

# Systems - AD: Groups synchronization

This tutorial is intended as a guide for administrators that want to load AD groups into CzechIdM (either one time or as a scheduled job).

You will learn

- how to connect an AD system for groups synchronization
- how to use a groups sync workflow
- how to prepare users to be able to assign them IdM roles by their AD groups

## Before you start

First of all, you need to download the connector from Connid (e.g. [Connid AD bundle 1.3.4 jar file](#)). Then add the jar file into the CzechIdM folder inside the application server. In case you installed CzechIdM into tomcat by standard installation, the path would be `/opt/tomcat/current/webapps/idm/WEB-INF/lib/`.



To preserve the connector during future upgrades of CzechIdM core, put the connector in e.g. `/opt/czechidm/lib/` and create symbolic link in the CzechIdM webapp folder:

```
ln -s /opt/czechidm/lib/net.tirasa.connid.bundles.ad-1.3.4.jar  
/opt/tomcat/current/webapps/idm/WEB-INF/lib/net.tirasa.connid.bundles.ad-1.3.4.jar
```



Then restart the application server. If you had CzechIdM already running in the web browser, refresh also the web browser window (e.g. Ctrl+F5).

Then with tutorial [Extended attributes - managing EAVs and forms](#), you should create EAVs for `IdmTreeNode`, `IdmIdentity` and `IdmIdentityContract`, so this EAVs can be used to create automatic roles. `IdmTreeNode` for an automatic role by organization and the others for an automatic role by attributes.



## Create system

- Go to **Systems** in the left menu and then click on **Add**.

Development



admin



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**Systems**

Virtual systems

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


Settings

## Systems

+ Add

Filter

Cancel filterFilter

<input type="checkbox"/>	System name	Description	Asynchronous provisioning	Read-only	Inactive	Blocked operations	Id
<input type="checkbox"/>	 table - organize		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4eca52b
<input type="checkbox"/>	 table role test		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		1ea5dc9
<input type="checkbox"/>	 table test		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		724a1ad

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- Fill in name of a system. And click on **Save and continue**.
- In tab **Configuration** choose AD connector (net.tirasa.connid.bundles.ad.ADConnector)

<https://wiki.czechidm.com/>

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## table role test System details

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### Connector configuration

net.tirasa.connid.bundles.ad.ADConnector (connId)

Test connector

SSL

Yes

User SSL to perform password provisioning

Memberships (multi)

Specify memberships

Server hostname

Insert hostname

☒ Retrieve deleted users
 

Specify TRUE to retrieve deleted users also. The default is "true".

Server port

636

Insert port. The default is 636.

☒ Retrieve deleted groups
 

Specify TRUE to retrieve deleted groups also

☐ Trust all certs
 

Specify TRUE to trust all certs. The default is "false".

Failover (multi)

Failover host:port

## Connector configuration

On this page fill in these important values:

- **Server hostname** - IP address of ad server or hostname
- **Server port** - on this port will server listen
- **Principal** - with this username connector will connect to the AD system, this user has to have enough rights to reads groups
- **Principal password** - password of the "principal" account
- **Root suffixes** - there should be DNs of **Base contexts**, groups outside of these "paths" will be ignored. Content of **Root suffixes** could be same as **Base contexts** or just put in domain.
- **Entry object classes** - List of all objectClasses groups have in AD. It is necessary to find just groups. With wrong settings, it could find even users.
- **Group search scope** - Choose object, onlevel or subtree. It means where it will search for groups. As a **subtree**, a search will start on paths in **Base context** and it will search in every **Organization Unit** in this path. **onlevel** will search just one **OU**, where distinguished names of

**Base context** points to and the last **object** means, in **Base context** there are DNs of groups we want to synchronize.

- **Custom group search filter** - this enables additional filter for groups, which will be searched for. You can use it e.g. to filter out roles with some specific substrings in their CN by using LDAP filter (&(!(cn=\*Administrator\*))(!(cn=\*Auditor\*)))
- **Base contexts for group entry searches** - list of distinguished names (paths), where it will search for groups.
- **Group members reference attribute** - a name of the attribute, which indicates membership. It contains whole DNs of users.
- **useVlvControls** - have to be enabled - this is only supported option
- **pageSize** - number, it should be greater than a count of all groups on AD.
- **vlvSortAttribute** - this should be identifier with sorting properties. Recommended is sAMAccountName.
- **Uid Attribute for groups** - unique identifier, recommended is sAMAccountName or objectGUID.
- **Object classes to synchronize** - Based on this filled object classes, groups to synchronized will be found. Content is usually same as **Entry object classes**.

## Connector's mapping

- Firstly in **Scheme** tab generate a schema with a green button. If there is some exception, you have probably mistake in the configuration of the connector.

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### System scheme

[Generate scheme](#)

### Object types in system

[+ Add](#) [Filter](#) [Refresh](#)

Object name	Auxiliary	Container	Id
<input checked="" type="checkbox"/> <a href="#">_ACCOUNT_</a>	<input type="checkbox"/>	<input type="checkbox"/>	ffa0661

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- Then in **Mapping** tab create new mapping - synchronization (\\\_GROUP\\\_ (Object name), Role (Entity type)).

table role test

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Attributes mapping

attribute groups for operation and entity type

+ Add

	Operation type	Mapping name	Object name	Entity type	Id
<input type="checkbox"/>	<div>Synchronization</div>	sync of groups	__ACCOUNT__	<div>Role</div>	c737877

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- Now we will map just 3 attributes. Click on green add button like on picture below and this fill in:

Attribute in schema	Name	Attribute	IdM key
__Name__ (__GROUP__)	Distinguished name	extended	
distinguished_name			
name (__GROUP__)	name	identifier, entity	name
__UID__ (__GROUP__)	__UID__		

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Mapping of attributes for IdM entity and operation type

Detail

Operation type

Synchronization

Mapping name

sync of groups

Object name

\_\_ACCOUNT\_\_

Entity type

Role

Back

Save and continue

Mapped attributes

+ Add

Filter

	Name	IdM key	Identifier	Entity attr.	Extended attr.	Transfer from system
<input type="checkbox"/>	<input type="checkbox"/> distinguishedname	DN	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> name	name	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> uid		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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- In **Synchronization** tab create new synchronization.

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### Synchronization configuration

+ Add

↺

<input type="checkbox"/>	Running	Name	Reconciliation	Allowed		Id
<input type="checkbox"/>	<input checked="" type="checkbox"/>	sync of groups	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		23ed9fa

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- Enable **Allowed** and **Reconciliation**. Fill **Name**, **Set of mapped attributes** and then **Correlation attribute** as '\\\_\\\_UID\\\_\\\_\'.
- Below there are 4 possibilities on state when synchronization starts (Linked, Not linked, Missing entity, Missing account).
  - **Linked** - it's like update, group is in the AD and also in IdM, but it is possible in the AD could be some change, so usually **Action** is "Update entity"
  - **Not Linked** - this means the group is in the AD and also in IdM, but in IdM was not created by synchronization, so it does not have an account on this system.
  - **Missing entity** - in other words - create action - group is in the AD, but in IdM it is not. It could be newly created in the AD, so it is not yet in IdM or it could be already erased in IdM. But this situation only supports "Ignore" and "Create entity" action.
  - **Missing account** - or "delete" - group is in IdM, but missing in AD. Groups are synchronized from the AD, and this situation usually means group was deleted in the AD, so in IdM we expect to be erased as well.
- In each of these possibilities there is a select box "Workflow". It is for selecting additional steps, which will be done. For example, when groups are synchronized, we want them to be in **Role catalog** or some of them as an **automatic role by organization**. And this is done in a workflow. You could write your own, but we have one, which covers basic actions with a just little bit of adjusting ([Systems - Groups synchronization workflow](#)).

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Synchronization details

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Logs

☒ Allowed

☒ Reconciliation

Executes full reconciliation instead of synchronization. Synchronization will be executed for all accounts without filter. Search for missing accounts will be executed for all entities in CzechIdM.

Name

sync of groups

\*

Set of mapped attributes

sync of groups (Role - Synchronization)

x

Correlation attribute

name

x

Token

Description

In section below, it is possible to define how synchronization will react in given situations. Synchronization behavior is affected by selected workflow. Workflow is started after execution of standard action for each element. Workflow must ensure changes are saved.



	<h3>Linked</h3> <div><b>Action</b> Update entity x ▾</div> <div><b>Workflow</b> Synchronization - Roles from AD x ▾</div>
	<h3>Not linked</h3> <div><b>Action</b> Create link and update entity x ▾</div> <div><b>Workflow</b> Synchronization - Roles from AD x ▾</div>
	<h3>Missing entity</h3> <div><b>Action</b> Create entity x ▾</div> <div><b>Workflow</b> Synchronization - Roles from AD x ▾</div>
	<h3>Missing account</h3> <div><b>Action</b> Delete entity x ▾</div> <div><b>Workflow</b> Synchronization - Roles from AD x ▾</div>
	<div>Back Save and continue ▴</div>

## Synchronization

At this point configuring of synchronization is complete. Save this synchronization and run it. It should smoothly create a catalog, new roles and maybe even some automatic roles. If provisioning of memberships will fail do not forget to try "IdapGroups" attribute.



In user provisioning system's configuration **Base context of groups** should be filled too, for correctly provisioning memberships



In user provisioning system's schema and mapping should have attribute memberOf/IdapGroups and **Strategy** as "Merge".

## Tips

You can create a new security group in Active Directory with the Apache Directory Studio by following these steps:

1. Select an existing group
2. Right click on the group name → New → New entry
3. Check the "Use existing entry as template" and click Next
4. Object classes: Write "group" and click Add → group and top are added to "Selected object classes" → Next
5. Distinguished Name: Set the value of RDN to your choice → Next
6. A warning is displayed - click Cancel
7. Set instanceType = 4
8. Set sAMAccountName to your choice (right click → Edit values)
9. Delete values (right click → Delete values) of these attributes:
  1. nTSecurityDescriptor
  2. objectCategory
  3. member (if you don't want to copy members)
  4. sAMAccountType

**New Entry**

**Attributes**

⚠ Mandatory attribute [ntsecuritydescriptor, 1.2.840.113556.1.2.281] is missing, please add it. Mandatory attribute [1.2.840.113556.1.4.782, ...]

DN: CN=TestSkupina,OU=Groups,OU=EU,OU=Organ

Attribute Description	Value
objectClass	group (structural)
objectClass	top (abstract)
groupType	-2147483646
instanceType	4
CN	TestSkupina
sAMAccountName	TestSkupina

? < Back Next > Cancel Finish

Finally, click Finish

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