

GALSync

Admin guide for setting up GALSync

Copyright 2017 CLOUDIWAY. All rights reserved.

Use of any CLOUDIWAY solution is governed by the license agreement included in your original contract.

The copyright and all other intellectual property rights in the Software are and remain the property of CLOUDIWAY and/or its subsidiaries (“CLOUDIWAY”). The licensee shall not acquire any title, copyright or other proprietary rights in the Software or any copy than specified in.

You may not attempt to copy, modify, alter, disassemble, de-compile, translate or convert in human readable form, or reverse engineer all or any part of the Features and/or Data.

You acknowledge that the Software and all related products (including but not limited to documentation) are the subject of copyright. You therefore, shall not during or any time after the expiry or termination of this Agreement, permit any act which infringes that copyright and, without limiting the generality of the foregoing, You specifically acknowledge that You may not copy the Software or Products except as otherwise expressly authorized by this Agreement.

CLOUDIWAY provides this publication “as is” without warranty of any either express or implied, including but not limited to the implied warranties of merchantability or fitness for a particular purpose. CLOUDIWAY may revise this publication from time to time without notice. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

Document history

Date	Editor	Change details
09/09/2017	ED	First draft

Table of Contents

1	About this guide.....	1
1.1	Audience	1
1.2	Using this guide	1
2	Introduction	2
2.1	What is Galsync?	2
2.2	Features	2
2.3	Supported Systems.....	2
3	Security	3
4	Set up Cloudiway for Galsync	4
4.1	Before you start.....	4
4.2	Cloudiway contacts	4
4.3	Galsync Setup	4
4.3.1	Setup of a source Gsuite connector	5
4.3.2	Setup of a target Gsuite connector	8
4.3.3	Setup of a source Office 365 connector	10
4.3.4	Setup of a target Office 365 connector	11
4.3.5	Provisioning configuration	12
5	Test your Address List Synchronization	14
5.1	Pull the connectors	14
5.2	Reconcile	16
5.3	Export.....	17
6	Specific scenario: On premises Active Directory	19
7	Automatic schedule	25
8	Troubleshooting.....	26

1 About this guide

1.1 Audience

This guide is aimed at system administrators who are capable of connecting to remote systems such as G Suite for Business and Office 365 Admin Panel. GALSync is usually a detailed setup that requires a high level of competence and experience with mail systems and directories.

Although we provide support for our own products, we do not provide support for third party products such as PowerShell or server administration of Google or Exchange.

If you are concerned you might have any difficulty completing these steps, please consider a solution with our consulting team, contactable via sales@cloudiway.com. This will ensure a fast, cost-effective and stress-free implementation.

1.2 Using this guide

This guide provides steps for setting up GALSync using the Cloudiway platform, as well as details of any remote system configuration required.

The screen dumps used in this guide reflect these business names to provide typical examples of data to enter into each field.

Whitepapers and guides covering Cloudiway's other products, such as general mail migration, are available from the Cloudiway website (www.cloudiway.com).

2 Introduction

2.1 What is GALSync?

GALSync stands for Global Address List Synchronization.

The goal of a GAL Synchronization solution is to synchronize users, groups and contacts from one source messaging system with contacts objects in another messaging system. It allows automatic updates between global address lists to ensure they remain synchronized.

GALSync works between multiple address books through a simple configuration online, which sends pull requests to other address books and pushes the changes to the targets.

2.2 Features

The GALSync engine is hosted on the Cloudiway platform, it's a SAAS application. Address books of Cloud messaging systems can be synchronized without requiring to install anything.

- Filter by domain: You can select the domain Names that you want to synchronize.
- Filter by object type: You can select to synchronize only users, groups or contacts
- Preview: A preview mode is available to visualize and validate the changes before pushing them to the targets
- Attribute selection: The schema is open and extensible. Any attribute present in the source can be synchronized without coding.
- Automatic schedule: Once the rules are in place and working correctly, you can schedule the execution and run it automatically at the time of your choice.
- Logs: Execution logs are available to keep track of the errors and changes.

2.3 Supported Systems

- G Suite
- Office 365
- Exchange on premises (2007 and >)
- Possibility of Lotus Notes.

Note: On Premises environments require a local agent to be running.

3 Security

We take your privacy and security seriously at Cloudiway, and we have invested significant effort into making our platform and your data secure. Cloudiway provides a cloud-based application hosted in Windows Azure. It means that the software and data are centrally hosted and accessed by clients using a web browser and internet connection. In addition, Cloudiway's SaaS benefits from Windows Azure's certifications, ensuring security of the infrastructure, network and physical security layers of the Cloudiway cloud.

4 Set up Cloudiway for GALSync

4.1 Before you start

Before you start, please ensure you have the details outlined in the following table.

Name	Description	Location
Cloudiway login	Stores details and provides communication between the systems you already use.	https://apps.cloudiway.com
Knowledge base access	Our extensive knowledge base is always accessible, with videos, troubleshooting tools, samples and more.	http://kb.cloudiway.com

4.2 Cloudiway contacts

GALSync setup might require assistance of our consulting team.

Should you need help, please drop an email to services@cloudiway.com with sales@cloudiway.com in cc.

4.3 Service Accounts Creation

This chapter explains how to create the service accounts in order to synchronize G Suite, Office 365 and on Premises Exchange servers

4.3.1 On Premises Exchange service Account

When you synchronize to or From an On Premises Exchange server, it requires a local agent.

The agent runs with the identity of the logged on user.

If you are using the On Premises environment as a source connector, all you need is an Active Directory account with ReadOnly access to the objects or organizational Units that will be pulled.

If you are using the On Premises environment as a target connector, the read/write operations are performed using Exchange Powershell commands under the identity of the account that has launched the local agent. This account needs Exchange admin privileges and the authorization to run Powershell commands.

4.3.2 Office 365 Service account

The GalSync connector requires an Office 365 tenant admin account.

The reason is that Powershell msol cmdlets commands are run (Get-MsolUsers, etc...)

Running these powershell commands require to be admin of the tenant.

4.3.3 Gsuite Service Account

This article describes how to create a service account for G Suite:

<http://kb.cloudiway.com/how-to-create-an-admin-account-for-google-migration/>

In particular, the service account needs the permissions for the following feeds:

https://www.googleapis.com/auth/admin.directory.user,
https://www.googleapis.com/auth/admin.directory.group,
https://www.googleapis.com/auth/admin.directory.orgunit,
https://www.googleapis.com/auth/admin.directory.userschema,
https://apps-apis.google.com/a/feeds/user/,
https://apps-apis.google.com/a/feeds/groups/,
https://apps-apis.google.com/a/feeds/policies/,
https://www.google.com/m8/feeds/,
https://www.googleapis.com/auth/admin.directory.user.readonly,
https://apps-apis.google.com/a/feeds/alias/

4.4 GALSync Setup

The following chapter shows how to setup GalSync between Gsuite,office 365 and On Premises environments.

Connectors are mono-directional.

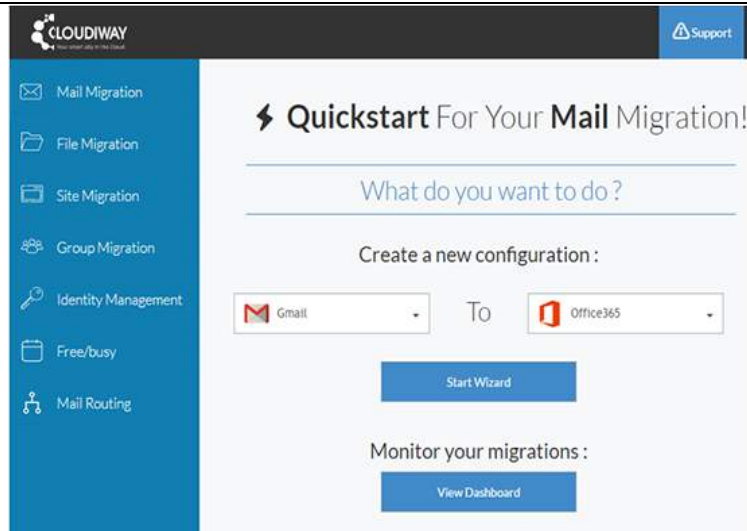
To setup a synchronization between G Suite and Office 365, you need to create a source and a target connector of each type.

4.4.1 Setup of a source G Suite connector

From your browser, go to	
--------------------------	--

<https://apps.cloudiway.com>

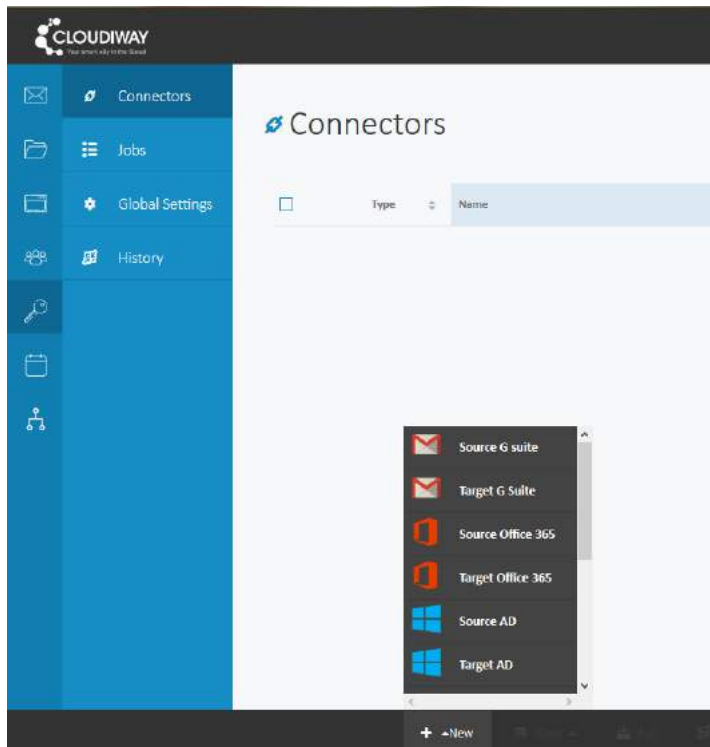
And login

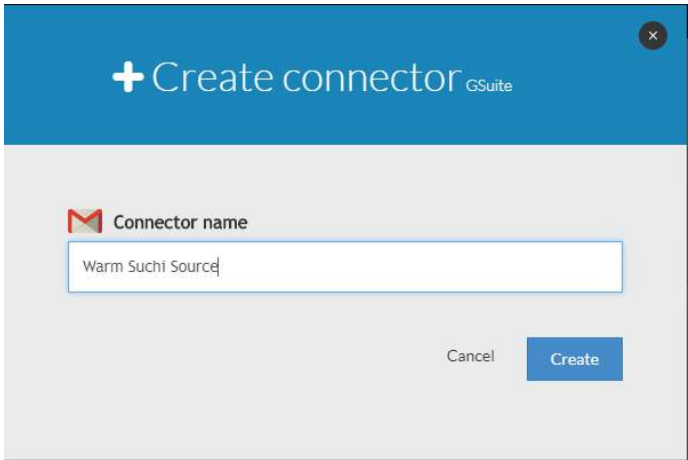
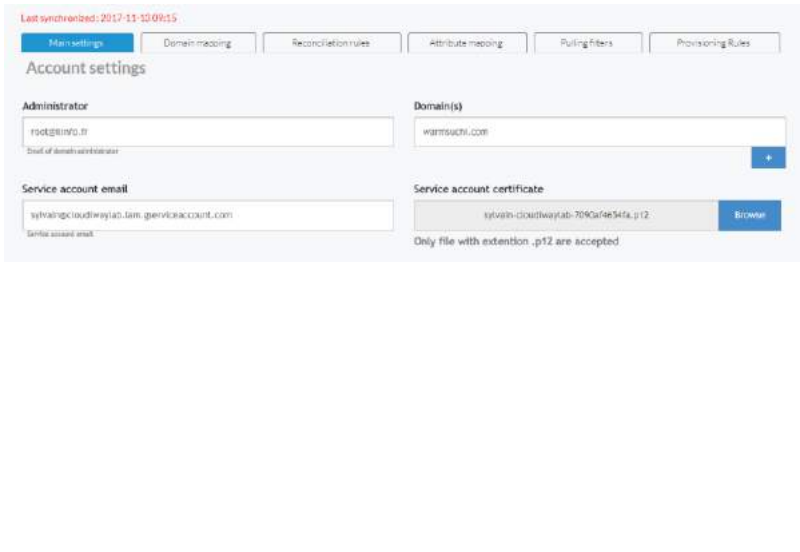
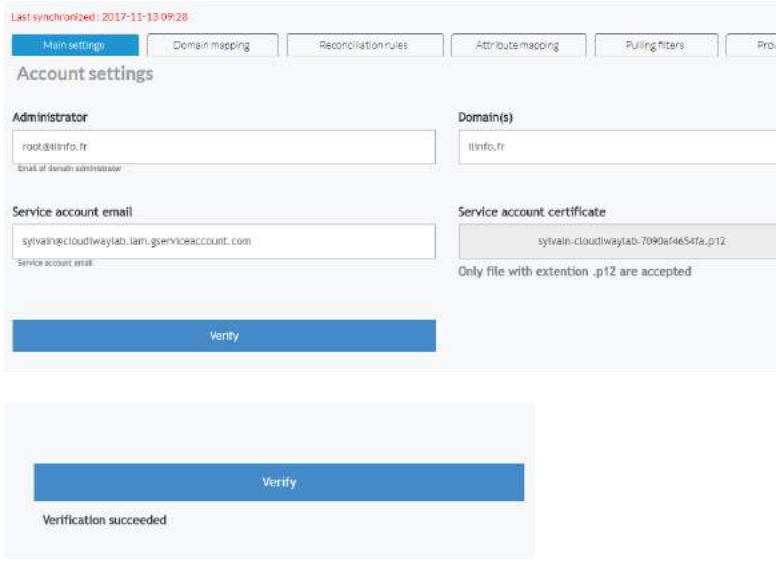



Click on **Identity Management.**

On the connectors List, Click **New**

Select G Suite Source

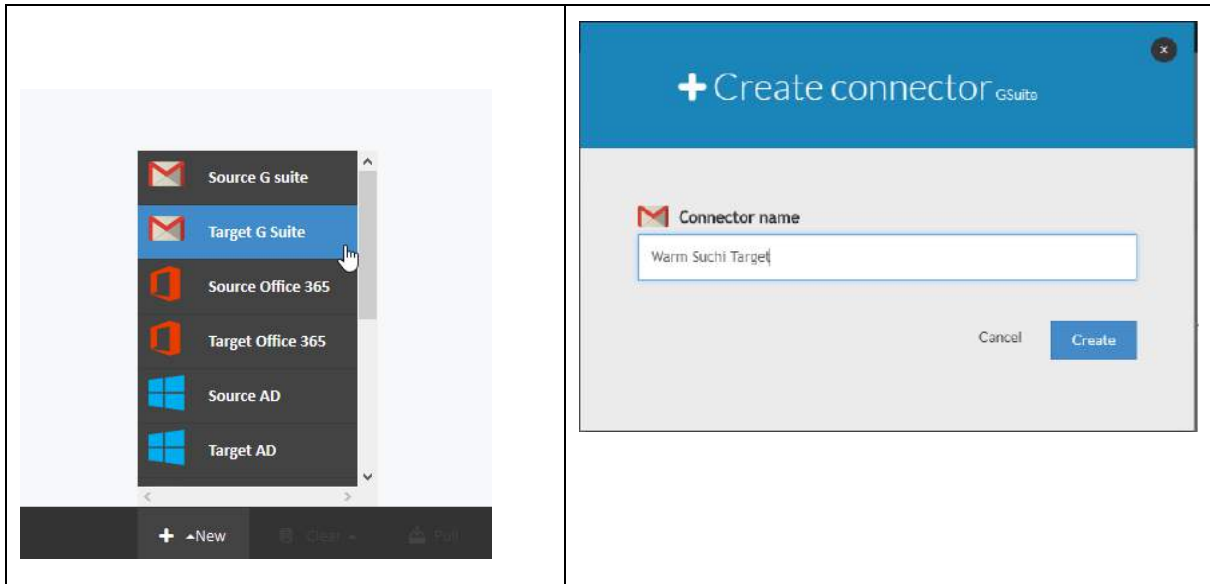


<p>Give a name to your connector and click Create</p>	
<p>In Main settings, fill the required fields.</p> <p>Administrator: the name of an account that will be impersonated.</p> <p>Service Account Email and service Account Certificate: See the above chapter to see how to create the service account</p> <p>Domains: the domains to pull.</p>	
<p>Click on Verify.</p> <p>This will validate that the settings are correct</p>	

<p>Synchronization rules.</p> <p>To Enable GALSync, activate Pull Users as Contacts and Pull Groups as contacts (if you wish to synchronize groups as well).</p>	 <p>The screenshot shows the 'Synchronization Rules' configuration page. It contains six toggle switches, all of which are turned 'ON' (indicated by a blue bar on the right):</p> <ul style="list-style-type: none"> Synchronize Users: ON Synchronize Contacts: ON Synchronize Groups: ON Pull Users as Contacts (Galsync): ON Pull Groups as Contacts: ON
<p>Domain Mapping.</p> <p>Do not make any domain transformations.</p>	
<p>Reconciliation rules.</p> <p>Leave the defaults rules (mail exact match is relevant for messaging systems).</p>	
<p>Attribute Mapping.</p> <p>The default List is sufficient</p>	
<p>Pulling filters.</p> <p>Reserved for later use. Do not set yet any pulling filters.</p> <p>In a next version, you will be able to synchronize members of a specific group.</p> <p>Today, only filtering by attribute value is active. No rules means that all objects are synchronized.</p>	
<p>Provisioning rules.</p> <p>This tab will be filled later.</p>	

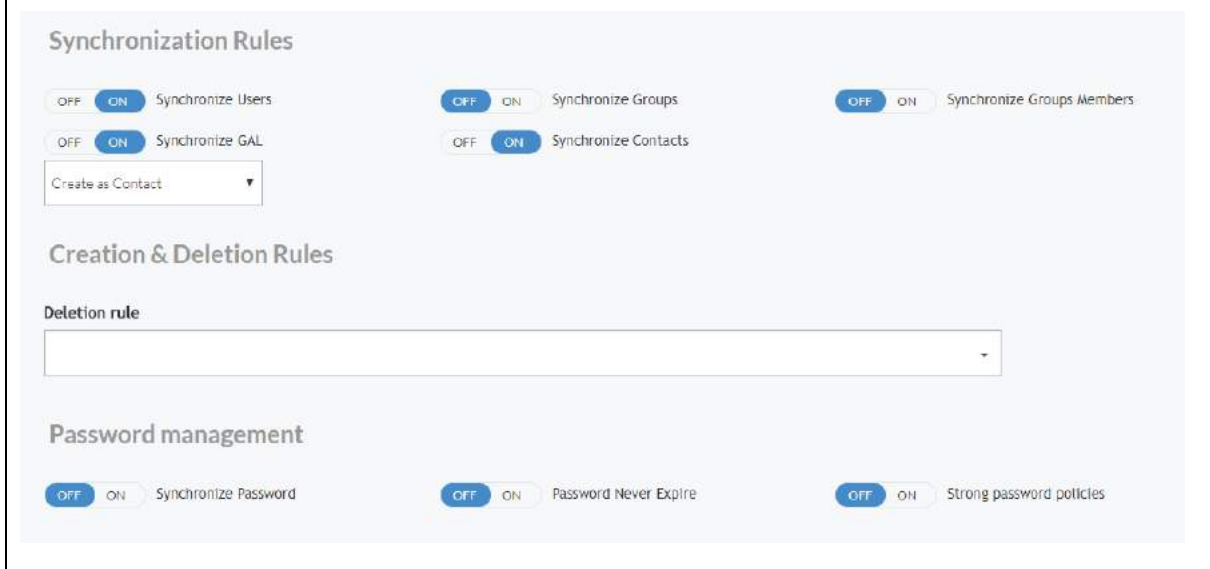
4.4.2 Setup of a target G Suite connector.

Repeat the above procedure but this time, select a target Gsuite Connector.



Activate the GALSync and select to create users as contacts.

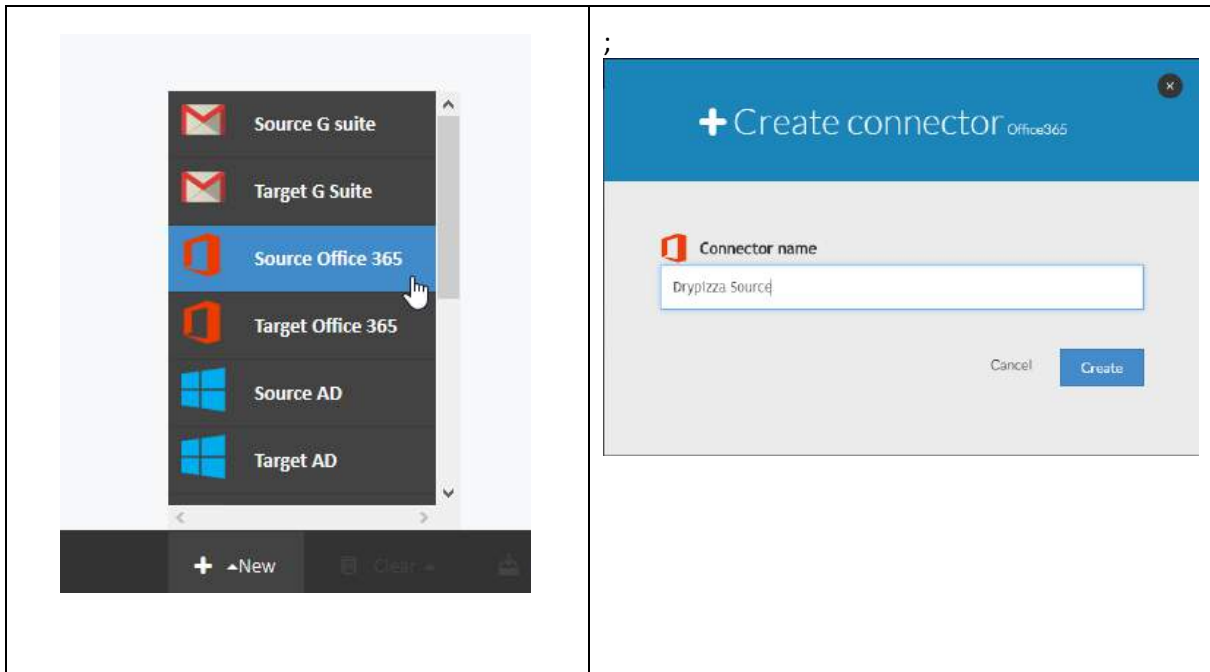
Also Enable the synchronization of contacts



The rest of the configuration is identical to the previous step.

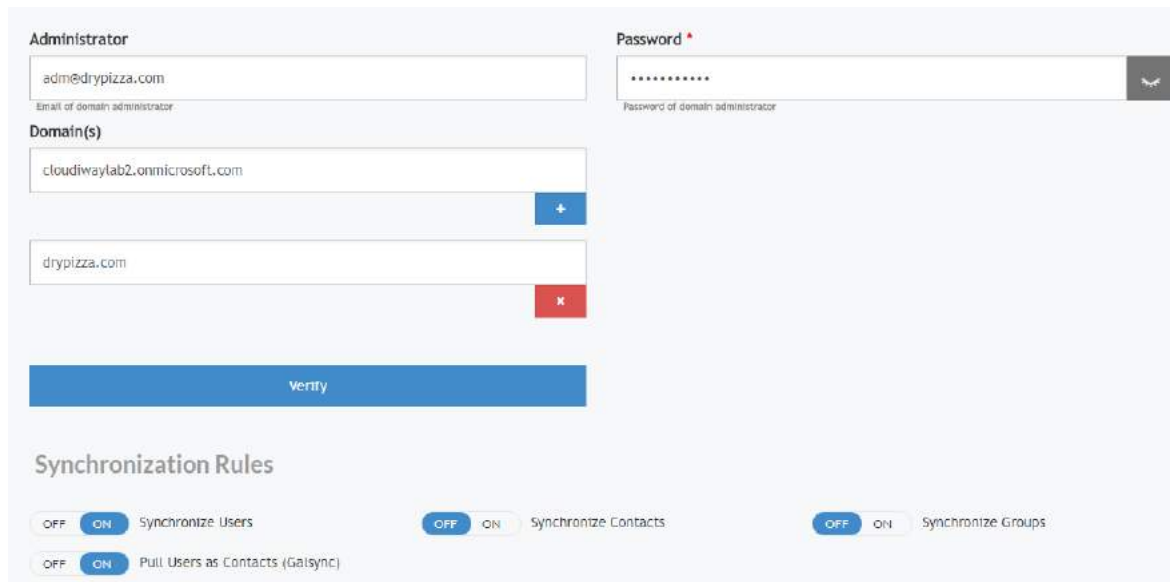
4.4.3 Setup of a source Office 365 connector

Let's now create the source Office 365 connector



Enter the credentials for the Office 365 connector.

Select Pull Users as contact (this actually activates the GALSync).



The screenshot shows the configuration page for an Office 365 connector. It is divided into several sections. The 'Administrator' section has a text input field with 'adm@drypizza.com' and a small 'Email of domain administrator' label below it. The 'Password' section has a password input field with a masked password '*****' and a 'Password of domain administrator' label below it. The 'Domain(s)' section has two text input fields: the first contains 'cloudiwaylab2.onmicrosoft.com' with a blue '+' button to its right, and the second contains 'drypizza.com' with a red 'x' button to its right. Below the domain fields is a large blue 'Verify' button. The 'Synchronization Rules' section contains four toggle switches: 'Synchronize Users' (ON), 'Synchronize Contacts' (OFF), 'Synchronize Groups' (OFF), and 'Pull Users as Contacts (Galsync)' (ON).

Click on Verify to validate your settings.

Main settings | Domain mapping | Reconciliation rules | Attribute mapping | Provisioning Rules

Account settings

Administrator
adm@drypizza.com
Email of domain administrator

Password *
.....
Password of domain administrator

Domain(s)
drypizza.com +

Verify

4.4.4 Setup of a target Office 365 connector

Let's now create the target Office 365 connector.

Repeat the above step by selecting a target Office 365 connector.

Source G suite
Target G Suite
Source Office 365
Target Office 365
Source AD
Target AD

+ New | Clear

+ Create connector Office365

Connector name
Drypizza target

Cancel | Create

Click on Verify to validate your settings.

Main settings | Domain mapping | Reconciliation rules | Attribute mapping | Provisioning Rules

Account settings

Administrator
adm@drypizza.com
Email of domain administrator

Password *
.....
Password of domain administrator

Domain(s)
drypizza.com
+

Verify

Select **Synchronize GAL** and **Create as Contact**

Do not set the other fields since we are not going to provision users.

Synchronization Rules

OFF ON Synchronize Users OFF ON Synchronize Groups OFF ON Synchronize Contacts

OFF ON Synchronize GAL OFF ON Synchronize Groups Members

Create as Contact

Creation & Deletion Rules

Deletion rule

Password management

OFF ON Synchronize Password OFF ON Password Never Expire OFF ON Strong password policies

License management

Default location
2 letters ISO country code for distcenter

Default users license
No license found.

Save & Refresh Licenses

The connectors are now created.

4.4.5 Provisioning configuration

The final step is to configure the provisioning.

We want the G Suite source connector to provision the target office 365 connector and vice-versa.

Edit the source G Suite connector and allow it to provision the target Office 365 connector

Warm Suchi Source
(Source Connector)

Last synchronized: 2017-11-13 09:32

Main settings | Domain mapping | Reconciliation rules | Attribute mapping | Pulling filters | Provisioning Rules

Allow Provisioning in	Allow Modifications in	Allow Deprovisioning in	Provisioning rules
<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	Warm Suchi Target
<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	Drypizza target

Edit the source Office connector and allow it to provision the target G Suite connector

Drypizza source
(Source Connector)

Last synchronized: 2017-11-13 10:06

Main settings | Domain mapping | Reconciliation rules | Attribute mapping | Pulling filters | Provisioning Rules

Allow Provisioning in	Allow Modifications in	Allow Deprovisioning in	Provisioning rules
<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Warm Suchi Target	Warm Suchi Target
<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	<input type="radio"/> OFF <input checked="" type="radio"/> ON Drypizza target	Drypizza target

Your configuration is now completed.

It's now time to test it.

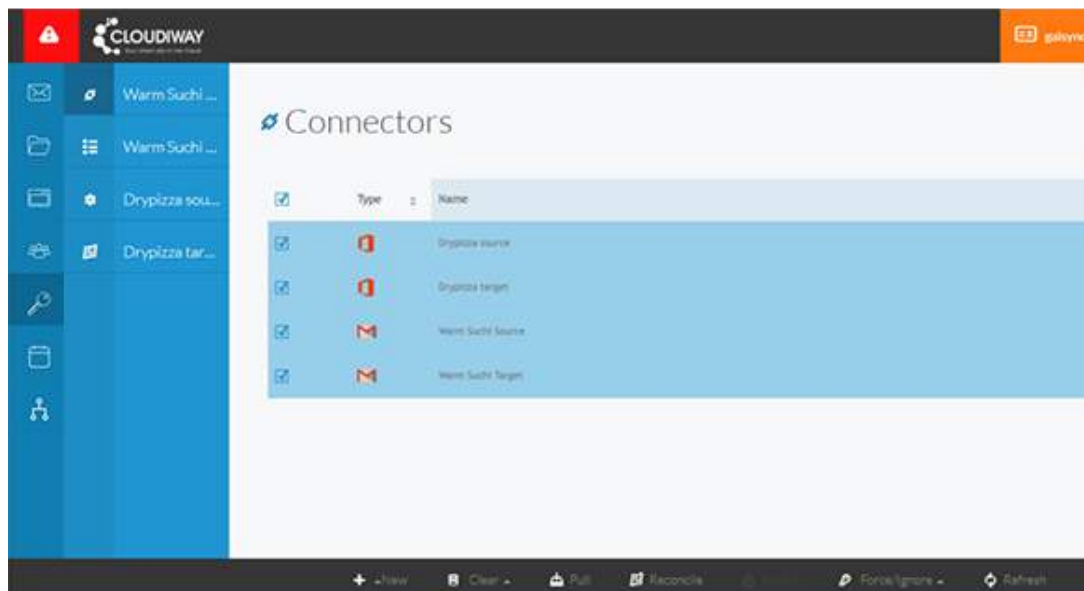
5 Test your Address List Synchronization

A full synchronization cycle is a three step process:


- Pulling of the sources.
 - o This pull every connector and stores the objects in an internal cache (connector caches).
- Reconciliation
 - o It updates the connector caches.
 - o You can visualize the changes, changes (creation, modifications, deletions) that are ready to be exported.
- Export to target
 - o This writes the changes to the tenants.

5.1 Pull the connectors

In the connector List, select all the connectors and Click **Pull**



Click on **Confirm**.





 Pull connectors
✕

Please confirm that you want to pull connectors:

- Drypizza source
- Drypizza target
- Warm Suchi Source
- Warm Suchi Target

Cancel Confirm

Switch to the Job List view to monitor the execution of your tasks





-  Connectors
-  Jobs
-  Global Settings
-  History

IAM / Jobs List

Job List

Start Time	Type	Connector Name	Status	Duration
2017-11-13 10:13	Pull ID : 18894		Queued	
2017-11-13 10:13	Pull ID : 18893		Queued	
2017-11-13 10:13	Pull ID : 18892		Queued	
2017-11-13 10:13	Pull ID : 18891		Queued	
2017-11-13 09:30	VerifyConnectorConfiguration ID : 18876		Completed	a few seconds
2017-11-13 09:28	VerifyConnectorConfiguration ID : 18875		Completed	a few seconds

50 100 200

-  Connectors
-  Jobs
-  Global Settings
-  History

IAM / Jobs List

Job List

Start Time	Type	Connector Name	Status	Duration
2017-11-13 10:15	Pull ID : 18892	Drypizza source (Source)	Completed	a few seconds
2017-11-13 10:13	Pull ID : 18894		Queued	
2017-11-13 10:13	Pull ID : 18893		Queued	
2017-11-13 10:13	Pull ID : 18891	Drypizza target (Target)	Completed	a few seconds
2017-11-13 09:30	VerifyConnectorConfiguration ID : 18876		Completed	a few seconds
2017-11-13 09:28	VerifyConnectorConfiguration ID : 18875		Completed	a few seconds

50 100 200

GALsync admin guide

Page 15/26

IAM / Jobs List

Job List





Start Time	Type	Connector Name	Status	Duration
2017-11-13 10:25	Pull ID : 18896	Warm Suchi Target (Target)	Completed	a few seconds
2017-11-13 10:16	Pull ID : 18893	Warm Suchi Source (Source)	Completed	a few seconds
2017-11-13 10:15	Pull ID : 18892	Drypizza source (Source)	Completed	a few seconds
2017-11-13 10:13	Pull ID : 18891	Drypizza target (Target)	Completed	a few seconds
2017-11-13 09:30	VerifyConnectorConfiguration ID : 18876		Completed	a few seconds
2017-11-13 09:28	VerifyConnectorConfiguration ID : 18875		Completed	a few seconds

50 100 200

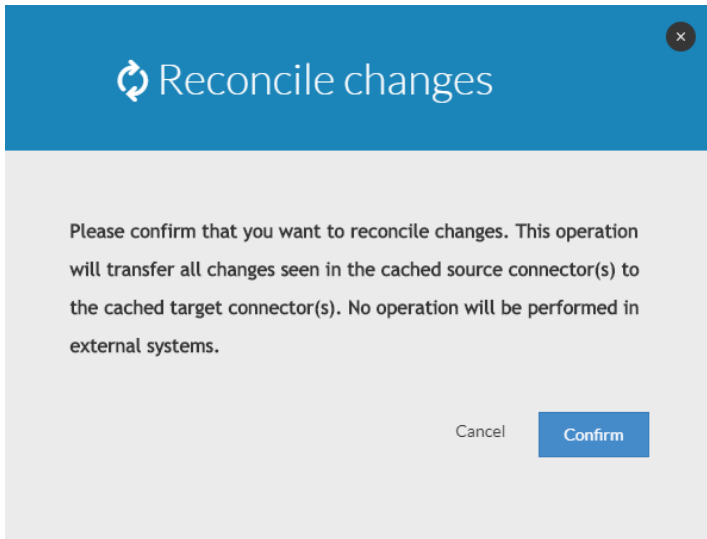
5.2 Reconcile

In the connector list, select the connectors and click on **Reconcile**

Connectors

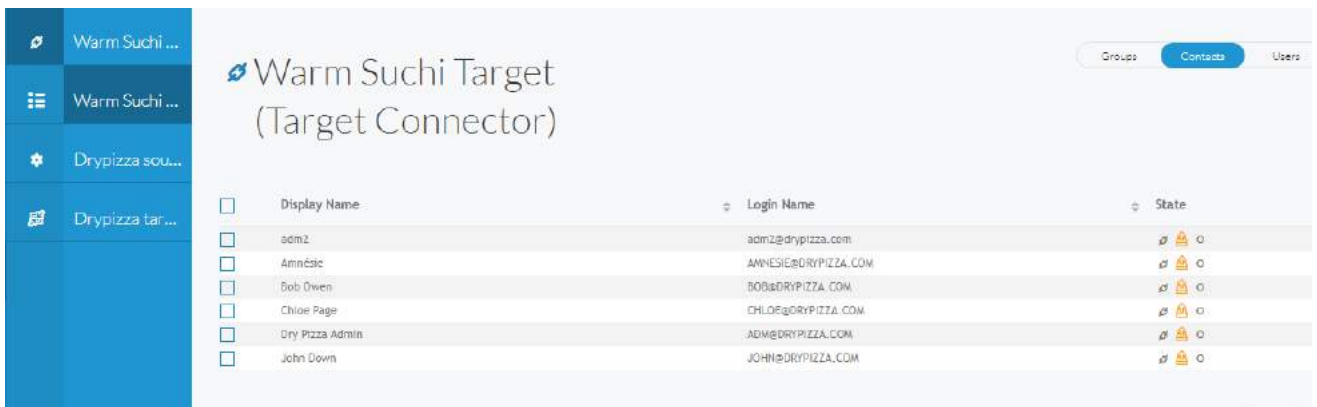
<input checked="" type="checkbox"/>	Type	Name
<input checked="" type="checkbox"/>	 Drypizza source	Drypizza source
<input checked="" type="checkbox"/>	 Drypizza target	Drypizza target
<input checked="" type="checkbox"/>	 Warm Suchi Source	Warm Suchi Source
<input checked="" type="checkbox"/>	 Warm Suchi Target	Warm Suchi Target

+ New Clear Pull Reconcile Export Force/Ignore Refresh



Click on **Confirm** to start the Process.

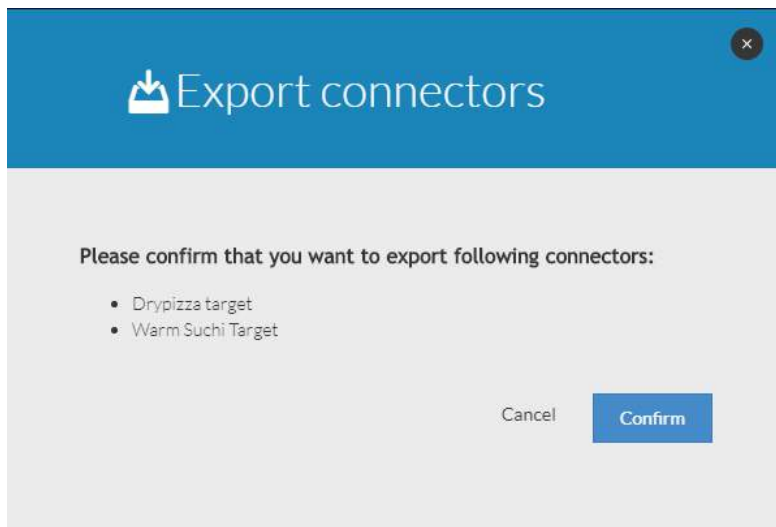
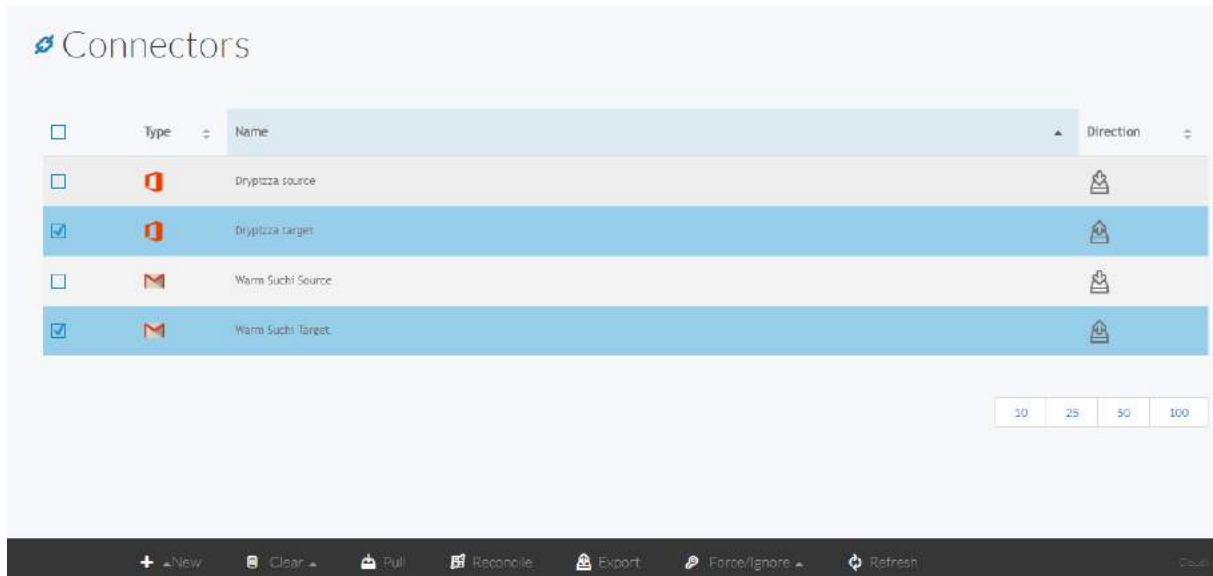
You can visualize the results of the reconciliation in the connectors.



If everything is correct, you are now ready to export the changes.

5.3 Export

Select the target connectors and click on **Export**



Click on confirm.

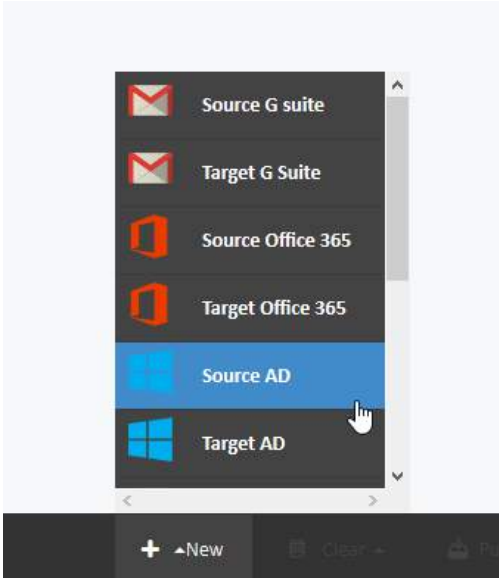
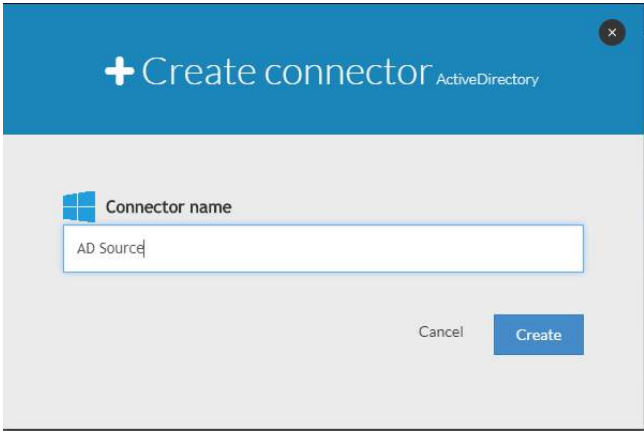
Your GALSync synchronization is now completed.

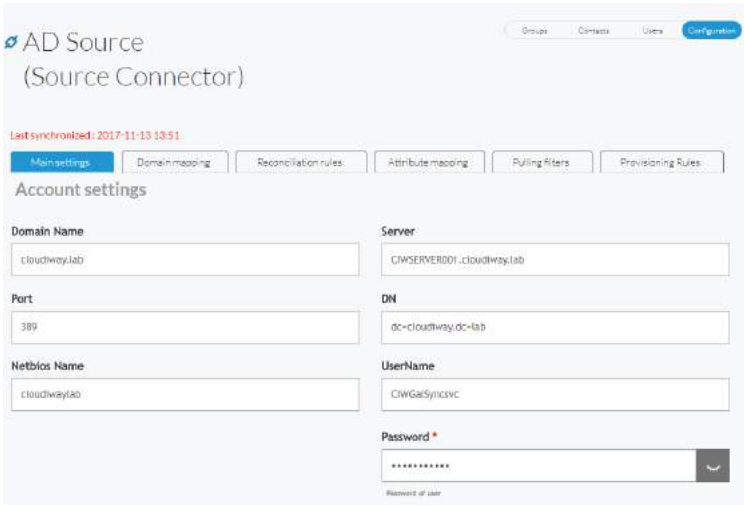
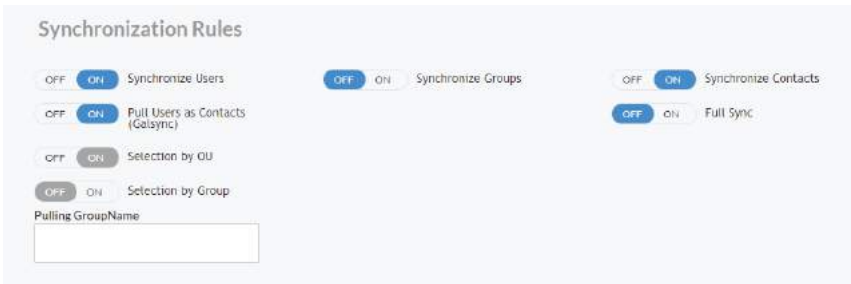
6 Specific scenario: On premises Active Directory

6.1 OnPrem Active Directory as source

If you have an On Premises Exchange environment, objects are stored in the Active Directory

You can create an Active Directory source connector to pull the users, groups and contacts and sync them in the targets of your choice

<p>In the connector list, create a new connector of type AD Source</p>	 <p>A screenshot of a connector list interface. The list contains several items: 'Source G suite', 'Target G Suite', 'Source Office 365', 'Target Office 365', 'Source AD', and 'Target AD'. The 'Source AD' item is highlighted in blue, and a mouse cursor is pointing at it. At the bottom of the list, there are buttons for '+ New', 'Clean', and 'Refresh'.</p>
<p>Give it a name and click on Create</p>	 <p>A screenshot of a 'Create connector' dialog box. The title bar says '+ Create connector ActiveDirectory'. Below the title bar, there is a text input field labeled 'Connector name' with the text 'AD Source' entered. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Create'.</p>

<p>Fill the required fields.</p> <p>Username / password must be a single user that has permissions to read the organizational units that you have selected</p>	
<p>Synchronization rules</p> <p>Enable Synchronize contacts.</p> <p>Enable Pull Users as Contacts</p> <p>By default, all the users of the AD are synchronized.</p> <p>You can select to pull specific Organizational units (Selection by OU) or members of a Given Group (Selection by Group)</p>	

The configuration is now completed.

Now you need to download the local agent and its configuration file and run it locally from a member server.

In the connector configuration, at the bottom of the configuration, there are 2 links to download the local agent.

Synchronization Rules

OFF ON Synchronize Users
 OFF ON Synchronize Groups
 OFF ON Synchronize Contacts

OFF ON Pull Users as Contacts (Galsync)
 OFF ON Full Sync

OFF ON Selection by OU

OFF ON Selection by Group

Pulling GroupName

Active Directory agent:

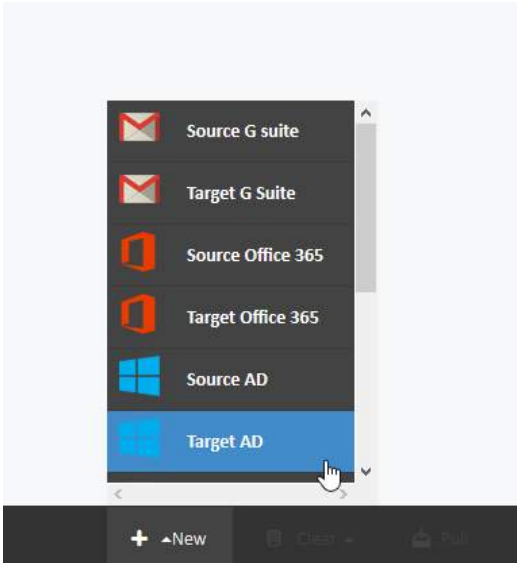
Active Directory agent:

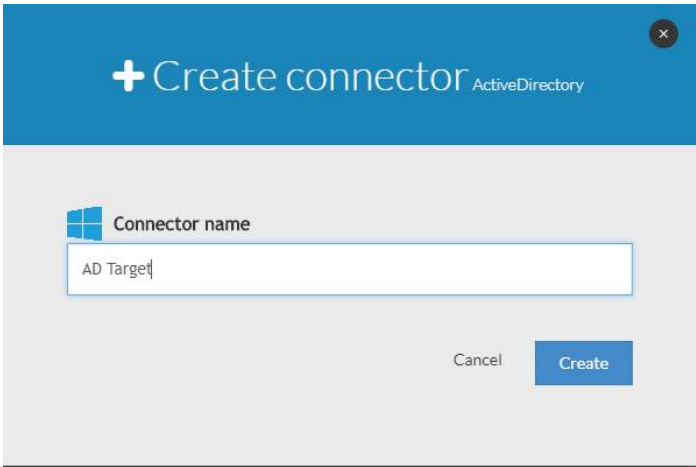
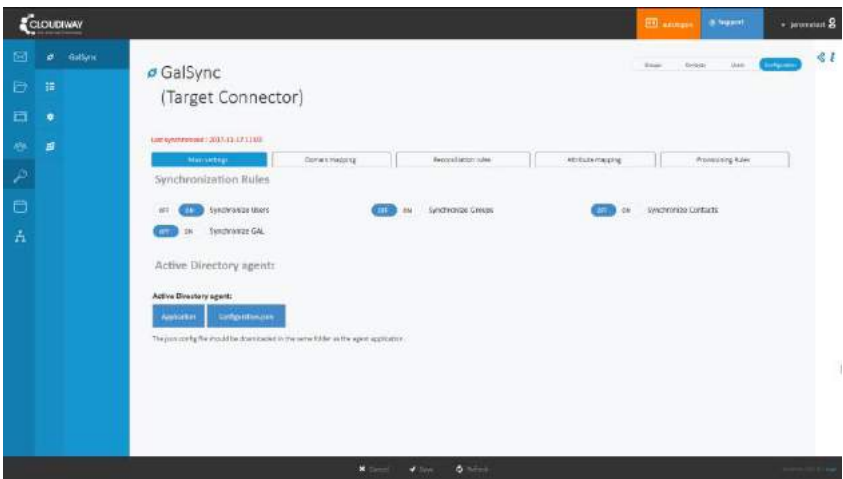
The json config file should be downloaded in the same folder as the agent application.

6.2 OnPrem Active Directory as target

The Cloudiway SAAS platform also allows to provision On Premises Active Directory.

In the connector list, create a new connector of type **Active Directory Target**



<p>Give it a name and click on Create</p>	
<p>Fill the required fields.</p> <p>Username / password must be a single user that has permissions to read the organizational units that you have selected</p> <p>Enable Synchronize GAL</p> <p>Enable Synchronize Contacts</p>	

The target AD connector works differently from the other. Provisioning actions are written in powershell and you have the control and ability to modify it. It's using Exchange powershell to manipulate objects. Below is an example of provisioning script. Please contact our consulting team to get a complete working script.

```

#*****
#      CreateContact
#*****
Function CreateContact
{
    Param($Attributes,$UTFDecoded)

    $Name = GetAttributeValue $Attributes "mail"
    if (!$Name)
  
```

```

    {
        $err = "Error: Name is not provided : " + $UTFDecoded
        return $err
    }

    $FirstName = GetAttributeValue $Attributes "FirstName"
    $LastName = GetAttributeValue $Attributes "LastName"
    $DisplayName = GetAttributeValue $Attributes "DisplayName"
    $Alias = GetAttributeValue $Attributes "Alias"
    $externalEmailAddress = GetAttributeValue $Attributes "mail"
    $country = GetAttributeValue $Attributes "country"
    $City = GetAttributeValue $Attributes "City"
    $Department = GetAttributeValue $Attributes "Department"
    $State = GetAttributeValue $Attributes "State"
    $Office = GetAttributeValue $Attributes "Office"
    if (!$LastName)
    {
        $LastName = $null
    }
    if (!$firstName)
    {
        $firstName = $null
    }
    Write-Host "FirstName = $FirstName , LastName = $LastName , DisplayName = $DisplayName ,
Alias= $Alias"

    $ADGuid = new-MailContact -Name $Name -DisplayName $DisplayName -
OrganizationalUnit $OrganizationalUnit -DomainController $DCName -FirstName $FirstName -
LastName $LastName -externalEmailAddress $externalEmailAddress -alias $Alias
    Write-Host "after new-MailContact $($ADGuid.Guid)"

    #Set-MailContact -identity $Name -HiddenFromAddressListsEnabled $true -
DomainController $DCName

    # Now set additional attributes
    if (!$country)
    {
        Set-Contact -identity $Name -city $City -Department $Department -state $State -
office $Office -DomainController $DCName
    }
    else
    {
        Set-Contact -identity $Name -city $City -Department $Department -state $State -office $Office
-country $country -DomainController $DCName
    }

    #return the AD Guid.
write-host $ADGuid.Guid

```

```
return $ADGuid.Guid  
}
```

7 Automatic schedule

When everything is up and running, you can schedule the synchronization to run every x hours.

Click on **Global Settings**.

Connectors

Jobs

Global Settings

History

IAM / Global Settings / Edit

Run Settings | Attribute Precedence

Automatic runs hour period

Expressed in hours, 0 means never

Automatic runs pull targets period

Every x automatic run, 0 means never

Cancel Save

Schedule it to run every 24 hours. (It's usually sufficient to run one sync per day).

Typical configuration:

- Automatic run period : 24 hours.
- Automatic Pull Targets : 1
 - o This will ensure that target connectors are pulled at each pass.
 - o In large environments, Cloudiway might advise you to pull the targets every n passes.

8 Troubleshooting

Cloudiway provides an extensive knowledge base with many resources, including common error messages, video guides and downloads.

Please visit the knowledge base here (where you can search for keywords or read through topics):
<http://kb.cloudiway.com/>

The knowledge base also contains information on how you can ask for further support, should you require it.