Module 1 Introducing Azure Stack HCI

**Demonstration: Deploy hyperconverged infra­structure by using Windows Admin Center**

In this demonstration, you'll learn how to deploy hyperconverged infrastructure by using Windows Admin Center.

**Prerequisites**

1. Internet connectivity and a computer running Windows Server 2019
2. Microsoft Edge based on Chromium

**Demonstration steps**

1. On the Windows Server 2019 computer, install Windows Admin Center by following the steps de­scribed in **Windows Admin Center**5.
2. Start Microsoft Edge based on Chromium and navigate to https://localhost.
3. In the Azure Admin Center, install the extension for creating clusters.
4. Open the installed extension.
5. Review the available options without actually invoking any of them. Point out the options related to hyperconverged infrastructure.
6. Select the appropriate option to deploy a hyperconverged infrastructure and review the steps leading to the deployment.
7. Close Windows Admin Center without completing the wizard. **Note**: For additional information, refer to **Deploy hyperconverged infrastructure with Windows Admin Center**6.

**6** https://aka.ms/deploy-hyperconverged-infrastructure

**9** https://aka.ms/configuration-data-in-DSC

**10** <https://aka.ms/PowerShell-DSC-Extension>

**Demonstration: Use PowerShell and PowerShell DSC to configure and manage Windows Server 2019**

In this demonstration, you'll learn how to manage Windows Server 2019 with PowerShell and PowerShell DSC.

**Prerequisites**

1. A Microsoft Azure subscription
2. An account with the Contributor or Owner role in the Azure subscription

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1. Microsoft Edge based on Chromium installed on an Azure virtual machine (VM) running Windows Server 2019
2. Windows Admin Center installed on the Azure VM by following steps described in **Windows Admin Center11**

**Demonstration steps**

1. Open PowerShell ISE.
2. Install the xWebAdministration module.
3. Run a PowerShell script to create the DSC file.
4. Use PowerShell ISE to apply the DSC configuration.
5. Wait until the configuration is applied, and then verify that it completed successfully.
6. From the Server Manager window, start Internet Information Services (IIS) Manager, and then in its console, verify that the Default Web Site is stopped.

‍**Implementing and managing workloads on Azure Stack HCI:**

**Demonstration: Implement guest clustering with shared disks**

In this demonstration, you'll learn how to implement guest clustering with a shared virtual hard disk (. vhdx file).

**Prerequisites**

1. WSLab S2D Converged scenario implemented according to the instructions provided in **WSLab/ Scenarios/S2D Converged/1**
2. **1** https://aka.ms/S2D-Converged.

**Demonstration steps**

1. On the lab virtual machine, from the **Server Manager** window, select **Tools** and, in the drop-down menu, select **Failover Cluster Manager**.
2. In the **Failover Cluster Manager** window, in the **tree** pane, select **Roles**.
3. In the **Failover Cluster Manager** window, in the **Actions** pane, select **Virtual Machines** and, in the cascading menu, select **New Hard Disk**.
4. In the **New Virtual Hard Disk** window, ensure that the first cluster node is selected and select **OK**.
5. Step through the **New Virtual Hard Disk Wizard** and specify the following settings (leave all others with their default values):

*Table 1: New* ***Virtual Hard Disk Wizard*** *settings*

|  |  |
| --- | --- |
| Setting | Value |
| Choose Disk Format | VHD Set |
| Choose Disk Type | Dynamically expanding |
| Virtual disk file name | shared1.vhds |
| Virtual disk file location | C:\ClusterStorage\MyVolumeonHDDs1\\testvm­myvolumeonhdds1\_1\virtual hard disks\ |
| Create a new blank virtual hard disk size | 127 GB |

1. In the **Failover Cluster Manager** window displaying the list of roles, right-click or access the context menu on **TestVMMyVolumeonHDDs1\_1** and select **Settings**.
2. In the **Settings** window, select **SCSI Controller**. Select **Shared drive**, and then select **Add**.
3. In the **Shared Drive** pane, select **Browse**, in the **Open** window, navigate to the **C:\ClusterStorage\ MyVolumeonHDDs1\testvmmyvolumeonhdds1\_1\virtual hard disks\** folder, and select **shared1. vhds**.
4. In the **Settings** window, select **OK**.
5. In the **Failover Cluster Manager** window displaying the list of roles, right-click or access the context menu on **TestVMMyVolumeonHDDs1\_2** and select **Settings**.
6. Repeat the same sequence of steps to attach the same shared disk to the second virtual machine.

**4** https://aka.ms/azure-integration

**Demonstration: Implement Azure Network Adapter**

In this demonstration, you'll learn how to implement Azure Network Adapter.

**Prerequisites**

1. An Azure subscription.
2. An account with the Contributor or Owner role in the Azure subscription.
3. Microsoft Edge based on Chromium installed.
4. Windows Admin Center installed.

**Demonstration steps**

1. On the lab computer, open Microsoft Edge based on Chromium and navigate to https://local­host.
2. On the **Windows Admin Center** page, in the **Tools** section, select **Networks** and, on the **Networks** pane, select **+ Add Azure Network Adapter (Preview)**.
3. When prompted, in the **Add Azure Network Adapter** window, select **Register Windows Admin Center to Azure**, and then select **Register**.
4. On the **Get started with Azure in Windows Admin Center** pane, follow the instructions to register the Windows Admin Center with Azure:
5. Copy the code.
6. Enter the code.
7. Connect to Azure Active Directory.
8. Select **Create new** Azure Active Directory application.
9. Select **Connect**.
   1. Grant permissions in Azure:
      * 1. Select **App permissions in the Azure portal**.
   2. Under **Grant consent**, select **Grant admin consent**. When prompted, select **Yes**.
   3. Return to the browser window displaying **Windows Admin Center** and refresh the page.
   4. Navigate back to the **Windows Admin Center** page. In the **Tools** section, select **Networks**, and on the **Networks** pane, select **+ Add Azure Network Adapter (Preview)**.
   5. On the **Add Azure Network Adapter** pane, select the **Create a new Virtual Network in Azure portal** link. This will automatically open a new browser tab displaying the **Create Virtual Network** blade.
   6. Create a new virtual network by following steps described in **Quickstart: Create a virtual network using the Azure portal, create a virtual network5**.
   7. Return to the **Add Azure Network Adapter** pane and specify the following settings (leave other settings with their default values):

*Table 1:* ***Add Azure Network Adapter*** *settings*

|  |  |
| --- | --- |
| Setting | Value |
| Location | The name of the Azure region in which you created the virtual network |
| Virtual network | The name of the virtual network |
| Gateway Subnet | The default value |
| Gateway SKU | VpnGw1 |
| Client Address Space | 10.0.0.0/24 |

1. Do not select **Create**. Provisioning of the VPN gateway might take about 45 minutes.
2. Close the **Add Azure Network Adapter** pane.

**Demonstration: Implement Azure File Sync**

In this demonstration, you'll learn how to implement Azure File Sync.

**Prerequisites**

1. An Azure subscription.
2. An account with the Contributor or Owner role in the Azure subscription.
3. Microsoft Edge based on Chromium installed.
4. Windows Admin Center installed.

**Demonstration steps**

1. On the lab virtual machine, open Microsoft Edge based on Chromium and navigate to https:// localhost.
2. On the **Windows Admin Center** page, in the **Tools** section, select **Azure File Sync** and, on the **Azure File Sync Overview** pane, select **Setup**.
3. If prompted, sign in to the Azure subscription by using the account with the Contributor or Owner role in the Azure subscription.
4. On the **Set up Azure File Sync** pane, review the **Azure settings** and **Azure File Sync agent** section. The first one allows you to specify an existing or a new resource group that should contain the Storage Sync Service instance, along with the target region and the name of the Storage Sync Service to provision. The second one contains settings of the Azure File Sync agent, including its installation location and update schedule.

**Note**: Windows Admin Center will automatically detect any existing Storage Sync Service resources in the target subscription.

1. Select the target Azure region closest to the location of your lab virtual machine, in the **Resource group** section, select **Create new** and enter the name **demosyc-RG**, accept all other default values, and select **Set up**.
2. On the **Setting up Azure File Sync** pane, monitor the progress of the installation and select **Close** once the installation completes.
3. Return to the **Azure File Sync** pane, select **Sync a folder**, and specify the following settings:

*Table 1:* ***Sync a folder*** *settings*

|  |  |
| --- | --- |
| Setting | Value |
| Local folder name | C:\WindowsAzure |
| Tier the least-accessed files to the cloud | Enabled |
| Minimum volume free space % | 20 |
| Sync group | demosyncgroup1 |
| Azure file share to sync with | demosyncfileshare1 |
| Resource group | demosync-RG |
| Storage account | Create new |
| Storage account name | Any unique string of between 3 and 24 letters and digits, starting with a letter |
| Storage performance | Standard |
| Data replication | Locally-redundant storage (LRS) |

1. Wait for the operation to complete, then open another browser tab, navigate to the **Azure portal77** https://portal.azure.com, search for the newly created Storage Sync Service, and review its settings to verify that its configura­tion matches the one you set up from the Windows Admin Center.
2. Create a file in the **C:\WindowsAzure** folder and verify that it replicates to a cloud endpoint.

**Module 3 Planning for and implementing Azure Stack HCI storage**

**5** https://aka.ms/validate-azure-stack-hci-cluster

**6** https://aka.ms/s2d-vmfleet-pdf

**Demonstration: Test Storage Spaces Direct by using synthetic workloads**

In this demonstration, you'll learn how to test Storage Spaces Direct by using synthetic workloads.

**Prerequisites**

To complete this demonstration, you will need:

1. A lab VM.

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1. The Storage Spaces Direct Hyperconverged scenario deployed into the lab VM, as described in **S2D Hyperconverged7**
2. **7** https://aka.ms/s2d-hyperconverged .
3. All of the VMs in the Storage Spaces Direct Hyperconverged scenario, which should be running.

**Note:** For more information regarding the prerequisites, refer to the lab setup instructions for this module.

**Preparation steps**

1. On the lab VM, use a web browser to download the **Windows Server 2016 ISO** file (English lan­guage) from the Microsoft Evaluation Center, and save it to the **F:\Source** folder on the lab VM.
2. On the lab VM, use a browser to download the **Windows Server 2016 cumulative update 2020-06 Cumulative Update for Windows Server 2016 for x64-based systems** from the Microsoft Update Catalog and save it to the **F:\Source** folder on the lab VM.
3. On the lab VM, use the browser to download the **Windows Server 2016 servicing stack updates 2020-06 Servicing Stack Update for Windows Server 2016 for x64-based systems** from the Microsoft Update Catalog and save it to the **F:\Source** folder on the lab VM.
4. On the lab VM, use the browser to download **DiskSpd.exe** from **DiskSpd-2.0.21a.zip8**
5. **8** https://aka.ms/DiskSpd-2.0.21a , and then extract **diskspd.exe** from the **amd64** subfolder in the downloaded archive into the **F:\WSLab-mas­ter\Tools** folder.
6. On the lab VM, start **Windows PowerShell ISE** as Administrator, and then open and run the file **F:\ WSLab-master\Scripts\CreateParentdisk.ps1** to create the **Win2016Core\_G2.vhdx** image that will be used to provision VM Fleet VMs.

**Note:** This image must be different from the one used to create Storage Spaces Direct VMs.

1. On the lab VM, start **Hyper-V Manager**, and then connect via an enhanced console session connect­ed to the **WSLab-DC** VM.
2. When prompted to sign in, provide the **CORP\LabAdmin** username and **LS1setup!** password.
3. Within the **WSLab-DC** VM console session, use the enhanced console session functionality to copy the **Win2016Core\_G2.vhdx** image you created to the root of the **D:** drive.
4. Within the **WSLab-DC** VM console session, use the enhanced console session functionality to copy the **diskspd.exe** from the **F:\WSLab-master\Tools** folder into the **D:\DiskSpd** folder.
5. On the lab VM, use the browser to download the **DiskSpd.exe** from **DiskSpd-2.0.21a.zip9**
6. **9** https://aka.ms/DiskSpd-2.0.21a .
7. Within the **WSLab-DC** VM console session, start Windows PowerShell ISE as Administrator.
8. In a browser, navigate to **S2D Hyperconverged10**
9. **10** https://aka.ms/s2d-hyperconverged, select Scenario1.ps, select **Raw**, and then select and copy all the script on the page.
10. Within the **WSLab-DC** VM console session, in the **Administrator: Windows PowerShell ISE** window, open a new tab and paste into it the script that you copied in the previous step.
11. Within the **WSLab-DC** VM console session, in the **Administrator: Windows PowerShell ISE** window, select the first nine regions of the script, down to and including the region labeled **#region add the missing tiers (effective just for 2 node 2019 or 2016 servers)** between lines 1 and 770, and then execute them by using the **Run selection** toolbar icon or by selecting **F8**.

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**Note:** Wait until the script completes before you proceed to the next step. This might take about 60 minutes.

* 1. Within the **WSLab-DC** VM console session, in the **Administrator: Windows PowerShell ISE** window, open and run the script **D:\SetupVMFleet.ps1**. When prompted, specify the following: The name of the Storage Spaces Direct cluster: **S2D-Cluster**
  2. The password that will be injected into the answer file for VM Fleet VMs: **LS1setup!**
  3. The VHD image for the VM Fleet VMs: **D:\Win2016Core\_G2.vhdx**

**Note:** Wait for the script to complete. This might take about 45 minutes.

**Note:** The output of the script will include a listing of commands to run from the first cluster node (**S2D1**).

**Note:** For more information regarding the preparation steps for this demonstration, refer to **fun with VMFleet11**

**11** https://aka.ms/fun-with-vmfleet.

**Demonstration steps**

To perform the demonstration, complete the following steps:

1. Switch to the lab VM, and then from Hyper-V Manager, connect via an enhanced console session connected to the **WSLab-S2D1** VM.
2. When prompted to sign in, provide the **CORP\LabAdmin** username and **LS1setup!** password.
3. Within the **WSLab-S2D1** VM console session, from the **Command Prompt**, run the following com­mand to start a Windows PowerShell session:

powershell

1. Run the following command to disable CSV Cache:

(Get-Cluster).BlockCacheSize = 0

1. Run the following command to install the VM Fleet tools and set up the directory structure for its deployment:

c:\VMFleet\install-VMFleet.ps1 -source C:\VMFleet

1. Run the following command to copy DiskSpeed.exe from the **DC** VM:

Copy-Item -Path '\\DC\D$\DiskSpd\Diskspd.exe' -Destination 'c:\ClusterStorage\Collect\Control\Tools\ Diskspd.exe'

1. Run the following command to create per-node internal VM switches and deploy the VM Fleet VMs from the master image:

c:\VMFleet\create-VMFleet.ps1 -basevhd C:\ClusterStorage\Collect\FleetImage.vhdx -vms 1 -admin­pass LS1setup! -connectuser Corp\Administrator -connectpass LS1setup! -FixedVHD:$False

1. Run the following command to adjust the number of virtual CPUs and memory sizes of VM Fleet VMs:

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c:\VMFleet\set-VMFleet.ps1 -ProcessorCount 2 -MemoryStartupBytes 512MB -MemoryMinimumBytes 512MB -MemoryMaximumBytes 2GB

1. Run the following command to start VM Fleet VMs:

c:\VMFleet\Start-VMFleet.ps1

1. Run the following command to run the VM Fleet synthetic workload test based on an automated performance sweep:

c:\VMFleet\start-sweep.ps1 -b 4 -t 2 -o 40 -w 0 -d 300

**Note:** The parameters match those used by Diskspd.exe, including:

1. b: buffer size in kibibytes (KiB)
2. t: thread count
3. o: outstanding I/O counts
4. w: write ratio
5. p: pattern (random: r, sequential: s, sequential interlocked: si)
6. warm: duration of pre-measurement warmup (in seconds)
7. d: duration of measured interval (in seconds)
8. cool: duration of post-measurement cooldown (in seconds)
9. Run the following command to start VM Fleet VMs:

c:\VMFleet\Start-VMFleet.ps1

1. Run the following command to display a text-console monitoring performance monitor tracking across a cluster:

c:\VMFleet\watch-cluster.ps1

1. Review the results generated by the test.

**Note:** The results include IOPS, bandwidth, and latency counters, aggregated per-node and per-clus­ter.

**Test your knowledge**

**Demonstration: Extend volumes**

In this demonstration, you'll learn how to extend volumes by using Windows Admin Center.‍Managing Storage Spaces Direct in Azure Stack HCI **163**

**Prerequisites**

To complete this demonstration, you will need:

1. A lab VM.
2. The **S2D Hyperconverged** scenario deployed into the lab VM, as described in **S2D Hypercon­verged12**
3. **12** https://aka.ms/s2d-hyperconverged .
4. An enhanced console session established from the lab VM to the **WSLab-Management** VM with the **CORP\LabAdmin** credentials.
5. Microsoft Edge (Chromium) installed in the **WSLab-Management** VM.
6. Windows Admin Center installed on the **WSLab-Management** VM by following the steps described in **Windows Admin Center13**
7. **13** https://aka.ms/windows-admin-center-overview.

**Note:** For more information regarding the prerequisites, refer to the lab setup instructions for this module.

**Demonstration steps**

1. Within the **WSLab-Management** VM console session, within the browser window displaying the Windows Admin Center interface, on the **All connections** page, select **+ Add**.
2. On the **Add resources** panel, on the Windows Server cluster tile, select **Add**.
3. On the **Add or create resources** pane, in the **Server clusters** section, select **Add**.
4. In the **Cluster name** text box, enter s2d-cluster.corp.contoso.com, and then select the **Use another account for this connection** option.
5. In the **Username** text box, enter **CORP\LabAdmin**.
6. In the **Password** text box, enter **LS1setup!**.
7. Select **Connect with account**, and then select **Add**.
8. Within the **WSLab-Management** VM console session, within the browser window displaying the Windows Admin Center interface, on the **All connections** page, select the s2d-cluster.corp. contoso.com entry.
9. On the s2d-cluster.corp.contoso.com page, in the **Storage** section, select **Volumes**.
10. In the **Volumes** pane, select the **Inventory** tab, and then select **Create**.

**Note:** The inventory at this point includes only the pre-created **ClusterPerformanceHistory** volume.

1. In the **Create volume** pane, specify the three-way volume settings as defined in the following table.

*Table 1: Three-way volume settings*

|  |  |
| --- | --- |
| Setting | Value |
| Name | Volume01-3wm |
| Resiliency | Three-way mirror |
| Size on HDD | 100 |
| Size units | GB |

1. Review the resulting estimated footprint and the total available storage space.
2. Back in the **Volumes** pane, on the **Inventory** tab, in the list of volumes, select the **Volume01-3wm** check box, and then select **Expand**.
3. On the **Expand volume “Volume01-3wm”** pane, in the **Size on HDD (Current size 99.9 GB)** text box, enter **200**, and then select **Expand**.
4. Back in the **Volumes** pane, on the **Inventory** tab, in the list of volumes, select **Volume01-3wm**.
5. In the **Volume01-3wm** pane, review the existing settings.
6. Select **Storage tiers**, and verify that it contains **Three-way mirror**.
7. Navigate back to the **Volumes** pane.
8. On the **Inventory** tab, in the list of volumes, select the **Volume02-map70** check box, and then select **Expand**.
9. In the **Expand volume “Volume02-map70”** pane, in the **Size on HDD (Current size 99.9 GB)** text box, enter **200**, and then select **Expand**.
10. Navigate back to the **Volumes** pane.
11. On the **Inventory** tab, in the list of volumes, select **Volume02-map70**.
12. In the **Volume02-map70** pane, review the existing settings.
13. In the **Related** section, select **Storage tiers**, and verify that it contains **Dual parity** and **Three-way mirror**.

**Demonstration: Manage deduplication and compression**

In this demonstration, you'll learn how to enable deduplication and compression by using Windows Admin Center.

**Prerequisites**

To complete this demonstration, you will need: A lab VM.

1. The **S2D Hyperconverged** scenario deployed into the lab VM, as described in **S2D Hypercon­verged14**.
2. An enhanced console session established from the lab VM to the **WSLab-Management** VM with the **CORP\LabAdmin** credentials.
3. Microsoft Edge (Chromium) installed in the **WSLab-Management** VM.
4. Windows Admin Center installed the **WSLab-Management** VM by following the steps described in **Windows Admin Center15**.

**Note:** For more information regarding the prerequisites, refer to the lab setup instructions for this module.

**Demonstration steps**

**Note:** This sequence of steps follows directly after the previous demonstration, **Extend volumes**.

1. Within the console session to the **WSLab-Management** VM, from the console pane of the **Adminis­trator: Windows PowerShell ISE** window, run the following command to install Data Deduplication on each of the cluster nodes:

$servers = @('S2D1','S2D2','S2D3','S2D4') Invoke-Command -computername $servers -ScriptBlock { Install-WindowsFeature FS-Data-Deduplication }

1. Within the console session to the **WSLab-Management** VM, within the browser window displaying the Windows Admin Center interface, on the s2d-cluster.corp.contoso.com page, review the **Inventory** tab on the **Volumes** pane in the **Storage** section.
2. In the **Volumes** pane, on the **Inventory** tab, select the **Volume01-3wm** volume entry.
3. In the **Optional features** section, move the **Deduplication and compression** switch to the **On** position, and then select **Start**.
4. In the **Enable deduplication** pane, in the **Deduplication mode** drop-down list, review the deduplica­tion options, including the **Default**, **Hyper-V**, and **Backup** options.
5. Select the **Hyper-V** option, and then select **Enable deduplication**.
6. Repeat the last four steps to enable the deduplication and compression in the **Backup** mode for the **Volume02-map70** volume.

**Note:** You have the option of enabling or disabling deduplication and compression, but it's not possible to modify integrity checksum or resiliency settings after a volume is created.

**Additional reading:** For more information regarding deduplication options, refer to **Install and enable Data Deduplication16**.

**Scale Storage Spaces Direct**

**Demonstration: Implement Storage Replica**

In this demonstration, you'll learn how to implement Storage Replica by using Windows Admin Center.

**Prerequisites**

To complete this demonstration, you will need:

1. A lab VM.
2. The **S2D Hyperconverged** scenario deployed into the lab VM, as described in **S2D Hypercon­verged22**
3. An enhanced console session established from the lab VM to the **WSLab-Management** VM with the **CORP\LabAdmin** credentials.
4. Microsoft Edge (Chromium) installed in the **WSLab-Management** VM.
5. Windows Admin Center installed the **WSLab-Management** VM by following the steps described in **Windows Admin Center23**

**Note:** For more information regarding the prerequisites, refer to the lab setup instructions for this module. ‍Planning for and implementing Storage Replica **185**

**Demonstration steps**

**Note:** This sequence of steps directly follows the previous demonstration from Lesson 4, **Manage deduplication and compression**.

To implement Storage Replica by using Windows Admin Center, complete the following steps:

1. Switch to the **WSLab-Management** VM console session.
2. Within the console, in the **Administrator: Windows PowerShell ISE** window, from the script pane, run the following command to install the Windows Server 2019 role services necessary to test and configure Storage Replica on the Storage Spaces Direct cluster nodes:

$servers = 'S2D1' ,'S2D2','S2D3','S2D4' $servers | ForEach { Install-WindowsFeature -ComputerName $\_ -Name Storage-Replica,FS-FileServer -IncludeManagementTools -Restart }

**Note:** Wait for all the cluster nodes to restart.

1. Within the console session to the **WSLab-Management** VM, within the Windows Admin Center browser window, connect to the s2d-cluster.corp.contoso.com cluster and authenticate as **CORP\LabAdmin** with the password **LS1setup!**.
2. Within the Windows Admin Center browser window, on the s2d-cluster.corp.contoso.com page, navigate to the inventory of the Storage Spaces Direct cluster volumes.
3. On the panel listing inventory of volumes on the **s2d-cluster** Storage Spaces Direct cluster, select **+ Create** and then create a volume with the settings listed in the following table:

*Table 1: Volume01-data*

|  |  |
| --- | --- |
| Setting | Value |
| Name | Volume01-data |
| Resiliency | Mirror-accelerated parity |
| Parity percentage | 90% parity, 10% mirror |
| Size on HDD | 50 |
| Size units | GB |

1. Repeat the same sequence of steps to create another volume with the settings listed in the following table:
2. *Table 3: Volume02-data*Review the resulting estimated footprint and the total available storage space.
3. Repeat the same sequence of steps to create another volume with the settings listed in the following table:

*Table 2: Volume01-log*

|  |  |
| --- | --- |
| Setting | Value |
| Name | Volume01-log |
| Resiliency | Three-way mirror |
| Size on HDD | 10 |
| Size units | GB |

1. Repeat the same sequence of steps to create another volume with the settings listed in the following table:

*Table 3: Volume02-data*

|  |  |
| --- | --- |
| Setting | Value |
| Name | Volume02-data |
| Resiliency | Mirror-accelerated parity |
| Parity percentage | 90% parity, 10% mirror |
| Size on HDD | 50 |
| Size units | GB |

*Table 4: Volume02-log*

|  |  |
| --- | --- |
| Setting | Value |
| Name | Volume02-log |
| Resiliency | Three-way mirror |
| Size on HDD | 10 |
| Size units | GB |

1. Within the console session to the **WSLab-Management** VM, in the **Server Manager** window, select **Tools**, and in the **Tools** menu, select **Failover Cluster Manager**.
2. In **Failover Cluster Manager**, right-click or access the context menu for the **Failover Cluster Manag­er** node, and then select **Connect to Cluster**.
3. In the **Select Cluster** dialog box, in the **Cluster name** field, enter s2d-cluster.corp.contoso. com, and then select **OK**.
4. In **Failover Cluster Manager**, in the tree pane, expand the **Storage** node, and then select the **Disks** subnode.
5. In the details pane, in the list of disks, right-click or access the context menu for each of the volumes you created earlier in this demonstration, and then select **Remove from Cluster Shared Volumes**.
6. Switch back to the browser displaying Windows Admin Center, and from the **Tools** menu, select **Storage Replica**.
7. In the **Storage Replica** pane, select **+ New**.
8. In the **Replicate with another server** pane, ensure that the **Use an existing server or VM** option is selected, and then select **Next**.
9. In the **Replicate with another server** pane, specify the settings listed in the following table, and then select **Create**:

*Table 5: Replicate with another server settings*

|  |  |
| --- | --- |
| Setting | Value |
| Source server name | s2d-cluster.corp.contoso.com |
| Replication group name | rg01 |
| Volume | Volume01-data |
| Log volume | Volume01-log |
| Destination server name | s2d-cluster.corp.contoso.com |
| Replication group name | rg02 |
| Volume | Volume02-data |

**Note:** Wait until the storage replica is created. This should take a few minutes.

1. Back on the **Storage Replica** panel, review the newly created replication partnership.

**Module 4 Planning for and implementing Azure Stack HCI networking**

**Demonstration: Manage Software-Defined Net­working by using Windows Admin Center**

In this demonstration, you'll learn how to manage Software-Defined Networking (SDN) by using Win­dows Admin Center.

**Prerequisites**

1. ●A lab virtual machine (VM)

●The SDNExpress with Windows Admin Center WSLab scenario deployed into the lab VM, as described in **SDNExpress with Windows Admin Center10**

●An enhanced console session established from the lab VM to the SDNExpress2019-Management VM with the CORP\LabAdmin credentials

●A third-party browser installed in the SDNExpress2019-Management VM

●Windows Admin Center installed in the SDNExpress2019-Management VM by following the steps described in **Windows Admin Center11**

**Note**: For more information about setting up this demonstration’s lab environment, refer to this module’s lab setup instructions.

**Demonstration steps**

1. In the console session to the **SDNExpress2019-Management VM**, start Chrome.
2. In Chrome, go to the Windows Admin Center endpoint (https://management:9999).
3. In the Windows Admin Center interface, on the **All connections** page, select sddc01.corp.conto­so.com.

**Note**: Microsoft has integrated SDN with the hyperconverged cluster experience in Windows Admin Center. By adding a network controller to your hyperconverged cluster, you can manage your SDN resources and infrastructure by using a single application.

**Note**: You require a hyperconverged cluster to use the SDN extension for the Windows Admin Center.

1. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **Virtual switches**, and then review virtual switches on the members of the SDN cluster sddc01. corp.contoso.com.
2. Select the first **sdnSwitch** on hv1.corp.contoso.com, select **More**, and then, in the drop-down list, select **Settings**.
3. Review the general settings of **sdnSwitch**, and then note that you have the option of changing the **Load balancing algorithm** from **Hyper-V port** to **Dynamic**.
4. Select **Close** without making any changes.
5. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **Virtual networks**, and then on the **Virtual networks** panel, select **Inventory**.
6. On the **Inventory** tab, select **+ New**, and then, on the **Virtual network** panel, specify the following settings:

*Table 1: Inventory settings*

|  |  |
| --- | --- |
| Setting | Value |
| Name | vnet-1 |
| Address Prefixes | 192.168.0.0/20 |

1. On the **Virtual network** panel, select **+ Subnets**, and then in the **Subnets** panel, specify the following settings:

*Table 2: Subnets settings*

|  |  |
| --- | --- |
| Setting | Value |
| Name | subnet-0 |
| Address Prefix | 192.168.0.0/24 |

1. Select **Submit**, and then on the **Virtual network** panel, select **Submit** again.
2. Verify that **vnet-1** with one subnet was created successfully.
3. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **Access control lists**.
4. On the **Access control list** panel, on the **Inventory** tab, select **+ New**, and in the **Name** text box, enter **acl-1**, and then select **Submit**.
5. Switch to the **Access control list** panel, and on the **Inventory** tab, select **acl-1**.
6. On the **Access Control List > acl-1** panel, in the **Access Control Rule** section, select **+ New**.
7. On the **Access Control Rule** panel, specify the following settings:
8. Select **Submit**, and then verify that the rule was created successfully.
9. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **Logical networks**, and then review logical networks in the SDN cluster sddc01.corp.contoso. com.
10. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **Gateway connections**.
11. On the **Inventory** tab of the **Gateway connections** panel, select **+New** and then, on the **Create New Gateway Connections** panel, review the available settings.
12. On the **Create New Gateway Connections** panel, select **Cancel**.
13. Switch to the **Gateway connections** panel, note that you have the option to create a site-to-site VPN to Azure.
14. On the sddc01.corp.contoso.com page, in the list of **Tools**, in the **Networking** section, select **SDN monitoring**. When prompted to **Connect to Network Controller**, in the **Network Controller node Name** text box, enter NCCLUSTER.corp.contoso.com, and then select **Continue**.
15. Switch to the **SDN monitoring** panel, review the content of the **Summary** panel.

**Note**: With the SDN Monitoring extension, you can monitor the state of the SDN services and infra­structure in real time. You can observe detailed information about the health of your Network Con­troller, Software Load Balancers, Virtual Gateways, and hosts. You can also monitor consumption of your Virtual Gateway pools, Public IP pools, and Private IP pools.

1. On the **SDN monitoring** panel, select **Load Balancer** to display the **Load Balancer** panel.

**Note**: The **Load Balancer** panel provides an overview of the health of individual components of the software load balancer as well as the utilization of your load balancer virtual IP pools. This helps to identify situations in which the pool of available IP addresses becomes depleted.

1. On the **SDN monitoring** panel, select **Gateway** to display the **Gateway** panel.

**Note**: The **Gateway** panel provides an overview of gateway pools and the health of the individual gateway VMs that make up the pool.