

# Dell™ One Identity Manager 7.1.3




User Guide for the Windows PowerShell®  
Connector



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#### Legend

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One Identity Manager User Guide for the Windows PowerShell® Connector  
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# Connecting a Target System using the Windows PowerShell® Connector

You can use the Windows PowerShell® connector to connect target systems to One Identity Manager that do not have native support in One Identity Manager. Windows PowerShell® cmdlets are used to execute read/write operations in the target system.

The Windows PowerShell® connector does not provide a project template for setting up synchronization. You must create synchronization configuration components (mappings, workflows, start up configurations,...) manually after the synchronization project has been saved.

**NOTE:** You need well-founded knowledge of Windows PowerShell® to set up synchronization with the Windows PowerShell® connector.

## *To set up synchronization with the Windows PowerShell® connection*

1. Install and configure a synchronization server and declare the server as Job server in One Identity Manager.
2. Provide One Identity Manager users with the required permissions for setting up synchronization and post-processing of synchronization objects.
3. Create a synchronization project with the Synchronization Editor.

## Detailed information about this topic

- [Setting Up the Synchronization Server](#) on page 9
- [Users and Permissions for Synchronizing](#) on page 4
- [Creating a Synchronization Project](#) on page 12

## Users and Permissions for Synchronizing

In the synchronization process, there are three use cases for mapping synchronization objects in the One Identity Manager data model with the Windows PowerShell® connector.

1. Mapping custom target systems
2. Mapping default tables (for example `Person`, `Department`)
3. Mapping custom tables

In the case of non role-based log in on One Identity Manager tools, it is sufficient to add one system user in the permissions group "DPR\_EditRights\_Methods". For more detailed information about system users and permissions groups, see the Dell One Identity Manager Configuration Guide.

**Table 1: Users and Permissions Groups for Non Role-Based Login**

User	Task
One Identity Manager administrators	<ul style="list-style-type: none"> <li>• Create customized permissions groups for application roles for role-based login to administration tools in the Designer, as required.</li> <li>• Create system users and permissions groups for non-role based login to administration tools, as required.</li> <li>• Enable or disable additional configuration parameters in the Designer as required.</li> <li>• Create custom processes in the Designer as required.</li> <li>• Create and configures schedules as required.</li> </ul>
System users in the permissions group "DPR_EditRights_Methods"	<ul style="list-style-type: none"> <li>• Configure and start synchronization in the Synchronization Editor.</li> <li>• Edit the synchronization's target system types as well as outstanding objects in the Manager.</li> </ul>

There are different steps required for role-based login, in order to equip One Identity Manager users with the required permissions for setting up synchronization and post-processing of synchronization objects.

**Table 2: User and permissions groups for role-based login: Mapped as custom target system**

User	Task
One Identity Manager administrators	<ul style="list-style-type: none"> <li>• Create customized permissions groups for application roles for role-based login to administration tools in the Designer, as required.</li> <li>• Create system users and permissions groups for non-role based login to administration tools, as required.</li> <li>• Enable or disable additional configuration parameters in the Designer as required.</li> <li>• Create custom processes in the Designer as required.</li> <li>• Create and configures schedules as required.</li> </ul>

User	Task
Target system administrators	<p>Target system administrators must be assigned to the application role <b>Target system   Administrators</b>.</p> <p>Users with this application role:</p> <ul style="list-style-type: none"> <li>• Administrate application roles for individual target systems types.</li> <li>• Specify the target system manager.</li> <li>• Set up other application roles for target system managers if required.</li> <li>• Specify which application roles are conflicting for target system managers</li> <li>• Authorize other employee to be target system administrators.</li> <li>• Do not assume any administrative tasks within the target system.</li> </ul>
Target System Managers	<p>Target system managers must be assigned to the application role <b>Target systems   Custom target systems</b> or a sub application role.</p> <p>Users with this application role:</p> <ul style="list-style-type: none"> <li>• Assume administrative tasks for the target system.</li> <li>• Create, change or delete target system objects, like user accounts, groups or container structures.</li> <li>• Prepare groups for adding to the IT Shop.</li> <li>• Configure synchronization in the Synchronization Editor and defines the mapping for comparing target systems and One Identity Manager.</li> <li>• Edit the synchronization's target system types and outstanding objects.</li> <li>• Authorize other employees within their area of responsibility as target system managers and create child application roles if required.</li> </ul>

**Table 3: User and permissions groups for role-based login: Mapped as default tables**

User	Task
One Identity Manager administrators	<ul style="list-style-type: none"> <li>• Create customized permissions groups for application roles for role-based login to administration tools in the Designer, as required.</li> <li>• Create system users and permissions groups for non-role based login to administration tools, as required.</li> <li>• Enable or disable additional configuration parameters in the Designer as required.</li> <li>• Create custom processes in the Designer as required.</li> <li>• Create and configures schedules as required.</li> </ul>

User	Task
Custom application role	<p>Users with this application role:</p> <ul style="list-style-type: none"> <li>• Configure and start synchronization in the Synchronization Editor.</li> <li>• Edit the synchronization's target system types as well as outstanding objects in the Manager.</li> </ul> <p>This application role gets its write access through a custom permissions group and the permissions group "vi_4_SYNCPROJECT_ADMIN".</p>

**Table 4: Users and permissions groups for role-based login: Mapped in custom tables**

User	Task
One Identity Manager administrators	<ul style="list-style-type: none"> <li>• Create customized permissions groups for application roles for role-based login to administration tools in the Designer, as required.</li> <li>• Create system users and permissions groups for non-role based login to administration tools, as required.</li> <li>• Enable or disable additional configuration parameters in the Designer as required.</li> <li>• Create custom processes in the Designer as required.</li> <li>• Create and configures schedules as required.</li> </ul>
Application roles for custom tasks	<p>Administrators must be assigned to the application role <b>Custom   Administrators</b>.</p> <p>Users with this application role:</p> <ul style="list-style-type: none"> <li>• Administrate custom application roles.</li> <li>• Set up other application roles for managers, if required.</li> </ul>
Manager for custom tasks	<p>Managers must be assigned to the application role <b>Custom   Managers</b> or a subordinate role.</p> <p>Users with this application role:</p> <ul style="list-style-type: none"> <li>• Add custom task in the One Identity Manager.</li> <li>• Configure and start synchronization in the Synchronization Editor.</li> <li>• Edit the synchronization's target system types as well as outstanding objects in the Manager.</li> </ul> <p>This application role gets its write access through a custom permissions group and the permissions group "vi_4_SYNCPROJECT_ADMIN".</p>

***To configure synchronization projects and target system synchronization (in the use cases 2 and 3)***

1. Set up a custom permissions group with all permissions for configuring synchronization and editing synchronization objects.
2. Assign a custom application role to this permission group.

## Detailed information about this topic

- [Setting Up a Custom Application Role for Synchronization](#) on page 8

# Setting Up a Custom Application Role for Synchronization

For role-based login, create a custom application role to guarantee One Identity Manager users the necessary permissions for configuring synchronization and handling outstanding objects. This application role obtains the required permissions by using a custom permissions group.

### *To set up an application role (use case 2)*

1. Select the default application role to use to edit the objects you want to synchronization in the Manager.
  - Establish the application role's default permissions group.  
If you want to import employee data, for example, select the application role **Identity Management | Employees | Administrators**. The default permissions group is "vi\_4\_PERSONADMIN".
2. Create a new permissions group in the Designer.
  - Set the option **Only use for role based authentication**.
3. Make the new permissions group dependent on the permission group "vi\_4\_SYNCPROJECT\_ADMIN".  
The permissions "vi\_4\_SYNCPROJECT\_ADMIN" must be assigned as parent permissions group. This means that the new permissions group inherits the properties.
4. Make the new permissions group dependent on the default permission group of the selected default application role.  
The default permissions group must be assigned as a subgroup. This means that the new permissions group inherits the properties.
5. Save the changes.
6. Create a new application role in the Manager.
  - a. Assign the selected application role to be the parent application role.
  - b. Assign the newly created permissions group to it
7. Assign employees to this application role.
8. Save the changes.

### *To set up an application role for synchronization (use case 3)*

1. Create a new permissions group for custom tables, which are populated though synchronization, in the Designer.
  - Set the option **Only use for role based authentication**.
2. Guarantee this permissions group all the required permissions to the custom tables.
3. Create another permissions group for synchronization.
  - Set the option **Only use for role based authentication**.



4. Make the permissions group for synchronization dependent on the permissions group for custom tables.  
The permissions group for custom tables must be assigned as parent permissions group. This means the permissions groups for synchronization inherits its properties.
5. Make the permissions group for synchronization dependent on the permissions group "vi\_4\_SYNCPROJECT\_ADMIN".  
The permissions "vi\_4\_SYNCPROJECT\_ADMIN" must be assigned as parent permissions group. This means the permissions groups for synchronization inherits its properties.
6. Save the changes.
7. Create a new application role in the Manager.
  - a. Assign the application role **Custom | Managers** as parent application role.
  - b. Assign the permissions group for synchronization.
8. Assign employees to this application role.
9. Save the changes.

For more detailed information about setting up application roles, see the Dell One Identity Manager Identity Management Base Module Administration Guide. For more detailed information about permissions groups, see the Dell One Identity Manager Configuration Guide.

## Setting Up the Synchronization Server

A server with the following software must be available for setting up synchronization:

- Windows® operating system  
Following versions are supported:
  - Windows Server® 2008 (non-Itanium based 64-bit) Service Pack 2 or later
  - Windows Server® 2008 R2 (non-Itanium based 64-bit) Service Pack 1 or later
  - Windows Server® 2012
  - Windows Server® 2012 R2
  - Windows Server® 2016
- Microsoft® .NET Framework version 4.5.2 or 4.6.1
- Windows® Installer
- Windows® Management Framework 4.0 or Windows PowerShell® Version 3.0 or later
- Target system specific Windows PowerShell® modules or snap-ins
- One Identity Manager Service
  - Install One Identity Manager components with the installation wizard.
    1. Select the option **Select installation modules with existing database.**
    2. Select the machine role **Server | Job server.**

For more detailed information about system requirements for installing the One Identity Manager Service, see the Dell One Identity Manager Installation Guide.

All One Identity Manager Service actions are executed against the target system environment on the synchronization server. Entries which are necessary for synchronization and administration with the One Identity Manager database are processed by the synchronization server. The synchronization server must be declared as a Job server in One Identity Manager.

- ① **NOTE:** If several target system environments of the same type are synchronized under the same synchronization server, it is useful to set up a job server for each target system on performance grounds. This avoids unnecessary swapping of connection to target systems because a job server only has to process tasks of the same type (re-use of existing connections).
- ① **NOTE:** If the server running the synchronization does not have a connection to the One Identity Manager database, synchronization is aborted. Ensure that a direct connection to the One Identity Manager database is possible.

Use the Server Installer to install the One Identity Manager Service. This program executes the following steps.

- Setting up a Job server.
  - Specifying machine roles and server function for the Job server.
  - Remote installation of One Identity Manager Service components corresponding to the machine roles.
  - Configures the One Identity Manager Service.
  - Starts the One Identity Manager Service.
- ① **NOTE:** The program executes remote installation of the One Identity Manager Service. Local installation of the service is not possible with this program. Remote installation is only supported within a domain or a trusted domain.

### *To install and configure the One Identity Manager Service remotely on a server*

1. Start the program Server Installer on your administrative workstation.
2. Enter valid data for connecting to One Identity Manager on the **Database connection** page and click **Next**.
3. Specify on which server you want to install the One Identity Manager Service on the **Server properties** page.
  - a. Select a job server in the **Server** menu.  
The view- OR -  
Click **Add** to add a new job server.
  - b. Enter the following data for the Job server.

**Table 5: Job Servers Properties**

Property	Description
Server	Name of the Job servers.
Queue	Name of queue to handle the process steps. Each One Identity Manager Service within the network must have a unique queue identifier. The process steps are requested by the job queue using exactly this queue name. The queue identifier is entered in the One Identity Manager Service configuration file.

Property	Description
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Full server name	Full name of the server in DNS syntax. Example: <name of server>.<fully qualified domain name>
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**NOTE:** Use the **Advanced** option to edit other Job server properties. You can use the Designer to change properties at a later date.

- Specify which job server roles to include in One Identity Manager on the **Machine role** page. Installation packages to be installed on the Job server are found depending on the selected machine role.

Select at least the following roles:

- Job Server

- Specify the server's functions in One Identity Manager on the **Server functions** page. One Identity Manager processes are handled depending on the server function.

The server's functions depend on which machine roles you have selected. You can limit the server's functionality further here.

Select at least one of the following server functions:

- Windows PowerShell® connector

- Check the One Identity Manager Service configuration on the **Service settings** page.

**NOTE:** The initial service configuration is already predefined. If further changes need to be made to the configuration, you can do this later with the Designer. For more detailed information about configuring the service, see Dell One Identity Manager Configuration Guide.

- To configure remote installations, click **Next**.
- Confirm the security prompt with **Yes**.
- Select the directory with the install files on the **Select installation source** page.
- Select the file with the private key on the page **Select private key file**.

**NOTE:** This page is only displayed when the database is encrypted.

- Enter the service's installation data on the **Service access** page.

**Table 6: Installation Data**

Data	Description
Computer	Server on which to install and start the service from.

**To select a server**

- Enter the server name.
- OR -
- Select a entry from the list.

Data	Description
Service account	<p>One Identity Manager Service user account data.</p> <p><b>To enter a user account for the One Identity Manager Service</b></p> <ul style="list-style-type: none"> <li>Set the option <b>Local system account</b>. This starts the One Identity Manager Service under the account "NT AUTHORITY\SYSTEM".</li> <li>- OR -</li> <li>Enter user account, password and password confirmation.</li> </ul>
Installation account	<p>Data for the administrative user account to install the service.</p> <p><b>To enter an administrative user account for installation</b></p> <p>Enable Advanced</p> <ul style="list-style-type: none"> <li>.</li> <li>Enable the option <b>Current user</b>. This uses the user account of the current user.</li> <li>- OR -</li> <li>Enter user account, password and password confirmation.</li> </ul>

12. Click **Next** to start installing the service.

Installation of the service occurs automatically and may take some time.

13. Click **Finish** on the last page of the Server Installer.

**NOTE:** The One Identity Manager Service is entered with the name "Dell One Identity Manager Service" in the server's service administration.

## Creating a Synchronization Project

A synchronization project collects all the information required for synchronizing the One Identity Manager database with a target system. Connection data for target systems, schema types and properties, mapping and synchronization workflows all belong to this.

Have the following information available for setting up a synchronization project.

**Table 7: Information Required for Setting up a Synchronization Project**

Data	Explanation
Definition file	You provide the required Windows PowerShell® cmdlets, schema types, schema properties and connection parameters in an XML file.

Data	Explanation
Synchronization server	<p>All One Identity Manager Service actions are executed against the target system environment on the synchronization server. Entries which are necessary for synchronization and administration with the One Identity Manager database are processed by the synchronization server.</p> <p>Installed components:</p> <ul style="list-style-type: none"> <li>• One Identity Manager Service (started)</li> </ul> <p>The synchronization server must be declared as a Job server in One Identity Manager. The Job server name is required.</p> <p>For more information, see <a href="#">Setting Up the Synchronization Server</a> on page 9.</p>
Remote connection server	<p>To configure synchronization with a target system, One Identity Manager must load the data from the target system. One Identity Manager communicates directly with target system to do this. If you do not have direct access on the workstation on which the Synchronization Editor is installed, because of the firewall configuration, for example, you can set up a remote connection.</p> <p>The remote connection server and the workstation must be in the same Active Directory® domain.</p> <p>Remote connection server configuration:</p> <ul style="list-style-type: none"> <li>• One Identity Manager Service is started</li> <li>• RemoteConnectPlugin is installed</li> </ul> <p>The remote connection server must be declared as a Job server in One Identity Manager. The Job server name is required.</p> <p><b>TIP:</b> The remote connection server requires the same configuration (with respect to the installed software) as the synchronization server. Use the synchronization as remote connection server at the same time, by simply installing the RemoteConnectPlugin as well.</p> <p>For more detailed information about setting up a remote connection, see the Dell One Identity Manager Target System Synchronization Reference Guide.</p>
Synchronization workflow	<p>Set the option <b>Data import</b> in the synchronization step if synchronization data is imported from a secondary system. You cannot select the processing method "MarkAsOutstanding" for these synchronization steps.</p> <p>For more detailed information about synchronizing user data with different systems, see the Dell One Identity Manager Target System Synchronization Reference Guide.</p>

Data	Explanation
Base object	<p>If no base object can be specified, you can assign a base table and the synchronization server.</p> <ul style="list-style-type: none"> <li>• Select the <b>Base table</b> from the menu in which to import the objects. The base table can be used to defined downstream processes for synchronization. For more information about downstream processes, see the Dell One Identity Manager Target System Synchronization Reference Guide.</li> <li>• All Job servers, which have the server function "Windows PowerShell® connector" enabled are displayed in the <b>Synchronization servers</b> menu.</li> </ul>
Variable set	<p>If you implement specialized variable sets, ensure that the start configuration and the base object use the same variable set.</p>

### *To configure synchronization with the Windows PowerShell® connector*

1. Create a definition file, which described the structure of the target system and the Windows PowerShell® cmdlets to use.
2. Create a new synchronization project.
3. Add mappings. Define property mapping rules and object matching rules.
4. Create synchronization workflows.
5. Create a start up configuration.
6. Define the synchronization scope.
7. Specify the base object of the synchronization.
8. Specify the extent of the synchronization log.
9. Run a consistency check.
10. Activate the synchronization project.
11. Save the new synchronization project in the database.

For more detailed information about create the various components of the synchronization configuration (mappings, workflows, startup configuration,...), see the Dell One Identity Manager Target System Synchronization Reference Guide.

#### **Detailed information about this topic**

- [Creating Definition Files](#) on page 14
- [How to Set up a Synchronization Project](#) on page 15

## Creating Definition Files

When you set up synchronization, you enter the required Windows PowerShell® cmdlets, schema types, schema properties and the information required for logging in to the target system in XML notation. Create one XML file for this, which contains the entire definition. The definition file is loaded when you configure synchronization in the project wizard. You can create Synchronization Editor maps and synchronization workflows based on this definition.

You can find an example of a definition file on the One Identity Manager installation medium in directory  
 ..\Modules\TSB\dvd\AddOn\SDK\ADSample.xml.

**Table 8: Structure of the Definition File**

Elements	Description
PluginAssemblies	Additionally required plugins. Plugin are required for converting return values from the connector or readable values from the Windows PowerShell®.
ConnectionParameters	Definition of the connection parameter required for connecting to the target system.
Initialization	Describes the elements required for connecting Windows PowerShell® and reading or writing data in the target system.
PredefinedCommands	List of all required cmdlets, which are already defined in the Windows PowerShell® modules and snap-ins in use.
CustomCommands	Definition of custom cmdlets. Create cmdlets for all commands that are required in addition to PredefinedCommands . Specify a name, the required parameter and the command to run for each cmdlet.
Connect CommandSequence	Command sequence to execute in order to create a Windows PowerShell® connection to the target system. The command sequence consists of a succession of cmdlets in a specified order.
Disconnect CommandSequence	Connection sequence to run in order to closed an existing Windows PowerShell® connection. The command sequence consists of a succession of cmdlets in a specified order.
Schema	Describes how return values from cmdlets are mapped to a schema, which is loaded from the Windows PowerShell® connector and can be edited in the synchronization configuration. Defines schema types, schema properties and processing methods, which can be run for each schema type.
Class	Schema type definition. A schema type is defined by elements listed below
Properties	Definition of a schema type's schema properties.
CommandMappings	Specifies the cmdlets used for editing the schema property's values.
ReturnBindings	Specifies which cmdlets from the CommandMappings list, returns values for the schema property.
ModifiedBy	Specifies which cmdlet from the CommandMappings list writes the schema property's value in the target system.
ReadConfiguration	Definition of cmdlets used to read a list of objects (ListingCommand) or to read a single object with all properties (CommandSequence).
MethodConfiguration	Definition of methods for reading, writing and deleting a schema type's objects. A method consists of a succession of cmdlets in a specified order. Equivalent methods for all processing methods used in synchronization workflows, must be defined here.

## How to Set up a Synchronization Project

There is an wizard to assist you with setting up a synchronization project. This wizard takes you all the steps you need to set up initial synchronization with a target system. Click **Next** once you have entered all the data for a step.

① **NOTE:** The following sequence describes how you configure a synchronization project if the Synchronization Editor is:

- In default mode
- Started from the launchpad

Additional settings can be made if the project wizard is run in expert mode or is started directly from the Synchronization Editor. Follow the project wizard instructions through these steps.

### To set up a synchronization project

1. Start the Launchpad and log on to the One Identity Manager database.

① **NOTE:** If synchronization is executed by an application server, connect the database through the application server.

2. Select **Windows PowerShell® connector**. Click **Run**.

This starts the Synchronization Editor's project wizard.

3. Specify how the One Identity Manager can access the target system on the **System access** page.

- If you have access from the workstation from which you started the Synchronization Editor, do not set anything.
- If you do not have access from the workstation from which you started the Synchronization Editor, you can set up a remote connection.



In this case, set the option **Connect using remote connection server** and select, under **Job server**, the server you want to use for the connection.

- Click **Next** to start the system connection wizard for connecting with the Windows PowerShell® .

4. Click **Next** on the start page of system connection wizard.

5. On the **Connector Definition** page, you enter the required Windows PowerShell® cmdlets, schema types, schema properties and the information required for logging in to the target system in XML notation.

**Table 9: Connector Definition**

Property	Description
System ID/Name	Unique name for the system connection.
Concurrent connections	Maximum number of connections to the target system that can exist in parallel.
Definition	Definition that the target system schema converts into cmdlet calls. Enter the definition in XML notation. <ol style="list-style-type: none"><li>a. To load the definition from a definition file, click .</li><li>b. To check the definition, click .</li></ol>

6. Enter the data for the required connection parameter on the **Connection data** page. All the parameters from the `ConnectionParameters` element of the XML definition are queried.

7. You can save the connection data on the last page of the system connection wizard.

- Set the option **Save connection locally** to save the connection data. This can be reused when you set up other synchronization projects.



- Click **Finish**, to end the system connection wizard and return to the project wizard.
8. Verify the One Identity Manager database connection data on the **One Identity Manager connection** page. The data is loaded from the connected database. Reenter the password.
    - ① **NOTE:** Reenter all the connection data if you are not working with an encrypted One Identity Manager database and no synchronization project has been saved yet in the database. This page is not shown if a synchronization project already exists.
  9. The wizard loads the target system schema. This may take a few minutes depending on the type of target system access and the size of the target system.
  10. Select a project template on the **Select project template** page to use for setting up the synchronization configuration.
    - ① **NOTE:** The Windows PowerShell® connection does not provide a default project template for setting up synchronization. If you have created your own project template, you can select it to configure the synchronization project. Otherwise, select **Create blank project**.
  11. Enter the general setting for the synchronization project on the **General** page.

**Table 10: General Synchronization Project Properties**

Property	Description
Display name	Display name for the synchronization project.
Script language	<p>Language in which the scripts for this synchronization project are written. Scripts are implemented at various points in the synchronization configuration. Specify the script language when you set up an empty project.</p> <ul style="list-style-type: none"> <li>① <b>IMPORTANT:</b> The script language cannot be changed after the synchronization project has been saved.</li> </ul> <p>If you use a project template, the template's script language is used.</p>
Description	Spare text box for additional explanation.

12. Click **Finish** to complete the project wizard.
13. Save the synchronization project in the database.

## Updating Schemas

All the schema data (schema types and schema properties) of the target system schema and the One Identity Manager schema are available when you are editing a synchronization project. Only a part of this data is really needed for configuring synchronization. If a synchronization project is finished, the schema is compressed to remove unnecessary data from the synchronization project. This can speed up loading the synchronization project. Deleted schema data can be added to the synchronization configuration again at a later point.

If the target system schema or the One Identity Manager schema has changed, these changes must also be added to the synchronization configuration. Then the changes can be added to the schema property mapping.

To include schema data that have been deleted through compressing and schema modifications in the synchronization project, update each schema in the synchronization project. This may be necessary if:

- A schema was changed by:
  - Changes to a target system schema
  - Customizations to the One Identity Manager schema
  - A One Identity Manager update migration
- A schema in the synchronization project was shrunk by:
  - Activating the synchronization project
  - Synchronization project initial save
  - Compressing a schema

### ***To update a system connection schema***

1. Open the synchronization project in the Synchronization Editor.
2. Select the category **Configuration | Target system**.  
- OR -  
Select the category  
**Configuration | One Identity Manager connection**.
3. Select the view **General** and click **Update schema**.
4. Confirm the security prompt with **Yes**.  
This reloads the schema data.

### ***To edit a mapping***

1. Open the synchronization project in the Synchronization Editor.
2. Select the category **Mappings**.
3. Select a mapping in the navigation view.  
Opens the Mapping Editor. For more detailed information about editing mappings, see Dell One Identity Manager Target System Synchronization Reference Guide.

**NOTE:** The synchronization is deactivated if the schema of an activated synchronization project is updated. Reactivate the synchronization project to synchronize.

## **Starting Synchronization**

Synchronization is started using scheduled process plans. A scheduled process plan is added once a start up configuration is assigned to a schedule. Use schedules to define executing times for synchronization.

**NOTES:** Synchronization can only be started if the synchronization project is enabled.


To execute synchronization regularly, configure and activate the a schedule. You can also start synchronization manually if there is no active schedule.

- IMPORTANT:** As long as synchronization is running, you must not start another synchronization for the same target system. This applies especially, if the same synchronization objects would be processed.
- The moment another synchronization is started with the same start up configuration, the running synchronization process is stopped and given the status, "Frozen". An error message is written to the One Identity Manager Service log file.
  - If another synchronization is started with another start up configuration, that addresses same target system, it may lead to synchronization error or loss of data. Plan your start times carefully. If possible, specify your start times so that synchronization does not overlap.

## Analyzing Synchronization

Synchronization results are summarized in the synchronization log. You can specify the extent of the synchronization log for each system connection individually. One Identity Manager provides several reports in which the synchronization results are organized under different criteria.

### *To display a synchronization log*

1. Open the synchronization project in the Synchronization Editor.
2. Select the category **Logs**.
3. Click  in the navigation view toolbar.  
Logs for all completed synchronization runs are displayed in the navigation view.
4. Select a log by double-clicking on it.  
An analysis of the synchronization is shown as a report. You can save this report.

Synchronization logs are stored for a fixed length of time. The retention period is set in the configuration parameter "DPR\Journal\LifeTime". By default, synchronization logs are stored for 30 days and then deleted.

### *To modify the retention period for synchronization logs*

- Edit the value of the configuration parameter "DPR\Journal\LifeTime" in the Designer. Enter a retention period in days.

## Post-Processing Outstanding Objects

Objects, which do not exist in the target system, can be marked as outstanding in One Identity Manager by synchronizing. This prevents objects being deleted because of an incorrect data situation or an incorrect synchronization configuration.

Objects marked as outstanding:

- Cannot be edited in One Identity Manager.
- Are ignored by subsequent synchronization.
- Must be post-processed separately in One Identity Manager.

Start target system synchronization to do this.

### To allow post-processing of outstanding objects

- Configure target system synchronization.

For more information, see [Configuring Target System Synchronization](#) on page 20.


### Related Topics

- [How to Post-Process Outstanding Objects](#) on page 21
- [Users and Permissions for Synchronizing](#) on page 4

## Configuring Target System Synchronization

Create a target system for post-processing outstanding objects. Assign tables you want to be populated by synchronization, to this target system type. Specify the tables for which outstanding objects can be published in the target system during post-processing. Define a process for publishing the objects.


### To create a target system type

1. Start the Manager.
2. Select the category **Data Synchronization | Basic configuration data | Target system types**.
3. Click  in the result list toolbar.
4. Edit the target system type master data.
5. Save the changes.

Enter the following data for a target system type.

**Table 11: Master Data for a Target System Type**

Property	Description
Target system type	Target system type description.
Description	Spare text box for additional explanation.
Display name	Name of the target system type as displayed in One Identity Manager tools.
cross boundary inheritance	Specifies whether user accounts can be assigned to groups if they belong to different custom target systems.

 **NOTE:** If this option is not set, the target system type is used to group the target systems.

### To add tables to the target system synchronization.

1. Select the category **Data Synchronization | Basic configuration data | Target system types**.
2. Select the target system type in the result list.
3. Select **Assign synchronization tables** in the task view.
4. Assign tables whose outstanding objects you want to handle in **Add assignments**.
5. Save the changes.
6. Select **Configure tables for publishing**.

7. Select tables whose outstanding objects can be published in the target system and set the option **Publishable**.
8. Save the changes.

① **NOTE:** The connector must have write access to the target system in order to publish outstanding objects that are being post-processed. That means, the option **Connection is read only** must not be set for the target system connection.

### *To publish outstanding objects*

- Create a process for each table with outstanding objects you want to publish. The process is triggered by the event "HandleOutstanding" and provisions the objects. Use the process function "AdHocProjection" of the process component "ProjectorComponent". For more detailed information about defining processes, see Dell One Identity Manager Configuration Guide.

## How to Post-Process Outstanding Objects

### *To post-process outstanding objects*


1. Start the Manager.
2. Select the category **Data synchronization | Target system synchronization: <target system type>**.  
All tables assigned to the target system type are displayed in the navigation view.
3. Select the table whose outstanding objects you want to edit in the navigation view.  
All objects marked as outstanding are shown on the form.



① **TIP:**

#### *To display object properties of an outstanding object*

- a. Select the object on the target system synchronization form.
  - b. Open the context menu and click **Show object**.
4. Select the objects you want to rework. Multi-select is possible.
  5. Click one of the following icons in the form toolbar to execute the respective method.

**Table 12: Methods for handling outstanding objects**

Icon	Method	Description
	Delete	The object is immediately deleted in the One Identity Manager. Deferred deletion is not taken into account. The "outstanding" label is removed from the object. Indirect memberships cannot be deleted.

Icon	Method	Description
	Publicize	<p>The object is added in the target system. The "outstanding" label is removed from the object.</p> <p>The method triggers the event "HandleOutstanding". This runs a target system specific process that triggers the provisioning process for the object.</p> <p>Prerequisites:</p> <ul style="list-style-type: none"> <li>• The table containing the object can be published.</li> <li>• The target system connector has write access to the target system.</li> <li>• A custom process is set up for provisioning the object.</li> </ul>
	Reset	The "outstanding" label is removed from the object.

6. Confirm the security prompt with **Yes**.

**NOTE:** By default, the selected objects are processed in parallel, which speeds up execution of the selected method. If an error occurs during processing, the action is stopped and all changes are discarded.

Bulk processing of objects must be disabled if errors are to be localized, which means the objects are processed sequentially. Failed objects are named in the error message. All changes that were made up until the error occurred are saved.

#### ***To disable bulk processing***

- Deactivate  in the form toolbar.

#### **Related Topics**

- [Configuring Target System Synchronization on page 20](#)
- [Users and Permissions for Synchronizing on page 4](#)

## Configuring Memberships Provisioning

Memberships, for example, user accounts in groups, are saved in assignment tables in the One Identity Manager database. During provisioning of modified memberships, changes made in the target system will probably be overwritten. This behavior can occur under the following conditions:

- Memberships are saved in the target system as an object property in list form (Example: List of user accounts in the property `Members` of an Active Directory® group).
- Memberships can be modified in either of the connected systems.
- A provisioning workflow and provisioning processes are set up.


If a membership in One Identity Manager changes, the complete list of members is transferred to the target system by default. Memberships, previously added to the target system are removed by this; previously deleted memberships are added again.

To prevent this, provisioning can be configured such that only the modified membership is provisioned in the target system. The corresponding behavior is configured separately for each assignment table.

### **To allow separate provisioning of memberships**

1. Start the Manager.
2. Select the category **Data Synchronization | Basic configuration data | Target system types**.
3. Select the target system type in the result list.
4. Select the task **Configure the table for publishing**.
5. Select the assignment tables for which you want to allow separate provisioning. Multi-select is possible.
  - The option can only be set for assignment tables whose base table has a column `XDateSubItem`.
  - Assignment tables, which are grouped together in a virtual schema property in the mapping, must be labeled identically (For example `ADSAccountInADSGroup`, `ADSGroupInADSGroup` and `ADSMachineInADSGroup`).
6. Click **Enable merging**.
7. Save the changes.

For each assignment table labeled like this, the changes made in the One Identity Manager are saved in a separate table. During modification provisioning, the members list in the target system is compared to the entries in this table. This means that only modified memberships are provisioned and the members list does not get entirely overwritten.

 **NOTE:** The complete members list is updated by synchronization. During this process, objects with changes but incomplete provisioning are not handled. These objects are logged in the synchronization log.

For more detailed information about provisioning memberships, see the Dell One Identity Manager Target System Synchronization Reference Guide.

## Error Handling

For detailed information about correcting errors during synchronization of object hierarchies, see the Dell One Identity Manager Target System Synchronization Reference Guide.

### Help for Analyzing Synchronization Issues

You can generate a report for analyzing problems which occur during synchronization, for example, insufficient performance. The report contains information such as:

- Consistency check results
- Revision filter settings
- Scope applied
- Analysis of the synchronization buffer
- Object access times in the One Identity Manager database and in the target system

#### *To generate a synchronization analysis report*

1. Open the synchronization project in the Synchronization Editor.
2. Select the menu **Help | Generate synchronization analysis report** and answer the security prompt with **Yes**.

The report may take a few minutes to generate. It is displayed in a separate window.

3. Print the report or save it in one of the available output formats.



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## Contacting Dell

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## Technical support resources

Technical support is available to customers who have purchased Dell software with a valid maintenance contract and to customers who have trial versions. To access the Support Portal, go to <https://support.quest.com/>.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. In addition, the Support Portal provides direct access to product support engineers through an online Service Request system.

The Support Portal enables you to:

- Create, update, and manage Service Requests (cases)
- View Knowledge Base articles
- Obtain product notifications
- Download software. For trial software, go to <http://quest.com/trials>.
- View how-to videos
- Engage in community discussions
- Chat with a support engineer

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