Lab - Create and manage session host images (AD DS)

Student lab manual

Lab dependencies

- An Azure subscription you will be using in this lab.
- A Microsoft account or a Microsoft Entra account with the Owner or Contributor role in the Azure subscription you will be using in this lab and with the Global Administrator role in the Microsoft Entra tenant associated with that Azure subscription.
- The completed lab **Prepare for deployment of Azure Virtual Desktop (AD DS)**

Estimated Time

60 minutes

Lab scenario

You need to create and manage Azure Virtual Desktop host images in an AD DS environment.

Objectives

After completing this lab, you will be able to:

- Create and manage WVD session host images

Lab files

- \\AZ-140\AllFiles\Labs\02\az140-25_azuredeployvm25.json
- \\AZ-140\AllFiles\Labs\02\az140-25_azuredeployvm25.parameters.json

Instructions

Exercise 1: Create and manage a session host image

The main tasks for this exercise are as follows:

1. Prepare for configuration of a Azure Virtual Desktop host image
2. Deploy Azure Bastion
3. Configure an Azure Virtual Desktop host image
4. Create an Azure Virtual Desktop host image
5. Provision an Azure Virtual Desktop host pool by using the custom image

Task 1: Prepare for configuration of a Azure Virtual Desktop host image

1. From your lab computer, start a web browser, navigate to the Azure portal, and sign in by providing credentials of a user account with the Owner role in the subscription you will be using in this lab.

2. In the Azure portal, open **Cloud Shell** pane by selecting on the toolbar icon directly to the right of the search textbox.

3. If prompted to select either **Bash** or **PowerShell**, select **PowerShell**.

4. On the lab computer, in the web browser displaying the Azure portal, from the PowerShell session in the Cloud Shell pane, run the following to create a resource group that will be used to contain the Azure Virtual Desktop host image:

```
$vnetResourceGroupName = 'az140-11-RG'
$location = (Get-AzResourceGroup -ResourceGroupName
$vnetResourceGroupName).Location
$imageResourceGroupName = 'az140-25-RG'
New-AzResourceGroup -Location $location -Name $imageResourceGroupName
```

5. In the Azure portal, in the toolbar of the Cloud Shell pane, select the **Upload/Download files** icon, in the drop-down menu select **Upload**, and upload the files **\\AZ-140\AllFiles\Labs\02\az140-25_azuredeployvm25.json** and **\\AZ-140\AllFiles\Labs\02\az140-25_azuredeployvm25.parameters.json** into the Cloud Shell home directory.

6. From the PowerShell session in the Cloud Shell pane, run the following to deploy an Azure VM running Windows 11 Enterprise multi-session that will serve as the source image:

```
New-AzResourceGroupDeployment `
  -ResourceGroupName $imageResourceGroupName `
  -Name az140lab0205vmDeployment `
  -TemplateFile $HOME/az140-25_azuredeployvm25.json `
  -TemplateParameterFile $HOME/az140-25_azuredeployvm25.parameters.json
```

> **Note**: Wait for the deployment to complete before you proceed to the next exercise. The deployment should take about 5-10 minutes.

Task 2: Deploy Azure Bastion

> **Note**: Azure Bastion allows for connection to the Azure VMs without public endpoints which you deployed in the previous task of this exercise, while providing protection against brute force exploits that target operating system level credentials.

> **Note**: Ensure that your browser has the pop-up functionality enabled.

1. In the browser window displaying the Azure portal, open another tab and, in the browser tab, navigate to the Azure portal.

2. In the Azure portal, open **Cloud Shell** pane by selecting on the toolbar icon directly to the right of the search textbox.

3. From the PowerShell session in the Cloud Shell pane, run the following to add a subnet named **AzureBastionSubnet** to the virtual network named **az140-25-vnet** you created earlier in this exercise:

```
$resourceGroupName = 'az140-25-RG'
$vnet = Get-AzVirtualNetwork -ResourceGroupName $resourceGroupName -Name
'az140-25-vnet'
$subnetConfig = Add-AzVirtualNetworkSubnetConfig `
  -Name 'AzureBastionSubnet' `
  -AddressPrefix 10.25.254.0/24 `
  -VirtualNetwork $vnet
$vnet | Set-AzVirtualNetwork
```

4. Close the Cloud Shell pane.

5. In the Azure portal, search for and select **Bastions** and, from the **Bastions** blade, select **+ Create**.

6. On the **Basic** tab of the **Create a Bastion** blade, specify the following settings and select **Review + create**:

Setting	Value
Subscription	the name of the Azure subscription you are using in this lab
Resource group	**az140-25-RG**
Name	**az140-25-bastion**
Region	the same Azure region to which you deployed the resources in the previous tasks of this exercise
Tier	**Basic**
Virtual network	**az140-25-vnet**
Subnet	**AzureBastionSubnet (10.25.254.0/24)**
Public IP address	**Create new**
Public IP name	**az140-25-vnet-ip**

7. On the **Review + create** tab of the **Create a Bastion** blade, select **Create**:

> **Note**: Wait for the deployment to complete before you proceed to the next exercise. The deployment might take about 10 minutes.

Task 3: Configure an Azure Virtual Desktop host image

1. In the Azure portal, search for and select **Virtual machines** and, on the **Virtual machines** blade, select **az140-25-vm0**.

2. On the **az140-25-vm0** blade, select **Connect**, in the drop-down menu, select **Connect via Bastion**.

3. When prompted, provde the following credentials and select **Connect**:

Setting	Value
User Name	**Student**
Password	**Pa55w.rd1234**

4. Within the Bastion session to **az140-25-vm0**, start **Windows PowerShell ISE** as administrator.

5. Within the Bastion session to **az140-25-vm0**, from the **Administrator: Windows PowerShell ISE** console, run the following to create a folder you will use as a temporary location for configuration of the image:

```
New-Item -Type Directory -Path 'C:\Allfiles\Labs\02' -Force
```

> **Note**: You will step through installation and configuration of Classic Microsoft Teams (for learning purposes, since Teams is already present on the image used for this lab).

6. Within the Bastion session to **az140-25-vm0**, go to **Control Panel > Programs > Programs and Features**, right-click on the **Teams Machine-Wide Installer** program and select **Uninstall**.

7. Within the Bastion session to **az140-25-vm0**, right-click **Start**, in the right-click menu, select **Run**, in the **Run** dialog box, in the **Open** textbox, type **cmd** and press the **Enter** key to start **Command Prompt**.

8. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the following to prepare for per-machine installation of Microsoft Teams:

```
reg add "HKLM\Software\Microsoft\Teams" /v IsWVDEnvironment /t REG_DWORD /d
1 /f
```

9. Within the Bastion session to **az140-25-vm0**, in Microsoft Edge, browse to the download page of Microsoft Visual C++ Redistributable, save **VC_redist.x64** into the **C:\Allfiles\Labs\02** folder.

10. Within the Bastion session to **az140-25-vm0**, switch to the **Administrator: C:\windows\system32\cmd.exe** window and, from the command prompt, run the following to perform installation of Microsoft Visual C++ Redistributable:

```
C:\Allfiles\Labs\02\vc_redist.x64.exe /install /passive /norestart /log
C:\Allfiles\Labs\02\vc_redist.log
```

11. Within the Bastion session to **az140-25-vm0**, in Microsoft Edge, browse to the documentation page titled Deploy the Teams desktop app to the VM, click the **64-bit version** link, and, when prompted, save the **Teams_windows_x64.msi** file into the **C:\Allfiles\Labs\02** folder.

12. Within the Bastion session to **az140-25-vm0**, switch to the **Administrator: C:\windows\system32\cmd.exe** window and, from the command prompt, run the following to perform per-machine installation of Microsoft Teams:

```
msiexec /i C:\Allfiles\Labs\02\Teams_windows_x64.msi /l*v
C:\Allfiles\Labs\02\Teams.log ALLUSER=1
```

> **Note**: The installer supports the ALLUSER=1 and ALLUSERS=1 parameters. The ALLUSER=1 parameter is intended for per-machine installation in VDI environments. The ALLUSERS=1 parameter can be used in non-VDI and VDI environments.

13. Within the Bastion session to **az140-25-vm0**, start the **Windows PowerShell ISE** as Administrator and, from the **Administrator: Windows PowerShell ISE** console, run the following to install Microsoft Edge (for learning purposes, since Edge is already present on the image used for this lab).:

```
Start-BitsTransfer -Source "https://aka.ms/edge-msi" -Destination
'C:\Allfiles\Labs\02\MicrosoftEdgeEnterpriseX64.msi'
Start-Process -Wait -Filepath msiexec.exe -Argumentlist "/i
C:\Allfiles\Labs\02\MicrosoftEdgeEnterpriseX64.msi /q"
```

> **Note**: Wait for the installation to complete. This might take about 2 minutes.

> **Note**: When operating in a multi-language environment, you might need to install language packs. For details regarding this procedure, refer to the Microsoft Docs article Add language packs to a Windows 10 multi-session image.

> **Note**: Next, you will disable Windows Automatic Updates, disable Storage Sense, configure time zone redirection, and configure collection of telemetry. In general, you should first apply the most recent quality update. In this lab, you skip this step in order to minimize the duration of the lab.

14. Within the Bastion session to **az140-25-vm0**, switch to the **Administrator: C:\windows\system32\cmd.exe** window and, from the command prompt, run the following to disable Automatic Updates:

```
reg add "HKLM\SOFTWARE\Policies\Microsoft\Windows\WindowsUpdate\AU" /v
NoAutoUpdate /t REG_DWORD /d 1 /f
```

15. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the following to disable Storage Sense:

```
reg add
"HKLM\Software\Microsoft\Windows\CurrentVersion\StorageSense\Parameters\Stor
agePolicy" /v 01 /t REG_DWORD /d 0 /f
```

16. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the following to configure time zone redirection:

```
reg add "HKLM\SOFTWARE\Policies\Microsoft\Windows NT\Terminal Services" /v
fEnableTimeZoneRedirection /t REG_DWORD /d 1 /f
```

17. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the following to disable feedback hub collection of telemetry data:

```
reg add "HKLM\SOFTWARE\Policies\Microsoft\Windows\DataCollection" /v
AllowTelemetry /t REG_DWORD /d 0 /f
```

18. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the following to delete the temporary folder you created earlier in this task:

```
rmdir C:\Allfiles /s /q
```

19. In the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the Disk Cleanup utility and click **OK** once completed:

```
cleanmgr /d C: /verylowdisk
```

> **Note**: The disk cleanup process might take 3-5 minutes.

Task 4: Create a Azure Virtual Desktop host image

1. Within the Bastion session to **az140-25-vm0**, in the **Administrator: C:\windows\system32\cmd.exe** window, from the command prompt, run the sysprep utility in order to prepare the operating system for generating an image and automatically shut it down:

```
C:\Windows\System32\Sysprep\sysprep.exe /oobe /generalize /shutdown /mode:vm
```

> **Note**: Wait for the sysprep process to complete. This might take about 2 minutes. This will automatically shut down the operating system.

2. From your lab computer, in the **Connection Error** dialog, select **Close**.

3. From your lab computer, in the web browser displaying the Azure portal, search for and select **Virtual machines** and, from the **Virtual machines** blade, select **az140-25-vm0**.

4. On the **az140-25-vm0** blade, in the toolbar above the **Essentials** section, click **Refresh**, verify that the **Status** of the Azure VM changed to **Stopped**, click **Stop**, and, when prompted for confirmation, click **OK** to transition the Azure VM into the **Stopped (deallocated)** state.

5. On the **az140-25-vm0** blade, verify that the **Status** of the Azure VM changed to the **Stopped (deallocated)** state and, in the toolbar, click **Capture**. This will automatically display the **Create an image** blade.

6. On the **Basics** tab of the **Create an image** blade, specify the following settings:

Setting	Value
Share image to Azure compute gallery	**Yes, share it to a gallery as an image version**
Automatically delete this virtual machine after creating the image	checkbox cleared
Target Azure compute gallery	create a new gallery called **az14025imagegallery**
Operating system state	**Generalized**

7. On the **Basics** tab of the **Create an image** blade, below the **Target VM image definition** textbox, click **Create new**.

8. On the **Create a VM image definition**, specify the following settings and click **OK**:

Setting	Value
VM Image definition name	**az140-25-host-image**
Publisher	**MicrosoftWindowsDesktop**
Offer	**office-365**
SKU	**win11-22h2-avd-m365**

9. Back on the **Basics** tab of the **Create an image** blade, specify the following settings and click **Review + create**:

Setting	Value
Version number	**1.0.0**
Exclude from latest	checkbox cleared
End of life date	one year ahead from the current date
Default replica count	**1**
Target region replica count	**1**
Default storage sku	**Premium SSD LRS**

10. On the **Review + create** tab of the **Create an image** blade, click **Create**.

    > **Note**: Wait for the deployment to complete. This might take about 10-15 minutes.

11. From your lab computer, in the web browser displaying the Azure portal, search for and select **Azure compute galleries** and, on the **Azure compute galleries** blade, select the **az14025imagegallery** entry, and, on the **az14025imagegallery** blade, verify the presence of the **az140-25-host-image** entry representing the newly created image.

Task 5: Provision a Azure Virtual Desktop host pool by using a custom image

1. From the lab computer, in the Azure portal, use the **Search resources, services, and docs** text box at the top of the Azure portal page to search for and navigate to **Virtual networks** and, on the **Virtual networks** blade, select **az140-adds-vnet11**.

2. On the **az140-adds-vnet11** blade, select **Subnets**, on the **Subnets** blade, select **+ Subnet**, on the **Add subnet** blade, specify the following settings (leave all other settings with their default values) and click **Save**:

Setting	Value
Name	**hp4-Subnet**
Subnet address range	**10.0.4.0/24**

3. From the lab computer, in the Azure portal, in the web browser window displaying the Azure portal, search for and select **Azure Virtual Desktop**, on the **Azure Virtual Desktop** blade, select **Host pools** and, on the **Azure Virtual Desktop | Host pools** blade, select **+ Create**.

4. On the **Basics** tab of the **Create a host pool** blade, specify the following settings and select **Next: Virtual Machines >**:

Setting	Value
Subscription	the name of the Azure subscription you are using in this lab
Resource group	**az140-25-RG**
Host pool name	**az140-25-hp4**
Location	the name of the Azure region into which you deployed resources in the first exercise of this lab
Validation environment	**No**
Preferred app group type	**Desktop**
Host pool type	**Pooled**
Load balancing algorithm	**Breadth-first**

Setting	Value
Max session limit	**12**

5. On the **Virtual machines** tab of the **Create a host pool** blade, specify the following settings:

Setting	Value
Add Azure virtual machines	**Yes**
Resource group	**Defaulted to same as host pool**
Name prefix	**az140-25-p4**
Virtual machine type	**Azure virtual machine**
Virtual machine location	the name of the Azure region into which you deployed resources in the first exercise of this lab
Availability options	**No infrastructure redundancy required**
Security type	**Standard**

6. On the **Virtual machines** tab of the **Create a host pool** blade, directly below the **Image** dropdown list, click the **See all images** link.

7. On the **Select an image** blade, under **Other Items**, click **Shared Images**, and, in the list of shared images, select **az140-25-host-image**.

8. Back on the **Virtual machines** tab of the **Create a host pool** blade, specify the following settings and select **Next: Workspace >**:

Setting	Value
Virtual machine size	**Standard D2s v3**
Number of VMs	**1**
OS disk type	**Standard SSD**
Boot Diagnostics	**Enable with managed storage account (recommended)**
Virtual network	**az140-adds-vnet11**
Subnet	**hp4-Subnet (10.0.4.0/24)**
Network security group	**Basic**
Public inbound ports	**No**
Select which directory you would like to join	**Active Directory**
AD domain join UPN	**student@adatum.com**

Setting	Value
Password	**Pa55w.rd1234**
Confirm password	**Pa55w.rd1234**
Specify domain or unit	**Yes**
Domain to join	**adatum.com**
Organizational Unit path	**OU=WVDInfra,DC=adatum,DC=com**
User name	**Student**
Password	**Pa55w.rd1234**
Confirm password	**Pa55w.rd1234**

9. On the **Workspace** tab of the **Create a host pool** blade, specify the following settings and select **Review + create**:

Setting	Value
Register desktop app group	**No**

10. On the **Review + create** tab of the **Create a host pool** blade, select **Create**.

> **Note**: Wait for the deployment to complete. This might take about 10 minutes.

> **Note**: If the deployment fails due to the quota limit being reached, perform the steps spelled out in the first lab to automatically request quota increase of the Standard D2sv3 limit to 30.

> **Note**: Following deployment of hosts based on custom images, you should consider running the Virtual Desktop Optimization Tool, available from its GitHub repository.

Exercise 2: Stop and deallocate Azure VMs provisioned in the lab

The main tasks for this exercise are as follows:

1. Stop and deallocate Azure VMs provisioned in the lab

> **Note**: In this exercise, you will deallocate the Azure VMs provisioned in this lab to minimize the corresponding compute charges

Task 1: Deallocate Azure VMs provisioned in the lab

1. Switch to the lab computer and, in the web browser window displaying the Azure portal, open the **PowerShell** shell session within the **Cloud Shell** pane.
2. From the PowerShell session in the Cloud Shell pane, run the following to list all Azure VMs created in this lab:

```
Get-AzVM -ResourceGroup 'az140-25-RG'
```

3. From the PowerShell session in the Cloud Shell pane, run the following to stop and deallocate all Azure VMs you created in this lab:

```
Get-AzVM -ResourceGroup 'az140-25-RG' | Stop-AzVM -NoWait -Force
```

> **Note**: The command executes asynchronously (as determined by the -NoWait parameter), so while you will be able to run another PowerShell command immediately afterwards within the same PowerShell session, it will take a few minutes before the Azure VMs are actually stopped and deallocated.