



# **Configuration of the LDIF Generator**

**Document Version 1.1**

**iQ.Suite Exchange/SMTP, as of Version 20.1**

**08.09.2021**

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## 1 Introduction

The Windows **iQ.Suite LDIF Generator Service** (also called *LDIF Generator*) exports:

- users, groups and contacts from the Azure Active Directory (Azure AD)
- mailbox information of the users and dynamic groups from Microsoft 365 (M365)

Since iQ.Suite has no direct access to the Azure AD, the LDIF Generator imports the exported data into a LDIF file which can be used by iQ.Suite.

In a multi-tenant installation, the LDIF Generator uses tenant access credentials of tenants taken from iQ.Suite WebClient.

This technical documentation describes how to configure the LDIF Generator.

For further information on LDIF, please refer to the iQ.Suite manual.

For information on using iQ.Suite and iQ.Suite WebClient with Microsoft 365 and Azure, please refer to the separate documentation “iQ.Suite – Azure Edition” (techDoc). Download on [www.gbs.com](http://www.gbs.com).

## 2 Permissions for accessing the Azure AD

To configure an access to the Azure AD and to set the required permissions in the Azure Portal, please refer to the separate techDoc “iQ.Suite – Azure Edition”. Download on [www.gbs.com](http://www.gbs.com).

The following permissions are required:

- Azure Active Directory Graph
  - Directory.Read.All** of the type “Delegated” and “Application”
  - User.Read.All** of the type “Delegated”
- Microsoft Graph
  - Directory.Read.All** of the type “Delegated” and “Application”
  - User.Read.All** of the type “Application” (is required to download profile images of the users (attribute thumbnailPhoto – see below))

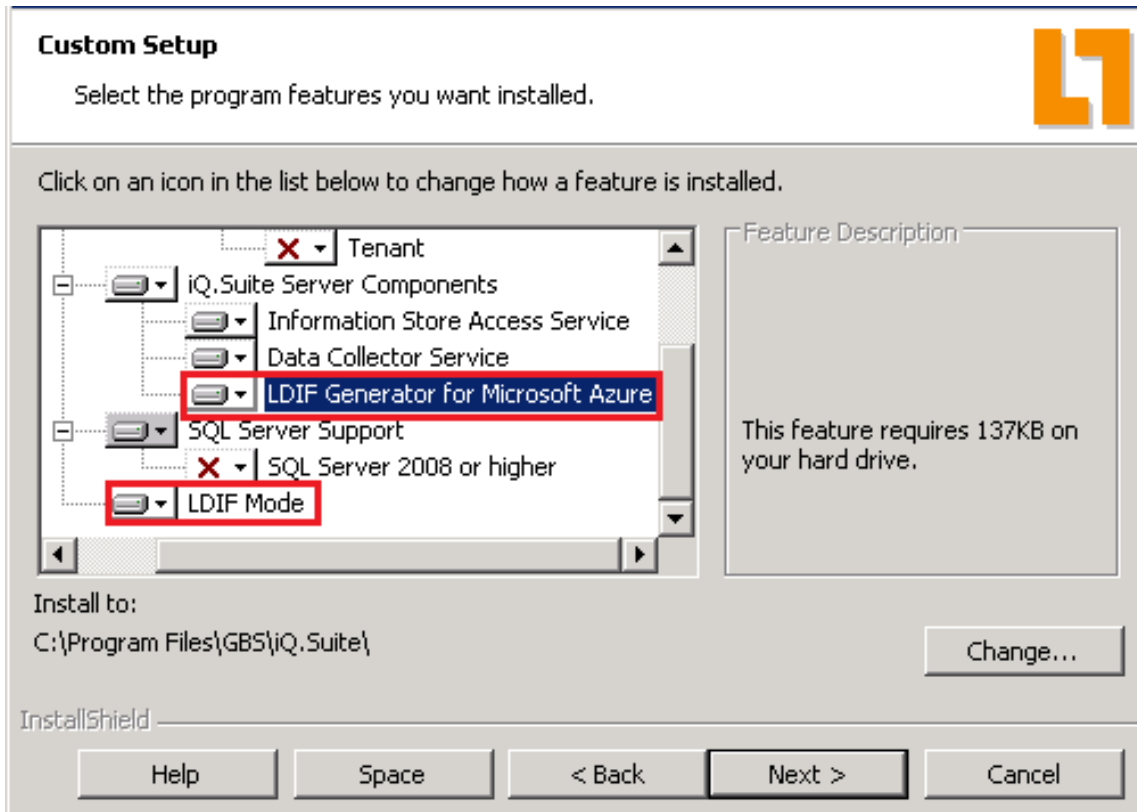
Result on the Azure Portal:

+ Add a permission		✓ Grant admin consent for GBS Europa GmbH			
API / Permissions name	Type	Description	Admin consent req...	Status	
▼ Azure Active Directory Graph (3)					
Directory.Read.All	Delegated	Read directory data	Yes	✓ Granted	
Directory.Read.All	Application	Read directory data	Yes	✓ Granted	
User.Read.All	Delegated	Read all users' full profiles	Yes	✓ Granted	
▼ Microsoft Graph (4)					
Directory.Read.All	Delegated	Read directory data	Yes	✓ Granted	
Directory.Read.All	Application	Read directory data	Yes	✓ Granted	
User.Read.All	Application	Read all users' full profiles	Yes	✓ Granted	

## 3 LDIF-specific files

### 3.1 General

For using the LDIF Generator, select the following features in the iQ.Suite setup dialog:



- **LDIF Generator for Microsoft Azure:**

The LDIF Generator will be installed.

The LDIF configuration files and the associated template files will be created. See [LDIF Configuration files](#).

- **LDIF Mode:**

The LDIF mode is enabled by default.

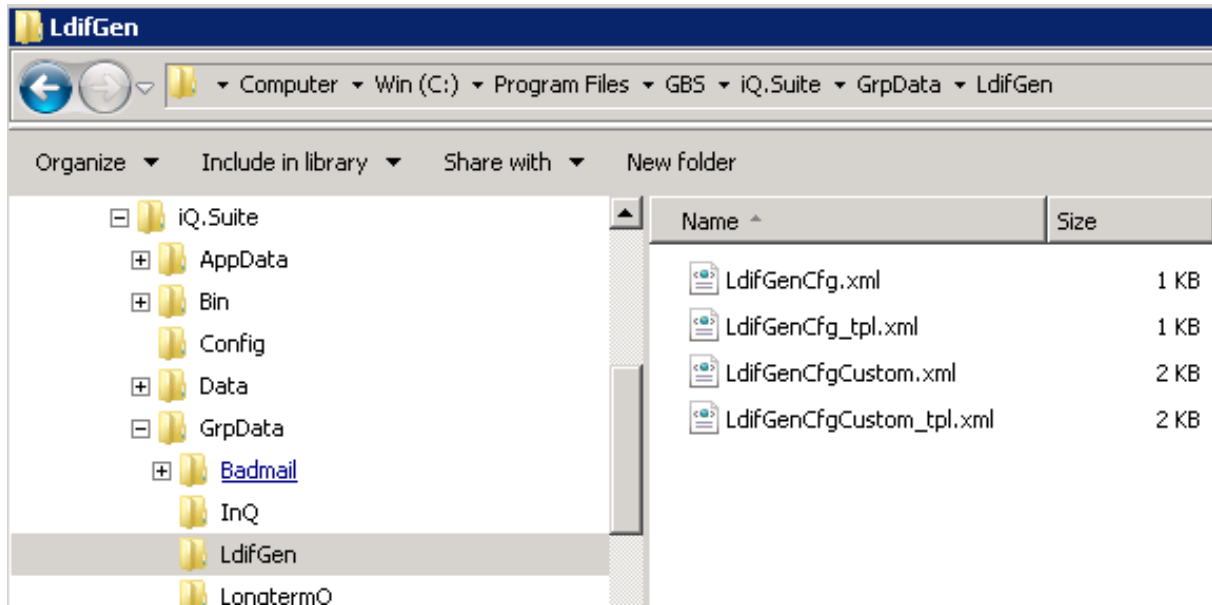
An empty **LDIF file** will be created and filled in later with the data which will be exported from the Azure AD and Microsoft 365. See [LDIF file](#).

## 3.2 LDIF Configuration files

### 3.2.1 General

The configuration files for the LDIF Generator (including template files) are located in the following folder:

Path: <iQ.Suite-InstallationDirectory>\GrpData\LdifGen



The LDIFGen configuration files **LdifGenCfg.xml** (global settings) and **LdifGenCfgCustom.xml** (custom settings) are not updated in case of an iQ.Suite update.

The template files **LdifGenCfg\_tpl.xml** and **LdifGenCfgCustom\_tpl.xml** are templates for the LDIFGen configuration files mentioned above. They are generated when the iQ.Suite LDIF Generator Service is started and they are updated each time iQ.Suite is updated, e.g. new attributes will be added automatically. If required, you can copy new attributes from the updated template files and paste them into your LDIFGen configuration files.

### 3.2.2 LdifGenCfg.xml

The *LdifGenCfg.xml* contains the following global settings for the LDIF Generator:

```

1  <?xml version="1.0" ?>
2  <LdifGenCfg xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/
3  <Active>false</Active>
4  <UseCustomProperties>false</UseCustomProperties>
5  <WebClientUri>https://WebClientUri</WebClientUri>
6  <User>SampleUser</User>
7  <Password>Password</Password>
8  <UseWebClient>true</UseWebClient>
9  <ExcludedTenantIds>
10 <string>tenantid1</string>
11 <string>tenantid2</string>
12 </ExcludedTenantIds>
13 <AzureTenantId>tenantid</AzureTenantId>
14 <AzureClientId>clientid</AzureClientId>
15 <AzureClientSecretKey>secretkey</AzureClientSecretKey>
16 <LDIFCustomPath />
17 <O365User>O365User</O365User>
18 <O365Password>O365Password</O365Password>
19 <AzureGroupSearchDepth>5</AzureGroupSearchDepth>
20 </LdifGenCfg>

```

The following tags exist in the *LdifGenCfg.xml*:

Tag	Description
<Active>	<p>Possible values: true, false</p> <p>If not active, then the iQ.Suite LDIF Generator Service continues to run, but it generates no LDIF files.</p>
<UseCustomProperties>	<p>Possible values: true, false</p> <p>If not active, the Custom file <i>LDIFGenCfgCustom.xml</i> is not used (it has no impact).</p> <p>If you are using WebClient in the multi-tenant version, then the file name contains the Azure tenant ID (domain of the tenant). Example: tenant.onmicrosoft.com.xml</p>
<WebClientUri>	<p>Only if &lt;UseWebClient&gt;=true</p> <p>URL to the WebClient use interface.</p>
<User>	<p>Only if &lt;UseWebClient&gt;=true</p>
<Password>	<p>User Principal Name (UPN) and password of an admin user who can access WebClient.</p>
<UseWebClient>	<p>Possible values: true, false</p>

Tag	Description
	<p>The LDIF Generator can be used in the following cases:</p> <ul style="list-style-type: none"> <li>■ <b>Case 1:</b> Use <b>with</b> iQ.Suite WebClient =&gt; Set value to ,true'!</li> <li>■ <b>Case 2:</b> Use <b>without</b> iQ.Suite WebClient =&gt; Set value to ,false'!</li> </ul> <p>Only in case 2, the tags from &lt;ExcludedTenantIds&gt; to &lt;AzureGroupSearchDepth&gt; are relevant. If required, specify appropriate values.</p> <p>If you are using WebClient (case 1), these tags are irrelevant since the settings can be made per tenant on the WebClient user interface under <b>Tenant Administration &gt; 'Tenant' &gt; Directory Service</b>.</p>
<pre>&lt;ExcludedTenantIds&gt;   &lt;string&gt;...&lt;/string&gt;   &lt;string&gt;...&lt;/string&gt; &lt;/ExcludedTenantIds&gt;</pre>	<p>Only if &lt;UseWebClient&gt;=true</p> <p>Optionally, you can exclude tenants from the LDIF generation by specifying the WebClient tenant IDs of the tenants to be excluded.</p> <p>Specify the WebClient tenant ID between &lt;string&gt; and &lt;/string&gt;.</p> <p><b>Note:</b> This allows to generate the tenant-specific LDIF files on different servers (load balancing).</p>
<AzureTenantId>	<p>Only if &lt;UseWebClient&gt;=false</p> <p>Azure tenant ID</p>
<AzureClientId>	<p>Only if &lt;UseWebClient&gt;=false</p> <p>ID of the WebClient application in Azure.</p>
<AzureClientSecretKey>	<p>Only if &lt;UseWebClient&gt;=false</p> <p>Secret access key of the WebClient application in Azure.</p>
<LDIFCustomPath>	<p>Only if &lt;UseWebClient&gt;=false</p> <p>Custom path (optional).</p> <p>If no path is specified here, then the path specified in the Registry is used (default: C:\Program Files\GBS\iQ.Suite\GrpData\LdifGen). Otherwise, the LDIF file is generated at the location specified here.</p>
<0365User>	<p>Only if &lt;UseWebClient&gt;=false</p> <p>For the LDIF export, specify a M365 user who has access to the M365 Directory (at least read permission).</p>



Tag	Description
<O365Password>	Only if <UseWebClient>=false Password of the M365 user mentioned above.
<AzureGroupSearchDepth>	Only if <UseWebClient>=false Recursion depth for groups contained in groups (default: 5)

### 3.2.3 Custom files

#### 3.2.3.1 General

The Custom XML can be the **LdifGenCfgCustom.xml** or a tenant-specific Custom XML **[AzureTenantID].xml**:

- **LdifGenCfgCustom.xml**: This file is used in the single-tenant case if iQ.Suite is used without WebClient. It contains the custom LDIFGen configuration for the tenant.
- **[AzureTenantID].xml**: This is the format for tenant-specific Custom files. If using iQ.Suite WebClient with **several tenants**, a Custom file can be created per tenant if you want to have tenant-specific LDIF configurations.

Example:

*tenant1.com.xml* (for the tenant with the Azure tenant ID "tenant1.com")

```

LdifGenCfgCustom.xml
1  <?xml version="1.0" ?>
2  <LDIFExportCustomTenantCfg xmlns:xsd="http://www.w3.org/2001/XMLSchema" xm
3  <CustomRegExReplaceActions>
4  <RegExReplaceAction>
9  </CustomRegExReplaceActions>
10 <UserCustomProperties>
22 <MailboxCustomProperties>
34 <ContactCustomProperties>
35 <CustomProperty>
40 <CustomProperty>
45 </ContactCustomProperties>
46 <NoExportUsers>false</NoExportUsers>
47 <NoExportUserThumbnails>false</NoExportUserThumbnails>
48 <NoExportContacts>false</NoExportContacts>
49 <NoExportGroups>false</NoExportGroups>
50 <NoExportDynGroups>false</NoExportDynGroups>
51 <NoSyncMailboxProps>false</NoSyncMailboxProps>
52 <NoSyncUserProps>false</NoSyncUserProps>
53 <NoMailEnabledContactsLimit>false</NoMailEnabledContactsLimit>
54 <NoMailEnabledUsersLimit>false</NoMailEnabledUsersLimit>
55 <AzureFilterUsers>startswith( mail, 'e' )</AzureFilterUsers>
56 <AzureFilterContacts />
57 <AzureFilterGroups />
58 <RetryCountEmptyDynGroups>5</RetryCountEmptyDynGroups>
59 <RetryWaitSecondsDynGroup>3</RetryWaitSecondsDynGroup>
60 </LDIFExportCustomTenantCfg>

```

For a description of the tags which are contained in Custom files, please refer to the sections below.

### 3.2.3.2 CustomProperties

See [Custom attributes \(CustomProperties\)](#).

### 3.2.3.3 CustomRegExReplaceActions

Under <CustomRegExReplaceActions>, you can define replacement actions in order to change values from the Azure AD by using regular expressions.

Tag	Description
<CustomRegExReplaceActions>	Tag which can be used to define replacement actions.
<RegExReplaceAction>	Contains a replacement action.
<DirectoryName>	<p>Contains the name of the field of Azure AD which shall be changed. Each name can only exist once. In case of duplicates, only the first replacement action is used.</p> <p>Example:</p> <p>The <code>displayName</code> field always contains the first name and last name of the user "Firstname Lastname". To change it to "Lastname, Firstname", you can define a &lt;RegExReplaceAction&gt;.</p>
<Pattern>	<p>Contains the regular expression which must be found.</p> <p>If it is not found (e.g. because the last name is missing, in the example with <code>displayName</code>), no replacement is done.</p>
<Replacement>	Contains the replacement text which can contain variables (\$1, \$2 etc.) for the bracketed parts of the occurrence.

Example:

```
<RegExReplaceAction>
  <DirectoryName>displayname</DirectoryName>
  <Pattern>^([a-zA-Z]+) ([a-zA-Z]+)$</Pattern>
  <Replacement>$2, $1</Replacement>
</RegExReplaceAction>
```

### 3.2.3.4 NoExport\* (Azure AD)

The following tags can have the value 'true' or 'false':

Tag	Description
NoExportUsers	With 'false', users will be exported from the Azure AD.
NoExportGroups	With 'false', groups will be exported from the Azure AD.
NoExportContacts	With 'false', contacts will be exported from the Azure AD.

### 3.2.3.5 NoExport\*, NoSync\* (M365)

The following tags relate to Microsoft 365 and can have the value 'true' or 'false':

Tag	Description
NoExportDynGroups	With 'false', the dynamic groups will be exported from M365. If the <O365User> field has an entry.
NoSyncMailboxProps	With 'false', the attributes of M365 user mailboxes will be imported into the LDIF file.
NoSyncUserProps	With 'false', the attributes of M365 users will be imported into the LDIF file.

### 3.2.3.6 NoMail\*Limits, \*UserThumbnails (Azure AD)

The following tags relate to the Azure AD and can have the value 'true' or 'false':

Tag	Description
NoMailEnabledContactsLimit	With 'true', only contacts which contain an email address will be downloaded.
NoMailEnabledUsersLimit	With 'true', only users who have an email address will be downloaded.
NoExportUserThumbnails	With 'false', images of users will be exported from the Azure AD and imported into the LDIF file (attribute thumbnailPhoto). By default, no images are added to the LDIF file since downloading can take a long time.  Für den Export der Thumbnails sind zusätzliche Berechtigungen notwendig. <i>Siehe hierzu techDoc „iQ.Suite – Azure Edition“.</i>

### 3.2.3.7 Filters for users, groups and contacts from Azure AD

Filters can be used to limit the export of users, contacts and groups from the Azure AD.

Microsoft Graph is the query language which is used by the LDIF Generator to export data from the Azure AD.

The following **filter parameters** of MS Graph can be used:

<https://docs.microsoft.com/en-us/graph/query-parameters#filter-parameter>

**Important:**

To avoid errors, you must specify the filter criteria very precisely.

The Custom file contains the following tags for filtering:

Tag	Description
AzureFilterUsers	Filters for users, groups and contacts which are exported from the Azure AD.
AzureFilterContacts	By using these filters, you can filter the users, contacts and groups which will be exported from the Azure AD. For a description of the attributes (properties) of the individual objects, please refer to the following <b>URLs</b> :
AzureFilterGroups	
	<p><b>Users:</b>  <a href="https://docs.microsoft.com/en-us/graph/api/resources/user?view=graph-rest-1.0#properties">https://docs.microsoft.com/en-us/graph/api/resources/user?view=graph-rest-1.0#properties</a></p> <p><b>Groups:</b>  <a href="https://docs.microsoft.com/en-us/graph/api/resources/group?view=graph-rest-1.0#properties">https://docs.microsoft.com/en-us/graph/api/resources/group?view=graph-rest-1.0#properties</a></p> <p><b>Contacts:</b>  <a href="https://docs.microsoft.com/en-us/graph/api/resources/contact?view=graph-rest-1.0#properties">https://docs.microsoft.com/en-us/graph/api/resources/contact?view=graph-rest-1.0#properties</a></p> <p>The <b>format of the filters</b> are described under the following URL:  <a href="https://docs.microsoft.com/en-us/graph/query-parameters">https://docs.microsoft.com/en-us/graph/query-parameters</a></p>

The values used for the filtering of users, groups and contacts are interpreted as follows:

- If one of the filters (users, groups, contacts) is specified in the custom XML of the tenant, *all* filters of the tenant object are overwritten (“local” overwrites “global”).
- If you don’t want any filtering, you must delete the entries from the local XML file and the tenant object.

### 3.2.3.8 Retries in case of empty DynGroups

Tag	Description
RetryCountEmptyDynGroups RetryWaitSecondsDynGroup	<p>If a dynamic group in Microsoft 365 is returned as empty group (no members), the LDIF Generator will retry to resolve this group according to the values specified here, since the group is probably not really empty, but the resolution on the Microsoft side does not work at the moment.</p> <p>Default values:</p> <ul style="list-style-type: none"> <li>■ RetryCountEmptyDynGroups: 5 (max. number of attempts)</li> <li>■ RetryWaitSecondsDynGroup: 3 (wait time between attempts in seconds)</li> </ul>

## 3.3 LDIF file

The LDIF file contains the data which have been exported from the Azure AD and Microsoft 365.

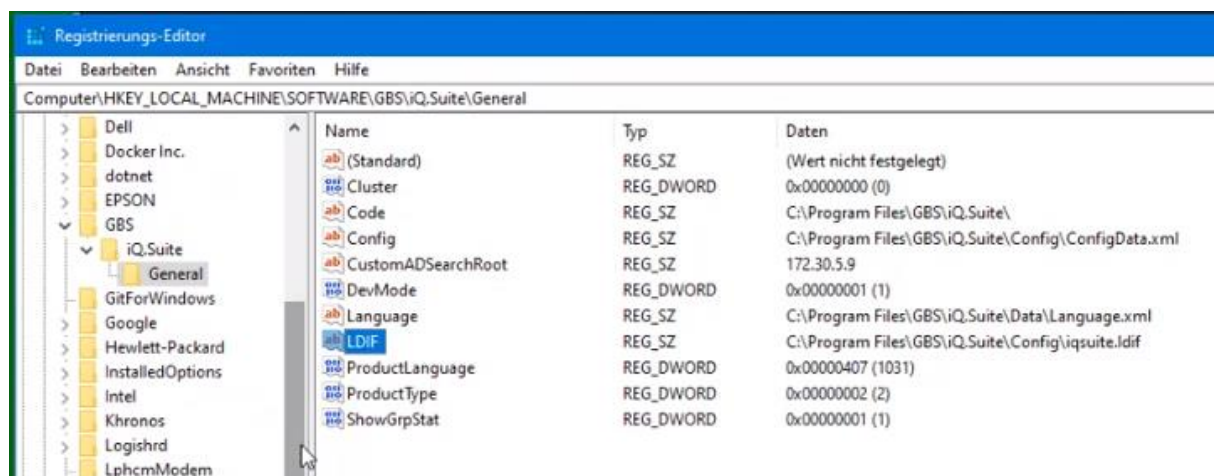
- **iQSuite.ldf**: This is the file name in the single-tenant case. This LDIF file is initially empty right after a new installation of iQ.Suite.
- **[WebClientTenantID].ldf**: In the multi-tenant case, tenant-specific LDIF files with this format are generated.

The exported data are imported into the LDIF file.

Default path: C:\Program Files\GBS\iQ.Suite\Config\iQSuite.ldf

If you want to change the default path of the LDIF file, enter the desired path in the Registry:

HKEY\_LOCAL\_MACHINE\SOFTWARE\GBS\iQ.Suite\General\LDIF



If you specify a custom path in the *LdifGenCfg.xml* by using the <LDIFCustomPath> property, the default path is ignored and the custom path is used instead of the default path.

If using iQ.Suite WebClient in a multi-tenant case, the path to the **tenant-specific LDIF files** is:

```
<iQ.Suite-InstallationDirectory>\GrpData\[WebClientTenantID].ldf
```

Example of a tenant-specific LDIF file:

```
dn: 5b1739e4-da77-406e-b1d7-7b9e52ef53fe
cn: David Galler
objectClass: user
mail: admin@domain.onmicrosoft.com
l: Karlsruhe
co: Germany
department: GBS
displayName: David Galler
givenName: David
sn: Galler
mobile: +49 1628710011
st: BW
streetAddress: An der Raumfabrik 33c
telephoneNumber: 072149011442
PostalCode: 76227
city: Karlsruhe
country: DE
mailNickname: admin
mobilePhone: +49 1628710011
otherMails: david.galler@mycompany.com
state: BW
surname: Galler
usageLocation: DE
userPrincipalName: admin@domain.onmicrosoft.com
proxyAddresses: SMTP:admin@domain.onmicrosoft.com

dn: b32b5d54-4775-44ff-80c7-c43ccceced7f
cn: Anna Glenn
objectClass: contact
mail: anna.glenn@domain2.onmicrosoft.com
displayName: Anna Glenn
givenName: Anna
sn: Glenn
id: b32b5d54-4775-44ff-80c7-c43ccceced7f
MailNickname: aglenn
Surname: Anna

dn: d74b56b3-311d-4c14-bba3-fd879c7caa57
```

## 4 Mapping for importing into the LDIF file

### 4.1 Standard attributes

Some attributes and their values are automatically exported from the Azure AD and imported into the LDIF file. These attributes are the so-called **standard attributes**.

#### 4.1.1 User attributes

The following standard attributes are **always available in the LDIF file**:

Attribute name in Azure AD	Attribute name in the LDIF file
Guid	dn
displayName	cn
objectclass	objectClass

The following standard attributes are **optional**. This means that they are imported into the LDIF file if they exist in the Azure AD. If they are missing in the Azure AD, no entry is created in the LDIF file:

Attribute name in Azure AD	Attribute name in the LDIF file
Mail	mail
l	l
co	co
department	department
displayName	displayName
faxNumber	facsimileTelephoneNumber
givenName	givenName
sn	sn
mobilePhone	mobile
physicalDeliveryOfficeName	physicalDeliveryOfficeName

Attribute name in Azure AD	Attribute name in the LDIF file
st	st
streetAddress	streetAddress
businessPhones	telephoneNumber
title	title
PostalCode	PostalCode
wwwHomepage	wwwHomepage
homePhone	homePhone
company	company
thumbnailPhoto	thumbnailPhoto

#### 4.1.2 Group attributes

The following standard attributes are **always available in the LDIF file**:

Attribute name in Azure AD	Attribute name in the LDIF file
Guid	dn
DisplayName	cn
objectclass	objectClass
Mail	mail



### 4.1.3 Contact attributes

The following standard attributes are **always available in the LDIF file**:

Attribute name in Azure AD	Attribute name in the LDIF file
Guid	dn
displayName	cn
objectclass	objectClass

## 4.2 Custom attributes (CustomProperties)

### 4.2.1 General

In addition to the standard attributes, you can add other Azure AD attributes to the Custom XML if you want these attributes and their values to be imported into your LDIF file as well. These attributes are called **Custom attributes**.

You can add only custom attributes which are known by the LDIF Generator. In the following sections, the allowed attributes are listed.

There are three types of custom attributes (Properties):

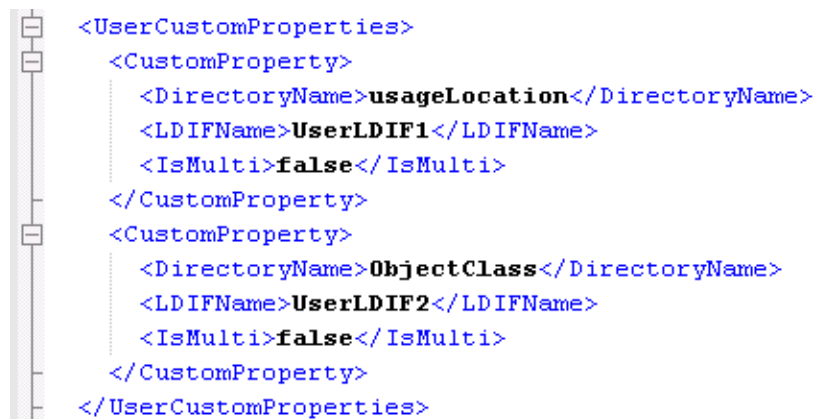
CustomProperties tag	Description
<UserCustomProperties>	User attributes der user, die zusätzlich zu den Standard-Attributen aus dem Azure AD exportiert werden sollen.
<MailboxCustomProperties>	Attributes for user mailboxes which will be exported from Microsoft 365, in addition to the standard attributes.
<ContactCustomProperties>	Contact attributes which will be exported from the Azure AD, in addition to the standard attributes.

For each custom attribute, you must add a `<CustomProperty>` block in the Custom file under the desired **\*CustomProperties** tag. This block contains three tags which respectively expect an entry:

Tag	Description
<code>&lt;DirectoryName&gt;</code>	Attribute name in Azure AD.
<code>&lt;LDIFName&gt;</code>	Attribute name in the LDIF file.
<code>&lt;IsMulti&gt;</code>	Possible values: true, false  There are attributes in Azure AD which can contain several values. For such attributes, set the value to 'true'.

Example of a custom user attribute (CustomProperty):

```
<UserCustomProperties>
  <CustomProperty>
    <DirectoryName>usageLocation</DirectoryName>
    <LDIFName>UserLDIF1</LDIFName>
    <IsMulti>>false</IsMulti>
  </CustomProperty>
</UserCustomProperties>
```



```
<UserCustomProperties>
  <CustomProperty>
    <DirectoryName>usageLocation</DirectoryName>
    <LDIFName>UserLDIF1</LDIFName>
    <IsMulti>>false</IsMulti>
  </CustomProperty>
  <CustomProperty>
    <DirectoryName>ObjectClass</DirectoryName>
    <LDIFName>UserLDIF2</LDIFName>
    <IsMulti>>false</IsMulti>
  </CustomProperty>
</UserCustomProperties>
```

## 4.2.2 User attributes

In addition to the standard user attributes, you can add the following custom user attributes. For these attributes, you can specify any attribute name in the LDIF file.

### Attribute names in Azure AD

accountEnabled	imAddress	onPremisesSyncEnabled
city	isResourceAccount	onPremisesUserPrincipalName
companyName	jobTitle	otherMails
country	lastPasswordChangeDateTime	passwordPolicies
createdDateTime	mail	proxyAddresses
creationType	mailNickname	refreshTokensValidFromDateTime
deletedDateTime	officeLocation	showInAddressList
employeeHireDate	onPremisesDistiguishedName	signInSessionsValidFromDateTime
employeeId	onPremisesDomainName	state
employeeType	onPremisesImmutableId	surname
externalUserState	onPremisesLastSyncDateTime	usageLocation
externalUserState ChangeDateTime	onPremisesSamAccountName	userPrincipalName
id	onPremisesSecurityIdentifier	userType

### 4.2.3 Contact attributes

In addition to the standard contact attributes, you can add the following custom contact attributes. For these attributes, you can specify any attribute name in the LDIF file.

#### Attribute names in Azure AD

city	jobTitle	ProxyAddresses
companyName	lastDirSyncTime	sipProxyAddress
country	mail	state
department	mailNickName	streetAddress
dirSyncEnabled	mobile	surname
facsimileTelephoneNumber	physicalDeliveryOfficeName	telephoneNumber
givenName	postalCode	

### 4.2.4 Attributes from Microsoft 365

The **Custom** attributes (1 to 16) and **Extension Custom** attributes (<RowNumber><ColumnNumber>) from Microsoft 365 (mailbox attributes) are supported and can also be added to the Custom XML by using the tag <MailboxCustomProperties>.

Examples:

CustomAttribute7: seventh attribute

ExtensionCustomAttribute12: first row, second column

ExtensionCustomAttribute31: third row, first column

## 5 About GBS

GBS Europa GmbH is a leading vendor of solutions and services in the fields of messaging security and workflow for the Domino and Microsoft collaboration platforms. Over 5,000 customers and more than 4 million users worldwide trust in GBS expertise. The company operates in Europe, North America and Asia.

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