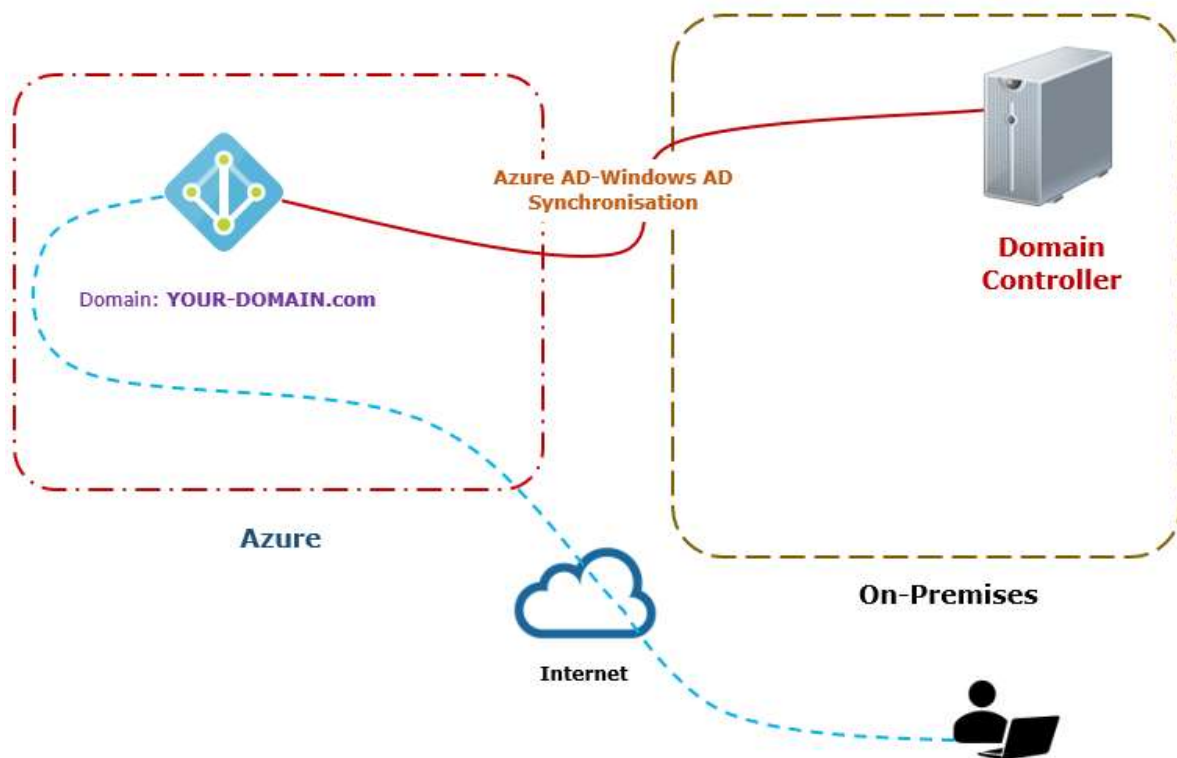


Azure AD Password Hash Synchronization (Portal)

(LAB-103-09-02)



Step 1: Create Windows 2016 Virtual Machine

1. Enable the **Azure Cloud Shell**
2. **Copy** & **execute** the PowerShell Script from Azure Cloud Shell.

This script creates:

- a. Resources group: **RG-103-09-02**
- b. Location: **East US**
- c. Virtual machine:
 - i. **OnP-DC01** [Windows 2016 Data Centre]
- d. Virtual network: **OnP-VNeT**

Info: When prompt for username & password, provide below details

Username: **master**

Password: **Lab@password**

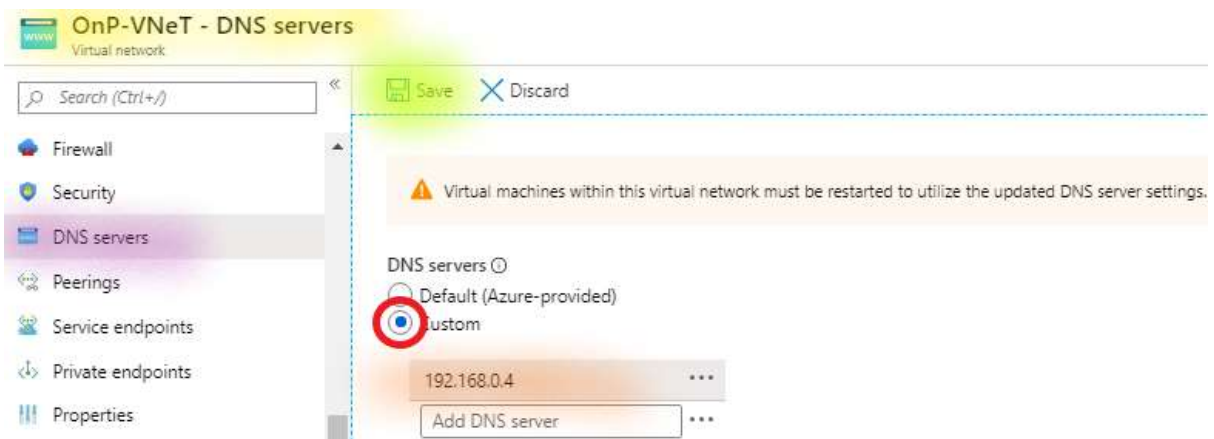
Note: PowerShell script **LAB-103-09-02-PowerShell-Script-Deploy-Domain Controller.txt** is provided with the lab manual

Note: Once PowerShell script executed successfully, you will get below output.

```
RequestId IsSuccess StatusCode ReasonPhrase
-----
True      OK OK
```

Step 2: Update the DNS for Windows Server

1. From the Azure Portal, go to the left menu, select **Virtual machine**
2. Open the **OnP-DC01** virtual machine
3. Copy the **Private IP address** of **OnP-DC01** virtual machine
4. From the Azure Portal, go to the left menu, select **Virtual network**
5. Open the **Onp-VNeT** virtual network
6. Open the **DNS Servers**, under **settings**
7. Select the **Custom**, under **DNS servers**
8. Provide the **Private IP address** of **OnP-DC01** virtual machine
9. Select **Save**



10. From the Azure Portal, **go to the left menu**, select **Virtual machine**
11. Select the **OnP-DC01** virtual machine
12. **Restart** the virtual machine

Step 3: Install Windows Active Directory

1. From the Azure Portal, **go to the left menu**, select **Virtual machine**
2. Open the **OnP-DC01** virtual machine
3. Copy the **Public IP address** of **OnP-DC01** virtual machine
4. Login into **OnP-DC01** virtual machine via **RDP**
5. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**.
6. In the open, **write cmd**
7. From the command line, Write **ipconfig /all**

Note: Here you will the **DNS server** pointing to the **Private IP address** of **ONP-DC01** virtual machine.

```
C:\Users\azureadmin>ipconfig /all

Windows IP Configuration

Host Name . . . . . : AD-DC01
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : reddog.microsoft.com

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . : reddog.microsoft.com
Description . . . . . : Microsoft Hyper-V Network Adapter
Physical Address. . . . . : 00-0D-3A-56-60-3E
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::e0cb:c3e:c58e:1343%2(Preferred)
IPv4 Address. . . . . : 192.168.0.4(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Friday, October 25, 2019 6:20:24 PM
Lease Expires . . . . . : Tuesday, December 2, 2155 12:54:51 AM
Default Gateway . . . . . : 192.168.0.1
DHCP Server . . . . . : 168.63.129.16
DHCPv6 IAID . . . . . : 50335034
DHCPv6 Client DUID. . . . . : 00-01-00-01-25-44-85-64-00-0D-3A-56-60-3E
DNS Servers . . . . . : 192.168.0.4
NetBIOS over Tcpip. . . . . : Enabled
```

8. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**
9. In the open, **write PowerShell.exe**
10. **Copy** & **execute** the PowerShell Script

Note: PowerShell script **LAB-103-09-02_PowerShell_Script_Install Active Directory.txt** is provided with the lab manual.

```
#Install Active Directory Domain Service
Install-windowsfeature AD-domain-services -includemanagementtools

#Import ADDSDeployment Module
Import-Module ADDSDeployment

#Configure First Domain Controller in Forest.
Install-ADDSForest -CreateDnsDelegation:$false -DatabasePath "C:\Windows\NTDS" -
DomainMode "7" -DomainName "YOUR-DOMAIN.COM" -DomainNetbiosName "YOUR-
DOMAIN" -ForestMode "7" -InstallDns:$true -LogPath "C:\Windows\NTDS" -
NoRebootOnCompletion:$false -SysvolPath "C:\Windows\SYSVOL" -Force:$true

#End
```

Note: Replace **YOUR-DOMAIN.com** and **YOUR-DOMAIN** with you Domain Name (Like **ahmadmz.cf** and **ahmadmz**).

Info: When prompt for Safe mode administrator password, provide below details.

Password: **Password@123**

```
PS C:\Users\azureadmin> #Install Active Directory Domain Service
PS C:\Users\azureadmin> Install-windowsfeature AD-domain-services

Success Restart Needed Exit Code      Feature Result
-----
True      No                NoChangeNeeded {}

PS C:\Users\azureadmin>
PS C:\Users\azureadmin> #Import ADDSDeployment Module
PS C:\Users\azureadmin> Import-Module ADDSDeployment
PS C:\Users\azureadmin>
PS C:\Users\azureadmin> #Configure First Domain Controller in Forest.
PS C:\Users\azureadmin> Install-ADDSForest -CreateDnsDelegation:$false -DatabasePath "C:\Windows\NTDS"
InstallDns:$true -LogPath "C:\Windows\NTDS" -NoRebootOnCompletion:$false -SysvolPath "C:\Windows\SYSVOL"
SafeModeAdministratorPassword: *****
Confirm SafeModeAdministratorPassword: *****
```

Note: Once Windows Active Directory Installed successfully, virtual machine restart automatically.

Step 4: Create Windows Active Directory Users and Groups

1. Login into **OnP-DC01** virtual machine via **RDP**
 - a. Username: **master**
 - b. Password: **Lab@password**
2. From the **ONP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**
3. In the open, write **PowerShell.exe**

4. **Copy** & **execute** the PowerShell Script

Note: PowerShell script **LAB-103-09-02_PowerShell_Script_Create OU, AD Users and Groups.txt** is provided with the lab manual.

This script creates:

- a. OU: **Lab103-AD-OU**
- b. Groups: **OnPGroup01** and **OnPGroup02**
- c. Users: **OnPUser01** and **OnPUser02**
- d. Users Password: **P@ssword@123**
- e. Group Members: **OnPUser01** in **OnPGroup01** and **OnPUser02** in **OnPGroup02**

```
#Create Organisational Unit
New-ADOrganizationalUnit -Name "Lab103-AD-OU"

#Create Group-1 in Organisational Unit
New-ADGroup "OnPGroup01" -GroupCategory Security -GroupScope Global -PassThru -Verbose -Path
"Ou=Lab103-AD-OU,DC=YOUR-DOMAIN,DC=com"

#Create User-1 in Organisational Unit
New-ADUser -Name "OnPUser01" -GivenName "OnP" -Surname "User01" -SamAccountName "OnPUser01" -
UserPrincipalName "onpser01@YOUR-DOMAIN.com" -Path "Ou=Lab103-AD-OU,DC=YOUR-DOMAIN,DC=com" -
AccountPassword(ConvertTo-SecureString "P@ssword@123" -AsPlainText -force) -Enabled $true

#Add User-1 in Group-1
Add-AdGroupMember -Identity "OnPGroup01" -Members OnPUser01

#Create Group-2 in Organisational Unit
New-ADGroup "OnPGroup02" -GroupCategory Security -GroupScope Global -PassThru -Verbose -Path
"Ou=Lab103-AD-OU,DC=YOUR-DOMAIN,DC=com"

#Create User-2 in Organisational Unit
New-ADUser -Name "OnPUser02" -GivenName "OnP" -Surname "User02" -SamAccountName "OnPUser02" -
UserPrincipalName "onpser02@YOUR-DOMAIN.com" -Path "Ou=Lab103-AD-OU,DC=YOUR-DOMAIN,DC=com" -
AccountPassword(ConvertTo-SecureString "P@ssword@123" -AsPlainText -force) -Enabled $true

#Add User-2 in Group-2
Add-AdGroupMember -Identity "OnPGroup02" -Members OnPUser02

#End
```

Note: Replace **YOUR-DOMAIN.com** with you Domain Name. Like **ahmadmz.cf**.

```

PS C:\Users\azureadmin> New-ADOrganizationalUnit -Name "Lab103-AD-OU"
PS C:\Users\azureadmin> New-ADGroup "Lab-103-OnP-Group01" -GroupCategory Security -GroupScope Global -PassThru -Verbose
VERBOSE: Performing the operation "New" on target "CN=Lab-103-OnP-Group01,Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf".

DistinguishedName : CN=Lab-103-OnP-Group01,Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf
GroupCategory      : Security
GroupScope         : Global
Name               : Lab-103-OnP-Group01
ObjectClass        : group
ObjectGUID         : c2971461-964f-4a97-93ce-799ffcd641f
SamAccountName     : Lab-103-OnP-Group01
SID                : S-1-5-21-3808473014-56053922-583781959-1112

PS C:\Users\azureadmin> New-ADUser -Name "ADUser01" -GivenName "AD" -Surname "User01" -SamAccountName "ADUser01" -UserPrincipalName "aduser01@ahmadnz.cf" -Path "Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf" -AccountPassword(ConvertTo-SecureString "Password123" -AsPlainText -Force) -Enabled $true
PS C:\Users\azureadmin> Add-ADGroupMember -Identity "Lab-103-OnP-Group01" -Members ADUser01
PS C:\Users\azureadmin>
PS C:\Users\azureadmin> New-ADGroup "Lab-103-OnP-Group02" -GroupCategory Security -GroupScope Global -PassThru -Verbose
VERBOSE: Performing the operation "New" on target "CN=Lab-103-OnP-Group02,Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf".

DistinguishedName : CN=Lab-103-OnP-Group02,Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf
GroupCategory      : Security
GroupScope         : Global
Name               : Lab-103-OnP-Group02
ObjectClass        : group
ObjectGUID         : ca3c40dd-723c-4afe-bff1-b1f2cf17c5d8
SamAccountName     : Lab-103-OnP-Group02
SID                : S-1-5-21-3808473014-56053922-583781959-1114

PS C:\Users\azureadmin> New-ADUser -Name "ADUser02" -GivenName "AD" -Surname "User02" -SamAccountName "aduser02" -UserPrincipalName "aduser02@ahmadnz.cf" -Path "Ou=Lab103-AD-OU,DC=ahmadnz,DC=cf" -AccountPassword(ConvertTo-SecureString "Password123" -AsPlainText -Force) -Enabled $true

```

- From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**
- In the open, write **dsa.msc** (Active Directory Users and Computers)
- Expand **YOUR-DOMAIN.com** and select the **Lab103-AD-OU** Organisational Unit

Note: Here you can see the Groups & Users created via PowerShell.



- Open the **OnPGroup01** and click on the **Members**

Note: Here you can see the **OnPUser01** added in the Group.

- Open the **OnPGroup02** and click on the **Members**

Note: Here you can see the **OnPUser02** added in the Group.

Name	Type	Description
OnPGroup01	Security Group - Global	
OnPGroup02	Security Group - Global	
OnPUser01	User	
OnPUser02	User	

OnPGroup02 Properties

GeneralMembersMember OfManaged By

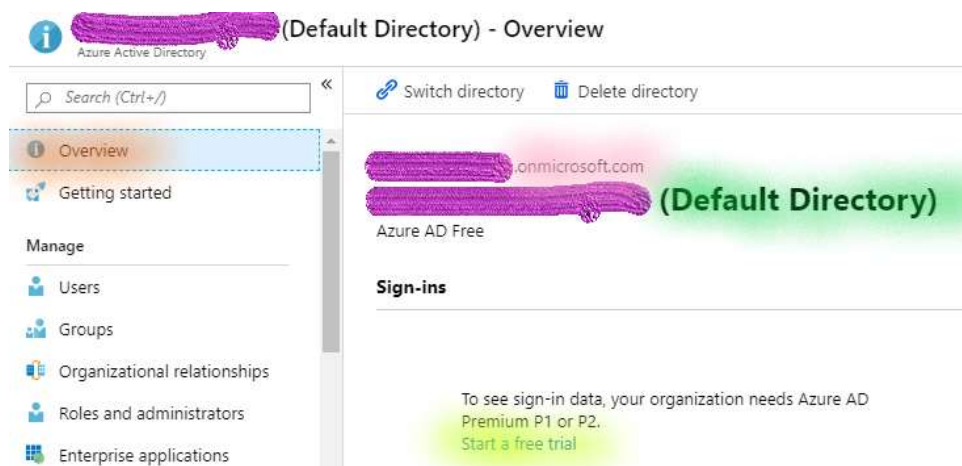
Members:

Name	Active Directory Domain Services Folder
OnPUser02	ahmadmz.cf/Lab103-AD-OU

Step 5: Create Azure AD User with Global Administrator Privileges

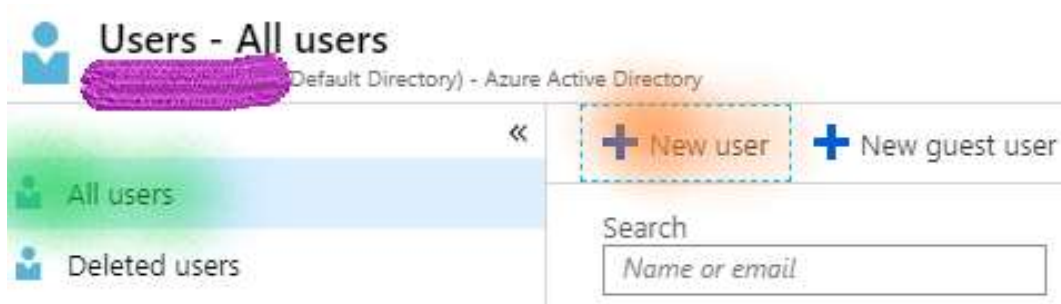
I. Identify your Azure AD Domain name

1. Go to the left-side, select **Azure Active Directory**
2. Under the **Overview**, check your **default directory domain name**



II. Create Azure AD User with Administrator Privileges

1. Select the **Users**, under the **manage**
2. Select **New user**



3. Select **Create user** & fill out the required information:

a. **User Name:** Provide username **adconnect**


Note: You can see your Azure AD default directory domain name are showing after @

b. **Name:** Provide name of the new user **AD Connect Service Account**

c. Select **Let me create the password**

i. Provide the Password as **P@ssword@123**

Identity

User name ① ✓ @ ✓ 
The domain name I need isn't shown here

Name * ① ✓

First name

Last name

Password

☐ Auto-generate password

☒ Let me create the password

Initial password * ① ✓

d. **Roles:** Select **Users**

i. Search and Select **Global Administrator**

Directory roles

Choose admin roles that you want to assign to this user. [Learn more](#)

Search: Global Administrator Type: All

Role	Description
<input checked="" type="checkbox"/> Global administrator	Can manage all aspects of Azure AD and Microsoft services that use Azure AD identities.
<input type="checkbox"/> Global reader	Can read everything that a global administrator can, but not update anything.

4. Select **Create**

Step 6: Sign-in using Azure AD using ADCONNECT

1. Open the below URL from **new browser**

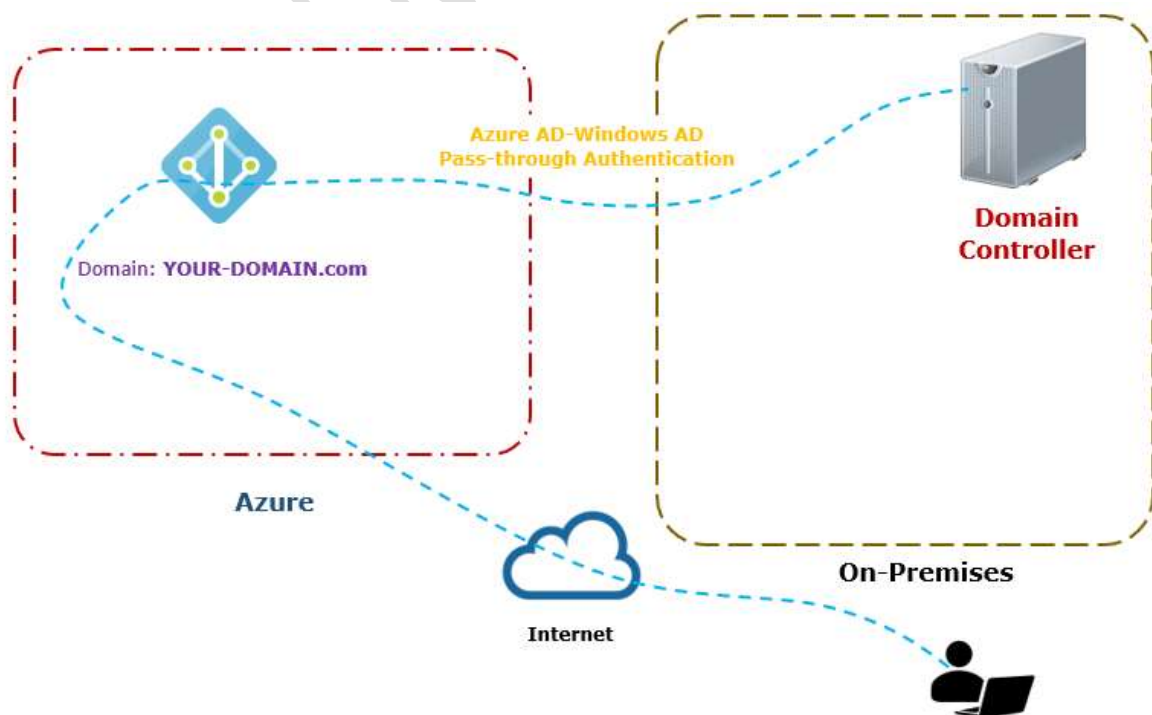
portal.azure.com

2. Login with Azure AD Id **adconnect@<YOUR-AD-DOMAIN.com>** and password **P@ssword@123**

Note: Replace **YOUR-AD-DOMAIN.com** with you Azure AD Domain Name. Like **ahmadmz.cf**.

3. While logged-in, it will ask to change the Password. Change the **password of adconnect** Azure AD User

Step 7: Install Azure AD Connect in OnP-DC01



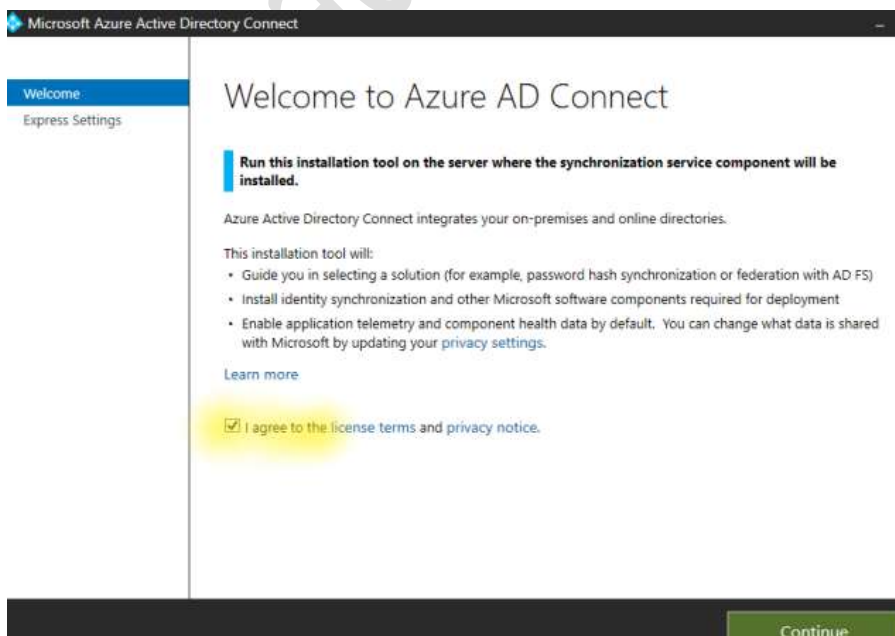
1. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**
2. In the open, **write powershell.exe**
3. From the **powershell**, write below command to Disable IE Enhanced Security Configuration to allow file download

```
function Disable-InternetExplorerESC {  
    $AdminKey = "HKLM:\SOFTWARE\Microsoft\Active Setup\Installed Components\{A509B1A7-37EF-4b3f-8CFC-4F3A74704073}"  
    $UserKey = "HKLM:\SOFTWARE\Microsoft\Active Setup\Installed Components\{A509B1A8-37EF-4b3f-8CFC-4F3A74704073}"  
    Set-ItemProperty -Path $AdminKey -Name "IsInstalled" -Value 0  
    Set-ItemProperty -Path $UserKey -Name "IsInstalled" -Value 0  
    Stop-Process -Name Explorer  
    Write-Host "IE Enhanced Security Configuration (ESC) has been disabled." -ForegroundColor Green  
}  
  
Disable-InternetExplorerESC
```

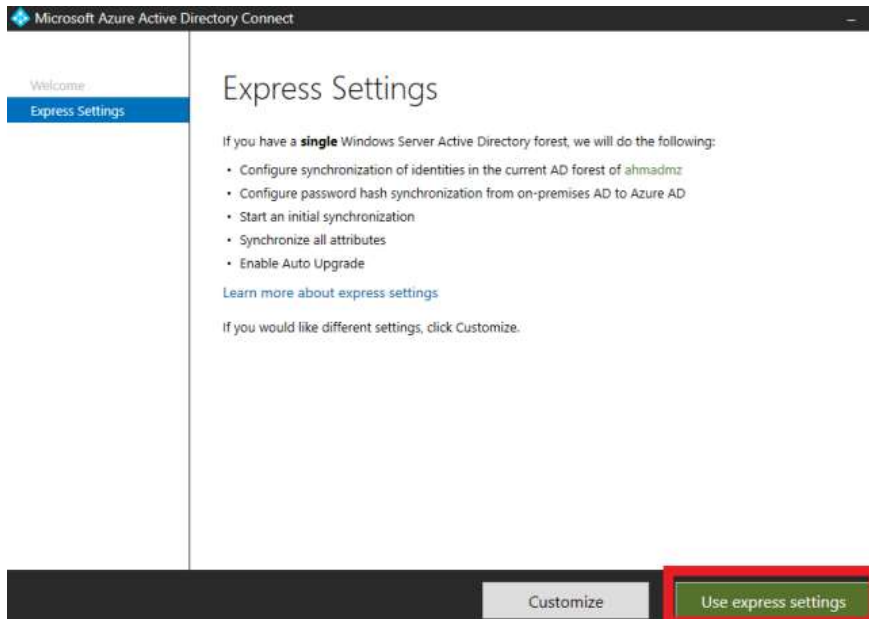
4. Open the below URL to download the **Microsoft Azure Active Directory Connect**

<https://www.microsoft.com/en-us/download/details.aspx?id=47594>

5. Install the **Microsoft Azure Active Directory Connect**
 1. Enable **I agree**
 2. Select **Continue**



3. Select **Use express setting**



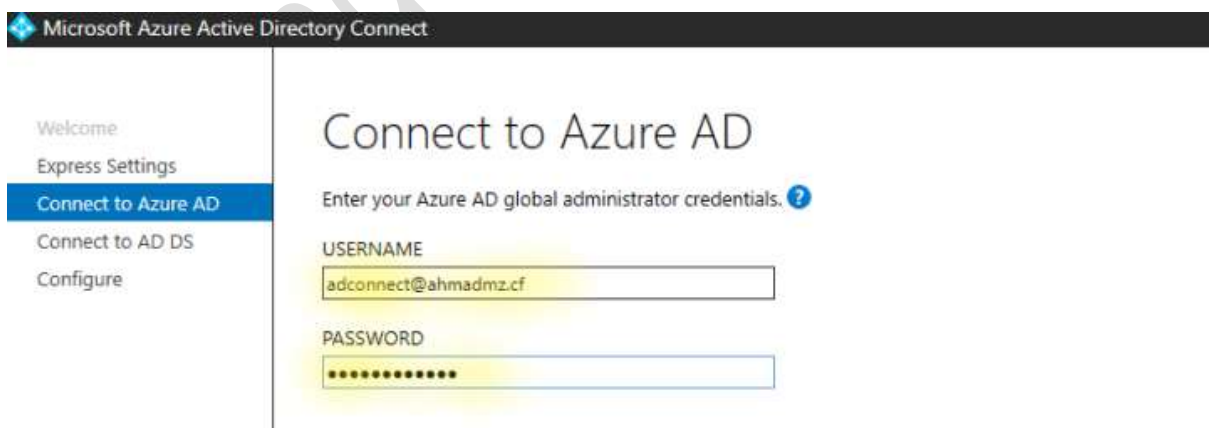
4. In **Connect to Azure AD**, provide the below details:

- i. **Username:** Provide **adconnect@<YOUR-AD-DOMAIN.com>**

Note: Replace **YOUR-AD-DOMAIN.com** with you Azure AD Domain Name. Like **ahmadmz.cf**.

- ii. **Password:** Provide your **password**

- iii. Select **Next**



5. In **Connect to AD DS**, provide the below details:

- i. **Username:** Provide **<YOUR-AD-DS-DOMAIN.com> \master**

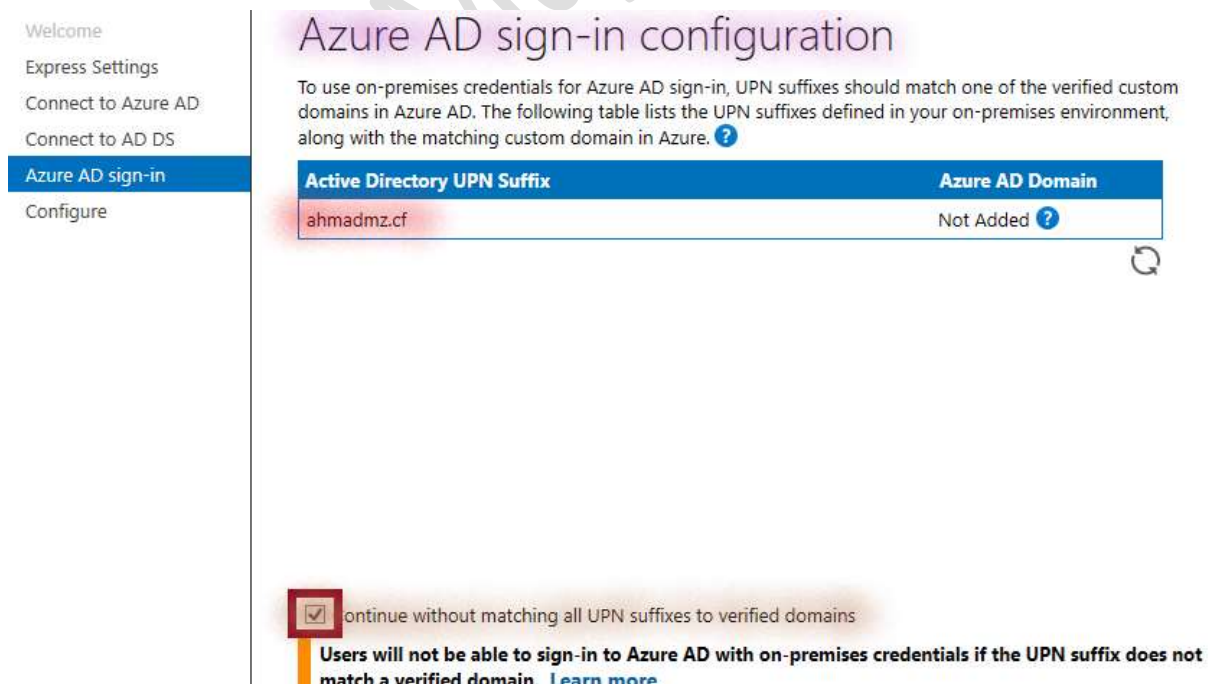
Note: Replace **YOUR-AD-DS-DOMAIN.com** with you Windows Active Directory Domain Name. Like **ahmadmz.cf**.

- ii. **Password:** Provide password **Lab@password**
- iii. Select **Next**



6. **(Optional)** If your Domain name is not verified, you get below option.

- i. Enable **Continue without matching all UPN.....**
- ii. Select **Next**



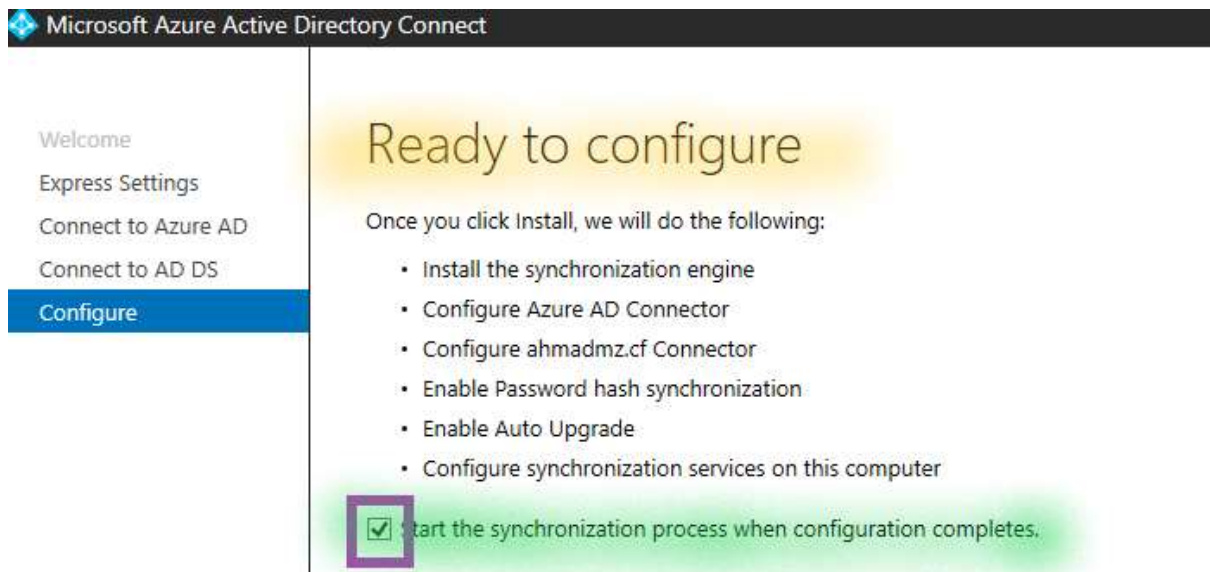
Active Directory UPN Suffix	Azure AD Domain
ahmadmz.cf	Not Added

☒ Continue without matching all UPN suffixes to verified domains

Users will not be able to sign-in to Azure AD with on-premises credentials if the UPN suffix does not match a verified domain. [Learn more](#)

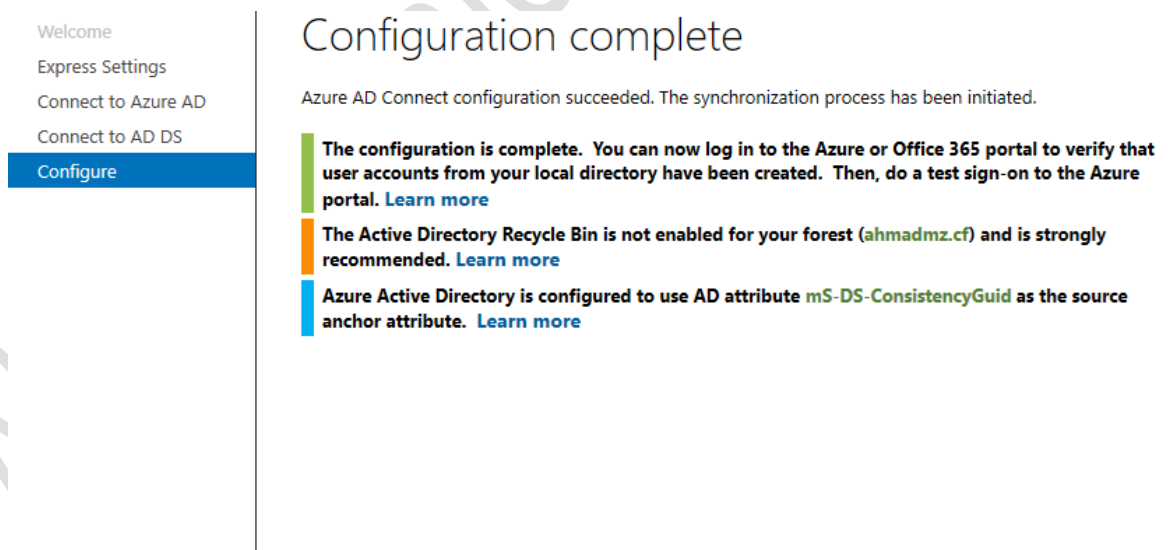
7. In **Ready to configure**, provide the below details:

- i. Enable **Start the synchronisation**
- ii. Select **Next**



8. Once configuration completed, you will get the below message:

- i. Press **Exit**

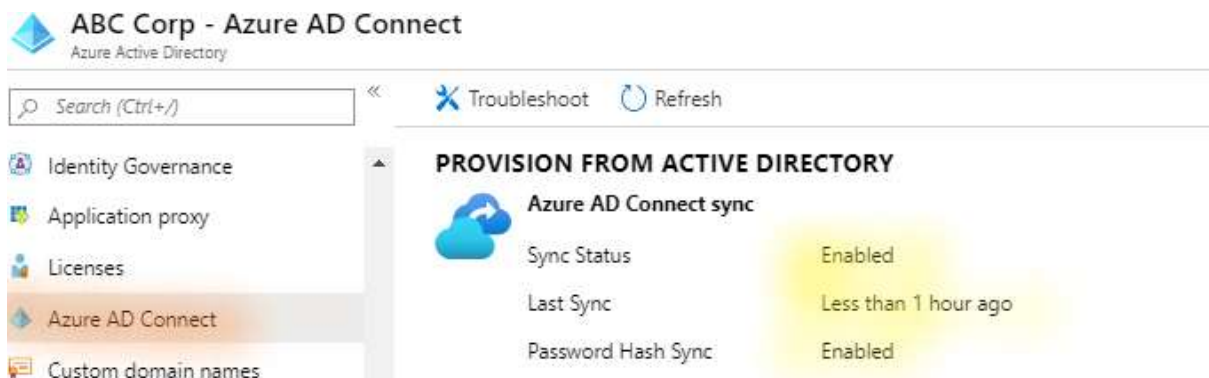


Step 8: Verify Directory Synchronisation

I. Check from Azure AD Connect

1. Go to the left-side, select **Azure Active Directory**
2. Select **Azure AD Connect**, under **manage**

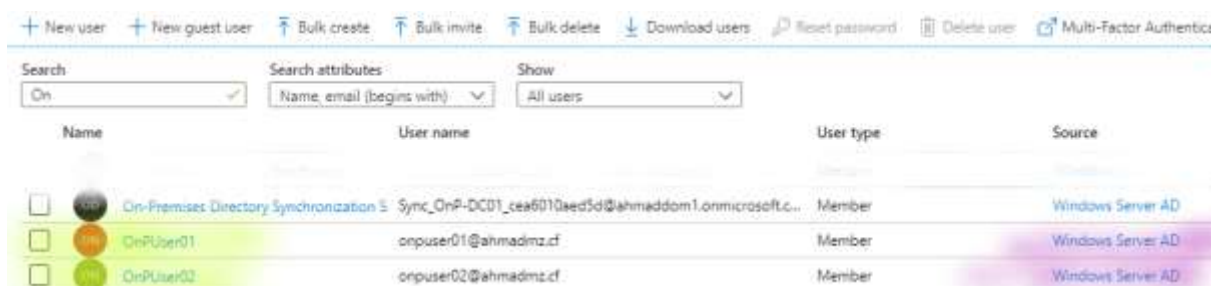
Note: Here you will see Password Hash Sync is enabled.



II. Verify the Windows AD users in Azure AD

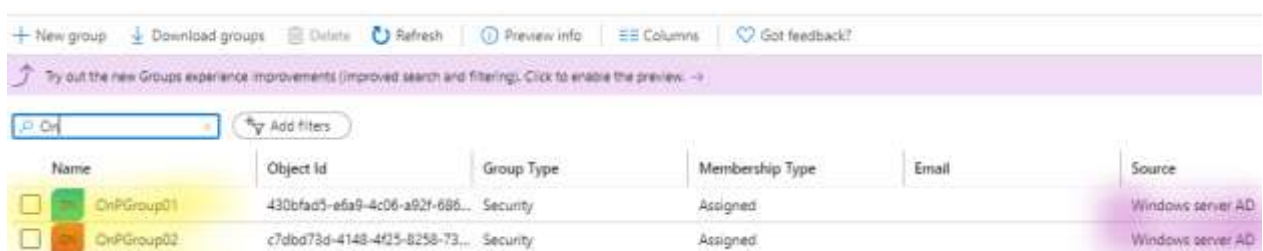
1. Go to the left-side, select **Azure Active Directory**
2. Select **Users**, under **manage**

Note: Here you will see the Windows AD users.



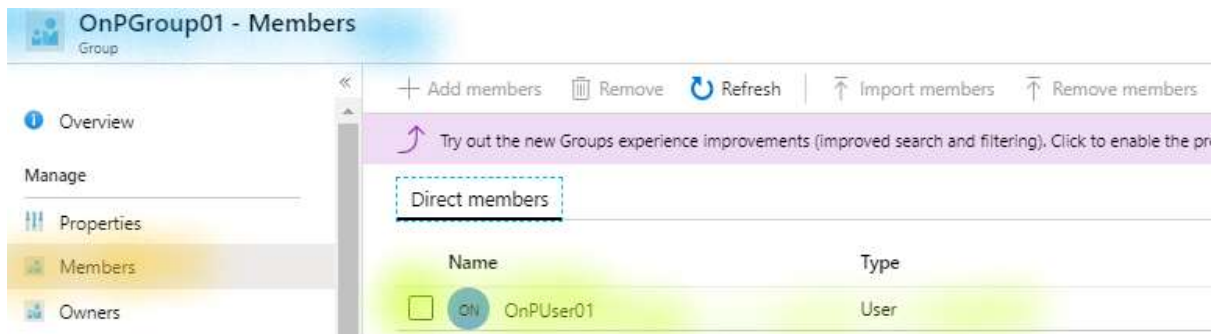
3. Go to the left-side, select **Azure Active Directory**
4. Select **Groups**, under **manage**

Note: Here you will see the Windows AD Groups.



5. Open the **OnPGroup1**
6. Select the **Members**, under the **manage**

Note: Here you will see the **OnPUser01** user added in the group.



III. Login in Azure AD

7. Open the below **URL** from new browser

portal.azure.com

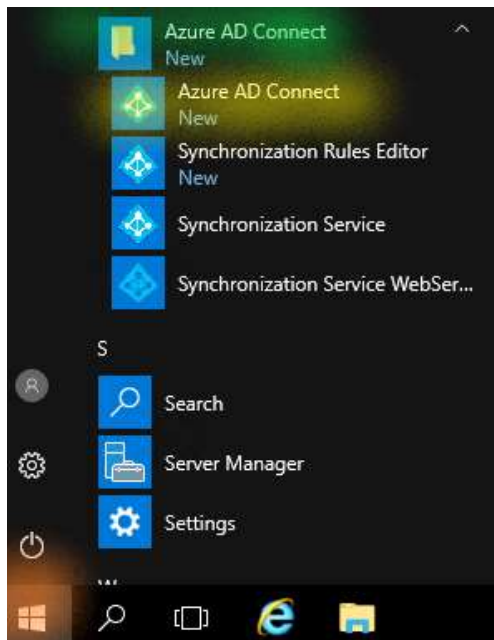
8. Login with Azure AD Id **OnPUser01@<YOUR-AD-DOMAIN.com>** and password **P@ssword@123**
 - 1.

Note: Replace **YOUR-AD-DOMAIN.com** with you Azure AD Domain Name. Like **ahmadmz.cf**.

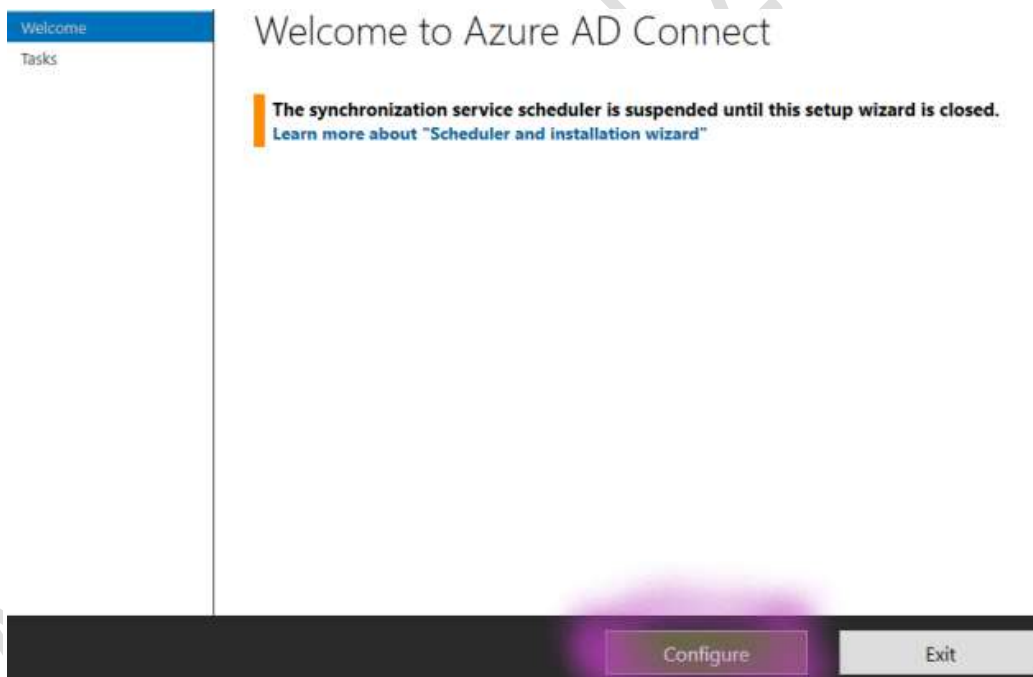
Note: You will not be asked for to change the Password.

Step 9: Enable Password Writeback

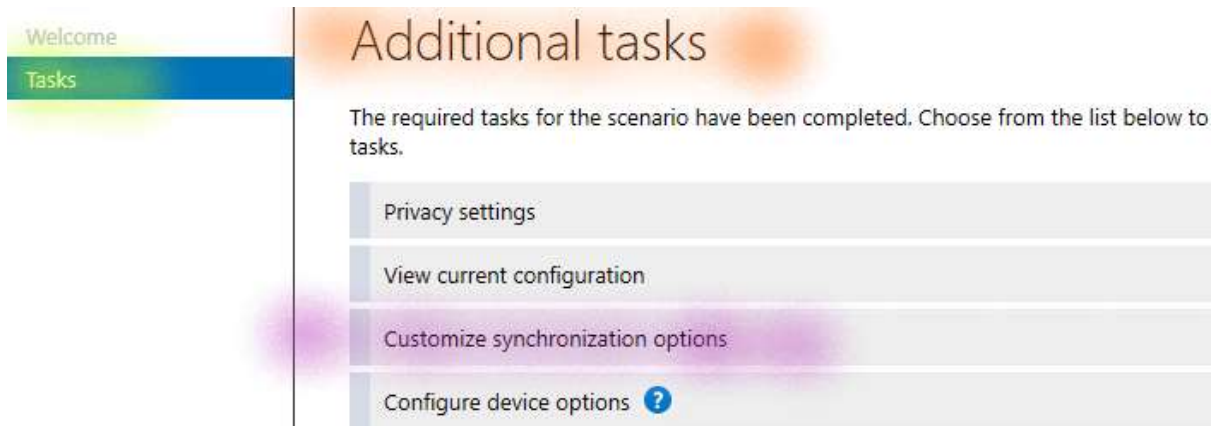
1. Login into **OnP-DC01** virtual machine via **RDP**
2. Click on the **Start**
3. **Expand Azure AD Connect** & Select **Azure AD Connect**



4. On the **Welcome** page, select **Configure**



5. On the **Additional tasks** page, select **Customize synchronization options**
6. Select **Next**



7. On the **Connect to Azure AD** page, enter below details:

- i. **Username:** Provide **adconnect@<YOUR-AD-DOMAIN.com>**

Note: Replace **YOUR-AD-DOMAIN.com** with you Azure AD Domain Name. Like **ahmadmz.cf**.

- ii. **Password:** Provide your **password**

8. Select **Next**

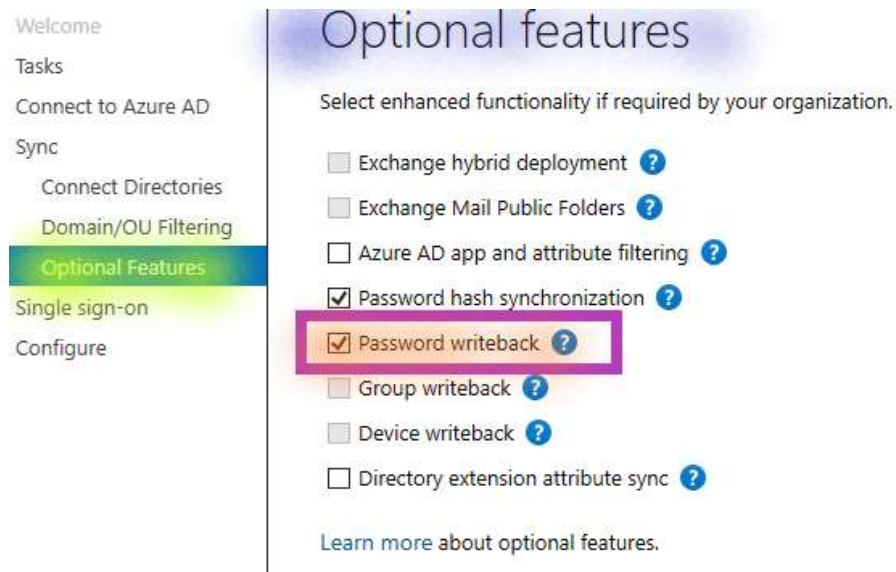


9. On the **Connect directories** pages, select **Next**

10. On the **Domain/OU filtering** pages, select **Next**

11. On the **Optional features** page:

- a. Select the box next to **Password writeback**
- b. Select **Next**



3. On the **Single Sign-On** page:

- Select **Enter credentials**
- Provide **below credentials**

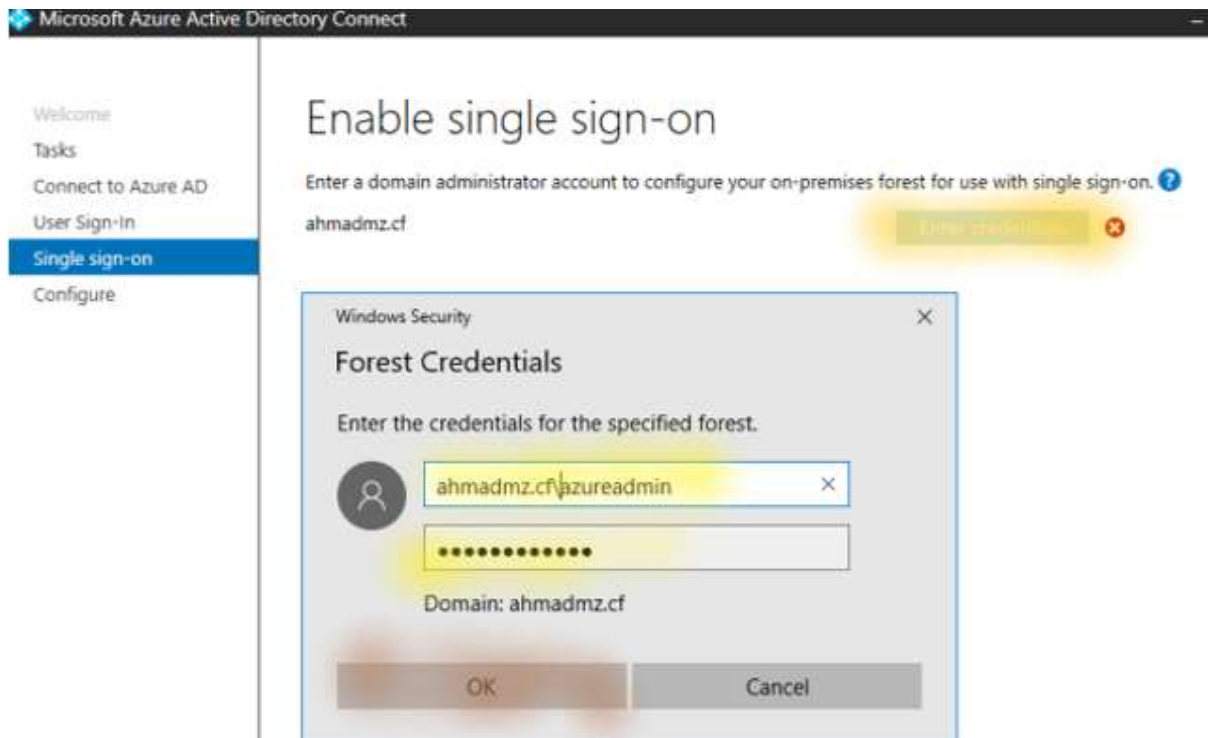
- Username:** Provide **<YOUR-AD-DS-DOMAIN.com> \master**

Note: Replace **YOUR-AD-DS-DOMAIN.com** with your Windows Active Directory Domain Name. Like **ahmadmz.cf**.

- Password:** Provide password **Lab@password**

- Select **OK**

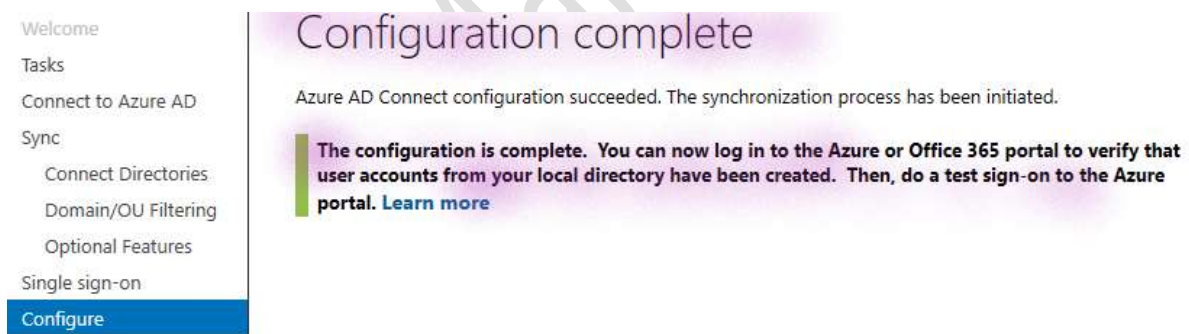
- Select **Next**



4. On the **Ready to configure** page, select **Configure**

Note: Wait for the process to complete

5. When you see the configuration finish, select **Exit**

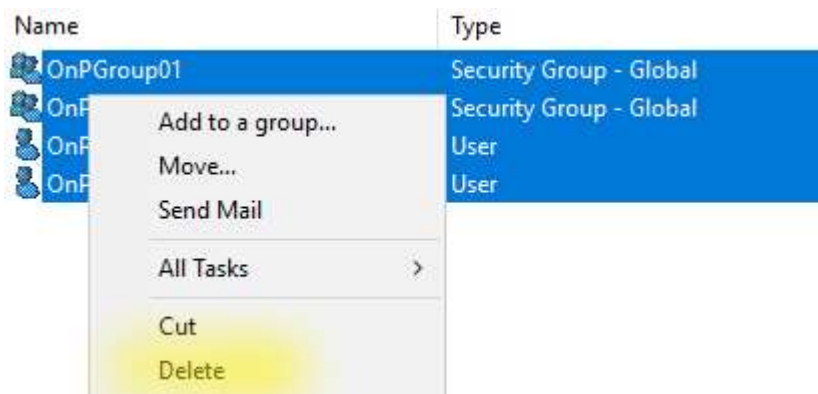


Step 10. Delete Azure AD Connect

1. Login in to **OnP-DC01** virtual machine via **RDP**
2. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**
3. In the open, write **dsa.msc** (Active Directory Users and Computers)
4. Expand **YOUR-DOMAIN.com** and select the **Lab103-AD-OU** Organisational Unit

Note: Here you can see the Groups & Users.

5. Select **Users & Group** and select **Delete**



6. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**

7. In the open, write **powershell.exe**

8. Install PowerShell Modules

- a. Install **Azure Module**

Import-Module Azure

- Select **Y**, once asked for NuGet provider is required to continue
- Select **Y**, once asked for Untrusted repository

```
PS C:\Users\azureadmin> Install-Module Azure
NuGet provider is required to continue
PowerShellGet requires NuGet provider version '2.8.5.201' or newer to interact with NuGet-based repositories. The NuGet
provider must be available in 'C:\Program Files\PackageManagement\ProviderAssemblies' or
'C:\Users\azureadmin\AppData\Local\PackageManagement\ProviderAssemblies'. You can also install the NuGet provider by
running 'Install-PackageProvider -Name NuGet -MinimumVersion 2.8.5.201 -Force'. Do you want PowerShellGet to install
and import the NuGet provider now?
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): y
Untrusted repository
You are installing the modules from an untrusted repository. If you trust this repository, change its
InstallationPolicy value by running the Set-PSRepository cmdlet. Are you sure you want to install the modules from
'PSGallery'?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): y
```

9. **Execute** the below commands

- a. Import the **ADSync Module**

Import-Module ADSync

- b. Initiate the **Manual Sync**

Start-ADSyncSyncCycle -PolicyType Initial


```
PS C:\Users\azureadmin> Import-Module ADSync
PS C:\Users\azureadmin> Start-ADSyncSyncCycle -PolicyType Initial

Result
-----
Success
```

10. Go to the left-side, select **Azure Active Directory**

a. Select **Users**, under manage

Note: Here you will see the Windows AD Users are deleted now.

b. Select **Groups**, under manage

Note: Here you will see the Windows AD Groups are deleted now.

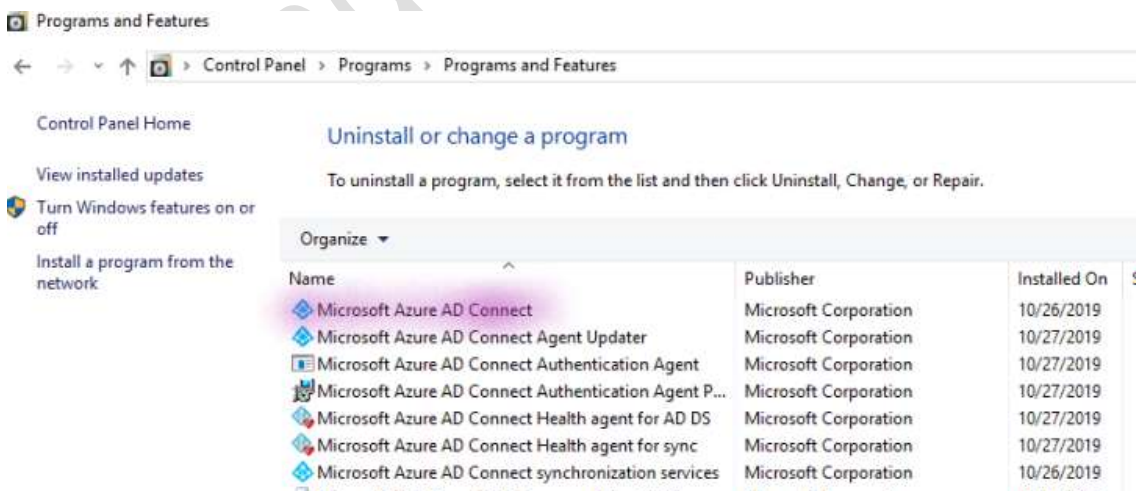
11. From the **OnP-DC01** virtual machine, Go to **Start** menu, right click on **Start** & **Run**

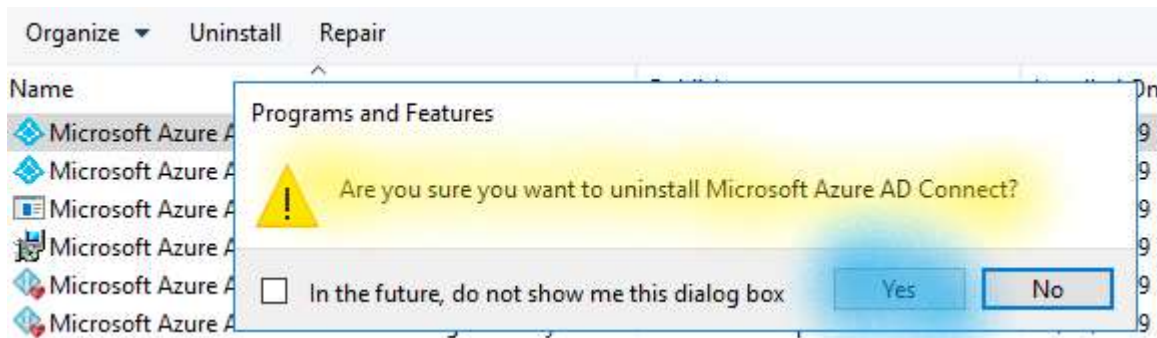
12. In the open, write **Control Panel**

13. From the Control panel, Select **Uninstall a program** under **Programs**

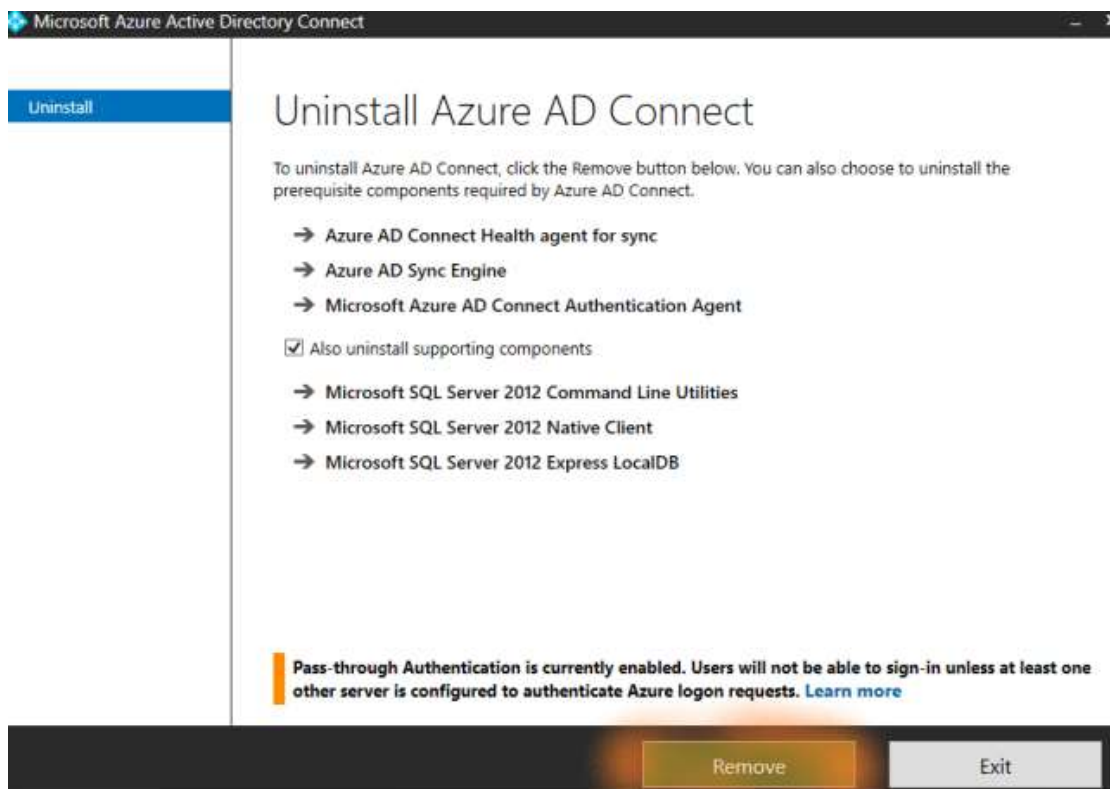


14. Select **Microsoft Azure AD Connect** to **Uninstall**

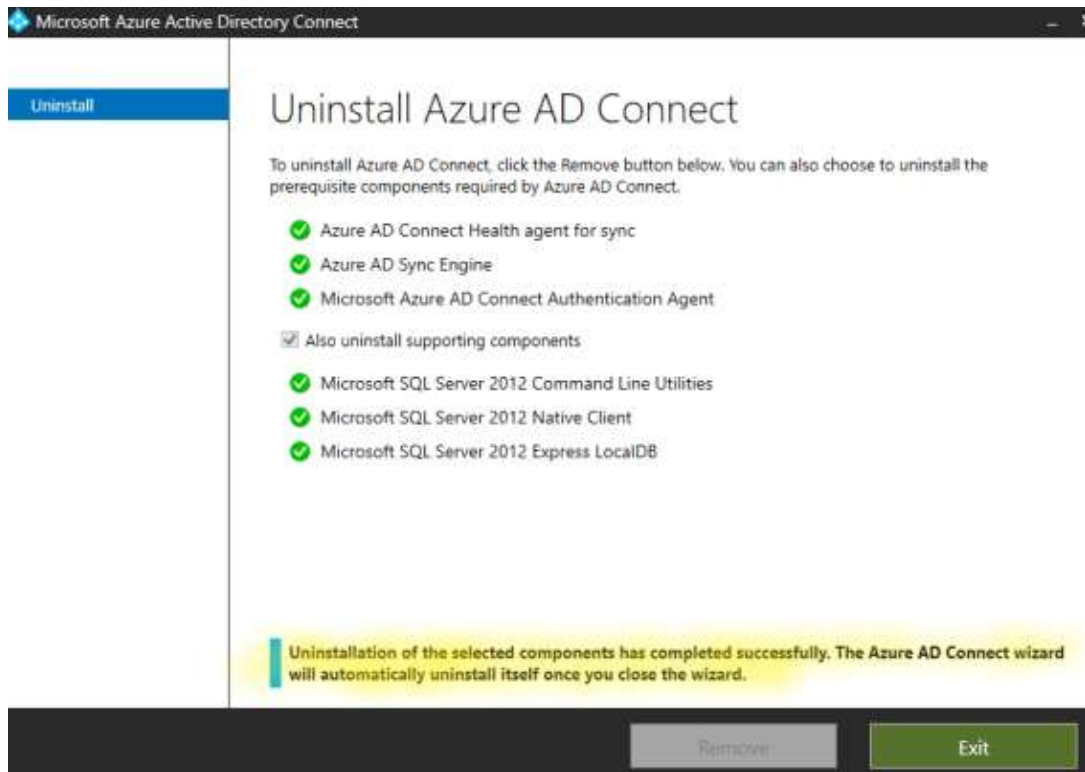




15. It will open the new Window. Select **Remove** to remove the Azure AD Connect



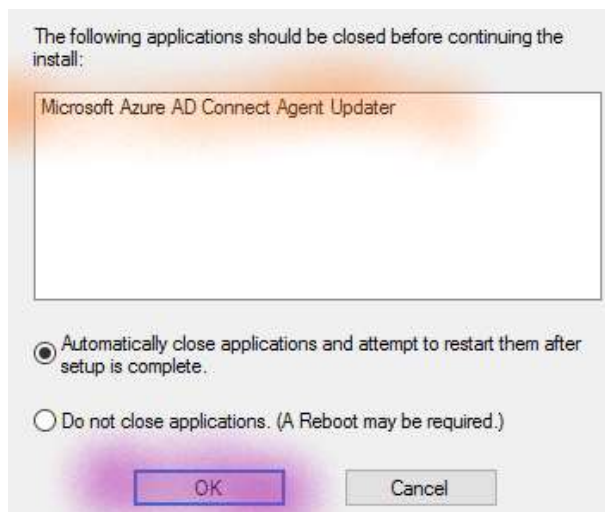
16. Once **Uninstall** completed. Select **Exit**



17. Select **Microsoft Azure AD Connect Agent Updater** to **Uninstall** (If it's showing)

Organize ▾ Uninstall		
Name	Publisher	Installed On
Microsoft Azure AD Connect Agent Updater	Microsoft Corporation	10/27/2019
Microsoft Azure AD Connect Health agent for AD DS	Microsoft Corporation	10/27/2019
Microsoft Visual C++ 2013 Redistributable (x64) - 12.0...	Microsoft Corporation	10/26/2019

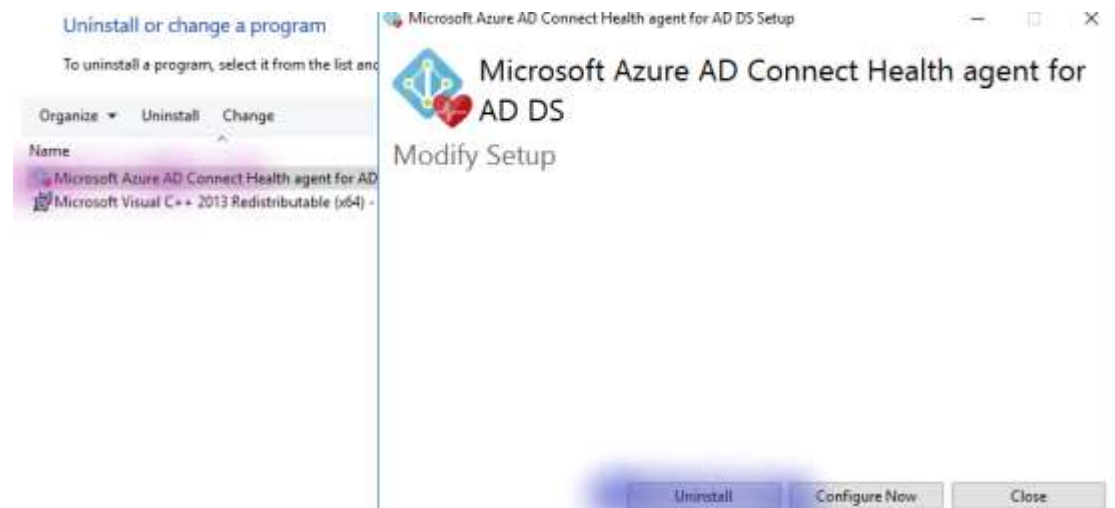
18. Select **Ok**, once asked for closing the application



19. Select **Microsoft Azure AD Connect Health Agent for AD DS** to **Uninstall**

20. It will open the new Window. Select **Uninstall**

21. Select **Close**, once it uninstalls successfully



22. Go to the left-side, select **Resource group**

23. Select **RG-103-09-02** & **delete** the resource group