1. Lab Information

The System Center Configuration Manager lab environment was created using Hyper-V 2016 Virtual Machines connected to its own virtual network. The lab has seven (7) virtual machines installed on one (1) Hyper-V host, installed with default configuration, as per following configuration:

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| --- | --- | --- | --- |
| Virtual Machine | Hardware | Description | Base OS |
| HYPER-V | RAM: 24GB  Drive 01 (C): 500GB  Drive 02 (D): DVD  Processor/Core: 4  Network Adapter | Hyper-V Server | Windows Server 2016  IP Address: DHCP |
| ROUTER01 | RAM: 512MB  Drive 01: 2GB  Processor/Core: 1  Network Adapter  Network Adapter | Linux router used to connect VMs to the internet | VyOS 1.1.3  External IP: DHCP  Internal IP: 192.168.3.254  Internal Subnet 255.255.255.0  Internal DNS 192.168.3.1 |
| SRV0001 | RAM: 2048MB  Drive 01 (C): 127GB  Drive 02 (D): DVD  Processor/Core: 1  Network Adapter | Domain Controller for domain called classroom.intranet (netbios name classroom), DNS, DHCP and Enterprise CA | Windows Server 2016  IP Address: 192.168.3.1  Subnet 255.255.255.0  Default Gateway: 192.168.3.254  DNS 192.168.3.1 |
| SRV0002 | RAM: 8192MB  Drive 01 (C): 127GB  Drive 02 (D): DVD  Processor/Core: 2  Network Adapter | Site Server for ConfigMgr | Windows Server 2016  IP Address: 192.168.3.2  Subnet 255.255.255.0  Default Gateway: 192.168.3.254  DNS 192.168.3.1 |
| WKS0001 | RAM: 2048MB  Drive 01 (C): 127GB  Processor/Core: 1  Network Adapter | Windows 10 Enterprise Edition x64 – Workstation | Windows 10 x64  IP Address: DHCP |
| WKS0002 | RAM: 2048MB  Drive 01 (C): 127GB  Processor/Core: 1  Network Adapter | Windows 10 Enterprise Edition x64 – Workstation | Windows 10 x64  IP Address: DHCP |
| WKS0004 | RAM: 2048MB  Drive 01 (C): 127GB  Processor/Core: 1  Network Adapter | Windows 8.1 Enterprise Edition x64 – Workstation | Windows 8.1 x64  IP Address: DHCP |

All user accounts have the password set to Pa$$w0rd and the below list explains its utilization:

|  |  |
| --- | --- |
| Account | Objective |
| CLASSROOM\administrator | Domain admin account |
| CLASSROOM\admworkstation | Domain user account used to demonstrate RBA settings. |
| CLASSROOM\sccmadmin | Account with full rights on the SCCM Servers |
| CLASSROOM\sccmpush | Account used for client push. This account has admin rights on all workstations |
| CLASSROOM\svc\_sccmna | Account used as network account |
| CLASSROOM\svc\_ssrsea | Account used as SSRS execution account |
| CLASSROOM\svc\_sccmjoin | Account used to join computers to the domain |
| CLASSROOM\User01 | Account used to deploy software to |
| CLASSROOM\User02 | Account used to deploy software to |

The following table shows the groups created to be used on this training and its objective:

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| --- | --- |
| Group | Objective |
| CLASSROOM\SCCM Admins | Contain all users with Full Access to the SCCM Infrastructure and it is a member of the SCCM Remote Tools |
| CLASSROOM\Workstation Admins | Contain the Admworkstation user |
| CLASSROOM\SCCM Remote Tools | Contain users with rights to remote access client machines |
| CLASSROOM\SCCM Servers | Contain all SCCM Servers |

The following table shows the group policies used on this training and its objective:

|  |  |  |  |
| --- | --- | --- | --- |
| Group Policy | Objective | Link | Enabled |
| Disable Windows Service | Set the BITS Window Service as disabled | Workstations Disabled OU | YES |
| SCCM Local Administrators | Set the Local Administrators membership group for the SCCM Servers | SCCM Servers OU | YES |
| Workstation Local Administrators | Set the Local Administrators group membership for the Desktops | Workstations OU | YES |
| Workstation Local Firewall | Set the Workstations Firewall Exclusion for the Client Push | Workstations OU | YES |

* 1. PowerShell

Automation is a key skill for IT Professionals in today’s world and everything can be automated. Within Windows and System Center Configuration Manager this is also true, so I have created over 200 scripts that can help you when using this e-book. The collection of scripts can be downloaded from <https://github.com/dotraphael/SCCMAdminEbookv4>.

Some of the scripts are used to create the entire lab environment using Hyper-V. It is recommended to use PowerShell ISE instead of a normal PowerShell console as it is richer environment. While many PowerShell scripts are expected to run without any user intervention, they have not been created to log or show results easily. Some scripts require you to run few lines at a time as a reboot of the machine may be necessary.

**Note:** To be able to run the PowerShell scripts, you need to change the PowerShell Execution Policy accordingly. This is necessary because the scripts are not signed and may be run from a remote location. Perform this change in a production environment is not recommended.

This can also be achieved via an elevated PowerShell console using the commands below:

Set-ExecutionPolicy Unrestricted -Force

Finally, whenever possible, I have created scripts to automate tasks, they are located under the Course Scripts folder, however, some tasks may not have an associated script (i.e. Browse Internet, Microsoft Azure, etc.).

Most of the time, these scripts run from the Configuration Manager Drive. To achieve this, you can start the PowerShell via the SCCM Console or use the following PowerShell commands to enable the PowerShell SCCM environment from a normal PowerShell:

$SiteCode = "001"

$servername = "SRV0002.classroom.intranet"

$ModulePath = $env:SMS\_ADMIN\_UI\_PATH

if ($ModulePath -eq $null) {

$ModulePath = (Get-ItemProperty -Path "Registry::HKEY\_LOCAL\_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Environment").SMS\_ADMIN\_UI\_PATH

}

$ModulePath = $ModulePath.Replace("bin\i386","bin\ConfigurationManager.psd1")

$Certificate = Get-AuthenticodeSignature -FilePath "$ModulePath" -ErrorAction SilentlyContinue

$CertStore = New-Object System.Security.Cryptography.X509Certificates.X509Store("TrustedPublisher")

$CertStore.Open([System.Security.Cryptography.X509Certificates.OpenFlags]::MaxAllowed)

$Certexist = ($CertStore.Certificates | where {$\_.thumbprint -eq $Certificate.SignerCertificate.Thumbprint}) -ne $null

if ($Certexist -eq $false) {

$CertStore.Add($Certificate.SignerCertificate)

}

$CertStore.Close()

import-module $ModulePath -force

if ((get-psdrive $SiteCode -erroraction SilentlyContinue | measure).Count -ne 1) {

new-psdrive -Name $SiteCode -PSProvider "AdminUI.PS.Provider\CMSite" -Root $servername

}

cd "$($SiteCode):"

**Note:** To be able to run some of the PowerShell scripts on the workstations, Domain Users Group will be added to the Local Administrators Group on the WKS0001, WKS0002 and WKS0004.

* 1. Installing a Hyper-V Server

Before we start, we need to build a Hyper-V Server that will host our Virtual Environment.

**Note:** Hyper-V server requires Virtualization capability in the host hardware, for details see <https://technet.microsoft.com/en-us/windows-server-docs/compute/hyper-v/system-requirements-for-hyper-v-on-windows>.

To create a Hyper-V Server, perform the following actions:

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| --- |
| 01. Download Windows Server 2016 Evaluation from Microsoft website <https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2016> and burn a DVD |
| 02. Insert the Windows Server 2016 DVD-ROM and turn on your computer. After a few minutes, you receive the Windows Server 2016 screen shown. Select the correct Language, Time and Currency Format and Keyboard or input method and Click Next. |
| 03. On the next Install Windows screen, click Install now. |
| 04. On the Select the Operating System you want to install, select Windows Server 2016 Standard Evaluation (Server with a GUI) and click Next. |
| 05. Under License terms, select I accept the license terms and click Next |
| 06. Under Which type of installation do you want? Click Custom: Install Windows only (advanced) |
| 07. Under Where do you want to install Windows? Click Next |
| 08. The Installation will start and it will take some time to complete (15-30 minutes depending on your hardware). |
| 09. Once the installation is completed, On the Settings, you must change the password before logging on for the first time. Once completed, click Finish. |
| 10. Perform a full windows update until there is no other update to be applied |
| 11. Download the collection of Scripts from <https://github.com/dotraphael/SCCMAdminEbookv4/raw/master/TrainingFilesv4ADM.zip> and extract to C:\ |

* 1. Installing Hyper-V Role

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| Perform this task on the Hyper-V server logged on as administrator |
| 01. In Server Manager, on the Manage menu, click Add Roles and Features. |
| 02. On the Before you begin page, verify that your destination server and network environment are prepared for the role and feature you want to install. Click Next. |
| 03. On the Select installation type page, select Role-based or feature-based installation and then click Next. |
| 04. On the Select destination server page, select a server from the server pool and then click Next. |
| 05. On the Select server roles page, select Hyper-V. |
| 06. To add the tools that you use to create and manage virtual machines, click Add Features, and click Next. |
| 07. On the Features page, click Next. |
| 08. On the Hyper-V page, click Next |
| 09. On the Create Virtual Switches page, click Next |
| 10. On the Virtual Machine Migration page, click Next |
| 11. On the Default Stores page, click Next |
| 12. On the Confirm installation selections page, select Restart the destination server automatically if required. |
| 13. On the Add Roles and Features Wizard message, click Yes and them Install |
| 14. When the server reboots, open the Server Manager so the installation can finish. Once done, click close |

This can also be achieved via PowerShell using the commands below:

##Install the Hyper-V Role

Install-WindowsFeature -Name Hyper-V -IncludeManagementTools -Restart

#Machine will reboot, to validate if the hyper-v role was installed, use

Get-WindowsFeature -name Hyper-V

* 1. Downloading Software

Once we have our Hyper-V host configured, it is time to download the required software and create the virtual machines, so Perform this task on the the Hyper-V server logged on as administrator:

|  |
| --- |
| 01. Open PowerShell (run as administrator) and navigate to C:\Trainingfiles\Scripts |
| 02. Execute .\DownloadSoftware.ps1  Note: If anti-virus software has been installed on the Hyper-V host, it is recommended to add an exclusion for C:\TrainingFiles otherwise it will identify the C:\TrainingFiles\Source\Eicar\eicar test file.txt as a Virus. This file is not a virus, it is an industry standard test file for antivirus engines. More information can be found at <http://www.eicar.org/> |
| 03. Copy the App-v5.0 SP3 Client (appv\_client\_setup.exe)[[1]](#footnote-2) to C:\Trainingfiles\Source\App-v5 Client |

* 1. Creating Windows Virtual Machines

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| Perform this task on the Hyper-V server logged on as administrator |
| 01. Open PowerShell (run as administrator) and navigate to C:\Trainingfiles\Scripts |
| 02. Execute .\CreateVMs.ps1 |

* 1. CLASSROOM-ROUTER01

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| Perform this task on the router01 virtual machine |
| 01. Boot Virtual Machine CLASSROOM-ROUTER01 |
| 02. Log in using vyos as login and password |
| 03. Type install image and press enter |
| 04. On Would you like to continue, press enter |
| 05. On Partition, press enter |
| 06. On Install the image on, press enter |
| 07. On Continue, type Yes and press enter |
| 08. On How big of a root partition should I create, press enter |
| 09. On What would you like to name this image, press enter |
| 10. On Which one should I copy to sda, press enter |
| 11. On Enter password for user ‘vyos’, type Pa$$w0rd and press enter |
| 12. On Retype password for user ‘vyos’ type Pa$$w0rd and press enter |
| 13. On Which drive should grub modify the boot partition on, press enter |
| 14. Type poweroff and press enter |
| 15. On Proceed with poweroff, type Yes and press enter |
| 16. Select Media -> DVD Drive -> Eject vyos-1.1.3-amd64.iso and power on the virtual machine |
| 17. Log on with login vyos and password Pa$$w0rd |
| 18. Type configure and press enter |
| 19. Type set interface ethernet eth0 address dhcp and press enter |
| 20. Type set interface ethernet eth0 description 'External' and press enter |
| 21. Type set interface ethernet eth1 address 192.168.3.254/24 and press enter |
| 22. Type set interface ethernet eth1 description 'Internal' and press enter |
| 23. Type set system name-server 8.8.8.8 and press enter |
| 24. Type set system name-server 8.8.4.4 and press enter |
| 25. Type set system host-name router01 and press enter |
| 26. Type set nat source rule 100 outbound-interface 'eth0' and press enter |
| 27. Type set nat source rule 100 source address '192.168.3.0/24' and press enter |
| 28. Type set nat source rule 100 translation address masquerade and press enter |
| 29. Type commit and press enter |
| 30. Type save and press enter |
| 31. Type exit and press enter |
| 32. Type show interfaces and press enter |
| 33. Type ping www.google.com and press enter |

* 1. CLASSROOM-SRV0001

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| Perform this task on the srv0001 virtual machine |
| 01. Confirm the Virtual Machine CLASSROOM-ROUTER01 is up and is providing internet connectivity |
| 02. Boot Virtual Machine CLASSROOM-SRV0001 |
| 03. Log on as administrator |
| 04. Open PowerShell (run as administrator) and navigate to C:\Trainingfiles\Scripts |
| 05. Type.\SRV0001.ps1 and press Enter |
| 06. Type .\SRV0001-01-InstallDC.ps1 and press Enter  Note: The computer will restart automatically |
| 07. Log on as administrator, Open PowerShell (run as administrator) and navigate to C:\Trainingfiles\Scripts |
| 08. Type .\SRV0001-02-ConfigureDC.ps1 and press Enter |

* 1. CLASSROOM-SRV0002

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| Perform this task on the srv0002 virtual machine as administrator |
| 01. Confirm the Virtual Machine CLASSROOM-ROUTER01 is up and is providing internet connectivity |
| 02. Confirm the Virtual Machine CLASSROOM-SRV0001 is up and has been configured as Domain Controller |
| 03. Boot Virtual Machine CLASSROOM-SRV0002 |
| 04. Log on as classroom\administrator |
| 05. Open PowerShell (run as administrator) and navigate to C:\Trainingfiles\Scripts |
| 06. Type .\SRV0002.ps1 and press Enter  Note: Computer will shutdown |

* 1. CLASSROOM-WKS0001

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| Perform this task on the wks0001 virtual machine as administrator |
| 01. Confirm the Virtual Machine CLASSROOM-ROUTER01 is up and is providing internet connectivity |
| 02. Confirm the Virtual Machine CLASSROOM-SRV0001 is up and has been configured as Domain Controller |
| 03. Boot Virtual Machine CLASSROOM-WKS0001 |
| 04. Log on as classroom\administrator |
| 05. Open PowerShell (run as administrator) |
| 06. Type Set-ExecutionPolicy Unrestricted -force and press Enter |
| 07. Type \\srv0001\Trainingfiles\Scripts\WKS0001.ps1 and press Enter  Note: Computer will shutdown |

* 1. CLASSROOM-WKS0002

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| Perform this task on the wks0002 virtual machine as administrator |
| 01. Confirm the Virtual Machine CLASSROOM-ROUTER01 is up and is providing internet connectivity |
| 02. Confirm the Virtual Machine CLASSROOM-SRV0001 is up and has been configured as Domain Controller |
| 03. Boot Virtual Machine CLASSROOM-WKS0002 |
| 04. Log on as classroom\administrator |
| 05. Open PowerShell (run as administrator) |
| 06. Type Set-ExecutionPolicy Unrestricted -force and press Enter |
| 07. Type \\srv0001\Trainingfiles\Scripts\WKS0002.ps1 and press Enter  Note: Computer will shutdown |

* 1. CLASSROOM-WKS0004

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| --- |
| Perform this task on the wks0004 virtual machine as administrator |
| 01. Confirm the Virtual Machine CLASSROOM-ROUTER01 is up and is providing internet connectivity |
| 02. Confirm the Virtual Machine CLASSROOM-SRV0001 is up and has been configured as Domain Controller |
| 03. Boot Virtual Machine CLASSROOM-WKS0004 |
| 04. Log on as classroom\administrator |
| 05. Open PowerShell (run as administrator) |
| 06. Type Set-ExecutionPolicy Unrestricted -force and press Enter |
| 07. Type \\srv0001\Trainingfiles\Scripts\WKS0004.ps1 and press Enter  Note: Computer will shutdown |

1. To have access to the App-V 5.0 SP3 client access to MDOP package is needed. Access the MSDN, TechNet or Microsoft volume license website to download MDOP 2014 R2 [↑](#footnote-ref-2)