\_algorithm](http://en.wikipedia.org/wiki/Asymmetric_key_algorithm)

## Status notification

GALsync can send status notification emails to inform you about errors that may have occurred. Status notification is a component of each policy. If you leave this option unselected no notification email will be sent.



The screenshot shows the 'Status notification emails' configuration window. At the top, there is a navigation bar with tabs: 'General', 'Synchronisation mode', 'Data transfer mode', 'Via email', 'Directory', and 'Status notification emails'. The 'Status notification emails' tab is active. Below the navigation bar, the title 'Status notification emails' is displayed. The configuration area includes a checked checkbox for 'Send Summary' with an information icon. Below this, there are two text input fields: 'Subject' with the value 'GALsync Summary' and 'Send to' with the value 'servicemonitor@mycompany.com'. Both fields have information icons. At the bottom, there is a 'Test' button with an information icon and an unchecked checkbox for 'Send only on error' with an information icon.

**Subject:** The email header

**Send to:** The SMTP-address of the person who will receive the administrative report

**Test:** GALsync will send an email to the specified email address.

**Send only on error:** GALsync will only send status notification mails if at least one error occurred during a running policy.

**NOTE: GALSYNC DOES NOT SEND A STATUS NOTIFICATION MAIL IF A POLICY HAS NOT BEEN STARTED DUE TO AN ERROR.**

## Schedule Service

GALsync can perform the synchronization of policies automatically. You can schedule weekly or monthly, on different days, the synchronization should be carried out. Furthermore, they can decide between what times and how many times a day the scheduler service works. Here, it is possible to synchronize the scheduler service every 15 minutes, every hour or once a day.

Using start time and end time option GALsync starts only in the defined period. The synchronization itself may take a longer time.

The screenshot shows the 'Scheduler service' configuration window in GALsync. At the top, there are tabs for 'Data transfer mode', 'Via email', 'Directory', 'Status notification emails', and 'ScheduleService'. The 'ScheduleService' tab is active. Below the tabs, the 'Scheduler service' section has three radio buttons: 'No schedule service', 'Weekly', and 'Monthly'. The 'Weekly' option is selected. Below these, there is a 'weekly' tab. Under the 'weekly' tab, there are checkboxes for each day of the week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. All days from Monday to Saturday are checked, while Sunday is unchecked. There is also an 'every day' checkbox which is unchecked. At the bottom, there are fields for 'start time' and 'end time'. The 'start time' is set to 1 h 0 min, and the 'end time' is set to 0 h 0 min. To the right of these fields is a dropdown menu set to 'every 2 hours'.

## How to

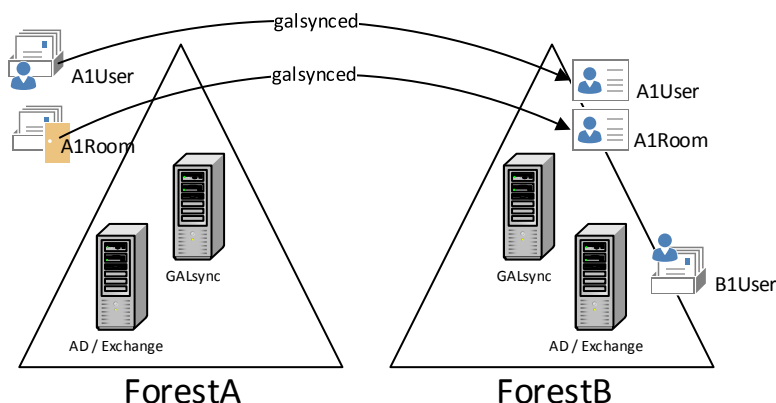
### How to book a room mailbox with GALsynced contacts?

Room Mailboxes are fundamentally the same as regular User Mailboxes (a user account in Active Directory and an associated mailbox in Exchange Server). A Room Mailbox is a special type of mailbox:

- The user account password is generated automatically, and the account is disabled by default (preventing interactive logons).
- The Room Mailbox object has special attributes that are used for automated processing of bookings etc.

With GALsync you synchronize a room mailbox from the source forest to the target forest like you synchronize a mailbox-enabled user. In the target the room mailbox it is created as a mail-enabled contact. A user in the target environment performs a meeting request by picking the galsynced contact (representing the source room mailbox) from the GAL and adding it as a resource to the request.

#### on-premise implementations



#### Booking

Can people in the target forest book a meeting?

Yes, by inviting the contact which represents the room mailbox from the source forest.

People in target forest can pick the contact (which represents the source room mailbox) and place it as "resource" into an invitation.

The room mailbox in the source forest replies to the conference/meeting originator (in the target forest) with a message (i.e. if the room is available at the required period).

**Note:** By default the room mailbox does not reply. So you may configure Exchange and the mailbox as described below.

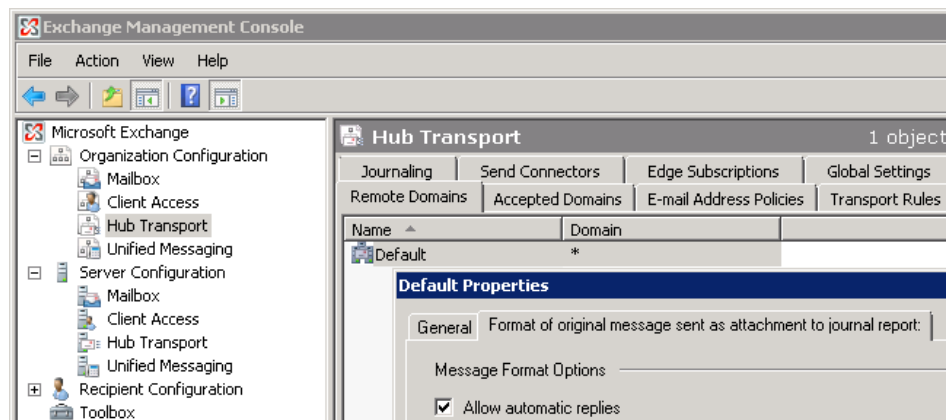
## Booking reply

We assume that booking of the room mailbox works in the originating forest. You validated that automatic or manual reply works and attendees and organizer are visible.

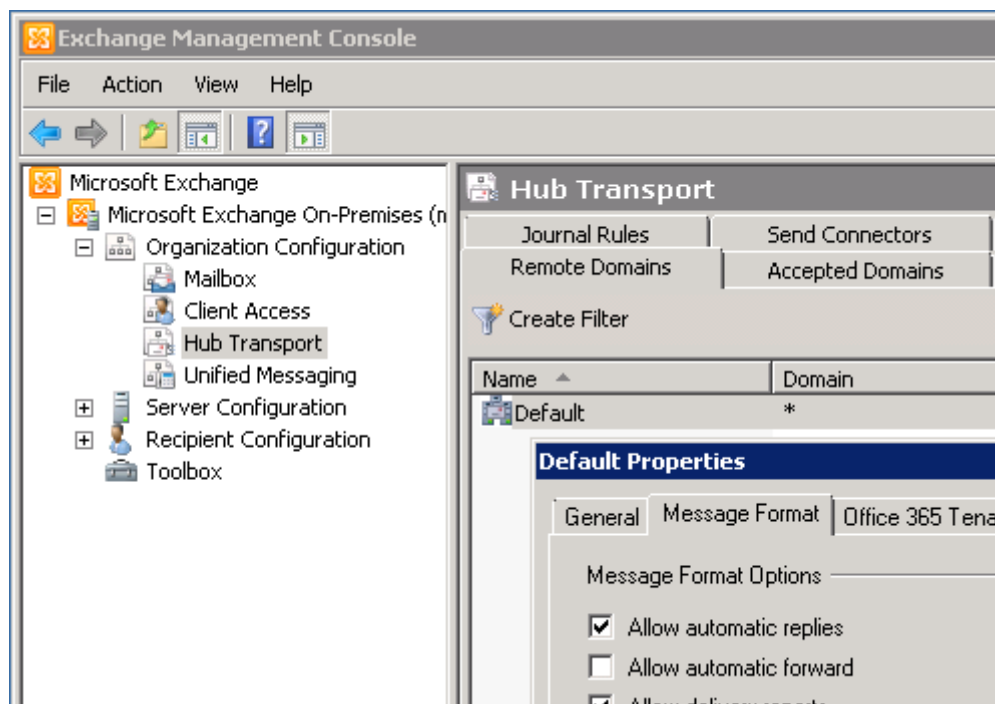
By default Exchange does not reply to external meeting requests. So, if a user in the target forest performs a meeting request to the galsynced contact the following conditions must be met:

- In the source forest the parameter `ALLOW AUTOMATIC REPLIES` needs to be configured for the remote domain `DEFAULT` or a specified domain.

## Exchange 2007



## Exchange 2010



## Exchange 2013

Get-RemoteDomain Default | fl

```
Set-RemoteDomain Default -AutoReplyEnabled $true
```

- The parameter `AUTOMATEPROCESSINGAUTOACCEPT` must be configured for the room mailbox in the source forest

#### Exchange 2007

```
Set-MailboxCalendarSettings -Identity "Room 1" -AutomateProcessing ct
```

#### Exchange 2010/2013

```
Set-CalendarProcessing "Room 1" -AutomateProcessing AutoAccept
```

- The parameter `PROCESSEXTERNALMEETINGMESSAGES` must be configured for the room mailbox in the source forest

#### Exchange 2007

```
Set-MailboxCalendarSettings -Identity "Room 1" -ProcessExternalMeetingMessages $True
```

#### Exchange 2010/2013

```
Set-CalendarProcessing -Identity "Room 1" -ProcessExternalMeetingMessages $true
```

### *Free/Busy / Attendees*

Can people in the target forest see Free/Busy or attendee information?

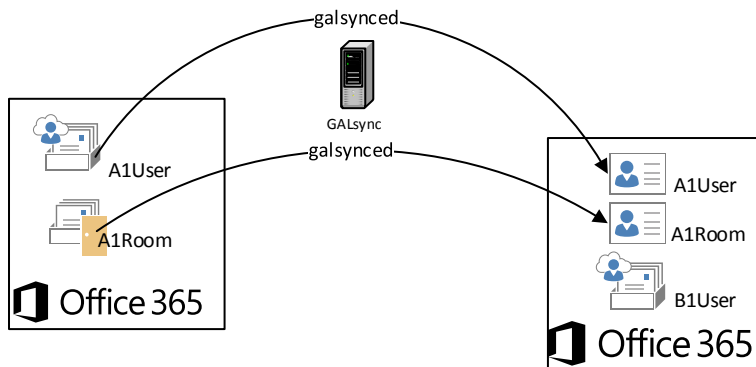
- Assumed you installed GALsync 5 (working with Exchange Web services in Exchange 2007 and higher), the F/B information can only be seen by contacting the room mailbox in the source forest. No F/B information is physically stored in the target within the galsynced contact object. This can be implemented through the configuration with cross-forest availability or federation mechanisms.

See our Whitepaper *Cross-Forest Free/Busy Delegation*

[http://www.netsec.de/fileadmin/download/GALsync/Whitepaper\\_CrossForest\\_FreeBusy\\_Delegation\\_EN.pdf](http://www.netsec.de/fileadmin/download/GALsync/Whitepaper_CrossForest_FreeBusy_Delegation_EN.pdf)

- Assumed you installed GALsync 4 (working with MAPI protocol and System Public Folders in Exchange 2003 - 2010), the Free/Busy information can be synchronized and attached to the target contact.

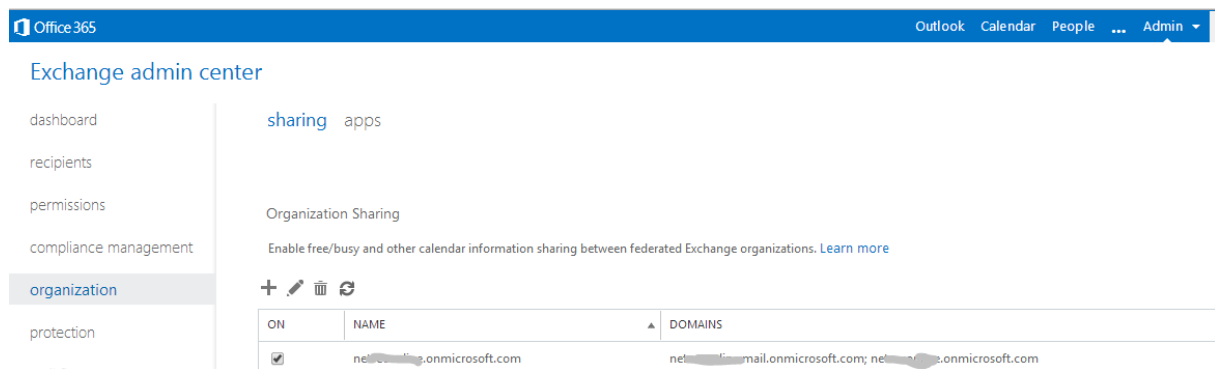
## Office365 implementations



### Booking

In Exchange Online you only add in the *Exchange admin center* – *organization* - *Organization Sharing* the opposite Office365 organization to the list. Because federation trust is already implemented by default nothing is to be configured additionally.

**Note:** The room mailbox must not be licensed.



### Booking reply

**Note:** By default the room mailbox in Office 365 does not reply to an external sender. So you may configure Exchange-Online and the mailbox as described below.

```
// logon to Office365 with Remote Powershell
$LiveCred = Get-Credential
$Session = New-PSSession -ConfigurationName Microsoft.Exchange -ConnectionUri
https://ps.outlook.com/powershell/ -Credential $LiveCred -Authentication Basic -
AllowRedirection
Import-PSSession $Session
// configure the room mailbox
Set-CalendarProcessing -Identity „Raum Alias“ -ProcessExternalMeetingMessages $true
// or do it for all room mailboxes
get-mailbox | Where {$_.RecipientTypeDetails -eq "RoomMailbox"} | set-
CalendarProcessing -ProcessExternalMeetingMessages $true
```

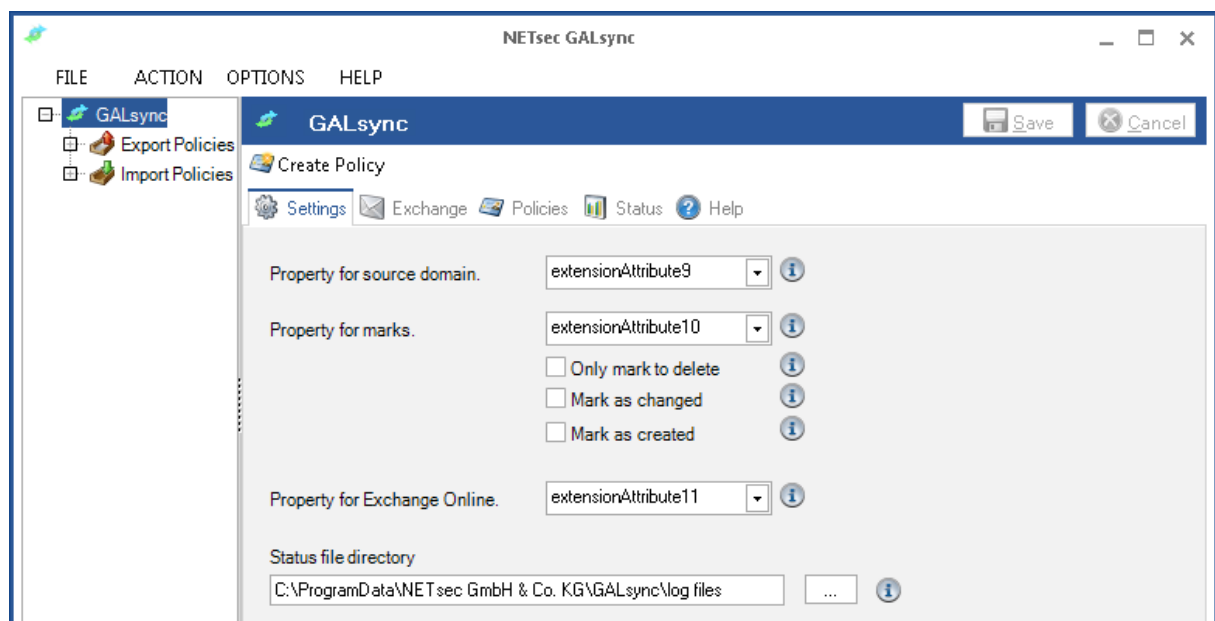
### *Free/Busy / Attendees*

You have to configure sharing calendar federation between both environments.

### **How to tell GALsync to match non-GALsynced objects in Exchange Online (Office 365) for synchronization.**

Sometimes you create contacts in Exchange Online before knowing GALsync. You will experience that GALsync will not match the objects you created before. Following the described procedure you will be able to teach GALsync to match the exported source objects against the existing target contacts.

Basically GALsync only checks for contacts in Exchange Online (Office 365) if the contacts are marked by a former GALsync import. In the general settings for PROPERTY FOR SOURCE DOMAIN (see screenshot below) you select a CUSTOMATTRIBUTE (EXTENSIONATTRIBUTE) which is used as a "watermark". CustomAttribute9 (extensionAttribute9) is configured by default.



GALsync matches a source object against an existing target object if two conditions are true

- the configuration of the PROPERTY FOR SOURCE DOMAIN uses the same extensionAttribute while exporting and importing
- The target contact(s) are stamped with a special value in the configured extensionAttribute

As a result GALsync will consider the target contact for synchronization even if the object was not originally created by GALsync.



You have to prepare your environment before you run export and import:

- Connect to your Exchange Online (Office 365) environment via Remote PowerShell.

For how to do this check the following article [CONNECT TO EXCHANGE ONLINE USING REMOTE POWERSHELL:](https://technet.microsoft.com/en-us/library/jj984289%28v=exchg.150%29.aspx)

<http://technet.microsoft.com/en-us/library/jj984289%28v=exchg.150%29.aspx>

Example:

```
Set-ExecutionPolicy RemoteSigned

$UserCredential = Get-Credential (use your EO credentials)

$Session = New-PSSession -ConfigurationName Microsoft.Exchange -ConnectionUri
https://outlook.office365.com/powershell-liveid/ -Credential $UserCredential -Authentication Basic -
AllowRedirection
```

- After you are connected copy the text below and paste it into the Powershell window with the established session. After pasting press RETURN twice. This will only define a filter which will be used later.

```
filter setGALsyncFlag($customAttributeNumber,$dnDomainPart)
{
    if(($dnDomainPart -ne $null) -and ($_.PrimarySmtpAddress -ne $null))
    {
        [string] $flag = $dnDomainPart + "|SMTP:" + $_.PrimarySmtpAddress + "|" +
            "GALsync"
        [string] $id = $_.Identity
        [string] $cmd = "Set-MailContact -Identity " + $id + " -CustomAttribute" +
            $customAttributeNumber + " " + $flag
        Write-Host $cmd

        switch ($customAttributeNumber)
        {
            1 { Set-MailContact -Identity $id -CustomAttribute1 $flag }
            2 { Set-MailContact -Identity $id -CustomAttribute2 $flag }
            3 { Set-MailContact -Identity $id -CustomAttribute3 $flag }
            4 { Set-MailContact -Identity $id -CustomAttribute4 $flag }
            5 { Set-MailContact -Identity $id -CustomAttribute5 $flag }
            6 { Set-MailContact -Identity $id -CustomAttribute6 $flag }
            7 { Set-MailContact -Identity $id -CustomAttribute7 $flag }
            8 { Set-MailContact -Identity $id -CustomAttribute8 $flag }
            9 { Set-MailContact -Identity $id -CustomAttribute9 $flag }
            10 { Set-MailContact -Identity $id -CustomAttribute10 $flag }
            11 { Set-MailContact -Identity $id -CustomAttribute11 $flag }
            12 { Set-MailContact -Identity $id -CustomAttribute12 $flag }
            13 { Set-MailContact -Identity $id -CustomAttribute13 $flag }
            14 { Set-MailContact -Identity $id -CustomAttribute14 $flag }
            15 { Set-MailContact -Identity $id -CustomAttribute15 $flag }
        }
    }
}
```

- To mark the objects, you now use the just defined SETGALSYNCFILTER filter.

In the first example we mark a contact assuming that

- o The configuration of PROPERTY FOR SOURCE DOMAIN is  
EXTENSIONATTRIBUTE9

- The target contact has the primary SMTP address [support@netsec.de](mailto:support@netsec.de)
- The object (from On-Premise) should be originated from the source Active Directory domain `NETSEC.LOCAL`

```
Get-MailContact "support@netsec.de" | setGALsyncFlag 9 "dc=netsec,dc=local"
```

- The distinguishedName of the object (from Exchange Online / Office365) is modified by GALsync export.

Because Microsoft has a unique part in the dn for all tenants GALsync cuts this part as shown in the example below:

Example for the original distinguishedName:

```
CN=support,OU=netsectest.onmicrosoft.com,OU=Microsoft Exchange Hosted Organizations,DC=EURPR03A001,DC=prod,DC=outlook,DC=com
```

Example how GALsync transforms the distinguishedName:

```
CN=support,DC=netsectest,DC=onmicrosoft,DC=com
```

Use the domain part of the transformed dn to stamp the contact in the target Exchange Online / Office365

```
Get-MailContact "support@netsectest.onmicrosoft.com" | setGALsyncFlag 9 "dc=netsectest,dc=onmicrosoft,dc=com"
```

In the second example we mark a contact assuming that

- The configuration of `PROPERTY FOR SOURCE DOMAIN` is `EXTENSIONATTRIBUTE9`
- The target contact's display name is "Adam Smith"
- The object should be originated from the source Active Directory domain `NETSEC.LOCAL`

```
Get-MailContact "Adam Smith" | setGALsyncFlag 9 "dc=netsec,dc=local"
```

If you use Exchange Online/Office 365 as source please see the transformation note in the first example.

In the third example we stamp all contacts which have the smtp domain NETSEC.DE as EXTERNALEMAILADDRESS (target address)

```
Get-MailContact | where{$_.ExternalEmailAddress -like "*@idearc.com"} |  
setGALsyncFlag 9 "dn=entwickler,dn=local"
```

If you use Exchange Online/Office 365 as source please see the transformation note in the first example.

After doing so you can validate the modification by checking the appropriate extensionAttribute

```
Get-MailContact | fl
```

As a result you can now export objects from the source, import them into the target, and GALsync will find matching objects and synchronize them. You do not need to repeat this procedure for the objects being in the same export scope.

### How to prevent GALsync from synchronizing an already GALsynced contact in Exchange Online (Office 365)

After synchronizing objects to your Exchange Online environment you may want to exclude certain objects from being synchronized anymore.

The key point here is to change the attribute value which is used by GALsync to match objects synched by GALsync.

If you synchronize objects from source to target with GALsync there is a configuration in the general settings called `PROPERTY FOR SOURCE DOMAIN`.

The contacts in target are marked in the selected `CUSTOMATTRIBUTE (EXTENSIONATTRIBUTE)` with a special value. This looks like `CN=user01,OU=export,DC=source,DC=domain|SMTP:user@sourcessmtp.domain|9c4d8fcbf0a639a1e109ccf70f99b9a3`

If you do not want that GALsync modifies an object - which has been synchronized with GALsync before - you only remove the value in this attribute. During the next import GALsync does not find an equivalent and assumes the object has been created by someone else and does not modify or delete it.

### How to change the primary SMTP address of users in the source environment, which are synced to partners with GALsync?

If you change the primary SMTP address of an user (contact or group), which is synced to partners with GALsync, your partners will get NDR issues, because the primary SMTP address is the matching criteria of GALsync. GALsync cannot find the synchronized contact in the partners' environment if the primary SMTP address of the user (contact or group) has been changed, so GALsync will delete the old contact and create a new one. After that the Outlook clients of your partner cannot find the contact anymore, because the `LEGACYEXCHANGEDN` has changed, which will caused an NDR issue.

To prevent this behavior, save the old primary SMTP address in one of the custom attributes (`EXTENSIONATTRIBUTE1` - `EXTENSIONATTRIBUTE15`) of the user (contact or group) in source environment using the prefix `GALSYNC:`

i.e.: `GALSYNC:JOE.DOLE@NETSEC.DE`

If the old primary SMTP address is save in one of the custom attributes (`EXTENSIONATTRIBUTE1` - `EXTENSIONATTRIBUTE15`) of the user (contact or group), then GALsync can find the old contact in the target environment, change the primary SMTP address for it and has not to delete the old contact.

# Troubleshooting and Support Guide

## Troubleshooting Exchange Online

Not all mails arrived . . .

You receive a warning in the logfile like

```
"WARNING";"15770";"1";"POLICYHANDLER->LOADMAILATTACHMENTEO"; "NOT ALL  
MAILS ARRIVED. 248110A1-D387-4D7A-B4AA-6C551C8EA8CA."
```

In this case the sender sent his data file splitted into multiple mails. The error indicates that GALsync on the receiving side tries to contact Exchange Online before all sent objects are really present in Exchange Online - even if you can see the mail within your OWA App.

Solution

Wait up to 5 minutes between receiving the data and running the import policy.

## How do I resolve NDR (Non-Delivery Report) problems?

If you have NDRs then Outlook / Exchange cannot bind a LEGACYEXCHANGEDN to a contact.

Please read the blog article [THE ATTRIBUTE, THE MYTH, THE LEGACYEXCHANGEDN](http://www.enowsoftware.com/about-enow/solutions-engine-blog/bid/151745/The-Attribute-the-Myth-the-legacyExchangeDN) by Michel de Rooij to get general information about the legacyExchangeDN attribute:

<http://www.enowsoftware.com/about-enow/solutions-engine-blog/bid/151745/The-Attribute-the-Myth-the-legacyExchangeDN>

The first solution is to reconstruct the old LEGACYEXCHANGEDN and to save it as X500 address in the PROXYADDRESSES attribute of the contact.

For Example:

You want to send an email to Ron Smith and receive the following NDR:

```
IMCEAEX-  
_O=TEST_OU=First+20administrative+20Group_cn=Recipients_cn=Ron.Smith  
#550 5.1.1 RESOLVER.ADR.ExRecipNotFound; not found ##
```

Then the X500 address within the PROXYADDRESSES should be:

```
X500:/O=TEST/OU=First administrative Group/cn=Recipients/cn=Ron.Smith
```

The LEGACYEXCHANGEDN must be unambiguous within an Exchange forest. During the check, all LEGACYEXCHANGEDNs and X500 addresses must be checked.

The second solution is clearing the NK2-Cache, this must be done for all affected uses.

For more information read:

HOW TO RESET THE NICKNAME AND THE AUTOMATIC COMPLETION CACHES IN OUTLOOK

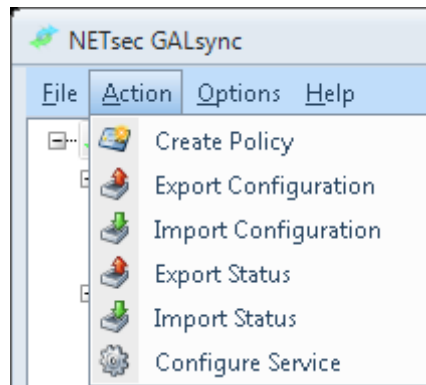
<http://support.microsoft.com/kb/287623>

### **Support: What to do when I notice an error / bug?**

We always try to provide a very responsive, solution orientated and effective support. Should you encounter any issue, bug or inconvenience please do not hesitate to contact us.

To enable us providing you the best quality support, please provide us with the following information:

- Environment Overview
  - GALsync Installations (Planned and Implemented)
    - Domain Infrastructure (e.g.: Single Domain "dom.local")
    - Exchange Version (e.g.: Exchange 2010 SP2)
    - Windows Version of GALsync Machine (e.g.: Windows Server 2008 R2)
    - GALsync Version (e.g.: 5.0.x)
    - Does the GALsync Service Account have an Exchange Mailbox?
    - Did you log on to the GALsync Machine using that Service Account to configure the policies?
    - Is the GALsyncService logging on using the Service Account?
- Please describe your issue/bug/inconvenience thoroughly, in detail, what you wanted to achieve and what you were doing as it occurred.
- A screenshot of the issue often helps us to understand
- We also require the configuration and the logs, preferably zipped. Use the Menu: Action -> Export Configuration to zip the configuration files, and the Menu: Action -> Export Status to zip the log files.



Do you have more questions or need further support than please do not hesitate to contact the GALsync Technical Support.

### **GALsync Technical Support**

Tel.: +49 2421 998 78 20

or email us at: [support@netsec.de](mailto:support@netsec.de) .