OFFICE 365 GROUPS

Power365 Directory Sync
A Guide to Preparing for Office 365 Group Migrations
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Introduction

Migrating Office 365 Groups has never been easier. Available now with Power365 Premium Integration Projects, migrate Office 365 Group conversations (inbox), calendar and files. To prepare for data migrations, utilize Power365 Directory Synchronization to create destination groups, convert existing groups, and synchronize members, owners and any property related to the group.

The purpose of this guide is to walk through the setup of Directory Synchronization workflows to create groups, match and synchronize members and set some specific attributes to their desired values. These tasks will prepare the environment for data migrations using Power365 migration services.

Assumptions

1. This guide is intended for a technical audience with experience in Active Directory, Azure Directory, Microsoft 365, Exchange Online and synchronization/migration tools.
2. This deployment model assumes the client has already successfully migrated their users and mailboxes or is utilizing Power365 to migrate their users and data to the destination tenant.
3. All users and guest users must exist in the destination with a matching attribute to synchronize membership and ownership.
4. This guide assumes only a source and target tenant are in scope. Additional tenants are not detailed or considered in this guide.
5. Mail routing coexistence is not covered by this guide.
6. The reader has an understanding and working knowledge of Unified Groups, better known as Office 365 Groups.

Goals

The goals of this deployment are to achieve the following:

1. Create Office 365 Groups in Target
2. Match & Sync Members and Owners
3. Match & Sync External Guests
4. Sync common attribute mappings
5. Customize some attribute mappings
6. Process Deletes in Target (Advanced)
7. Schedule Continuous Sync

Requirements

1. Joined the Early Adopters Program and the feature has been enabled
2. Created a Project Type of Premium Integration for data migrations
3. Has been Licensed for Directory Sync and Integration (Pro)
4. To migrate Office 365 Group content, Mail and OneDrive licenses are required
5. Access to 1 Global Administrator Account for each environment
6. The Target Users must already exist before matching so that membership synchronization can occur.
7. The source and target users must have matching attributes values to identify and pair objects together for membership/ownership synchronization.

Deployment

To achieve the stated goals, the following Directory Sync configurations must be completed prior to any data migrations. This guide will cover the setup and configuration of these items.

1. **Environment** – An environment end-point will be defined for each Office 365 tenant.
2. **Template** – A set of rules and mappings will be created for the Office 365 Group Workflows.
3. **Workflow** – Three (3) workflows will be created to manage this process. One for Reads, one for Matching and Staging and finally one for Writes.

Piloting

Before deploying in production and creating all the desired Office 365 Groups, it is important to first test the workflows to ensure they function as desired. This guide will cover the general test scenarios to validate workflows prior to production to ensure accuracy and predictability.

Production Directory Synchronization

After validation is complete as part of the Pilot, it is time to schedule and prepare for the first production synchronization. Before running the first sync there is most likely change control to schedule and approve, along with preparing other systems that may be impacted by these changes. This guide will review the general production rollout of creating the groups, synchronizing members and scheduling the workflows for continuous sync.

Deploy

In this deployment, local Active Directory will not be in scope. This guide will focus on Cloud only end-points related to Office 365 Groups and Members.

Environments

An environment is an end-point connection that can control the scope of objects read. This guide will walk through how to create the source and target cloud environments.

To create an environment, an Office 365 Global Administrator is required during setup for each tenant. During the initial setup, Power365 Directory Sync will create a new unlicensed account within each tenant. This account is used to orchestrate some of the PowerShell automation related to directory synchronization services. This account will be created with the Exchange and User Administrator Roles to facilitate its designated jobs.

The Global Administrator account used to setup the environments, is required for directory synchronization services, as it is used to facilitate Graph API related automation activities. The account role can be safely lowered to User and Exchange Administrator once the previously mentioned PowerShell account is created.
How to create an environment

Follow these steps to setup the cloud environment end-points. If there is an existing environment end-point from a different workflow, it can be reused.

1. Login to Power365
2. Navigate to Environments
3. Click the New button
4. Click Cloud as the environment type, Click Next
5. Name the environment, Click Next
6. Have the Global Administrator credentials handy for the tenant
7. Click the Connect button
8. Login to Office 365
9. Accept the requested Application Permissions
10. Do not select any discovery groups, Click Next (See Pro Tips 1 & 2)
11. Place a check in the “INCLUDE OBJECTS SYNCHRONIZED WITH A LOCAL ACTIVE DIRECTORY VIA AZURE ACTIVE DIRECTORY CONNECT” option, Click Next
12. Click Finish
13. Repeat steps 2 – 12 for the next environment

**Pro Tip 1:** No Group is selected in step 10 because to sync membership all users must be read from all environments. Office 365 Groups cannot be added to a Distribution List, therefore cannot be filtered in the environment by Group. Filtering by group can be accomplished in the Stage step.

**Pro Tip 2:** For testing purposes, one may add a select few Office 365 Groups to the Group filter. This will filter out any other groups or users from being read. However, membership cannot sync in this case unless processed in a separate workflow.

Templates

Follow these steps to build a new template to create Unified Groups and synchronize members. If there is an existing template, it can be reused, but it must fit the needs of this deployment. A new template is recommended for Office 365 Groups.

How to create a template

1. Login to Power365
2. Navigate to Templates
3. Click the New button
4. Name and Describe the template, Click Next
5. Click Cloud as the source environment type, Click Next
6. Click Cloud as the target environment type, Click Next
7. Set CREATE NEW USERS AS = SKIP
8. Set IF USERS ARE Matched = UPDATE (See Pro Tip 3)
9. Click Next
10. Set CREATE GROUPS AS = AS IS (See Pro Tip 4)
11. Set IF GROUPS ARE Matched = UPDATE
12. Click Next
13. Set CREATE NEW CONTACTS AS = DO NOT CREATE
14. Set IF CONTACTS ARE Matched = DO NOT SYNC
15. Click Next
16. Enter a default password, Click Next
17. Leave the default mappings, those will be addressed later in the guide
18. Click Next
19. Click Finish

**Pro Tip 3:** The IF USERS ARE Matched option must be set to Update, otherwise users will not match and cannot be synchronized for membership and ownership.

**Pro Tip 4:** To convert existing distribution lists and security groups to Office 365 Groups, set the CREATE GROUPS AS option to OFFICE 365 GROUPS. This will convert any standard group in-scope to an Office 365 (Unified) Group during creation.

**Workflows**

Follow these steps to create three (3) new workflows for reading, matching, staging and writing data. The Delete Objects step will be covered in the advanced topics section.

**How to create a read workflow**

1. Login to [Power365](#)
2. Navigate to [Workflows](#)
3. Click the *New* button
4. *Name* and *Describe* the template, Click Next
5. Select the Cloud environments created, Click Next
6. Select ONE-WAY SYNC, Click Next
7. Delete all the steps, except the *Read From* step
8. Click the *X* in the top right corner then click *Yes* to approve the deletion
9. Click the *Select* button in the Read step
10. Select both environments, Click *OK*
11. Click *Next*
12. Leave the schedule set to *Manually*, Click *Next*
13. Click *Skip*
14. Click Finish

**How to create a match & stage workflow**

1. Login to Power365
2. Navigate to Workflows
3. Click the New button
4. Name and Describe the template, Click Next
5. Select the Cloud environments created, Click Next
6. Select ONE-WAY SYNC, Click Next
7. Delete all the steps, except the Match and Stage steps
8. Click the X in the top right corner then click Yes to approve the deletion
9. The Match Objects step should be Step 1
10. Click the Select button in the Match Objects step
11. Choose the Source and Target environments from the drop-down menu
12. Choose the source and target attribute matching pairs
13. Choose up to 5 matching pairs by clicking the Add Attribute button
14. Each additional matching pair is an “OR” transaction
15. Each matching pair is in order of importance
16. Once a match is found, subsequent matching pairs are not evaluated
17. Do not check the MATCH ACROSS ALL OBJECT TYPES option
18. Click OK
19. Click the Select button in the Stage Data step
20. Locate and select the Template created earlier, Click Next

21. Choose the Source environment, Click Next
22. Choose the Target environment, Click Next
23. Choose the target domain, Click Next (See Pro Tip)
24. To filter out other object types from being considered:
   a. RecipientTypeDetails = GroupMailbox
   b. Set operator to And
   c. RecipientType = MailUniversalDistribution
25. Click Next
26. Click Finish
27. Click Next
28. Leave the schedule set to Manually, Click Next
29. Click Skip

*Figure 1: Example Stage Data Filter*
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How to create a write workflow

1. Login to Power365
2. Navigate to Workflows
3. Click the New button
4. Name and Describe the template, Click Next
5. Select the Cloud environments created, Click Next
6. Select ONE-WAY SYNC, Click Next
7. Delete all the steps, except the Write To step
8. Click the X in the top right corner then click Yes to approve the deletion
9. Click the Select button in the Read step
10. Select both environments, Click OK
11. Click Next
12. Leave the schedule set to Manually, Click Next
13. Click Skip
14. Click Finish

Pilot

First Read From

Before continuing with any further configurations, planning or testing, it is important to start reading the Azure directory data from source and target environments. Remember, the goal is to match and synchronize group members and owners. To do so, there is a need read in all the users and groups. Depending on the number of objects in each environment, this process could take several hours or days to populate initially.

Configuration may continue while the first read job runs in the background.

How to manually start a workflow

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Read workflow created earlier
4. Click the Run button
5. Click Yes to queue the job
Prepare Test Data

During every pilot, there are generally two (2) stages of setup and testing. The first stage entails testing use cases and validating data using test Group data that is manually generated and controlled. This stage is used to verify the configurations and make any final adjustments to the workflow or mappings.

The second stage normally involves identifying and utilizing a subset of production Group data. This stage is used to verify bulk operations work as expected and production data does not introduce any new challenges to a production deployment plan.

When following these two (2) stages, it is recommended that the first set of tests involve creating single (1) Office 365 Groups, one at a time. Also, control membership, ownership and other parameters that may require custom values in the target to ready them for migrations and cutover. By testing one group at a time and controlling what data is present in each, one may better determine the outcome and verify the desired results are met.

When starting stage two, determine a group of production Office 365 groups that meet the average size and complexity, relative to production. Do not use groups that could cause confusion to end-users during piloting. Choose groups that have users that are aware and participating in our pilot project.

To achieve isolated object testing, the next section will guide one through how to setup filters on objects based on the desired attribute values present in the environments.

Stage Data Filters for Testing

It is helpful to be able to isolate specific group(s) to run tests and validate the results. If undesired results are found, one may adjust the workflow or mappings to meet expectations. The following section will guide one how to setup stage data filters to only sync and create 1 or more groups.

How to create a stage data filter for Office 365 Groups

Follow these steps to modify the existing Stage Data step to meet the test group criteria.

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Match & Stage workflow created earlier
4. Click the Settings button
5. Click the Sync Workflow tab
6. Click the **Select** button in the Stage Data step
7. Click **Next** 4 times
8. Previously two (2) filters were added to isolate Office 365 groups from being processed during the Stage Data step
9. Now add one (1) additional filter to isolate one (1) or more test groups
10. In this example, all our test groups email address starts with “O365TestGroup”
11. If the preference is to only test 1 group at a time, add the full email address, **O365TestGroup01@source.com**
12. If using the full email address, change it to the next test group after tests are completed for the previous test group
13. For this test, a group of five (5) Office 365 Groups that have email addresses that start with “O365TestGroup”
14. If the **WindowsEmail``` attribute meets the pilot requirements, adjust the attribute or the conditional value
15. Set the following:
   a. **RecipientTypeDetails** = **GroupMailbox**
   b. Set operator to **And**
   c. **RecipientType** = **MailUniversalDistributionGroup**
   d. Set operator to **And**
   e. **WindowsEmailAddress, Starts With, <O365TestGroups>**
16. Click **Next**
17. Click **Finish**

*Figure 1: Example Stage Data Filter*
Mappings

Now that the test groups are isolated, the mappings need to be configured to meet the production goals of creating and synchronizing Office 365 groups. When synchronizing groups and membership, not all the default mappings provided in a standard template are required. The following sections will provide guidance on the minimal required mappings, the recommended mappings and all the eligible mappings associated with an Office 365 (Unified) Group. For convenience, an example mapping CSV file is provided that may be added to a template.

Required Mappings

Table 1 illustrates the minimum attributes required to create and synchronize a Unified Group.

<table>
<thead>
<tr>
<th>Mapping Attribute Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>ManagedBy</td>
<td>Required to Sync Owners</td>
</tr>
<tr>
<td>Member</td>
<td>Required to Sync Members</td>
</tr>
<tr>
<td>Name</td>
<td>Required by Directory Sync</td>
</tr>
<tr>
<td>RecipientType</td>
<td>Required by Directory Sync</td>
</tr>
<tr>
<td>RecipientTypeDetails</td>
<td>Required by Directory Sync</td>
</tr>
</tbody>
</table>

Table 1: Minimal Required Mapping Attributes for Unified Groups

Recommended Mappings

Table 2 illustrates the recommended attributes required to create and synchronize a Unified Group. This list of attributes compliments the required attributes. Additional details about these parameters can be found here.

<table>
<thead>
<tr>
<th>Mapping Attribute Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>AccessType</td>
<td>Control Privacy of the Group</td>
</tr>
<tr>
<td>Alias</td>
<td>Control the Alias Group Name</td>
</tr>
<tr>
<td>AutoSubscribeNewMembers</td>
<td>Control New Member Subscriptions</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Control the Group Display Name</td>
</tr>
<tr>
<td>EmailAddresses</td>
<td>Control the Proxy Addresses</td>
</tr>
<tr>
<td>HiddenFromAddressListsEnabled</td>
<td>Control GAL Visibility</td>
</tr>
<tr>
<td>HiddenGroupMembershipEnabled</td>
<td>Control Member Visibility</td>
</tr>
<tr>
<td>Language</td>
<td>Control the Group Language</td>
</tr>
<tr>
<td>Notes</td>
<td>Control the Group Description</td>
</tr>
<tr>
<td>RequireSenderAuthenticationEnabled</td>
<td>Control Internal &amp; External Emails</td>
</tr>
<tr>
<td>WelcomeMessageEnabled</td>
<td>Control Auto-Welcome Messages</td>
</tr>
<tr>
<td>WindowsEmailAddress</td>
<td>Control the Primary Email Address</td>
</tr>
</tbody>
</table>

Table 2: Recommend Mapping Attributes for Unified Groups
Eligible Mappings

Table 3 illustrates all eligible attributes available for modification within a Unified Group. This list includes all the previously mentioned attributes. If the accepted values column is blank, then that parameter does not require the $true switch to enable it. The $false switch is accepted in most cases. Additional details about these parameters and their constraints can be found [here](#) and [here](#).

<table>
<thead>
<tr>
<th>Mapping Attribute Name</th>
<th>Accepted Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>AcceptMessagesOnlyFrom</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>AcceptMessagesOnlyFromDLMembers</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>AcceptMessagesOnlyFromSendersOrMembers</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>AccessType</td>
<td>&lt;Public</td>
</tr>
<tr>
<td>AdministrativeUnits</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>Alias</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>AllowAddGuests</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>AlwaysSubscribeMembersToCalendarEvents</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>AutoSubscribeNewMembers</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>BypassModerationFromSendersOrMembers</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>CalendarMemberReadOnly</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>Classification</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>ConnectorsEnabled</td>
<td></td>
</tr>
<tr>
<td>CustomAttribute1</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute10</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute11</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute12</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute13</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute14</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute15</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute2</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute3</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute4</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute5</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute6</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>Mapping Attribute Name</td>
<td>Accepted Values</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>CustomAttribute7</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute8</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>CustomAttribute9</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>DataEncryptionPolicy</td>
<td>&lt;DataEncryptionPolicyIdParameter&gt;</td>
</tr>
<tr>
<td>DisplayName</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>EmailAddresses</td>
<td>&lt;ProxyAddressCollection&gt;</td>
</tr>
<tr>
<td>EmailAddressPolicyEnabled</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>ExtensionCustomAttribute1</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ExtensionCustomAttribute2</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ExtensionCustomAttribute3</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ExtensionCustomAttribute4</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ExtensionCustomAttribute5</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>GrantSendOnBehalfTo</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>HiddenFromAddressListsEnabled</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>HiddenFromExchangeClientsEnabled</td>
<td><strong>Currently Not Available is Mappings</strong></td>
</tr>
<tr>
<td>HiddenGroupMembershipEnabled</td>
<td></td>
</tr>
<tr>
<td>IsExternalResourcesPublished</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>IsMailboxConfigured</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>IsMembershipDynamic</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>Language</td>
<td>&lt;CultureInfo&gt;</td>
</tr>
<tr>
<td>MailTip</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>MailTipTranslations</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ManagedBy</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>MaxReceiveSize</td>
<td>&lt;Unlimited&gt;</td>
</tr>
<tr>
<td>MaxSendSize</td>
<td>&lt;Unlimited&gt;</td>
</tr>
<tr>
<td>Member</td>
<td>&lt;RecipientIdParameter[]&gt;</td>
</tr>
<tr>
<td>ModeratedBy</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>ModerationEnabled</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Mapping Attribute Name</td>
<td>Accepted Values</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td>Notes</td>
<td>&lt;String&gt;</td>
</tr>
<tr>
<td>PrimarySmtpAddress</td>
<td>Same as WindowsEmailAddress</td>
</tr>
<tr>
<td>RecipientTypeDetails</td>
<td></td>
</tr>
<tr>
<td>RecipientType</td>
<td></td>
</tr>
<tr>
<td>RejectMessagesFromSendersOrMembers</td>
<td>&lt;MultiValuedProperty&gt;</td>
</tr>
<tr>
<td>RejectMessagesFrom</td>
<td></td>
</tr>
<tr>
<td>RejectMessagesFromDLMembers</td>
<td></td>
</tr>
<tr>
<td>RequireSenderAuthenticationEnabled</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>SubscriptionEnabled</td>
<td>&lt;$true</td>
</tr>
<tr>
<td>WelcomeMessageEnabled</td>
<td></td>
</tr>
<tr>
<td>WindowsEmailAddress</td>
<td>&lt;$smtpAddress&gt;</td>
</tr>
</tbody>
</table>

**Default Example Mappings File**

In this example mapping file, the required and recommended attributes for Unified Groups are included with no custom mappings or expressions. For examples of how to use advanced mappings, see the Advanced Mapping section at the end of this guide.

<table>
<thead>
<tr>
<th>Target</th>
<th>Source</th>
<th>Condition</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AccessType</td>
<td>AccessType</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Alias</td>
<td>Alias</td>
<td>!empty(Alias)</td>
<td>Attribute</td>
</tr>
<tr>
<td>AutoSubscribeNewMembers</td>
<td>AutoSubscribeNewMembers</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>DisplayName</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>EmailAddresses</td>
<td>GetProxyAddresses(null, T.EmailAddresses, prefix(Result(&quot;WindowsEmailAddress&quot;), &quot;SMTP:&quot;), prefix(LegacyExchangeDN, &quot;x500:&quot;))</td>
<td>Action = &quot;create&quot;</td>
<td>Expression</td>
</tr>
<tr>
<td>HiddenFromAddressListsEnabled</td>
<td>HiddenFromAddressListsEnabled</td>
<td></td>
<td>Expression</td>
</tr>
<tr>
<td>HiddenGroupMembershipEnabled</td>
<td>HiddenGroupMembershipEnabled</td>
<td>Action = &quot;create&quot;</td>
<td>Attribute</td>
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<tr>
<td>Language</td>
<td>Language</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>ManagedBy</td>
<td>ManagedBy</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Member</td>
<td>Member</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Name</td>
<td>Name</td>
<td></td>
<td>Attribute</td>
</tr>
</tbody>
</table>


First Match Objects & Stage Data

Up to this point cloud environments, a template and 3 workflows were created, data filters and mappings were setup and the first read job was started. If the first read has completed, then move onto the next step of matching and staging. Be sure to review any errors or warnings that may occurred during the read objects step.

The match objects step in a workflow will compare the source and target environment objects based on the matching rules configured. If a match is found those objects will be paired together.

The stage data step in the workflow will create pending jobs based on the configurations. In this case, it will stage jobs to create all the unmatched Office 365 groups that meet the stage filter criteria. It will also generate jobs to add additional attributes, along with membership and ownership. Subsequent staging jobs would be generated when a change occurs in the source object.

The first time this workflow runs, all initial matches must occur. This process, depending on the size of the environment could take several hours to complete. Follow these steps to manually run the match and stage workflow.

How to manually start a workflow

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Match and Stage workflow created earlier
4. Click the Run button
5. Click Yes to queue the job
6. The status will change to Pending
7. The status will change to Running when it begins
8. Monitor the dashboard for any errors or warnings
9. Check errors and warnings by selecting the History button
10. Locate and select the last job run
11. Click the Download Logs button
12. Open the CSV to review errors and warnings
13. When the workflow run is complete, the status will change to Idle
14. The Last Run column will be updated

How to verify user matches
When the match and stage tasks is complete, it is easy to check if a user is matched against a target user. Follow these steps to verify a user match.

1. Login to Power365
2. Navigate to Environments
3. Locate and select the source cloud environment
4. Click the Details button
5. The cloud environment details will open
6. Cloud environments are categorized by Users, Groups and Contacts
7. Navigate to the Users view
8. In the Search bar, enter one of the known test users that is a member of a test group
9. Click the Search icon
10. Double-click on the search results
11. The object details will open
12. The Matched Objects section will display the target object this source object is matched with
13. Verify all the test users for proper matches by following steps 3 – 12
14. Click Close

How to verify group members and attributes
1. Login to Power365
2. Navigate to Environments
3. Locate and select the source cloud environment
4. Click the Details button
5. The cloud environment details will open
6. Cloud environments are categorized by Users, Groups and Contacts
7. Navigate to the Groups view
8. In the Search bar, enter one of the known test groups
9. Click the Search icon
10. Double-click on the search results
11. The object details will open
12. The Members section will display the target object this source object is matched with
13. Verify all the test groups have the appropriate members
14. Expand the Attributes section
15. Review the source objects read attributes
16. Click Close

First Write To

When the first Match and Stage steps have successfully completed, it is time to move onto creating the first test Office 365 group(s). Once the group(s) is created, it will need to be validated to ensure all the required attributes are set in the desired manner and membership has synchronized. This section will detail the Unified Group creation process and provide guidance on how to run and validate the workflow results.

How are Unified Groups created?

Power365 Directory Sync creates, and updates Unified (Office 365) Groups using the available Microsoft PowerShell cmdlets. When a group is created and updated for the first time, the following steps occur:

1. Unified Group is created:
   a) Calls New-UnifiedGroup, sets Name and DisplayName
2. Unified Group is updated:
   a) First, Power365 Directory Sync validates the group creation is complete. If not, continuous retries will occur every 7 seconds until it is ready
   b) Calls Set-UnifiedGroup, sets other mapped attributes/properties
   c) Calls Add-UnifiedGroupLinks, to set members
   d) Calls Add-UnifiedGroupLinks, to set owners

Here is an example of that process in action. Each section illustrates the changes to the example attributes/properties as the process progresses.
How to manually start a workflow

This is the first time the Write To step will be run against the production target environment. The unified groups defined as in-scope within the Stage Data step will determine which groups are created during this initial test. The goal of this test is to run the workflow then verify the group is created, membership is synchronized, and attributes are set as required. Follow these steps to run the workflow then verify the results in the target.

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Write To workflow created earlier
4. Click the Run button
5. Click Yes to queue the job
6. The status will change to Pending
7. The status will change to Running when it begins
8. Monitor the dashboard for any errors or warnings
9. Check errors and warnings by selecting the History button
10. Locate and select the last job run
11. Click the Download Logs button
12. Open the CSV to review errors and warnings
13. When the workflow run is complete, the status will change to *Idle*

14. The *Last Run* column will be updated

### Validate Test Results

Once the *Write To* workflow has completed successfully, it is time to verify the final results. There are different ways to achieve this. From the target environment either use the Microsoft Admin Portal, remote PowerShell or download the Change Logs under the workflow history within Power365 Directory Sync. The recommended way is to first download and review the Change Logs then use PowerShell to verify the target object.

To verify the Unified Groups, try these examples commands:

1. **Connect to Office 365 PowerShell**

```powershell
get-unifiedgroup <groupname> | select AccessType, Alias, AutoSubscribeNewMembers, DisplayName, EmailAddresses, HiddenFromAddressListsEnabled, HiddenGroupMembershipEnabled, Language, ManagedBy, Name, Notes, RecipientType, RecipientTypeDetails, RequireSenderAuthenticationEnabled, WelcomeMessageEnabled, *smtp*
```

<table>
<thead>
<tr>
<th>AccessType: Private</th>
<th>Alias: o365grouptest17</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoSubscribeNewMembers: True</td>
<td></td>
</tr>
<tr>
<td>DisplayName: O365 Group Test17_OFB</td>
<td></td>
</tr>
<tr>
<td>EmailAddresses: <code>{X500:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF235POLTL)\cn=Recipients/cn=2b72d62e3e4340dd5b022c38c5f3968-o365groupt, smtp:o365grouptest17_0771e39e-72ee-416a-ae43-8e15ae30f9f7@Target.com, SMTP:o365grouptest17@Target.com, smtp:o365grouptest17_0771e39e-72ee-416a-ae43-8e15ae30f9f7@Target.onmicrosoft.com}</code></td>
<td></td>
</tr>
<tr>
<td>HiddenFromAddressListsEnabled: False</td>
<td></td>
</tr>
<tr>
<td>HiddenGroupMembershipEnabled: False</td>
<td></td>
</tr>
<tr>
<td>Language: en-ZA</td>
<td></td>
</tr>
<tr>
<td>ManagedBy: {BinaryTreeCDSPowerShell.7d2dad4f3a524965bd5a17f510409b9, Allen Smit}</td>
<td></td>
</tr>
<tr>
<td>Name: o365grouptest17_0771e39e-72ee-416a-ae43-8e15ae30f9f7</td>
<td></td>
</tr>
<tr>
<td>Notes: Test #17</td>
<td></td>
</tr>
<tr>
<td>RecipientType: MailUniversalDistributionGroup</td>
<td></td>
</tr>
<tr>
<td>RecipientTypeDetails: GroupMailbox</td>
<td></td>
</tr>
<tr>
<td>RequireSenderAuthenticationEnabled: False</td>
<td></td>
</tr>
<tr>
<td>WelcomeMessageEnabled: True</td>
<td></td>
</tr>
<tr>
<td>PrimarySmtpAddress: <a href="mailto:o365grouptest17@Target.com">o365grouptest17@Target.com</a></td>
<td></td>
</tr>
</tbody>
</table>

```
Get-UnifiedGroupLinks -Identity <groupname> -LinkType Members | select name, recipienttype, recipienttypedetails, external*
```

<table>
<thead>
<tr>
<th>Name: Lars Aveen</th>
<th>RecipientType: UserMailbox</th>
<th>RecipientTypeDetails: UserMailbox</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExternalDirectoryObjectId: eded4ca4-06a0-4a45-8e05-a8472b2b561b</td>
<td>ExternalEmailAddress:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name: BinaryTreeCDSPowerShell.7d2dad4f3a524965bd5a17f510409b9</th>
<th>RecipientType: User</th>
<th>RecipientTypeDetails: User</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExternalDirectoryObjectId: bab94831-c7b4-69f9-9c5a-666f3153b143</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Remediation

During the remediation phase, it must be determined if any of the objects failed to meet requirements. If any objects failed to meet requirements, review the following:

1. Workflow Run Log for errors and warnings
2. Follow-up on any errors reported, remediate the problem or remove the problem from scope
3. Workflow Change Log to verify the attributes reported as changed
4. Verify the source object’s attributes are as expected
5. Modify a source test group object to trigger a change
6. Now run the workflows again to pick up these changes
7. Verify the changes were synchronized
8. Run as many additional tests are required to meet production readiness

Final Validation

If any changes to the workflow configurations occurred during remediation, then it is important to run a full synchronization for all workflows. When validating a unified group, it is recommended that the following items be verified before moving onto any production implementation.

1. Verify all mapped attribute values are copied over
2. Verify all advanced mappings values are written as intended
3. Verify all group owners & members are added to the group
4. Verify all group external guest members are added to the group if they exist
5. Verify when adding new groups to the source they are created in the target
6. Verify adding and removing groups owners/members are properly synchronized
7. Verify when deleting existing groups in the source they are deleted in the target (Delete Object Step must be setup to process these changes. See the advanced topics section below for more information.)
8. If converting existing Distribution lists, verify they were created as Unified Groups in the target
Production

Stage Data Filters for Production

Before moving into production, the test data group filters must be removed from the Stage Data step. Afterwards, the workflows should be run again to reflect the changes in scope.

How to modify the stage data filter for Office 365 Groups

Follow these steps to modify the existing Stage Data step to meet the production group criteria. The filters below will allow all Unified Groups to be synchronized.

18. Login to Power365
19. Navigate to Workflows
20. Locate and select Match & Stage workflow created earlier
21. Click the Settings button
22. Click the Sync Workflow tab
23. Click the Select button in the Stage Data step
24. Click Next 4 times
25. Previously three (3) filters were added to isolate the Office 365 test groups
26. Now remove the additional filter added previously during testing
27. Set the following:
   f. RecipientTypeDetails = GroupMailbox
   g. Set operator to And
   h. RecipientType = MailUniversalDistributionGroup
28. Click Next
29. Click Finish

Create All Groups & Sync Members

This is the stage of deployment where all directory sync configurations have been setup and validated. Test objects were created, synchronized and validated. All preproduction requirements have been fulfilled and change controls are approved.

During the next set of steps, all Office 365 groups will be created and synchronized into the destination environment. Before doing so there are some considerations to be made to ensure a good end-user experience. Here are a few rules to keep in mind when determining when and how to create target groups.

1. During the first sync, when adding membership to a Unified Group, by default new members are notified. To prevent this set this group property to False, WelcomeMessageEnabled.
2. By default, Unified Groups are visible in the Global Address List. To keep the group hidden until all data has been migrated, set this group property to True, HiddenFromAddressListsEnabled.
3. By default, Unified Groups are visible in OWA for any member. If the end-user has been migrated to the target mailbox already, it is recommended that the group be hidden until all data has been migrated. Set this group properly to True, HiddenFromExchangeClientsEnabled.

4. If external guest membership is being synchronized, ensure they exist in the destination environment so they will be matched and added as a member.

For additional information about additional group properties that could be important to consider before moving to production, see the Advanced Mappings section under Advanced Topics below.

**How to manually start a workflow**

This is the first time the Write To step will be run against the production target environment using production data. The unified groups defined as in-scope within the Stage Data step will determine which groups are created during this production push. The goal of this to run the workflow then verify the groups are created, membership is synchronized, and attributes are set as required. Follow these steps to run the workflow then verify the results in the target.

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Write To workflow created earlier
4. Click the Run button
5. Click Yes to queue the job
6. The status will change to Pending
7. The status will change to Running when it begins
8. Monitor the dashboard for any errors or warnings
9. Check errors and warnings by selecting the History button
10. Locate and select the last job run
11. Click the Download Logs button
12. Open the CSV to review errors and warnings
13. When the workflow run is complete, the status will change to Idle
14. The Last Run column will be updated

**Validate Production Results**

During production validation use the same methods and test cases used during the final validation process, outlined above. However, apply the test cases to a sampling of the production data. Alternatively, a PowerShell script could be developed to report on all the unified groups created in the destination. Below is a sample script to export all Unified Groups from the desired environment to a CSV file. Add any desired properties to the list of exported data to gather additional information.

```powershell
$exportfile = (Get-Item Env:UserProfile).value+"\downloads\UGs_Exports.csv"
get-unifiedgroup | select
AccessType,Alias,AutoSubscribeNewMembers,DisplayName,EmailAddresses,HiddenFromAddressListsEnabled,HiddenGroupMembershipEnabled,Language,ManagedBy,Name,Notes,RecipientType,RecipientTypeDetails,RequireSenderAuthenticationEnabled,WelcomeMessageEnabled,*smtp* | Export-Csv -Path $exportfile
```
Remediation
Just as previous remediation stages, it is important to identify any errors or problems that may have occurred during the initial writing of data objects. Follow the same principles as outlined previously. When any required remediation is complete, be sure to run your workflows again then review the logs and changes to ensure all remediation has corrected any identified issues.

Manual Activities
Once the initial write has created all the destination group objects there could be manual processes that need to be executed prior to data migrations or end-user use. There may also be instances where some manual steps must be completed during migration events such as Cutover. If any manual work is required after all the groups have been created, this is the time to execute those tasks.

Schedule Workflows
Now that the deployment, pilot and group creation processes are complete, it is time to schedule the three (3) workflows created earlier.

How to modify a workflow schedule
Follow these steps to modify an existing workflow run schedule.

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Read From workflow created earlier
4. Click the Settings button
5. Click the Schedule tab
6. Choose the At Specific Intervals option
7. Select Minutes
8. Enter 15
9. Click Save
10. Click Back
11. Repeat these steps for each workflow

All workflows are now scheduled for production use. This is a good time to setup Alerts if required. For more information, see the Advanced Topic about Alerts found below.
Advanced Topics

Deletes

For some migration projects the processing of deletions from the source to the target may not be required to meet migration project goals. However, there will be use cases where deletions are required. This section will guide the reader through adding the Delete Objects step to the existing Read From or Write To step added earlier in this guide.

To process deletions the associated Environments must have reconcile scheduled. When reconcile runs, the environment data will be updated to reflect the deleted objects.

The Delete Objects step will create delete jobs based on objects identified as deleted or out-of-scope during a previous Reconcile step. The Delete Objects step should be added after the Read From step or just before the Write To step. Once added to the workflow, the objects marked for deletion will process in the target environment during the Delete Objects step.

How to add the Delete Objects step to a Workflow

In this guide, the Delete Objects step will be added to the Write To step. The Write To step is when changes to the target are executed, therefore the Delete Objects step logically fits with the Write To step so all changes are processed during the same intervals. Follow these steps to add the Delete Objects step to the existing Write To step.

1. Login to Power365
2. Navigate to Workflows
3. Locate and select Write workflow created earlier
4. Click the Settings button
5. Click Sync Workflows
6. Select and drag the Delete Objects step
7. Place it as Step 1, before the Write To step
8. Click the Select button
9. Choose the Source and Target environments from the drop-down menu
10. Leave the default threshold of 100 maximum deletes at once
11. Click OK
12. Click Save

The setup is complete. When the Write To workflow runs, new pending deletions will be processed in the target.

Advanced Mappings

The advanced mappings section provides examples of custom mapping and expressions that may be useful when migrating Unified Groups.

Example Mappings File

In this example mapping file, the required and recommended attributes are included. In addition, four (4) expressions have been added to toggle features on or off during the migration cutover event. The custom attribute
1 in this example is used to trigger when a feature is enabled or disabled. The custom attribute value will be set manually or by PowerShell once the final group migration has started.

The advanced mappings are highlighted in blue. A detailed description of each custom expression or mapping is explained below. For more information about each of these parameters and other related to Unified Groups, go here.

- **CustomAttribute1** – This attribute will be used to trigger when the other attribute values are modified. In this example, the value of “cutover” will trigger the change in the other attribute values.
- **AutoSubscribeNewMembers** – This attribute will disable the acceptance of automatic subscriptions during creation and enable it during cutover.
- **HiddenFromAddressListsEnabled** – This attribute when set to true will hide the group from the global address list during creation but unhide it during cutover.
- **HiddenFromExchangeClientsEnabled** – This attribute when set to true will hide the group from Outlook during creation but unhide it during cutover.
- **RequireSenderAuthenticationEnabled** – This attribute will disable
- **WelcomeMessageEnabled** – This attribute will disable automatic welcome messages from being sent when new members are added to the group during creation and enable it during cutover.

<table>
<thead>
<tr>
<th>Target</th>
<th>Source</th>
<th>Condition</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AccessType</td>
<td>AccessType</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Alias</td>
<td>Alias</td>
<td>!=empty(Alias)</td>
<td>Attribute</td>
</tr>
<tr>
<td>AutoSubscribeNewMembers</td>
<td>if (lower(S.Customattribute1) =</td>
<td></td>
<td>Expression</td>
</tr>
<tr>
<td></td>
<td>&quot;cutover&quot;,&quot;True&quot;,&quot;False&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CustomAttribute1</td>
<td>CustomAttribute1</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>DisplayName</td>
<td>DisplayName</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>EmailAddresses</td>
<td>GetProxyAddresses(null, T.EmailAddresses, prefix(Result(&quot;WindowsEmailAddress&quot;), &quot;SMTP:&quot;), prefix(LegacyExchangeDN, &quot;x500:&quot;))</td>
<td>Action = &quot;create&quot;</td>
<td>Expression</td>
</tr>
<tr>
<td>HiddenFromAddressListsEnabled</td>
<td>if (lower(S.Customattribute1) =</td>
<td></td>
<td>Expression</td>
</tr>
<tr>
<td></td>
<td>&quot;cutover&quot;,&quot;False&quot;,&quot;True&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HiddenFromExchangeClientsEnabled</td>
<td>if (lower(S.Customattribute1) =</td>
<td></td>
<td>Expression</td>
</tr>
<tr>
<td></td>
<td>&quot;cutover&quot;,&quot;False&quot;,&quot;True&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HiddenGroupMembershipEnabled</td>
<td>HiddenGroupMembershipEnabled</td>
<td>Action = &quot;create&quot;</td>
<td>Attribute</td>
</tr>
<tr>
<td>Language</td>
<td>Language</td>
<td></td>
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</tr>
<tr>
<td>ManagedBy</td>
<td>ManagedBy</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Member</td>
<td>Member</td>
<td></td>
<td>Attribute</td>
</tr>
<tr>
<td>Name</td>
<td>Name</td>
<td></td>
<td>Attribute</td>
</tr>
</tbody>
</table>
Invite Guest Users

TBD

Alerts

Workflow Alerts may be added to keep administrators informed of the success completion and/or failure of any workflow. Alerts are delivered as status emails to the designated recipients. For each workflow choose the previously created alerts or add a new. Easily add multiple recipients, by separating the addresses with a semicolon.

How to setup a new Alert

Follow these steps to create a new workflow alert.

1. Login to Power365
2. Navigate to Alerts
3. Click New
4. Enter a Name, click Next
5. Enter a Name, click Next
6. Enter recipients. To add multiple recipients, separate addresses with a semicolon (;).
7. Click Next
8. Choose Language preference, click Next
9. Choose which events trigger alerts
10. Choose Workflow Failure at a minimum
11. Do not choose Local Agent Offline for a Cloud only workflows and environments
12. Click Next
13. Click Finish

**How to add an Alert to a workflow**

Follow these steps to add an alert to an existing workflow.

1. Login to [Power365](#)
2. Navigate to [Workflows](#)
3. Locate and select Write workflow created earlier
4. Click the [Settings](#) button
5. Click [Alerts](#)
6. Click [Add](#)
7. Select the [Alert](#) created in the previous steps
8. Click [OK](#)
9. Navigate to [Workflows](#)
10. Repeat these steps for each workflow

**Pro Tips**

To augment the Pro Tips already outlined in this document, this list of additional tips has been assembled to further the understanding and assist with implementation questions that may arise during setup and testing.

1. **Mappings** have no impact on the matching attributes.
2. **Mappings** do not modify the Read Step, all object metadata is read.
3. If creating an object, such as Unified Groups in the destination the default **mappings** such as “GroupType” or “ObjectType” are not required because they will be auto-generated by Exchange Online during creation.
4. If only synchronizing Group Membership, then all User attributes can be removed from the default **mappings** related to your group workflow and template.
5. **Matching** by “UserPrincipleName” will only match on the local part value, not the domain part.
6. **Matching** by “WindowsEmailAddress” will match on the entire string, not just the local part.
7. For membership/ownership to sync, within the template option, "If Users are matched" must be set to “Update”, not Skip. Skip will prevent membership from synchronizing.
8. During testing/piloting you may create a filter under Stage Data step to isolate a subset of test Groups to create and sync membership. This will provide a method to validate a few examples before proceeding onto creating all groups.
9. The Test Mode option in the workflow prevents the write data step from occurring in a workflow.
10. If the RecipientTypeDetails attribute mapping is missing, you will receive this error during the Stage Step. “No mapping found for RecipientTypeDetails.”
11. If this Name attribute mapping is missing, you will receive this error during the Write Step. “Missing required attribute: Name”.

12. The default mappings for Proxy Addresses (i.e. EmailAddresses) may prevent the creation of Unified Groups. The following error is received during the Write Step, “There should be at least one MOERA in Email Addresses.”.

13. When we create a group, we grant our BT account Owner access. This can be removed once Sync services are no longer required.

14. The “ONLY EVALUATE OBJECTS WHICH HAVE CHANGED SINCE THE LAST READ” option only affects the Stage Step. Enable this option after the initial data has been read. Do not set that setting on read and write only workflows.

15. By default, the “ReplaceDomain” function is used by the “WindowEmailAddress” attribute to set your default email address to the Target Domain selected within the Stage Data step. This can be changed if required.

16. The Delete Objects Step in a workflow is required to delete target objects if that is in scope for your project. Here are details on this step:

   1. Reconcile finds source object XYZ is no longer in scope and removes it from CDS, adds it to a list of “Reconciled objects” for that source.

   2. Delete step looks in “Reconciled objects” for anything from the configured source. It finds object XYZ.

   3. Delete step then looks for a match to object XYZ from the configured target. If found, the target object is deleted.

In summary, the Reconcile step captures anything removed from the source, the delete step looks for any matching objects on the target and deletes them.
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