



CLOUD IDENTITY SUMMIT '20

Identity Management Track

**"Synchronization –
backbone of a hybrid setup"**

Klaus Bierschenk (cellent GmbH)

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Azure Meetup

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Synchronization – backbone of a hybrid setup

About me:

Live in Murnau, near Garmisch-Partenkirchen

Have a passion for (Azure) Active Directory and related technologies

- Microsoft certified since first Windows Server Active Directory version in year 2000
- More than 20- years of experience in Enterprise Scenarios with Identity Technologies
- Collaborating in the Microsoft Security Council Group
- Occasional author in the German Paper Press



Klaus.bierschenk@cellent.de



@KlaBiers

Blog at:

<https://nothingbutcloud.net/>

Synchronization – backbone of a hybrid setup

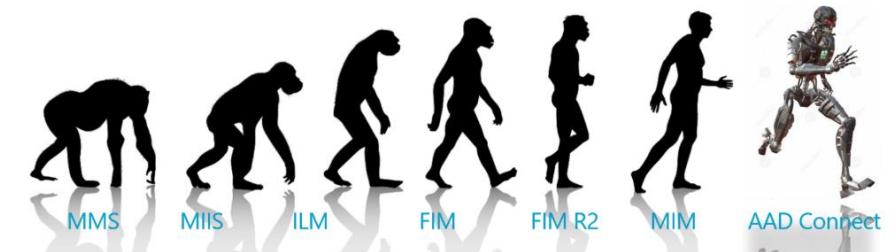
Agenda

- Historical topics (ILM, FIM, MIM)
- Azure AD Connect (components, architecting, supported scenarios, ...)
- Topics from an architectural perspective
- Introduction to Azure AD Connect Cloud Provisioning (why and when?)
- Demos on Azure AD Connect / Cloud Provisioning

Synchronization – backbone of a hybrid setup

Synchronization at Microsoft has a long historie

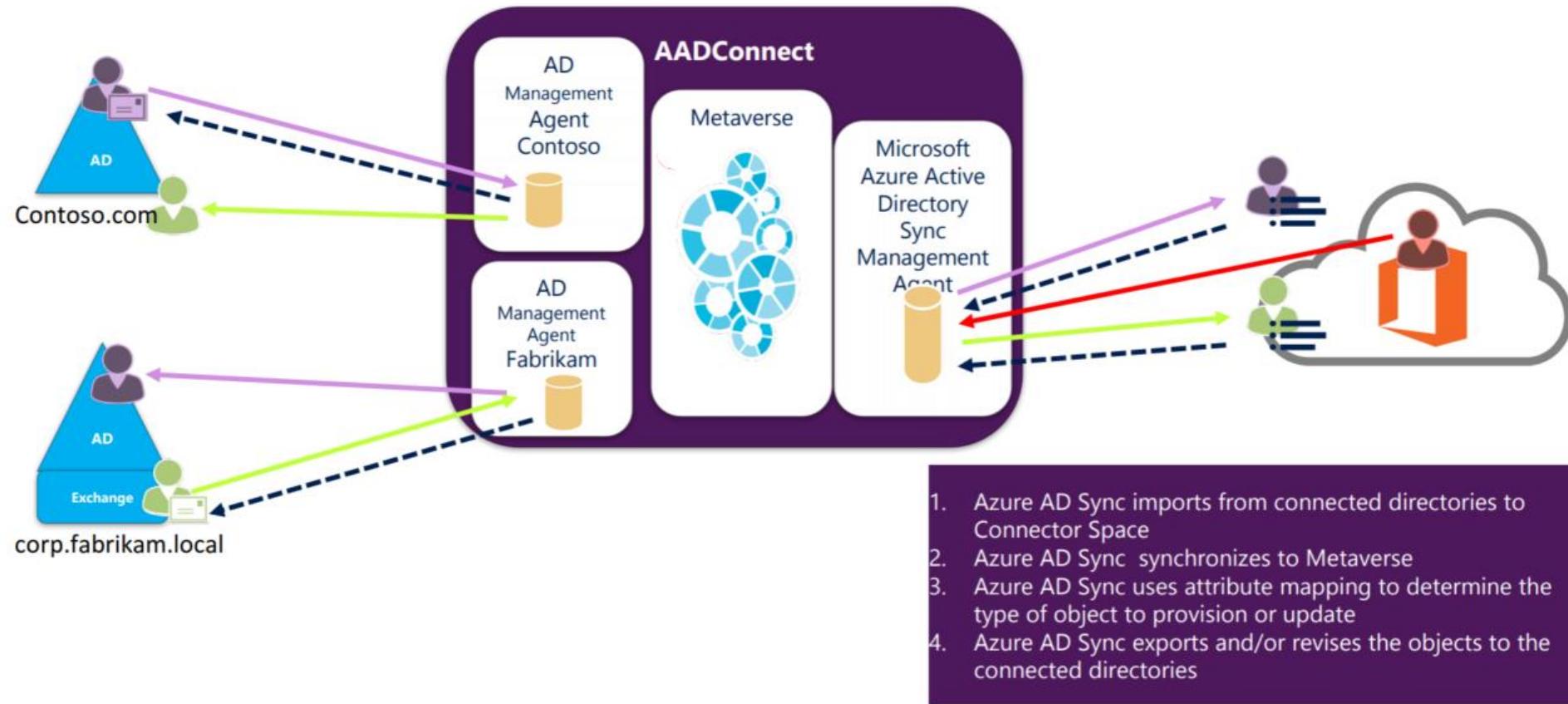
- It is part of the IAM-Productfamily Forefront Identity Management (FIM) or Microsoft Identity Management (MIM)
- MIM Sync can be used outside the Azure and Hybrid Setup...
... but you have to do your **programming homework**
- E.g. resource forest scenario
- Various datasources can be used. Not just AD DS
 - SQL DB
 - ...
 - textfiles are possible as well
- Core technology of the Identity Suite is the Synchronization Service.
AAD Connect has **under the hood the synch service**



Source: Oxford Computer Group

Synchronization – backbone of a hybrid setup

Data flow and internal components

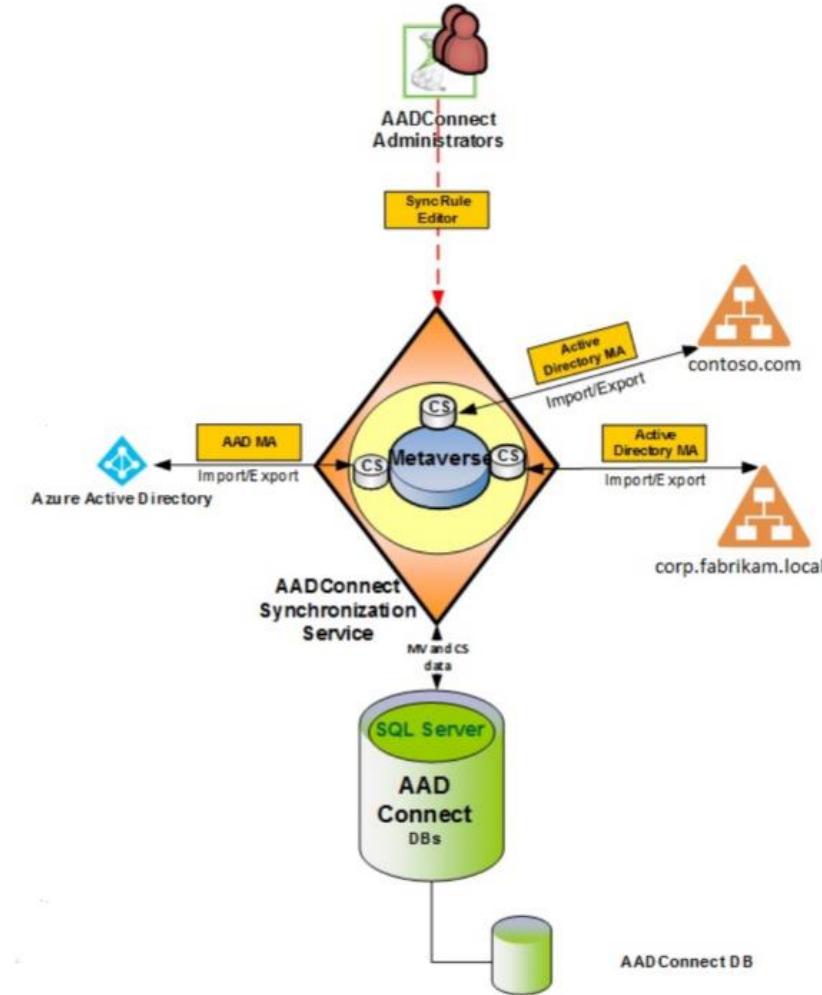


Synchronization – backbone of a hybrid setup

Data flow and components ... another view

Often used terms with sync technology

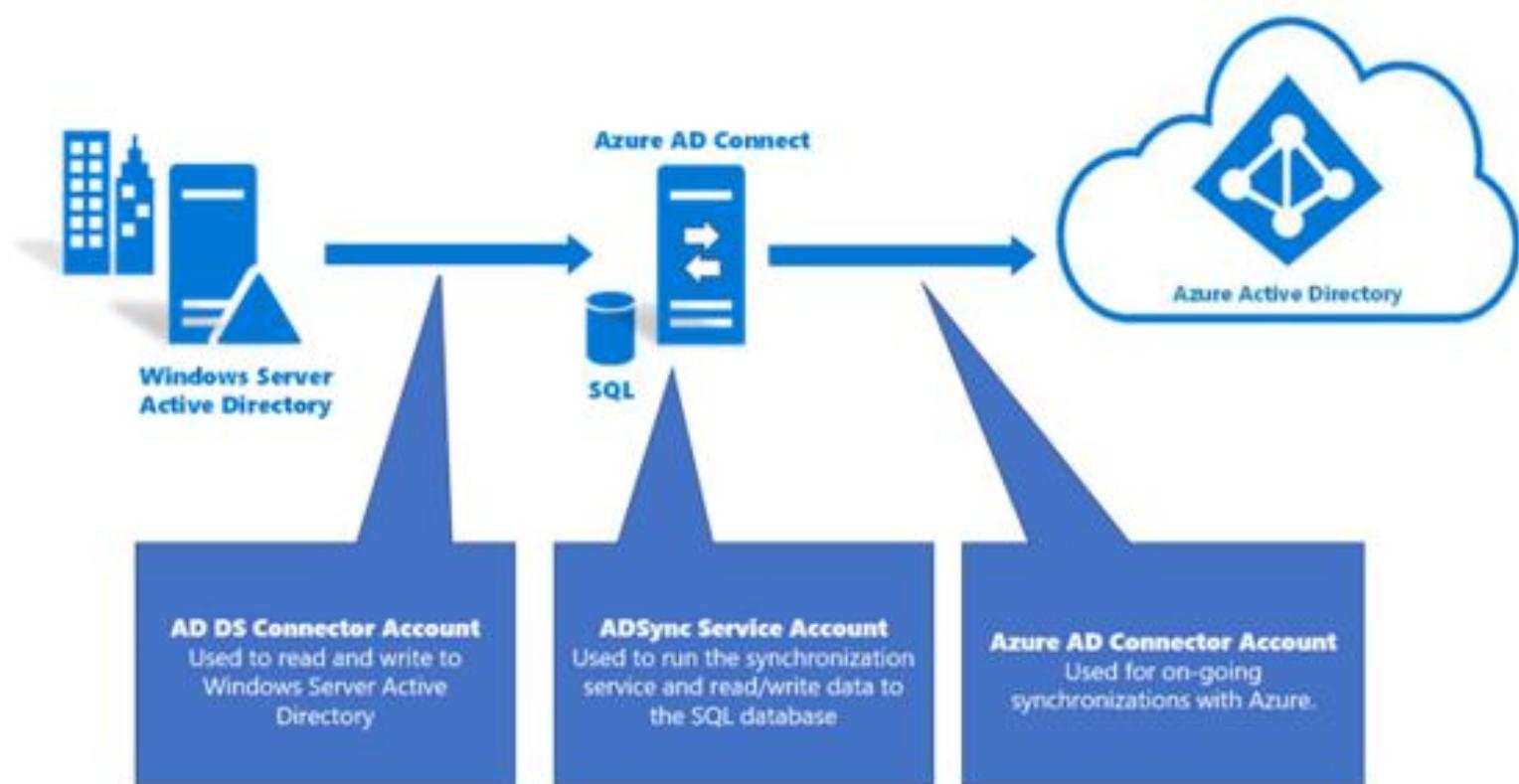
- Metaverse (MV)
- Connector Space (CS)
- Management Agent (MA)



Synchronization – backbone of a hybrid setup

Components! What's on the box after setup?

- FIM Sync as a „bridge“ to Azure
- Azure AD Connect (Setupmodul)
- Synchronization Rules Editor
(Attribute based filtering)
- Powershellmodule ADSync
(e.g. to set the sync schedule)
- SQL Server 2012 Express LocalDB
(10GB limitation)
- Synchronization Service
(Admintooll)



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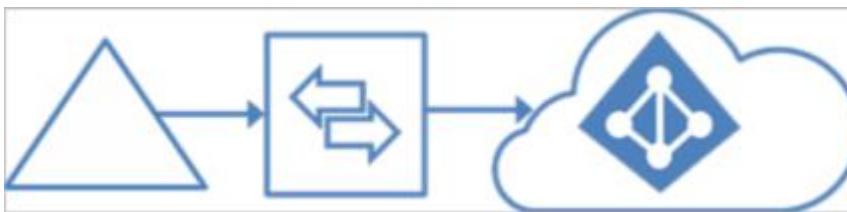
Demo: Azure AD Connect

Synchronization – backbone of a hybrid setup

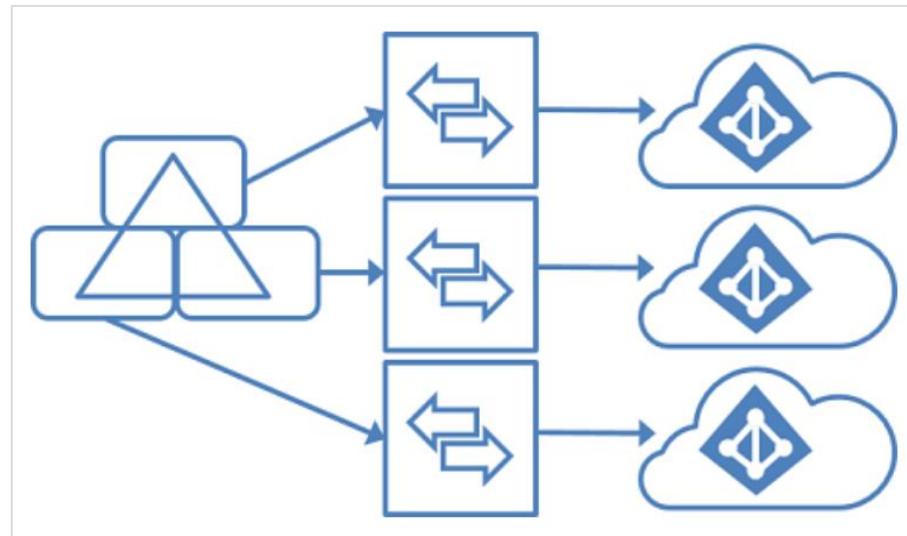
Single Forest Environment

Supported

Example1

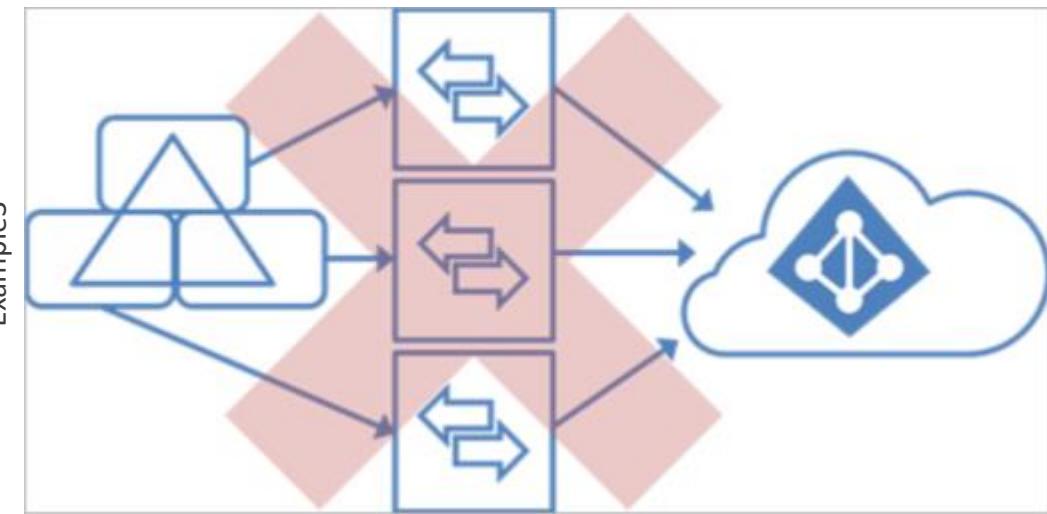


Example2



Unsupported

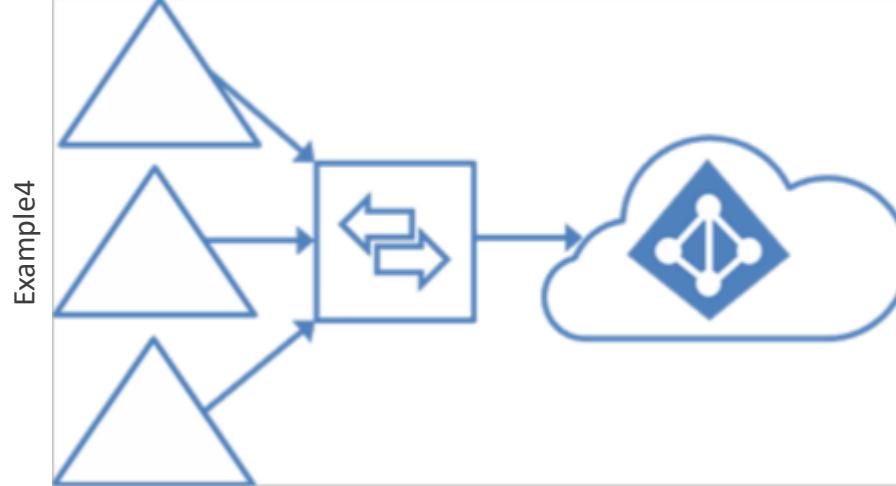
Example3



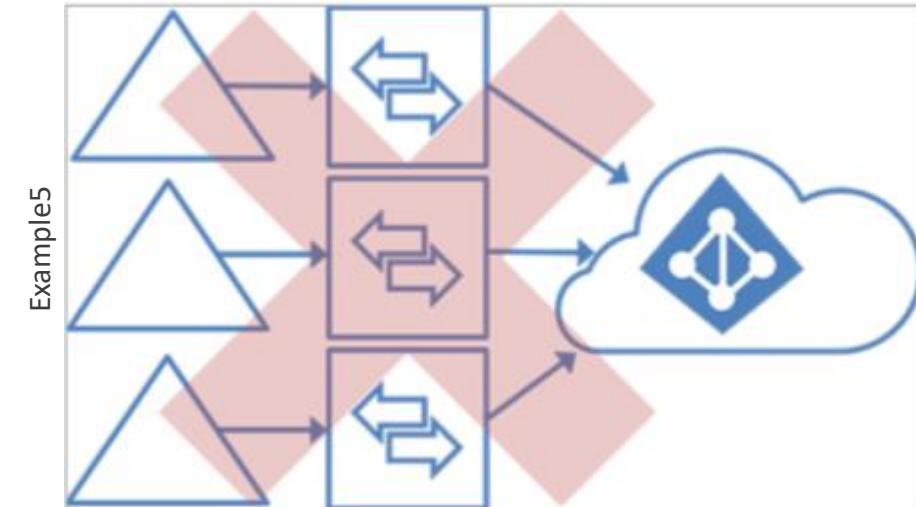
Synchronization – backbone of a hybrid setup

Multiple Forest Environment

Supported



Unsupported



Synchronization – backbone of a hybrid setup

What else can (should) be discussed from an architecting perspective (planning)?

Filtering on multiple level possible

- DomainLevel
- OU
- Attribute (Rule Editor) DEMO ☺
- Which tool for what level of filtering?
- Have a lab available for testing (or at least a staging)

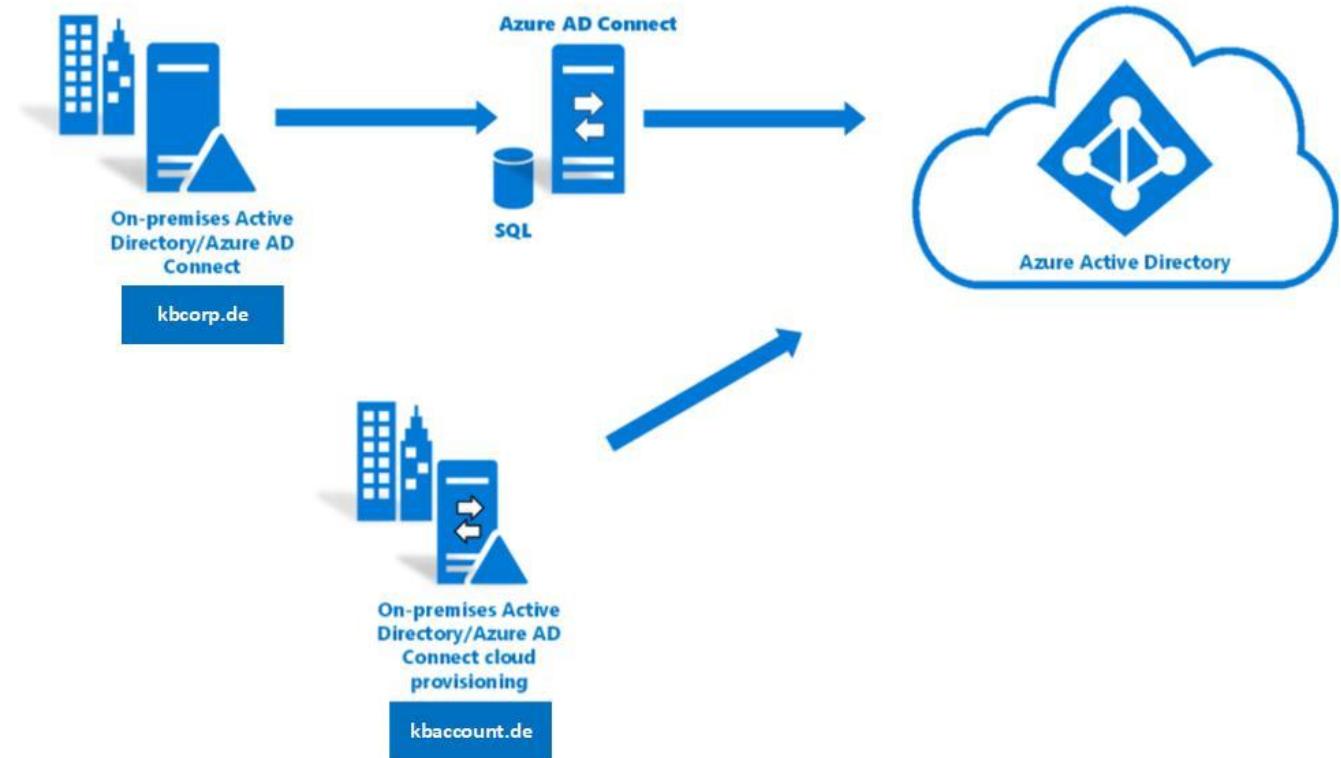
High Availability

- Is HA really required?
- No Farmsetup – every AAD Connect Server has it's own independent config
- What will happen when an issue occurs?
- Staging Server concept
- HA for SQL can make sense in large enterprises. *Setup with „useexistingdatabase“switch (Link)*

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Overview of Azure AD Connect Cloud Provisioning

- Public Preview since Ignite 2019
- Central management in Azure Portal
- Perfect in disconnected environments
- Lightweight agent On-Premises
- Eliminates a couple of disadvantages from Connect Server (SQL, Staging, HA, ...)
- Couple of features missing



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Demo: Azure AD Connect Cloud Provisioning

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Comparing AD Connect with AD Connect Cloud provisioning – major topics

Feature	Azure AD Connect	Azure AD Connect Cloud Provisioning
Configuration is stored	on-premises DB	Azure
Central management in the Azure Portal		✓
Multiple disconnected forest support		✓
Filtering on Attribute Level	✓	
Writeback support	✓	
On-Premises Agent HA		✓
Synchronize customer defined attributes	✓	
Powershell support	✓	

More features are available [here](#) today with CP. Check product web site for details and comparison

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Azure AD Connect Cloud Provisioning timeline (this was announced at Ignite)

Today

Release	Functionalities
Initial	<ul style="list-style-type: none"> - All former mentioned features
Public preview refresh update (Ignite 2020)	<ul style="list-style-type: none"> - Improved User Experience - On demand provisioning with single user - Improved troubleshooting experience - Attribute mapping and transformations UX
GA (end of year 2020)	<ul style="list-style-type: none"> - Password Writeback (SSPR) - gMSA support - Performance improvement for initial sync cycle - Improved health info into the portal - Extended on-demand provisioning - Prevention of accidental deletes - Azure Monitor Workbooks

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Recommendations? What next steps makes sense?

How to improve my knowledge? Recommended sources ...

- Semperis with HIPC, Podcast, conference, Video Material, Oxford Computer Group
- Jorge for quest [website](#). Many articles about Synchronization: from FIM to AADConnect and lots of other informations

How to continue with CP?

- Keep an eye on the Microsoft web site for the next version update. It is GA and coming soon (end of year 2020, announced at MS Ignite)

What else?

- Check my **two [Blog articles](#)** about synchronization and Azure AD Connect Cloud Provisioning
- In German: the it-Administrator magazine for the [article](#) about AAD Connect and Azure AD Cloud Provisioning

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Additional links:

FIM/MIM Link Collection (Huge list! Not totally new but perfect to understand FIM/MIM/Sync)

https://social.technet.microsoft.com/wiki/contents/articles/3610.fim-2010-mim-2016-related-wiki-articles.aspx#FIM_Understanding_Article

It is actually possible to synchronize different portions of AD to different tenants too. See this article for limitations of this approach.

<https://docs.microsoft.com/en-us/azure/active-directory/connect/active-directory-aadconnect-topologies#each-object-only-once-in-an-azure-ad-tenant>

IdFix: Guide (also included in Download)

<https://docs.microsoft.com/en-us/office365/enterprise/install-and-run-idfix>

<https://microsoft.github.io/idfix/>

AADConnectConfigDocumenter

<https://github.com/Microsoft/AADConnectConfigDocumenter>

Azure AD Pricing (AAD Connect / Health included)

<https://azure.microsoft.com/en-us/pricing/details/active-directory/>

Hardening Service Accounts from AADConnect

<https://docs.microsoft.com/en-us/azure/active-directory/hybrid/reference-connect-accounts-permissions>

Supported Scenarios

<https://docs.microsoft.com/en-us/azure/active-directory/hybrid/plan-connect-topologies#each-object-only-once-in-an-azure-ad-tenant>

Use existing database switch

<https://docs.microsoft.com/de-de/azure/active-directory/hybrid/how-to-connect-install-existing-database>

<https://docs.microsoft.com/de-de/azure/active-directory/hybrid/how-to-connect-install-move-db>

Start to find out what is possible with Cloud provisioning

<https://docs.microsoft.com/en-us/azure/active-directory/cloud-provisioning/>



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Your Feedback is important!

<http://feedback.identitysummit.cloud/>

Thanks to our sponsors!



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Backup Slides

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Synchronization Service Manager on SRV4

File Tools Actions Help

Operations Connectors Metaverse Designer Metaverse Search

Connector Operations

Name	Profile Name	Status	Start Time	End Time
kcorp.de	Export	success	22.10.2020 12:29:32	22.10.2020 12:29:32
klabier.onmicrosoft.co...	Export	success	22.10.2020 12:29:23	22.10.2020 12:29:32
klabier.onmicrosoft.co...	Delta Synchronization	success	22.10.2020 12:29:22	22.10.2020 12:29:23
kcorp.de	Delta Synchronization	success	22.10.2020 12:29:22	22.10.2020 12:29:22
klabier.onmicrosoft.co...	Delta Import	success	22.10.2020 12:29:18	22.10.2020 12:29:22
kcorp.de	Delta Import	success	22.10.2020 12:29:17	22.10.2020 12:29:18
kcorp.de	Export	success	22.10.2020 11:59:31	22.10.2020 11:59:31
klabier.onmicrosoft.co...	Export	success	22.10.2020 11:59:23	22.10.2020 11:59:31
klabier.onmicrosoft.co...	Delta Synchronization	success	22.10.2020 11:59:22	22.10.2020 11:59:23
kcorp.de	Delta Synchronization	success	22.10.2020 11:59:22	22.10.2020 11:59:22
klabier.onmicrosoft.co...	Delta Import	success	22.10.2020 11:59:17	22.10.2020 11:59:21
kcorp.de	Delta Import	success	22.10.2020 11:59:17	22.10.2020 11:59:17
kcorp.de	Export	success	22.10.2020 11:28:49	22.10.2020 11:28:49
klabier.onmicrosoft.co...	Export	success	22.10.2020 11:28:38	22.10.2020 11:28:49
klabier.onmicrosoft.co...	Delta Synchronization	success	22.10.2020 11:28:36	22.10.2020 11:28:38
kcorp.de	Full Synchronization	success	22.10.2020 11:28:27	22.10.2020 11:28:35
klabier.onmicrosoft.co...	Delta Import	success	22.10.2020 11:28:18	22.10.2020 11:28:26
kcorp.de	Delta Import	success	22.10.2020 11:28:17	22.10.2020 11:28:17

Profile Name: User:

Step Type:	Partition:
Start Time:	End Time:
Status:	

Synchronization Statistics	Connection Status
	Synchronization Errors

Synchronization – backbone of a hybrid setup

Synchronization Service Manager on SRV4

File Tools Actions Help

Operations Connectors Metaverse Designer Metaverse Search

Connectors

Name	Type	Description	State
klabier.onmicrosoft.co...	Windows Azure Active Directory (Micr...)		Idle
kbcorp.de	Active Directory Domain Services		Idle

Total number of Connectors: 2

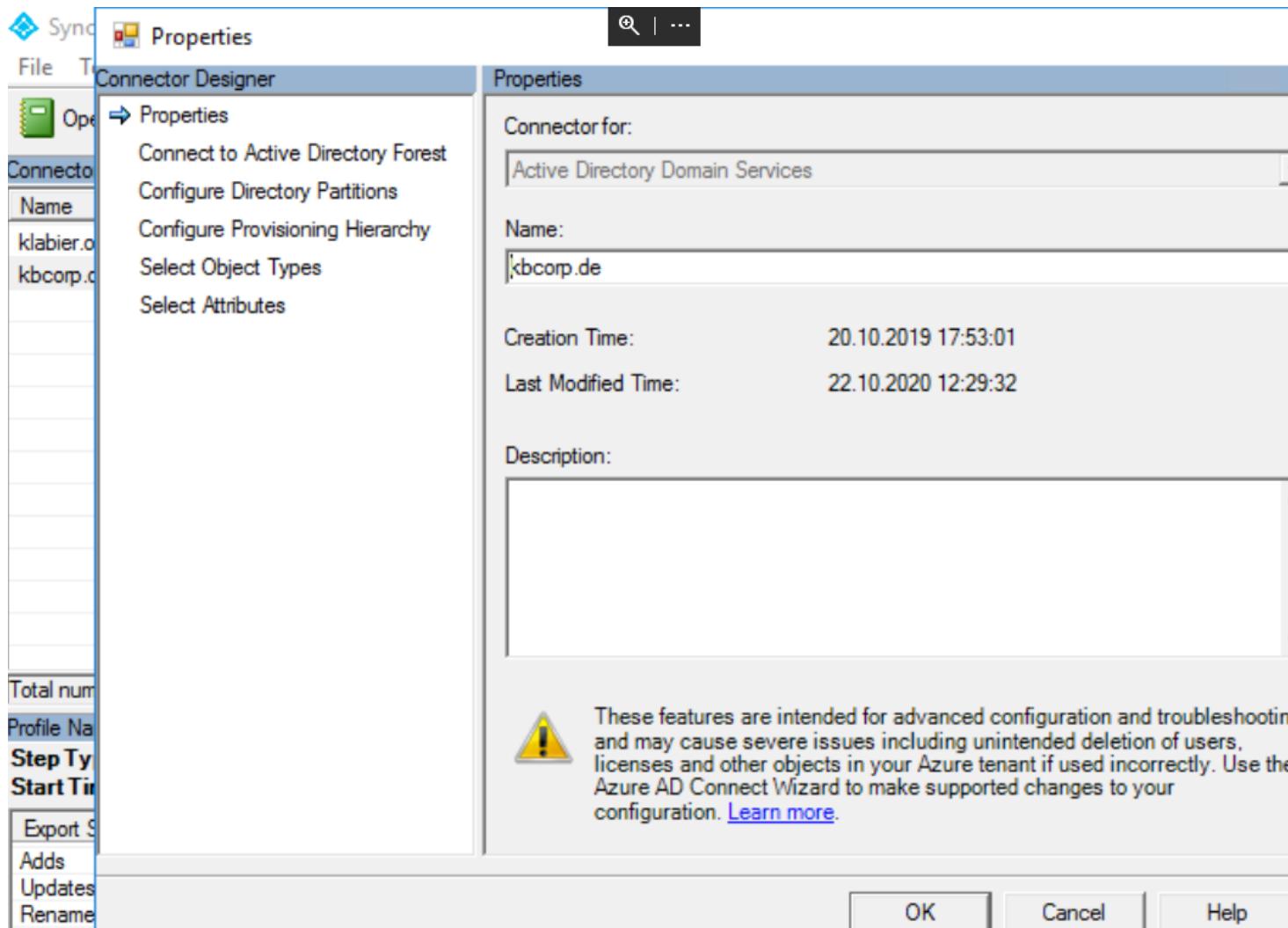
Profile Name: Export User Name: NT SERVICE\ADSync

Step Type: Export	Partition: DC=kbcorp,DC=de
Start Time: 22.10.2020 12:29:32	End Time: 22.10.2020 12:29:32
Status: success	

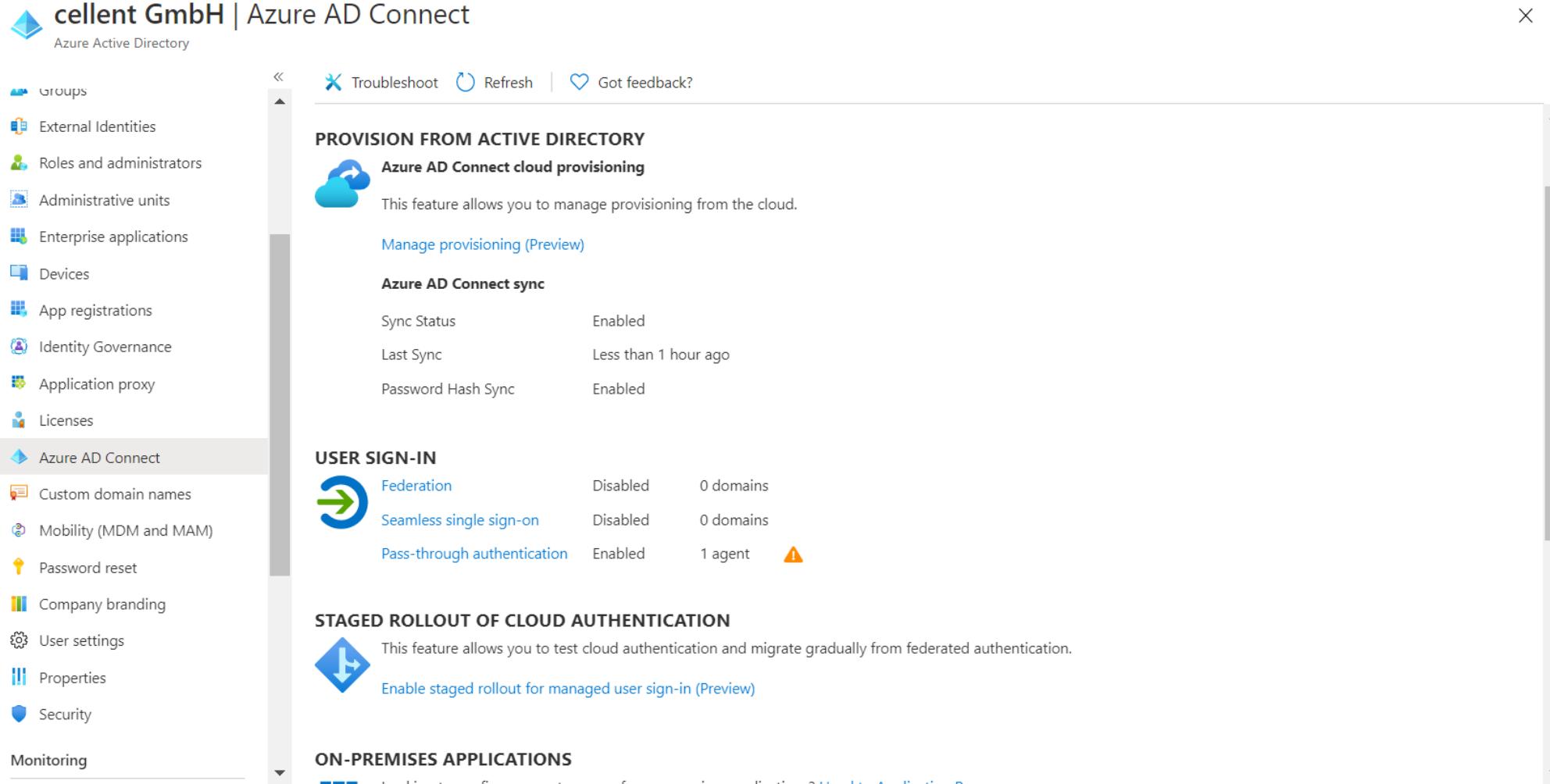
Export Statistics	
Adds	0
Updates	0
Renames	0

Connection Status	
DC2.kbcorp.de:389 success	
Export Errors	

Synchronization – backbone of a hybrid setup



Synchronization – backbone of a hybrid setup



The screenshot shows the Azure Active Directory portal with the title "cellent GmbH | Azure AD Connect". The left sidebar lists various Azure services, with "Azure AD Connect" selected. The main content area displays the "PROVISION FROM ACTIVE DIRECTORY" section, which includes "Azure AD Connect cloud provisioning" (with a note about managing provisioning from the cloud) and "Azure AD Connect sync" (showing Sync Status as Enabled, Last Sync as less than 1 hour ago, and Password Hash Sync as Enabled). Below this is the "USER SIGN-IN" section, featuring "Federation" (Disabled, 0 domains), "Seamless single sign-on" (Disabled, 0 domains), and "Pass-through authentication" (Enabled, 1 agent, with a warning icon). The "STAGED ROLLOUT OF CLOUD AUTHENTICATION" section follows, with a note about testing cloud authentication and migrating from federated authentication, and a link to "Enable staged rollout for managed user sign-in (Preview)". The bottom of the page shows the "ON-PREMISES APPLICATIONS" section, which is currently collapsed.

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Home > cellent GmbH >

Azure AD Provisioning (Preview)

X

Azure Active Directory

+ New configuration Review all agents Logs Download agent Refresh Troubleshoot New support request Got feedback?

Provision identities from on-premises Active Directory to Azure AD. Read the [configuration guide](#) for help configuring provisioning.

Configuration	Status	Agents
kbaccount.de	 Healthy	View

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Edit provisioning configuration

Azure Active Directory

 Save  Restart provisioning  Delete

Read the [configuration guide](#) for help configuring provisioning.

- 1 Scope** ⓘ
Active Directory domain **kbaccount.de**
Scope users
2 security groups in scope
[Click to edit scoping filters](#)
- 2 Manage attributes** ⓘ
Password hash sync Enable
Map attributes [Click to edit mappings](#)
- 3 Validate (recommended)** ⓘ
Verify that provisioning is working as expected before enabling the configuration by testing with individual users.
Quickly create, update, or disable the user's account in the target app based on your provisioning configuration.
[Provision a user](#)
- 4 Settings** ⓘ
Notification email
- 5 Deploy** ⓘ
Enabling this will provision the users and groups that are in scope as identified by this configuration.
[Enable](#) [Disable](#)

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Home > cellent GmbH > Azure AD Provisioning (Preview) >

Edit provisioning configuration

Azure Active Directory

 Save  Restart provisioning  Delete

Configure

Read the [configuration guide](#) for help configuring provisioning.

1 Scope ⓘ

Active Directory domain	kbaccount.de
Scope users	2 security groups in Click to edit scoping

2 Manage attributes ⓘ

Password hash sync	<input checked="" type="checkbox"/> Enable
Map attributes	Click to edit mapping

Scope users

X

 Nested objects beyond the first level will not be included when using scoping filters.

- All users
- Selected security groups
- Selected organizational units

Distinguished name of object

Add

CN=SynchedObjects_II,OU=CustomGroups,DC=kbaccount,DC=de [Remove](#)

CN=SynchedObjects,OU=CustomGroups,DC=kbaccount,DC=de [Remove](#)

Done

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Home > cellent GmbH > Azure AD Provisioning (Preview) > Edit provisioning configuration >

Edit attribute mappings

X

Azure Active Directory

 Save schema  Discard changes  Restore default mappings

Users / InetOrgPersons Groups Contacts

 Search by source or target attribute

+ Add attribute mapping

Target attribute ↑↓	Source attribute ↑↓	Mapping type		
AccountEnabled	IIF(IsPresent([userAccountControl]), IIF(BitAn...)	Expression		
Alias	mailNickname	Direct		
AltRecipient	altRecipient	Direct		
Assistant	assistant	Direct		
AuthOrig	authOrig	Direct		
City	Trim([I])	Expression		
CommonName	cn	Direct		

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[Home](#) > [cellent GmbH](#) > [Azure AD Provisioning \(Preview\)](#) >

On-premises provisioning agents

kbaccount.de

 [Download on-premises agent](#)

Agents configured for kbaccount.de

Machine Name	External IP	Status
SRV2.kbaccount.de	79.224.214.254	 active
SRV1.kbaccount.de	79.224.214.254	 active

Agents not configured for kbaccount.de

Machine Name	External IP	Status
No results		

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Azure AD Provisioning (Preview)

Azure Active Directory

+ New configuration Review all agents Logs Download a

Provision identities from on-premises Active Directory to Azure AD. Read the [Cloud-to-Cloud provisioning guide](#).

Configuration	Status
kbaccount.de	 Healthy

Provisioning status info (Preview) X

User and group provisioning

Status
Active

Last successful run
10/22/2020, 12:04:12 PM GMT+2

Groups processed
3

Users processed
495

Job Id
AD2AADProvisioning.61d8a0b4dfca4c6eb069fa0221a91286.ffe42c24-41d9-4055-9307-4ef74c77b03b

Password hash sync

Status
Active

Last successful run
10/22/2020, 12:03:41 PM GMT+2

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Home > cellent GmbH > Azure AD Provisioning (Preview) >

Provisioning Logs

X

Refresh | Columns | Got feedback?

Identity Name or ID Date : Last 24 hours Show dates as: Local Status : All Action : All Source System contains Active Directory X
Target System contains Azure Active Directory X Add filters

Date	Identity	Action	Source System	Target System	Status
10/21/2020, 6:25:39 PM	Display Name SynchedObjects_II Source ID 18f5df9c-a008-494a-95d3 Target ID 9924de4a-84ec-4320-ac47	Update	Active Directory	Azure Active Directory	Success
10/21/2020, 6:25:39 PM	Display Name SynchedObjects Source ID a95e0401-2f7e-4d2d-b31c Target ID 6df62cff-6754-4f96-ae23-a	Update	Active Directory	Azure Active Directory	Success
10/21/2020, 6:25:39 PM	Display Name VMADM_KBAccount Source ID 1f88b53a-3cd4-47a3-bb4f Target ID a1f1a59d-42eb-4101-9094	Update	Active Directory	Azure Active Directory	Success
10/21/2020, 6:24:47 PM	Display Name Steven Fischer Source ID 8d7707fc-8088-4b75-ac51 Target ID cc7ccfd-d6dd-466d-9499-	Create	Active Directory	Azure Active Directory	Success
10/21/2020, 6:24:47 PM	Display Name Frank Shaffer Source ID 0b1759fe-8607-40e2-92e1 Target ID 45e91cb1-b8ed-414f-9750	Create	Active Directory	Azure Active Directory	Success
10/21/2020, 6:24:47 PM	Display Name Jesus McGrath Source ID b913ebf9-691b-4655-9fe6 Target ID 0b61a7e2-b933-41eb-9248	Create	Active Directory	Azure Active Directory	Success
10/21/2020, 6:24:47 PM	Display Name Jessie Aguirre Source ID 48254fb0-0e15-4672-870c Target ID 5fd28cb2-ef86-4b48-a2cb-	Create	Active Directory	Azure Active Directory	Success
10/21/2020, 6:24:47 PM	Display Name Kelly Toman Source ID e58515fc-6bfc-4687-9ca9-	Create	Active Directory	Azure Active Directory	Success

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Home > cellent GmbH > Azure AD Provisioning (Preview) >

Provisioning Logs

X

Refresh | Columns | Got feedback?

Identity Name or ID Date : Last 24 hours Show dates as: Local Status : All Action : All Source System contains Active Directory X
Target System contains Azure Active Directory X Add filters

Steven.Fischer@kbaccount.de ▾

Steps Troubleshooting & Recommendations Modified Properties Summary

1. Import User from Active Directory ✓
2. Determine if User is in scope ✓

EntrySynchronizationScoping

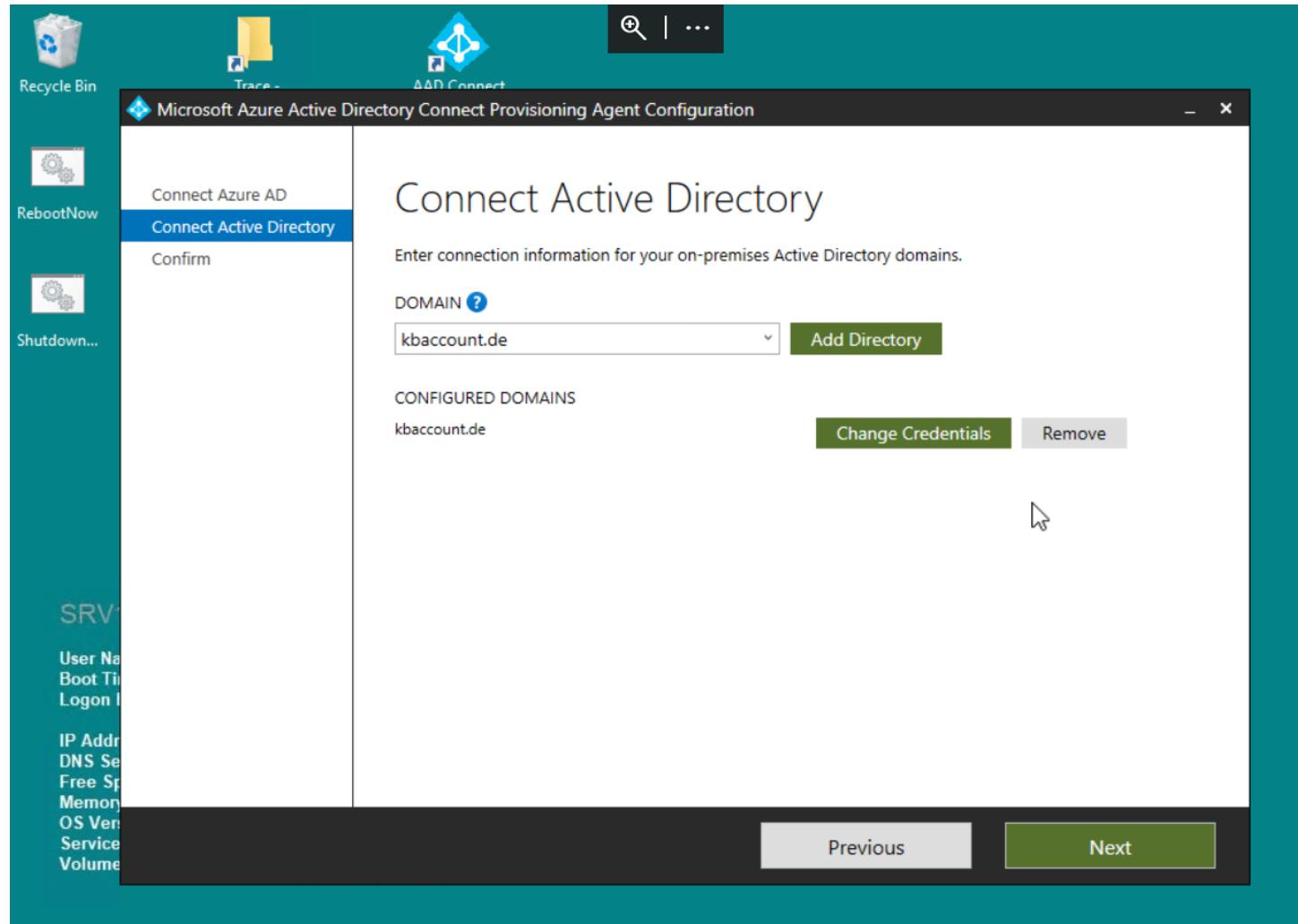
Result	Success
Description	Determine if user in scope by evaluating against each scoping filter
Active in the source system	True
Scoping filter evaluation passed	True

3. Provision User in Azure Active Directory ✓

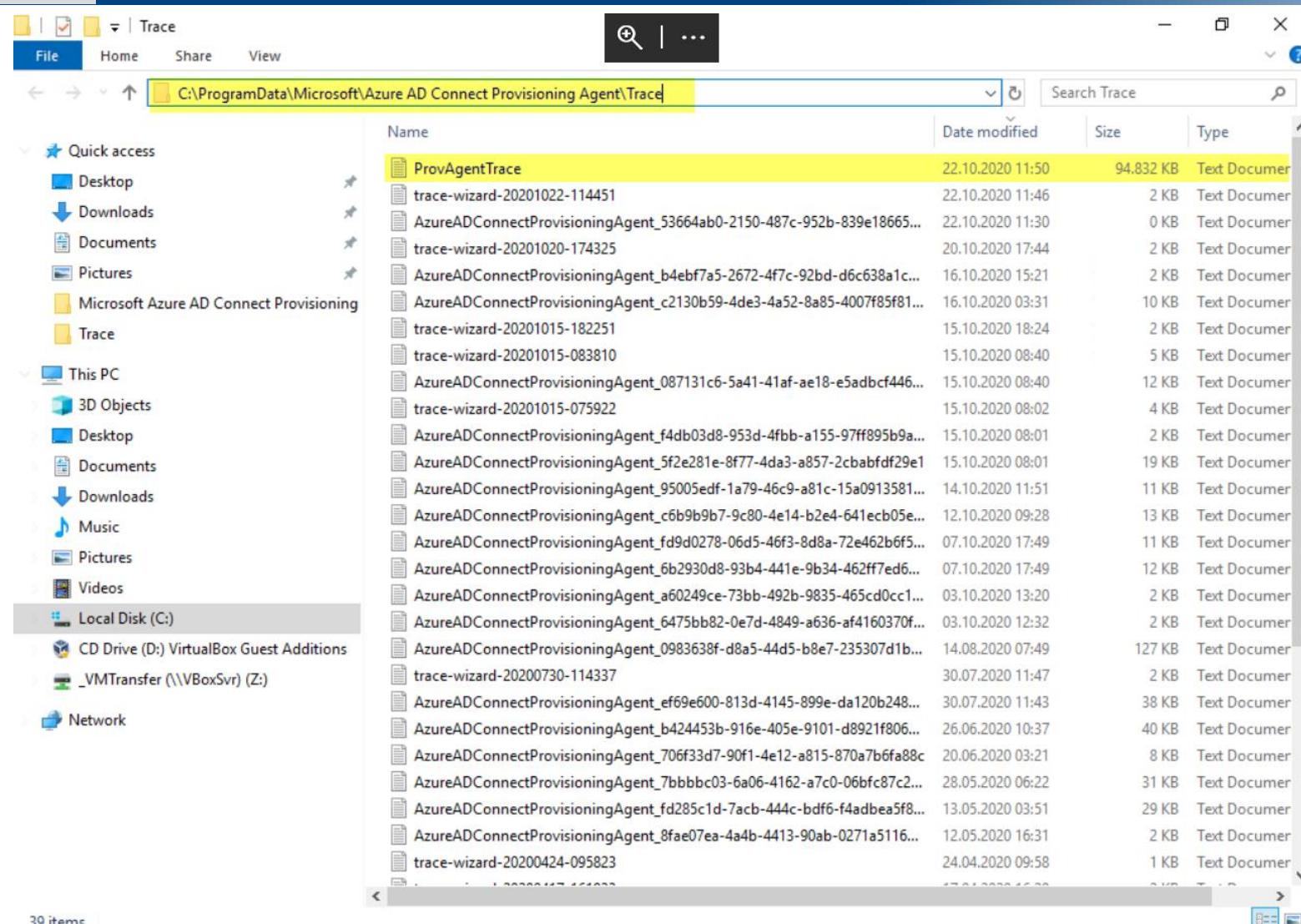
EntryExportAdd

◀

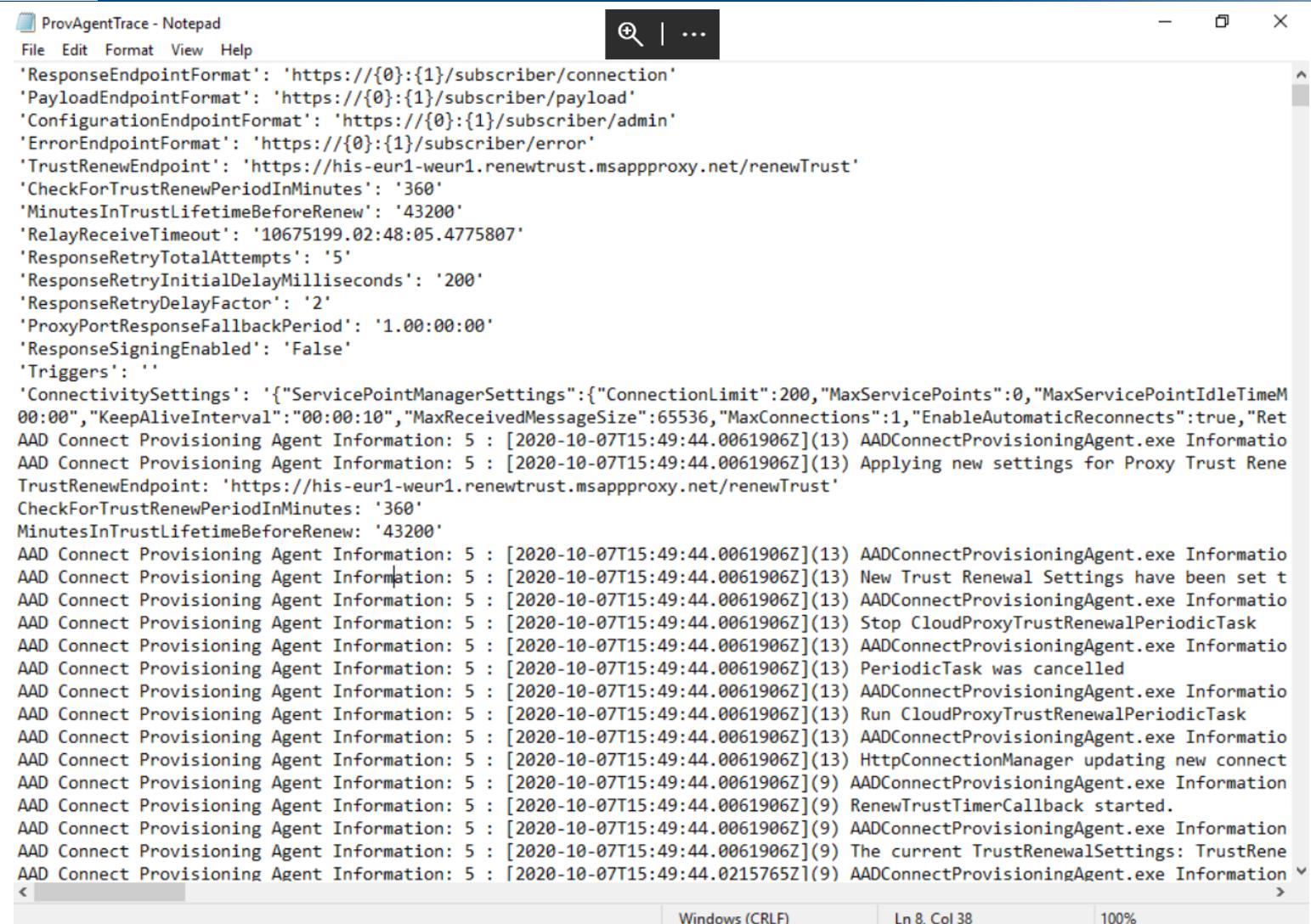
Synchronization – backbone of a hybrid setup



Synchronization – backbone of a hybrid setup



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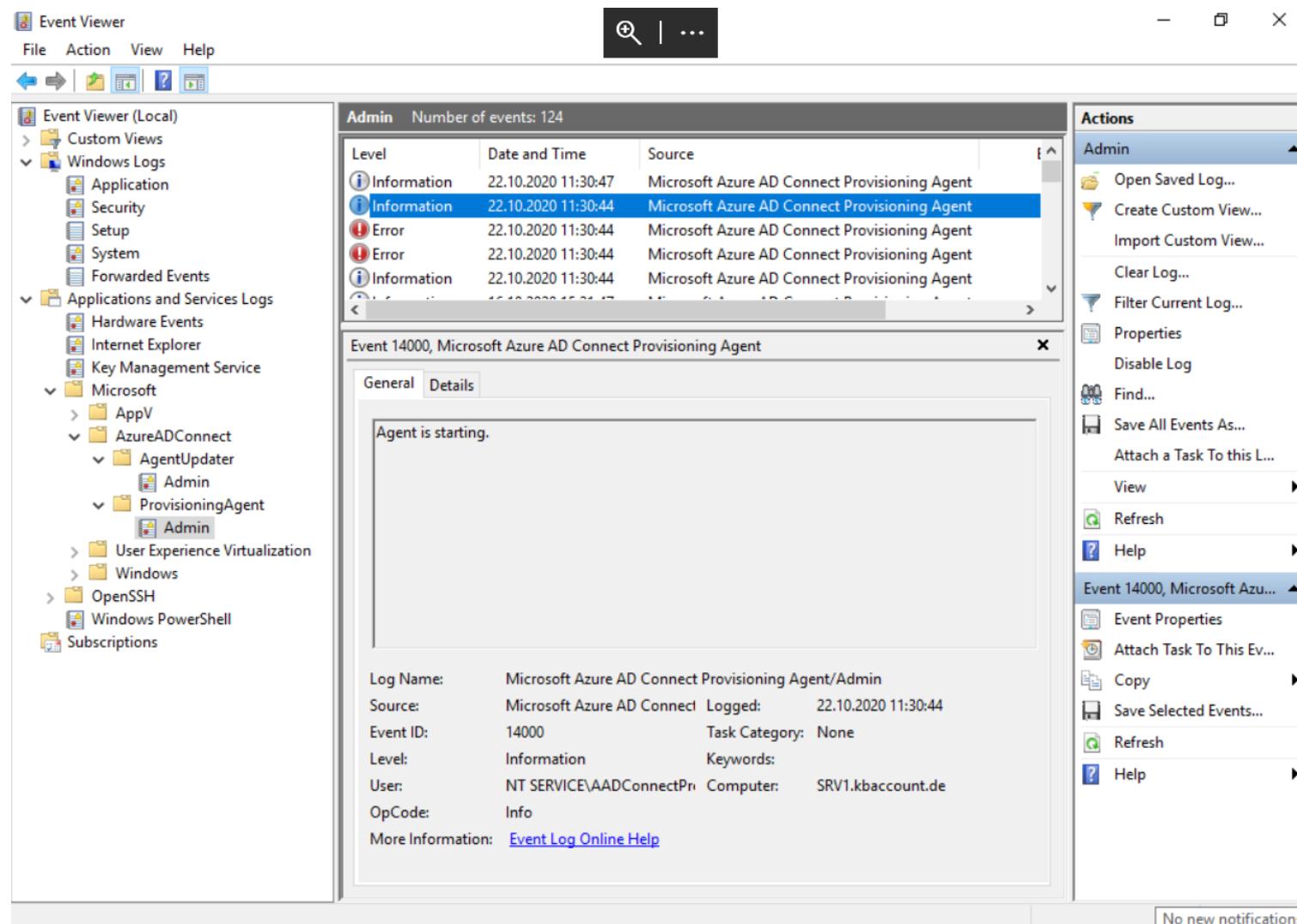


```

ProvAgentTrace - Notepad
File Edit Format View Help
'ResponseEndpointFormat': 'https://{}:{}/subscriber/connection'
'PayloadEndpointFormat': 'https://{}:{}/subscriber/payload'
'ConfigurationEndpointFormat': 'https://{}:{}/subscriber/admin'
'ErrorEndpointFormat': 'https://{}:{}/subscriber/error'
'TrustRenewEndpoint': 'https://his-eur1-weur1.renewtrust.msappproxy.net/renewTrust'
'CheckForTrustRenewPeriodInMinutes': '360'
'MinutesInTrustLifetimeBeforeRenew': '43200'
'RelayReceiveTimeout': '10675199.02:48:05.4775807'
'ResponseRetryTotalAttempts': '5'
'ResponseRetryInitialDelayMilliseconds': '200'
'ResponseRetryDelayFactor': '2'
'ProxyPortResponseFallbackPeriod': '1.00:00:00'
'ResponseSigningEnabled': 'False'
'Triggers': ''
'ConnectivitySettings': '{"ServicePointManagerSettings":{"ConnectionLimit":200,"MaxServicePoints":0,"MaxServicePointIdleTimeM00:00","KeepAliveInterval":"00:00:10","MaxReceivedMessageSize":65536,"MaxConnections":1,"EnableAutomaticReconnects":true,"Ret
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) Applying new settings for Proxy Trust Rene
TrustRenewEndpoint: 'https://his-eur1-weur1.renewtrust.msappproxy.net/renewTrust'
CheckForTrustRenewPeriodInMinutes: '360'
MinutesInTrustLifetimeBeforeRenew: '43200'
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) New Trust Renewal Settings have been set t
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) Stop CloudProxyTrustRenewalPeriodicTask
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) PeriodicTask was cancelled
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) Run CloudProxyTrustRenewalPeriodicTask
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) AADConnectProvisioningAgent.exe Informatio
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](13) HttpConnectionManager updating new connect
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](9) AADConnectProvisioningAgent.exe Information
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](9) RenewTrustTimerCallback started.
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](9) AADConnectProvisioningAgent.exe Information
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0061906Z](9) The current TrustRenewalSettings: TrustRene
AAD Connect Provisioning Agent Information: 5 : [2020-10-07T15:49:44.0215765Z](9) AADConnectProvisioningAgent.exe Information

```

Synchronization – backbone of a hybrid setup

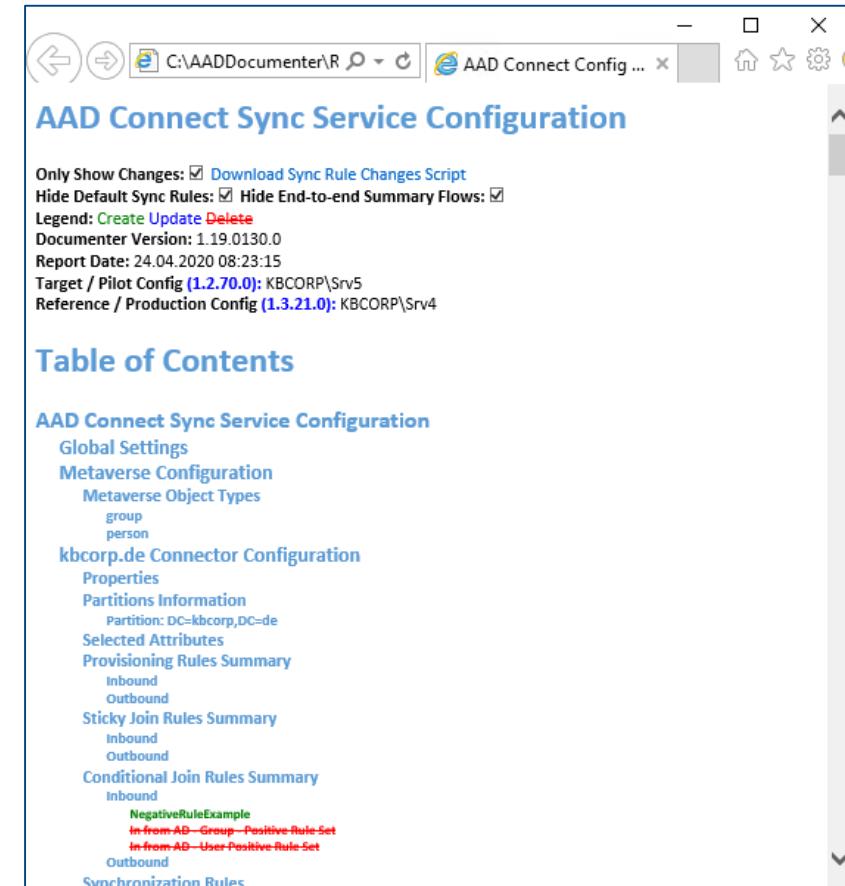


Synchronization – backbone of a hybrid setup

Document and compare config settings from Staging- to Active Server

- Create config dump from AAD Connect Server


```
Get-ADSyncServerConfiguration -Path "<CompletePathToOutputFolder>"
```
- MUST run before switch from Staging to Active Server
- Knowledge of Sync-Engine and Sync Terms required to understand HTML reports
- Easy transfer of the Sync-Rules without changing the GUID



Synchronization – backbone of a hybrid setup

idFix: Housekeeping and check environment for correct attributes

- Check objects On-Premises and reports attribute values which would be reported later as errors
- Checks for extended attributes
- Input via GUI or per CSV (import and export)
- Be careful! Bulk Updates!!
- Every run creates LDIF file for undo (*.ldif)
- Every run creates also an verbose file with detailed information of what was successful or not, in case of an issue

IdFix version 1.11

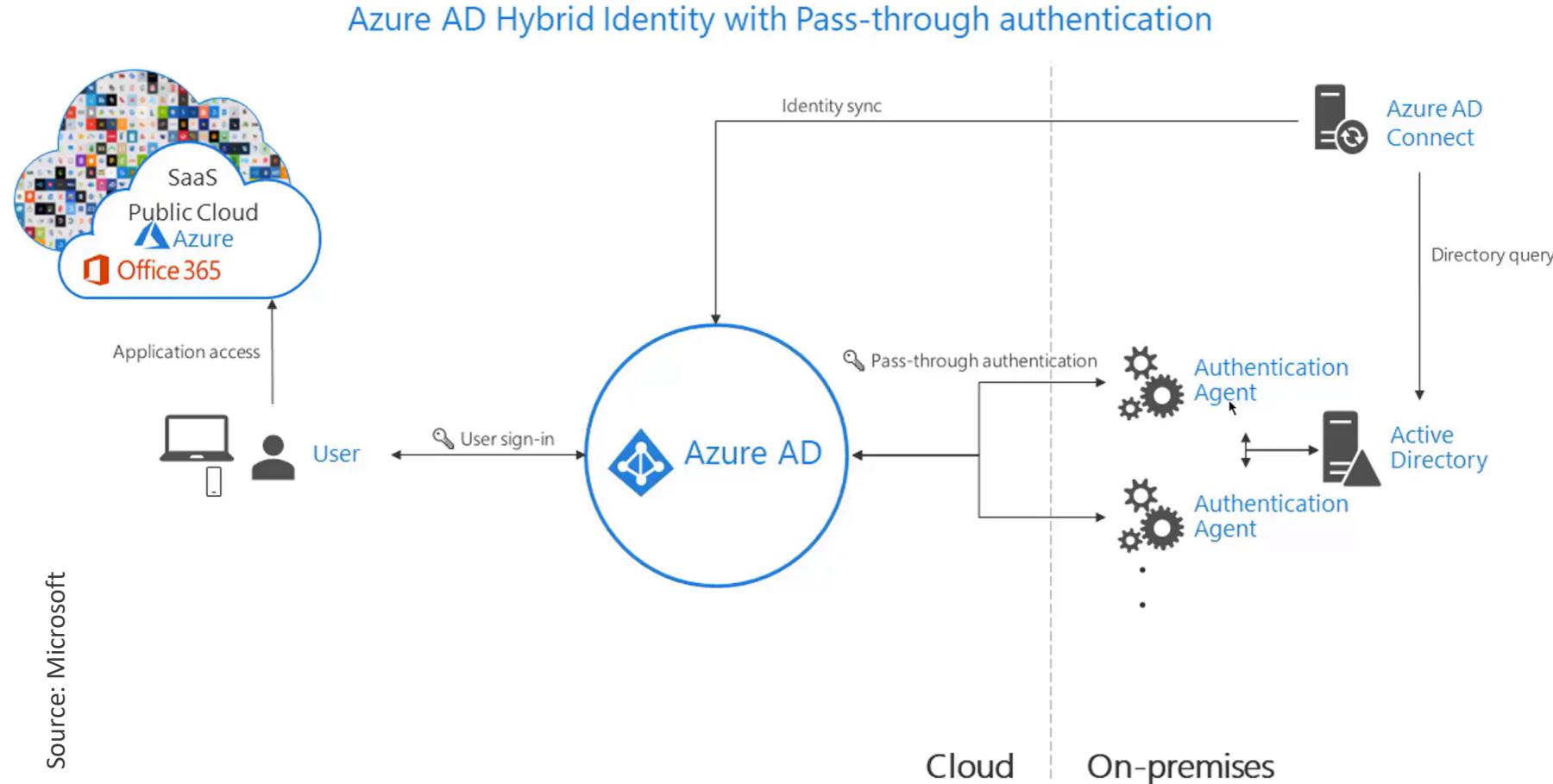
Office 365

Query Cancel Accept Apply Export Import Undo ⚙️ 😊

DISTINGUISHEDNAME	OBJECTCLASS	ATTRIBUTE	ERROR	VALUE	UPDATE	ACTION
CN=Ada Lauritzen,OU=Cust...	user	mail	toplveldomain	lauritzen@kbcorp.local	lauritzen@kbcor...	EDIT
CN=Ada Lauritzen,OU=Cust...	user	targetAddress	blank		SMTP:lauritzen...	REMOVE
CN=Ada Lauritzen,OU=Cust...	user	mailnickname	blank		AdaLauritzen	REMOVE
CN=Adrian Godin,OU=Cust...	user	mailnickname	blank		AdrianGodin	COMPLETE
CN=Adrian Godin,OU=Cust...	user	targetAddress	blank		SMTP:Adrian@...	✓
CN=Alfred Trice,OU=CustA...	user	mailnickname	blank		AlfredTrice	✓
CN=Alfred Trice,OU=CustA...	user	targetAddress	blank		SMTP:mail1@kl...	✓
CN=Allan Krebs,OU=CustA...	user	mailnickname	blank		AllanKrebs	✓
CN=Allan Krebs,OU=CustA...	user	targetAddress	blank		SMTP:mai998...	EDIT
CN=Alma Rogers,OU=Cust...	user	targetAddress	blank		SMTP:blabla@k...	REMOVE
CN=Alma Rogers,OU=Cust...	user	mailnickname	blank		AlmaRogers	COMPLETE
CN=America Tibbetts,OU=C...	user	mailnickname	blank		AmericaTibbetts	✓
CN=America Tibbetts,OU=C...	user	targetAddress	blank		SMTP:newmail...	✓
CN=Amy Martinez,OU=Cust...	user	mailnickname	blank		AmyMartinez	✓

Query Count: 21 Error Count: 35

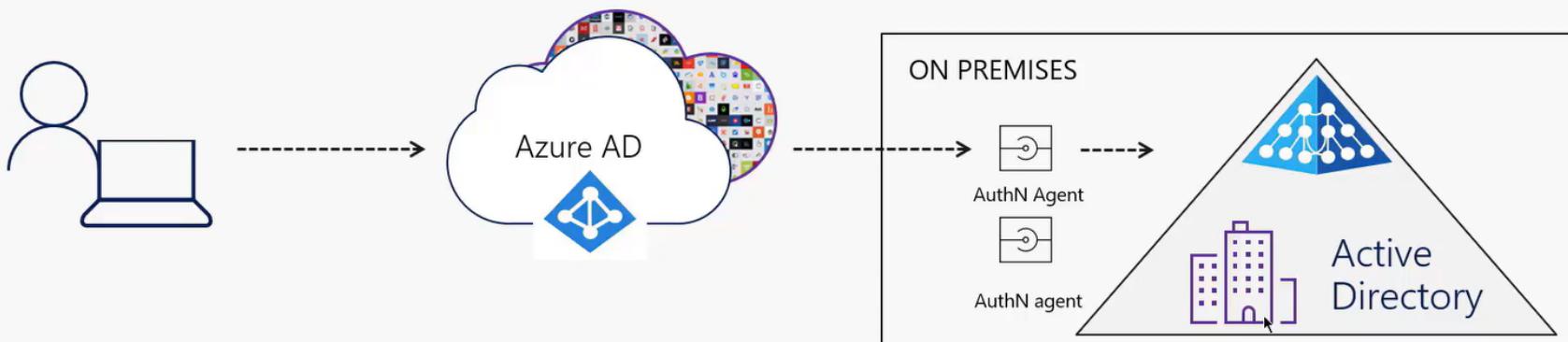
Synchronization – backbone of a hybrid setup



Source: Microsoft

Synchronization – backbone of a hybrid setup

Pass thru Authentication



Great user experience

- Same passwords for cloud-based and on-premises apps
- Integrated with Self-Service Password Reset

Secure and compliant

- Passwords remain on-premises
- No DMZ and no inbound firewall requirements
- Integrated with Smart Lockout, Identity Protection and Conditional Access

Easy to deploy & administer

- Agent-based deployment
- High availability out-of-the-box
- No complex on-premises deployments or network config

Source: Microsoft