

Synchronize Users against Azure AD Source

Starting from December 2022, you can provision Imagicle users from an Azure AD source. To enable such users' synch, you must involve Imagicle Technical Support and provide them some data about your geographic area.

Before illustrating the whole procedure, let us highlight the **requirements**:

- Imagicle UC Cloud Suite must be in place, or a Cloud-connected on-prem/hosted UC Suite, reaching "imagicle.cloud" domain on both TCP ports 443 and 1636.
- The customer's delegate, in charge to apply the configuration, should have administrative access to Azure portal.

Moreover, consider the following **limitations**, coming from Azure AD:

- disabled users are not provisioned;
- users belonging to nested groups are not provisioned: to include them you need to explicitly add the nested groups to the provisioning scope (see [here](#) for more details).
- Null/empty user fields are not provisioned by Azure AD (see [here](#)). This means that if a synchronized user property is cleared on Azure, the change will not reflect automatically on Imagicle suite.

Request to Imagicle Technical Support

If above requirements are satisfied, please proceed by contacting Imagicle Support team to provide the following information:

- Customer name
- Optionally: a short nickname to identify the customer, with no spaces inside, like "ACME-INC". max 35 chars length. If not provided, Imagicle invents one.
- Geographical macro-area where customer is located. I.e. Europe, Americas, middle-east, etc.

Imagicle Support applies an internal configuration in our Cloud, to enable a LDAP interface. This might requires few days. Once done, they are going to return you the following:

- **Az_client_creds.json**: A script text file including Azure AD token.
- **Suite_ldap_creds.txt**: this is a text file including all details and credentials to manually configure the LDAP synch connector in Imagicle UCX Suite, as explained at the bottom of this KB.

How to enable Users Synchronization on Azure

Please download the Windows executable to automatically apply Azure configuration (attached to this KB article) and save it in a local folder (for instance C:\Temp).

Copy into the same folder the configuration json file provided by Imagicle.

Open a Command Prompt window (CMD) as administrator and move to the same folder:

```
cd \Temp
```

Then type the following command:

```
ImagicleUserCloudSync Az_client_creds.json --disable-autostart --app-name "Imagicle Users Synch"
```

(supposing the json file provided by Imagicle is named `Az_client_creds.json`).

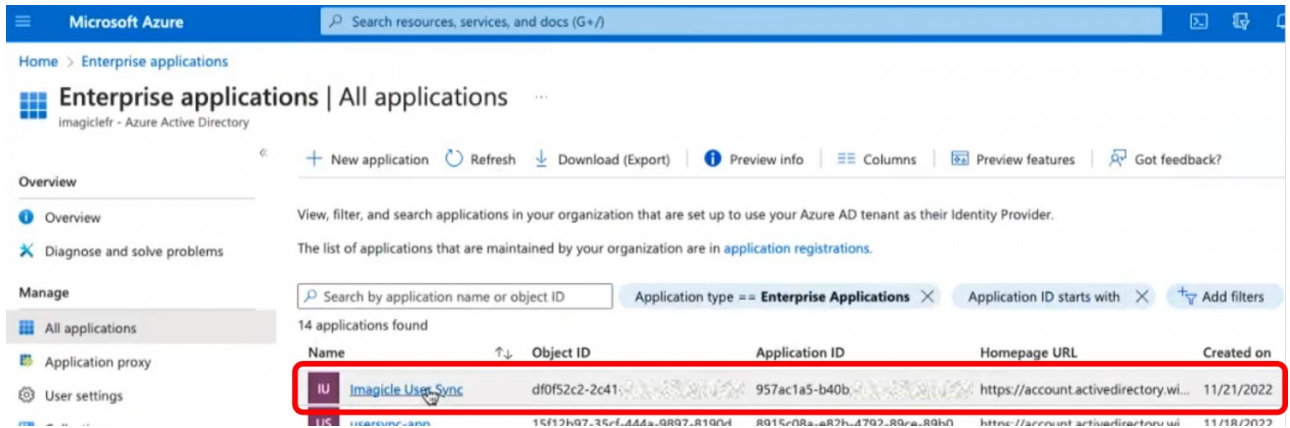
Once you execute above command, a pop-up window appears prompting you to enter your Microsoft admin credentials. Once done, you can close the pop-up window.

After few seconds, the process completes and you can track the configuration steps as below sample:

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```
2022-11-21 17:31:14,986|INFO |*****  
2022-11-21 17:31:14,987|INFO |* Welcome to Imagicle - Azure application creation procedure. *  
2022-11-21 17:31:14,988|INFO |*****  
2022-11-21 17:31:14,988|INFO |You need to authenticate to continue...  
2022-11-21 17:31:21,454|INFO |Creation of application Imagicle User Sync in progress. (It may take a while)  
2022-11-21 17:31:43,716|INFO |Creation of application Imagicle User Sync completed. Configuring ...  
2022-11-21 17:32:06,743|INFO |The Imagicle user sync enterprise application is configured  
2022-11-21 17:32:08,874|INFO |The sync will start soon  
2022-11-21 17:32:08,875|INFO |Process completed correctly  
+ AzCloudSync
```

The Imagicle script automatically creates an Azure **Enterprise** Application. You can view it from Azure web portal, as below sample:



This script applies a default field mapping according to below screenshot:

Attribute Mapping ...

 Save  Discard

Attribute Mappings

Attribute mappings define how attributes are synchronized between Microsoft Entra ID and customappsso

customappsso Attribute	Microsoft Entra ID Attribute
userName	objectId
active	Switch([IsSoftDeleted], "False", "True", "True", "False")
displayName	displayName
emails[type eq "work"].value	mail
preferredLanguage	preferredLanguage
name.givenName	givenName
name.familyName	surname
addresses[type eq "work"].streetAddress	streetAddress
addresses[type eq "work"].locality	city
addresses[type eq "work"].region	state
addresses[type eq "work"].postalCode	postalCode
addresses[type eq "work"].country	country
phoneNumbers[type eq "work"].value	telephoneNumber
phoneNumbers[type eq "mobile"].value	mobile
phoneNumbers[type eq "fax"].value	facsimileTelephoneNumber
nickName	userPrincipalName
urn:ietf:params:scim:schemas:extension:enterprise:2.0:User:department	department

[Add New Mapping](#)

Show advanced options

If you click on the Imagicle application, you can access the "Provisioning" menu and trigger a users' synch by hitting "Start provisioning" button. If the synch is correctly accomplished, you get the number of imported users (33 in below sample):

Microsoft Azure Search resources, services, and docs (G+/)

Home > Enterprise applications | All applications > Imagicle User Sync

Imagicle User Sync | Provisioning

Enterprise Application

Start provisioning Stop provisioning Restart provisioning Edit provisioning Provision on demand

Overview
Deployment Plan
Diagnose and solve problems

Manage

- Properties
- Owners
- Roles and administrators
- Users and groups
- Single sign-on
- Provisioning
- Application proxy
- Self-service

Current cycle status

Initial cycle completed.

100% complete

Users
33

[View provisioning logs](#)

Statistics to date

- View provisioning details
- View technical information

Manage provisioning

- Update credentials
- Edit attribute mappings
- Add scoping filters
- Provision on demand

Interval between each users' synch can't be below 40 minutes.

How to apply filters to provisioned users

By default, above configuration imports ALL users available in Azure AD. You can limit the amount of data by applying either a filter based on users/groups or based on attributes content. Both filtering methods are explained in the following paragraphs.

Filter based on Users/Groups list

Within the Imagicle Enterprise Application, please click on left panel's "Users and groups" menu option and browse/search for users/groups you wish to import from Azure AD. Just tick the box besides each user or group to enable the import. See below sample:

Microsoft Azure Search resources, services, and docs (G+)

Home > Imagicle Users Synch | Users and groups

Add Assignment

Imagicle spa

Users and groups

None Selected

Select a role

User

Users and groups

Try changing or adding filters if you don't see what you're looking for.

Search

All Users **Groups**

	Name	Type	Email
<input type="checkbox"/>	AAD DC Administrators	Group	
<input type="checkbox"/>	Advanced Services Team	Group	pedServiceTeam@imgicle.onmicrosoft.com
<input type="checkbox"/>	Advanced Services Team	Group	h@imgicle.com
<input type="checkbox"/>	All Company	Group	AllCompany3396251.lwngyepd@imgicle.onmicrosoft.com
<input type="checkbox"/>	AS Team	Group	ASTeam@imgicle.onmicrosoft.com
<input type="checkbox"/>	Blackbelt	Group	blackbelt@imgicle.com

Selected (0)
Reset
No items selected

Assign Select

Filter based on Azure AD attributes

Within the Imagicle Enterprise Application, please click on left panel's "Provisioning" and make sure that "Provision Azure Active Directory Groups" is disabled. See below sample:

Microsoft Azure Search resources, services, and docs (G+)

Home > Enterprise applications | All applications > Imagicle Users Synch | Provisioning > Imagicle Users Synch

Imagicle Users Synch | Provisioning

Save Discard

Overview

Provision on demand

Manage

Provisioning

Users and groups

Expression builder

Monitor

Provisioning logs

Audit logs

Insights

Troubleshoot

New support request

Provisioning Mode

Automatic

Use Microsoft Entra to manage the creation and synchronization of user accounts in Imagicle Users Synch based on user and group assignment.

Admin Credentials

Mappings

Mappings allow you to define how data should flow between Azure Active Directory and customappsso.

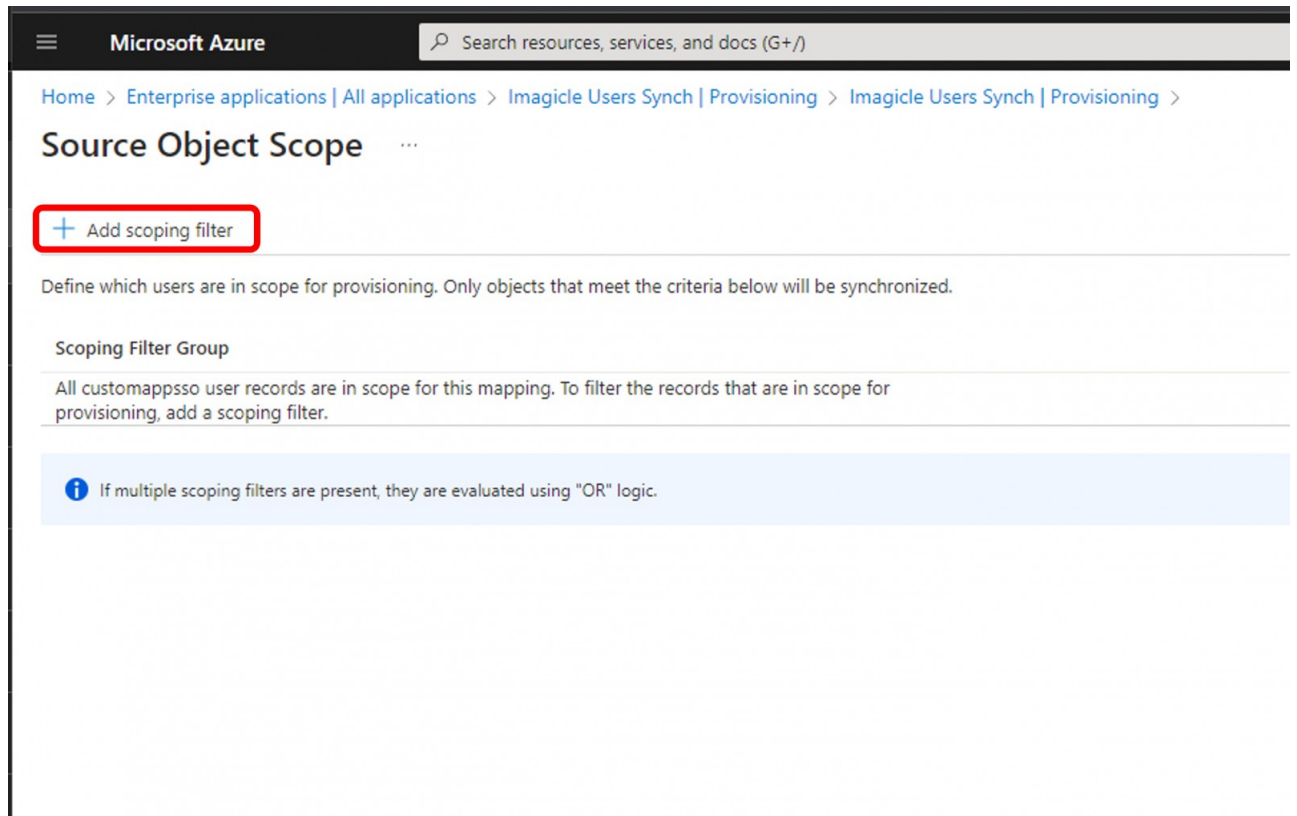
Name	Enabled
Provision Azure Active Directory Groups	No
Provision Azure Active Directory Users	Yes

Restore default mappings

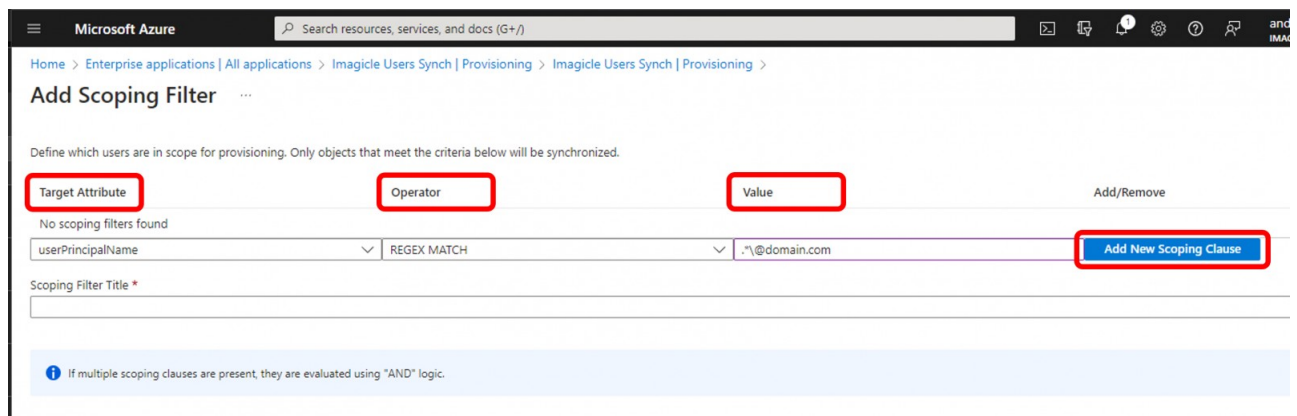
Click on "Provision Azure Active Directory Users" to access the Attribute Mapping page:

The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with the Microsoft Azure logo and a search bar. Below the navigation bar, the breadcrumb trail reads: Home > Enterprise applications | All applications > Imagicle Users Synch | Provisioning > Imagicle Users Synch | Provisioning >. The main heading is "Attribute Mapping" with a three-dot menu icon. Below the heading, there are "Save" and "Discard" buttons. The configuration fields are as follows: "Name" is "Provision Azure Active Directory Users"; "Enabled" is a toggle set to "Yes"; "Source Object" is "User"; "Source Object Scope" is "All records" (highlighted with a red box); "Source Object" is "urn:ietf:params:scim:schemas:extension:enterprise:2.0:User"; "Target Object Actions" includes checked boxes for "Create", "Update", and "Delete". At the bottom, there is a section for "Attribute Mappings" with a table header showing "Azure Active Directory Attribute" and "customannssso Attribute".

Click on Source Object Scope All records. See below:



Click on "Add scoping filter" to invoke the filter editor. See below:



From this page, you can add multiple filters, based on different Azure AD attributes available within "Target Attribute" pull-down menu. "Operator" column decides how to match the filter entered within "Value" column. Once the row is properly compiled, you can click on rightmost button to add the rule and create another row for additional filtering.

Limitations

- Multiple filtering rules are applied with "AND" operator
- "IsMemberOf" filter is currently not supported.
- The members attribute on a group is currently not supported.
- Filtering is not supported for multi-valued attributes.
- Scoping filters returns "false" if the value is null/empty.

More details are available within [this](#) Microsoft web page.

How to import custom fields

Imagicle Users' database supports 10 custom fields, to be mapped with **ExternalID** attribute in Azure during the provisioning. Please find below the procedure:

Access to Azure web portal and select "Imagicle Users Synch" Enterprise Application. From the "Overview", please click on "Provisioning":

The screenshot shows the Microsoft Azure portal interface for the 'Imagicle User Synch' Enterprise Application. The left-hand navigation pane includes options like Overview, Deployment Plan, Diagnose and solve problems, Manage, Properties, Owners, Roles and administrators, Users and groups, Single sign-on, Provisioning (highlighted with a red arrow), Application proxy, Self-service, and Custom security attributes. The main content area displays the 'Properties' section with fields for Name (Imagicle User Synch), Application ID (1f3c02f8-4cbd-4f5d-b290-2...), and Object ID (b51a0d63-03f4-4faf-a1f3-8...). Below this is the 'Getting Started' section with a task card titled '1. Assign users and groups' and a link to 'Assign users and groups'.

Hit "Edit provisioning":

Test Imagicle Users Synch 2 | Overview



Start provisioning Stop provisioning Restart provisioning Edit provisioning Provision on demand | Refresh ...

Overview

- Provision on demand
- Manage**
 - Provisioning
 - Users and groups
 - Expression builder
- Monitor**
 - Provisioning logs
 - Audit logs
 - Insights

Current cycle status

Incremental cycle stopped. 0% complete

[View provisioning logs](#)

Statistics to date

- [View provisioning details](#)
- [View technical information](#)

Manage provisioning


- [Update credentials](#)
- [Edit attribute mappings](#)
- [Add scoping filters](#)
- [Provision on demand](#)

Expand "Mapping" section and click on "Provision Entra ID Users":

Provisioning

 Save  Discard

Provisioning Mode

Automatic 

Use Microsoft Entra to manage the creation and synchronization of user accounts in Imagicle User Synch based on user and group assignment.

Admin Credentials

Mappings

Mappings

Mappings allow you to define how data should flow between Microsoft Entra ID and customappsso.

Name	Enabled
Provision Microsoft Entra ID Groups	Yes
Provision Microsoft Entra ID Users	Yes

Restore default mappings

Settings

Provisioning Status

On Off

In "Attribute Mapping" section, please hit "Add new mapping" at the bottom of the screen:

Attribute Mapping

Save ✕ Discard

addresses[type eq "work"].locality	city	Edit	Delete
addresses[type eq "work"].region	state	Edit	Delete
addresses[type eq "work"].postalCode	postalCode	Edit	Delete
addresses[type eq "work"].country	country	Edit	Delete
phoneNumbers[type eq "work"].value	telephoneNumber	Edit	Delete
phoneNumbers[type eq "mobile"].value	mobile	Edit	Delete
phoneNumbers[type eq "fax"].value	facsimileTelephoneNumber	Edit	Delete
nickName	userPrincipalName	Edit	Delete
urn:ietf:params:scim:schemas:extension:enterprise:2.0...	department	Edit	Delete

[Add New Mapping](#)

Show advanced options

In "Edit Attribute", please choose the following options:

- "Mapping type" = **Expression**
- "Target attribute" = **ExternalID**
- "Expression" = see sample in below picture.

Edit Attribute

A mapping lets you define how the attributes in one class of Microsoft Entra object (e.g. Users) should flow to and from this application.

Mapping type

Expression

The expression was correctly parsed.

Default value if null (optional)

Use the expression builder

Target attribute *

Match objects using this attribute

Matching precedence

Expression syntax

Custom fields and relevant values are mapped through a dedicated "Expression" whose syntax follows Azure Entra ID attribute mapping rules. See [here](#) for more details.

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Imagicle feature implies that custom fields are mapped as "CustomX=", [Attribute] for each custom field to be enabled, where each custom field is separated from the next one by adding "\$\$\$" separator.

See below a typical expression sample:

```
Join("$$$",  
Append("customX=", [Microsoft Entra ID Attribute1]),  
Append("customY=", [Microsoft Entra ID Attribute2])  
)
```

where "Microsoft Entra ID Attribute" corresponds to the actual Azure AD field to be mapped.

If the expression syntax is correct, by clicking outside of expression box, you should read the message "The expression was correctly parsed."

Final check

Once above configuration has been applied, you can manually launch a new provisioning by following below steps:

1. Stop provisioning (set to "pause")
2. Restart provisioning (cancel current provisioning, if already running)
3. Start provisioning. This is triggering a new provisioning from scratch. This should display an "initial cycle" message.

Current limitations

1. Custom fields can include max 256 alphanumeric characters
2. Custom fields content should NOT include "\$\$\$" string, already used as expressions separator.
3. If a custom field mapping rule is removed, custom field already populated by the last synchronization is not blanked.
4. If the expression is entered with a wrong syntax or field length is greater than 256 chars or content includes above mentioned separator, Azure returns a generic "Error 500" with no details.

To check what Azure actually sends as External ID attribute value, you can perform a manual provisioning of a single user and then access to Dataflow section. See below:

The screenshot shows the Azure portal interface for configuring an attribute mapping. The main heading is "Perform action" for the "externalId" attribute. The configuration table is as follows:

Attribute mapping	Expression
Expression	Join("\$\$\$", "ImagicleCustomFields", Append("Custom1=", [city]), Append("Custom2=", [jobTitle]))
Source parameters	Constant
Constant	Custom2=
Source attribute value	SourceAttributeValue
Source attribute value	Join("\$\$\$", "ImagicleCustomFields", Append("Custom1=", [city]), Append("Custom2=", [jobTitle]))
Target attribute values	New Value
Target attribute values	Old Value
Target attribute values	ImagicleCustomFields\$\$\$Custom1=\$\$\$Custom2=R&D Manager

The "Target attribute values" section is highlighted with a red box, showing the "New Value" as "ImagicleCustomFields\$\$\$Custom1=\$\$\$Custom2=R&D Manager".

Configurations on Imagicle UC Suite

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Please login to Imagicle UC Suite web portal as administrator and go to Administration » Synchronize users with an external data source » Configure Data Sources >>

Select LDAP from pull-down menu and add a new source, with a name of your choice:

Administration **User Management** System Parameters Licenses Synchronizers

<< Back

SELECT DATA SOURCE TYPE

LDAP ▾

There is no adapter yet

ADD NEW SOURCE

Name	Add
Azure_AD_Connector	

Refresh status

LDAP connector should be configured as per the **Suite_ldap_creds.txt** file provided by Imagicle support. See below sample:

NAME Azure_AD_Connector (LdapAdapter)

LDAP ADAPTER CONNECTION SETTINGS

Server (DNS name or IP address)	usersynch-ldap-imagicle.cloud
Server Port <small>(389 for standard AD/LDAP, 636 for secure LDAP)</small>	1636
Use secure connection	<input checked="" type="checkbox"/>
LDAP Object Path	ou=people,o=imagicle,dc=imagicle
LDAP Filter	(objectClass=inetOrgPerson)
Username@domain	uid=suite,ou=admin,o=imagicle,dc=imagicle
Password <input type="checkbox"/>

Add Cancel

You can manually run the users' synch straight away or just wait for automatic synch performed during night time (midnight, by default).

LDAP Synch Rules

1) In the Users' synch rules select "Use local IAS authentication" as Users authentication mode.

2) While we import data from Azure AD into our Cloud LDAP and, in turns, into Imagicle UC Suite, we are applying the following standard fields mapping;

Azure label	Azure attribute	LDAP attribute	UCX Suite field
Object ID	objectid	uid	UCX Suite Login Username
Display Name	displayName or uid or cn (commonName) or dn (distinguishedName) or mail	displayName or uid or cn (commonName) or dn (distinguishedName) or mail	PBX username
Email	mail	mail	Single Sign-on id Email
First Name	givenName	givenName	First Name
Last Name	surname	sn	Last Name
Preferred language	preferredLanguage	preferredLanguage	Preferred language
Business phone	telephoneNumber	telephoneNumber	First Extension Number
Department	department	departmentNumber	Department
Mobile phone	mobile	mobile	Mobile business number
Street address	streetAddress	street	User Address
City	city		
State or province	state		
ZIP or postal code	postalCode		
Country or region	country		
Fax number	facsimileTelephoneNumber	facsimileTelephoneNumber	Fax Number
Soft-Delete	active	enabled	
UserPrincipalName	UserPrincipalName	displayName	SSO username

Some mapping can be manually changed by selecting "Synch Rules" menu option. See below sample for PBX username, mapped to email address to support MS-Teams Call Recording:

IAS USER PARAMETER NAME	CONFIGURE RULE
Users authentication mode	<input checked="" type="radio"/> Enable users authentication against source LDAP server <input type="radio"/> Use local IAS authentication
IAS Login Username	<input checked="" type="radio"/> Import every time from LDAP field uid
PBX username	<input checked="" type="radio"/> Import every time from LDAP field cn (commonName) <input type="radio"/> Keep existing value
Single Sign-On Id	<input type="radio"/> Import every time from LDAP field <input checked="" type="radio"/> Keep existing value
Conversational AI Username	<input type="radio"/> Import every time from LDAP field displayName