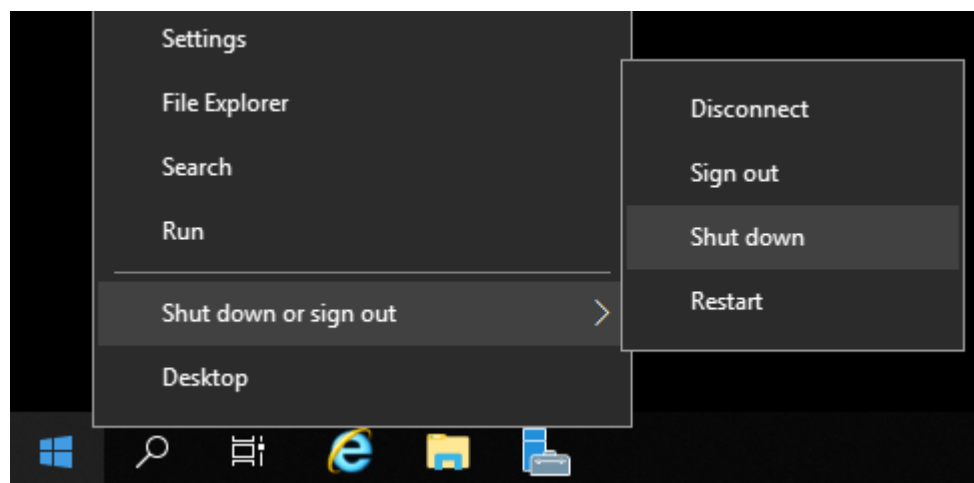
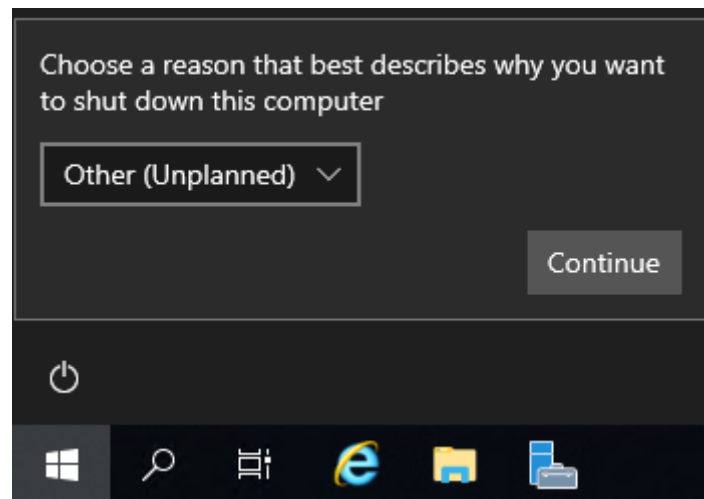
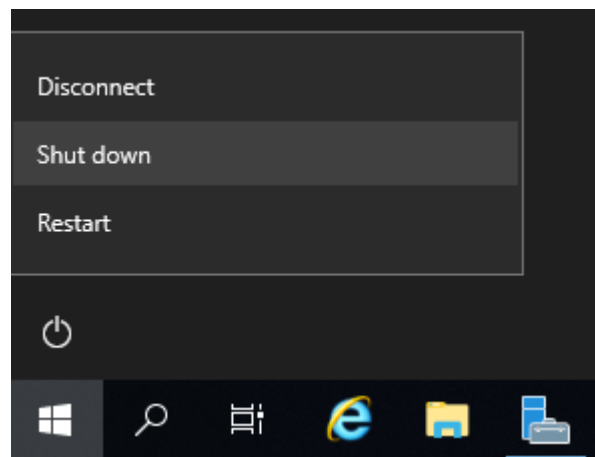
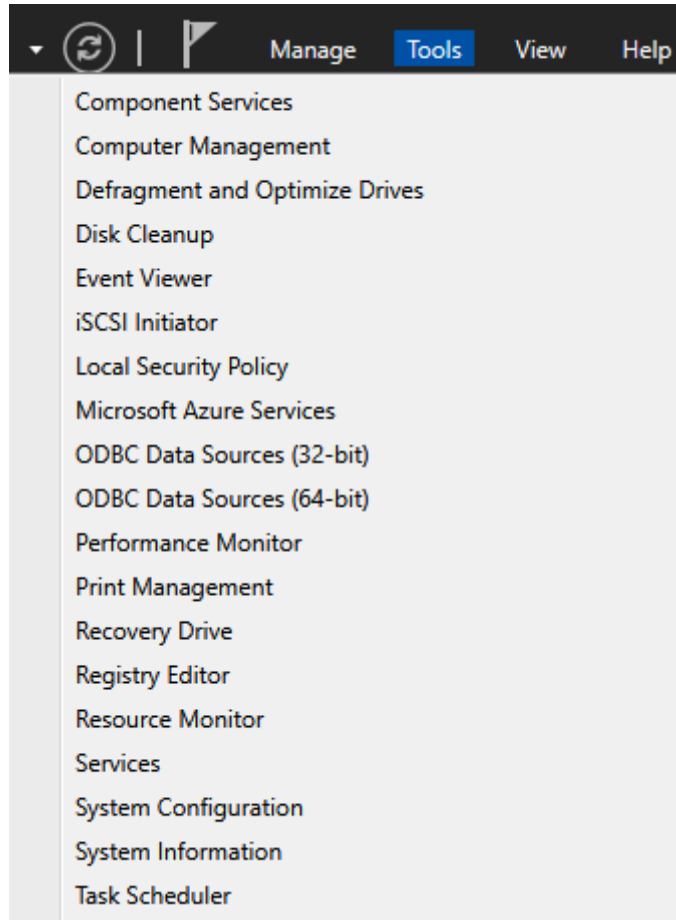


## Chapter 1: Learning the Interface

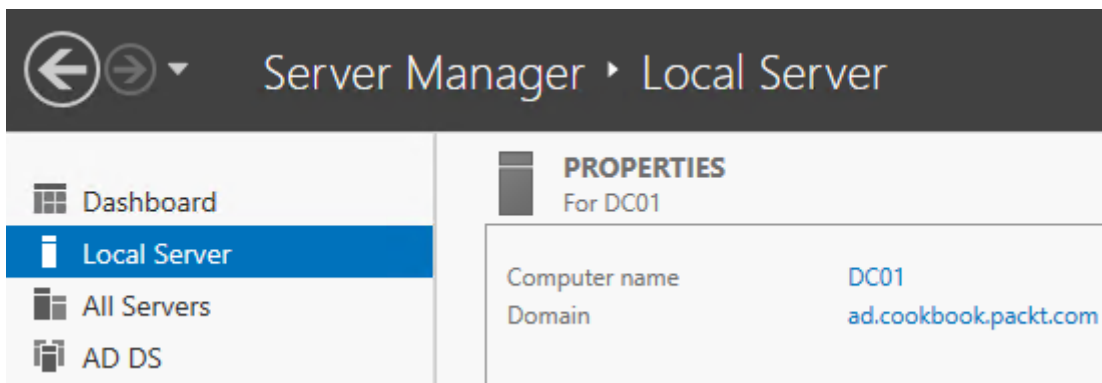
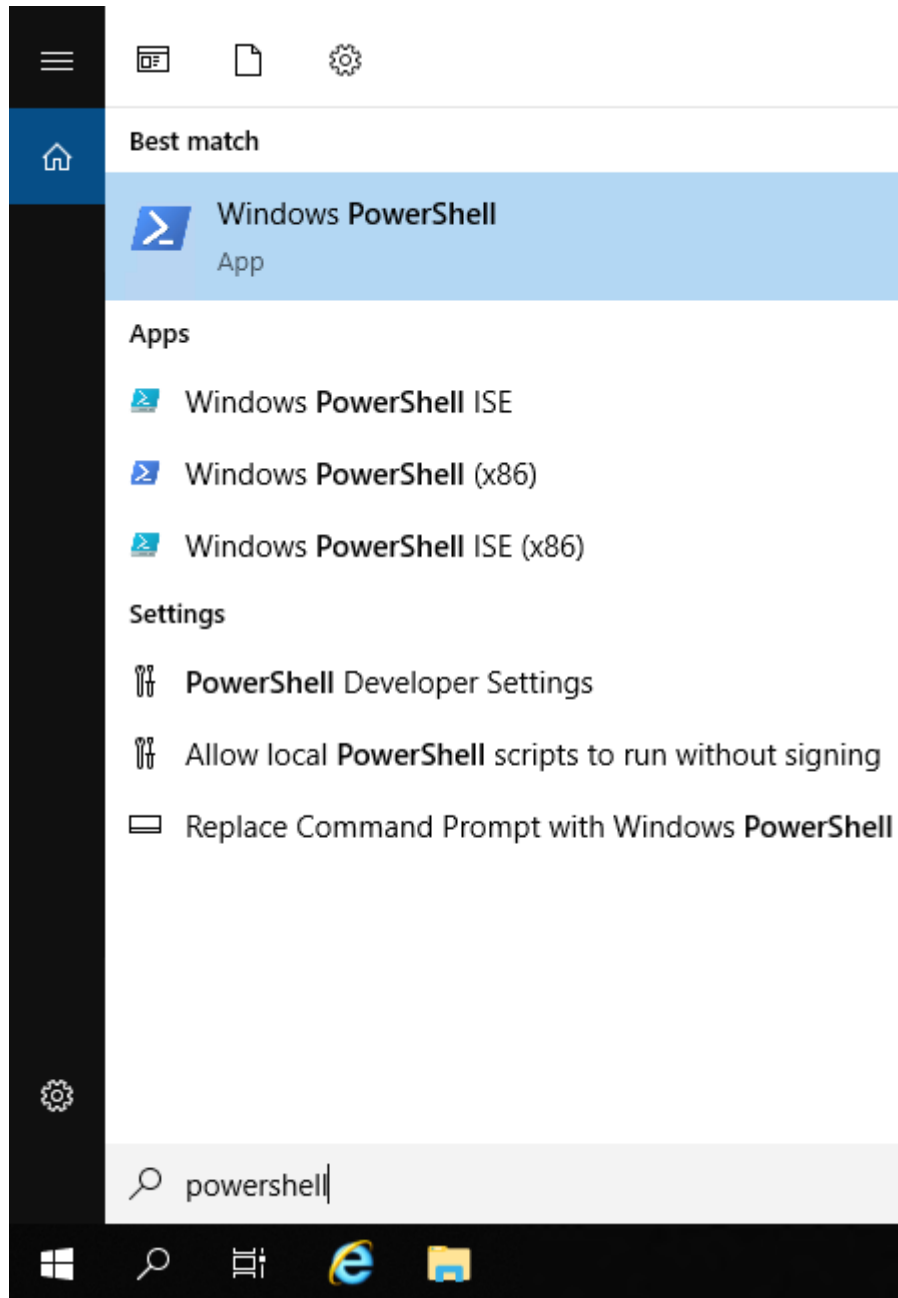


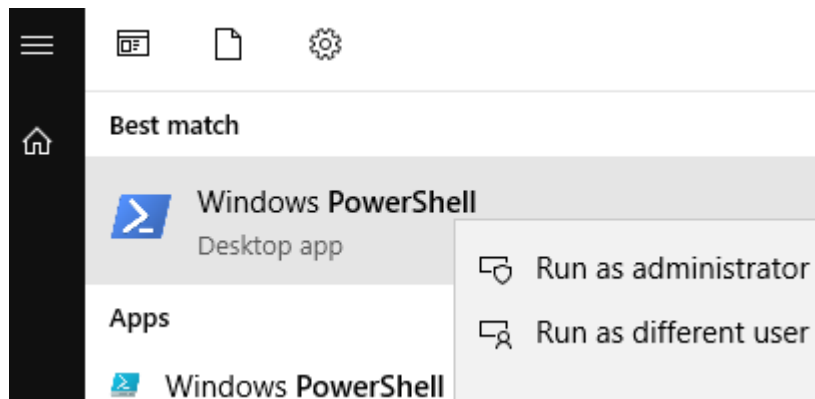
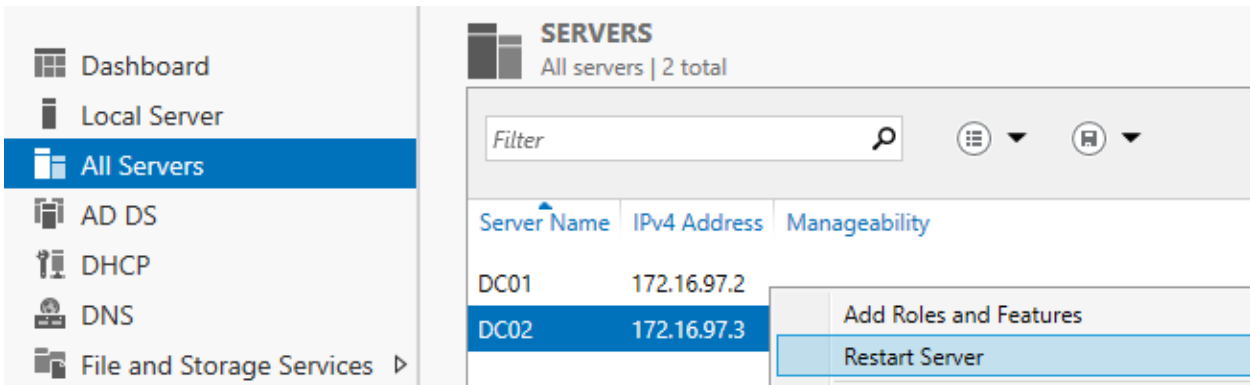
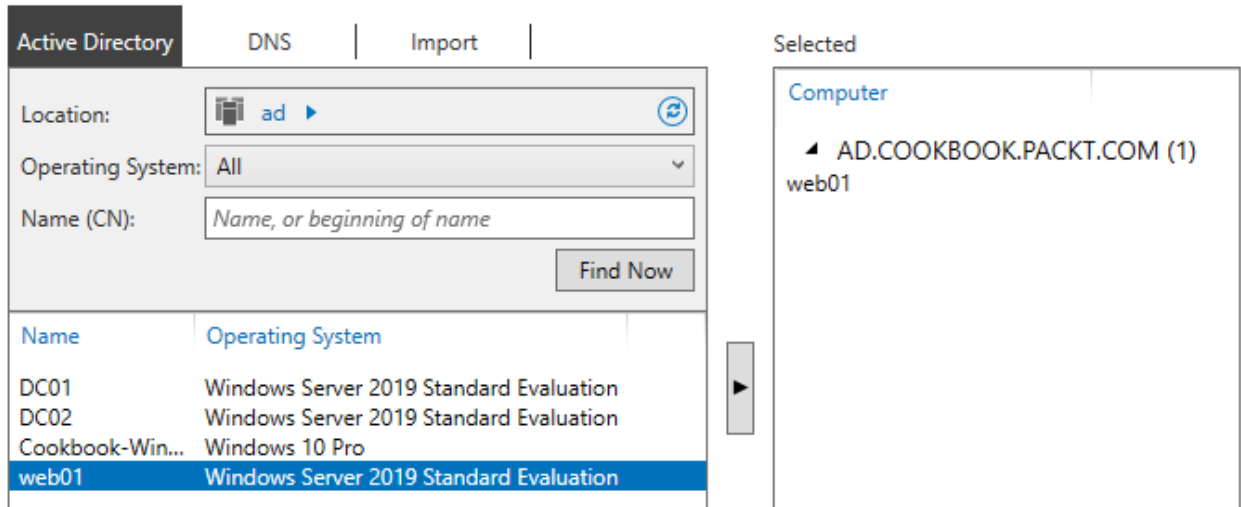
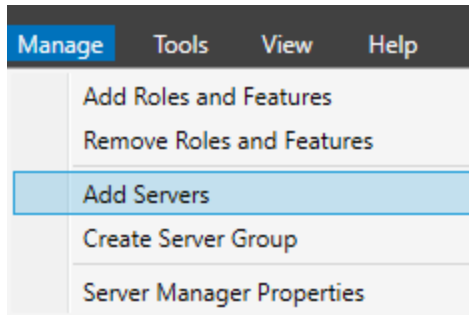
Windows PowerShell

```
PS C:\Users\mark.henderson> hostname  
DC01  
PS C:\Users\mark.henderson> Restart-Computer
```









Administrator: Windows PowerShell

```
PS C:\Users\Administrator> Get-NetIPAddress
```

```
IPAddress           : fe80::515:4e87:b4dc:1965%15
InterfaceIndex      : 15
InterfaceAlias      : Ethernet
AddressFamily       : IPv6
Type                : Unicast
PrefixLength        : 64
PrefixOrigin        : WellKnown
SuffixOrigin        : Link
AddressState        : Preferred
ValidLifetime       : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime   : Infinite ([TimeSpan]::MaxValue)
SkipAsSource        : False
PolicyStore         : ActiveStore
```

Administrator: Windows PowerShell

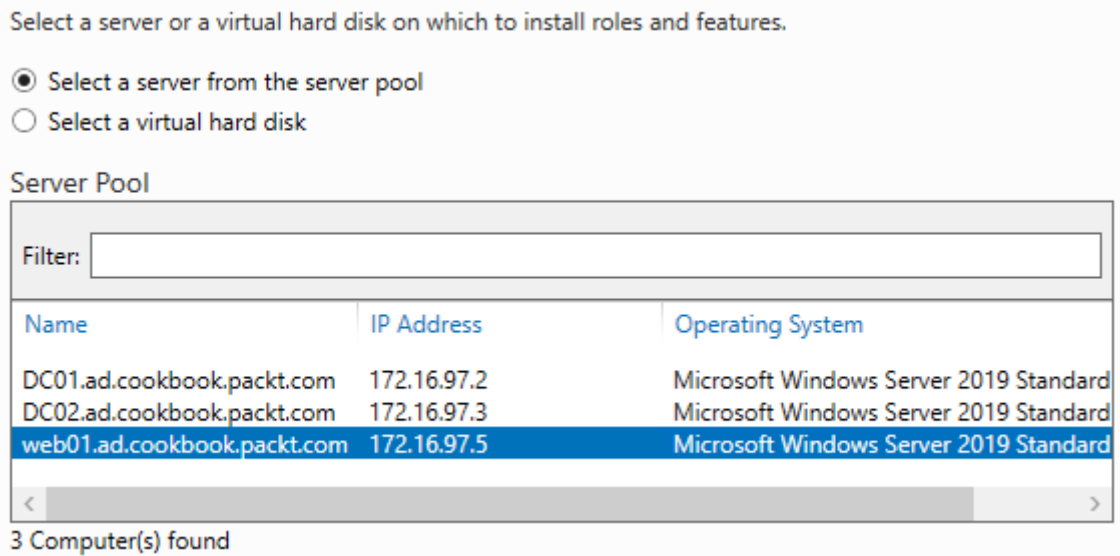
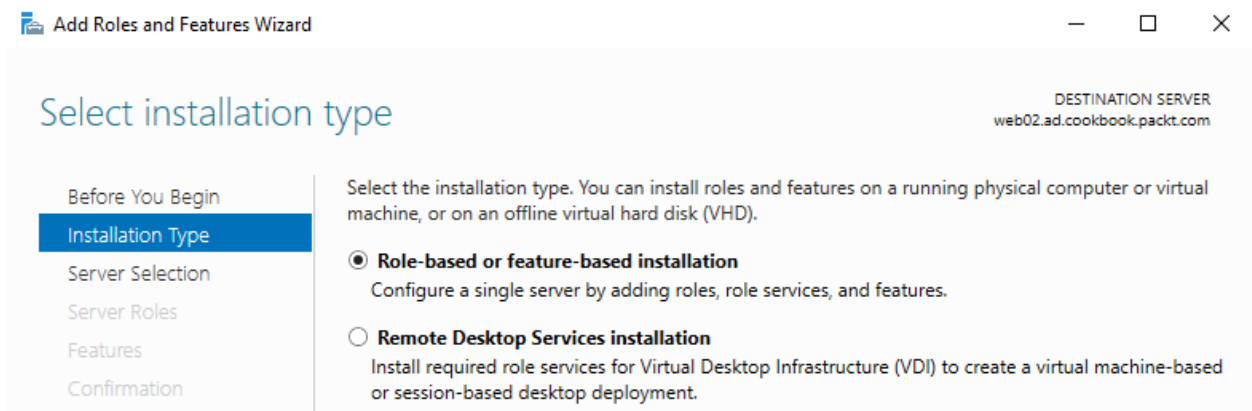
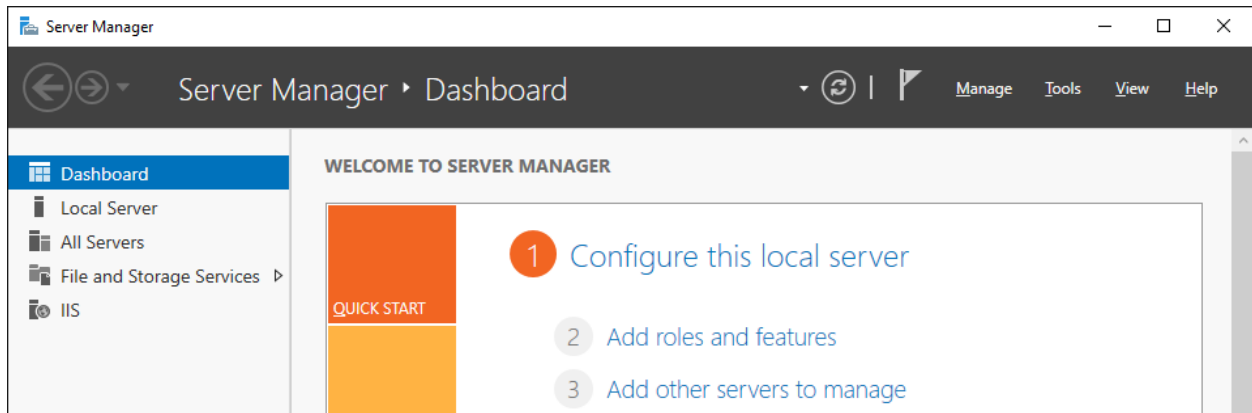
```
PS C:\Users\Administrator> Get-NetIPAddress -AddressFamily IPv4
```

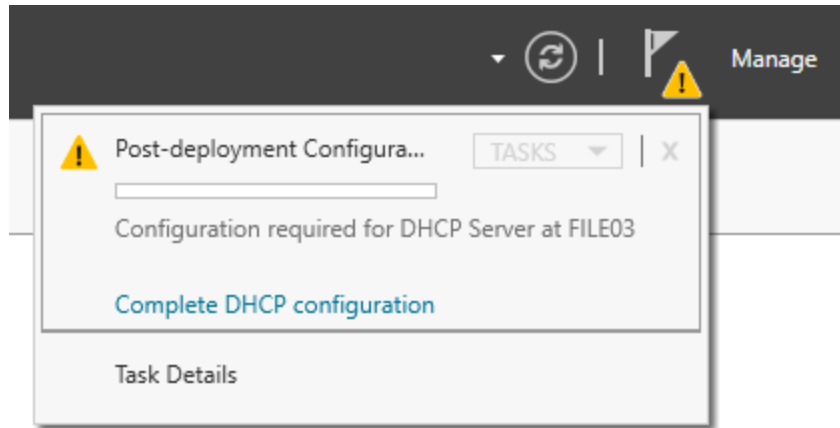
```
IPAddress           : 172.16.97.2
InterfaceIndex      : 15
InterfaceAlias      : Ethernet
AddressFamily       : IPv4
Type                : Unicast
PrefixLength        : 24
PrefixOrigin        : Manual
SuffixOrigin        : Manual
AddressState        : Preferred
ValidLifetime       : Infinite ([TimeSpan]::MaxValue)
PreferredLifetime   : Infinite ([TimeSpan]::MaxValue)
SkipAsSource        : False
PolicyStore         : ActiveStore
```

Administrator: Windows PowerShell

```
PS C:\Users\Administrator> Get-NetIPAddress | Format-Table
```

ifIndex	IPAddress	PrefixLength	PrefixOrigin	SuffixOrigin	AddressState	PolicyStore
15	fe80::515:4e87:b4dc:1965%15	64	WellKnown	Link	Preferred	ActiveStore
1	::1	128	WellKnown	WellKnown	Preferred	ActiveStore
15	172.16.97.2	24	Manual	Manual	Preferred	ActiveStore
1	127.0.0.1	8	WellKnown	WellKnown	Preferred	ActiveStore










```
Windows PowerShell
PS C:\Users\mhenderson> Get-WindowsFeature -Name Web-*, Telnet-Client -ComputerName web01 | Where-Object Installed

Display Name                                     Name                                     Install State
-----
[X] Web Server (IIS)                             Web-Server                             Installed
  [X] Web Server                                 Web-WebServer                           Installed
    [X] Common HTTP Features                    Web-Common-Http                         Installed
      [X] Default Document                      Web-Default-Doc                         Installed
      [X] Directory Browsing                    Web-Dir-Browsing                        Installed
      [X] HTTP Errors                           Web-Http-Errors                         Installed
      [X] Static Content                        Web-Static-Content                       Installed
    [X] Health and Diagnostics                  Web-Health                               Installed
      [X] HTTP Logging                           Web-Http-Logging                         Installed
    [X] Performance                             Web-Performance                         Installed
      [X] Static Content Compression             Web-Stat-Compression                     Installed
    [X] Security                                 Web-Security                             Installed
      [X] Request Filtering                      Web-Filtering                            Installed
      [X] IP and Domain Restrictions             Web-IP-Security                          Installed
  [X] Management Tools                           Web-Mgmt-Tools                           Installed
    [X] IIS Management Console                  Web-Mgmt-Console                         Installed
    [X] IIS Management Scripts and Tools        Web-Scripting-Tools                      Installed
[X] Telnet Client                               Telnet-Client                             Installed
```



## 🏠 Add a feature


-  RSAT: Network Controller Management Tools 163 KB
-  RSAT: Network Load Balancing Tools 267 KB
-  RSAT: Remote Access Management Tools 6.70 MB
-  RSAT: Remote Desktop Services Tools 947 KB

 **RSAT: Server Manager** 6.35 MB

Server Manager includes the Server Manager console and PowerShell tools for remotely managing Windows Server, and includes tools to remotely configure NIC teaming on Windows Server and Best Practices Analyzer.

[Install](#)

Active Directory | DNS | Import

Location:  

Operating System:

Name (CN):

[Find Now](#)

Name	Operating System
DC01	Windows Server 2019 Standard
DC02	Windows Server 2019 Standard
Cookbook-Win10	Windows 10 Pro
web01	Windows Server 2019 Standard

Dashboard

**All Servers**

AD DS

DHCP

DNS

File and Storage Services >

IIS

### SERVERS

All servers | 3 total

Filter

Server Name	IPv4 Address
DC01	172.16.97.2
DC02	172.16.97.3
WEB01	172.16.97.5

Windows Admin Center Setup

## One more thing...

The first time you open Windows Admin Center, you'll have to select a certificate. Be sure to select:

**More choices > Windows Admin Center Client**

More choices

- john@contoso.com  
Issuer: Contoso IT  
Valid From: 3/9/2018 to 6/7/2018
- Windows Admin Center Client**  
Issuer: Windows Admin Center  
Valid From: 3/28/2018 to 3/25/2028

Open Windows Admin Center

Back Finish Cancel

# Windows Admin Center

## All connections

+ Add  Connect  Manage as More ▾

Name ↑ Type

 [cookbook-win10.ad.cookbook.p](#) Windows PC

## Servers

Connection tags ⓘ

+ Add tags

Add one Import a list Search Active Directory

3 items 3 selected ✕

✓ Select server(s) to add ↑

✓ DC01.ad.cookbook.packt.com

✓ DC02.ad.cookbook.packt.com

✓ web01.ad.cookbook.packt.com

Server details - Overvie

https://localhost:6516/servermanager/connections/server/dc01.ad.cookbook.packt.com/tools/over

Windows Admin Center Server Manager Microsoft

### dc01.ad.cookbook.packt.com

**Tools**

Search Tools

- Overview
- Azure hybrid services
- Azure File Sync
- Backup
- Certificates
- Devices
- Events
- Files
- Firewall
- Installed Apps
- Local Users & Groups
- Settings

**Overview**

Restart Shutdown Enable Disk Metrics More

Computer name dc01	Domain ad.cookbook.packt.com	Operating system Microsoft Windows Server 2019 Standard Evaluation
Version 10.0.17763	Installed memory (RAM) 1 GB	Disk space (Free / Total) 27.34 GB / 44.33 GB
Processors AMD Ryzen Threadripper 2950X 16-Core Processor	Manufacturer Microsoft Corporation	Model Virtual Machine
Logical processors 2	Windows Defender Real-time protection: On	NIC(s) 1
Azure Backup status <a href="#">Not protected</a>	Up time 1:19:52:4	Logged in users 1

CPU Utilization 2.77% Handles 45635

Type here to search

8:44 PM 26/10/2019

Best match

**Windows PowerShell**  
Desktop app

Apps

Windows PowerShell

- Run as administrator
- Run as different user

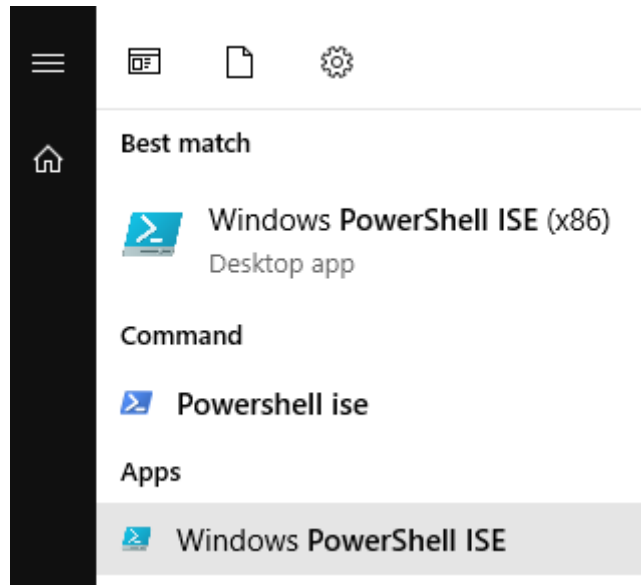
Administrator: Windows PowerShell

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> Get-ExecutionPolicy
RemoteSigned
PS C:\Users\Administrator>
```

```
Administrator: Windows PowerShell
PS C:\Users\Administrator> Set-ExecutionPolicy Unrestricted

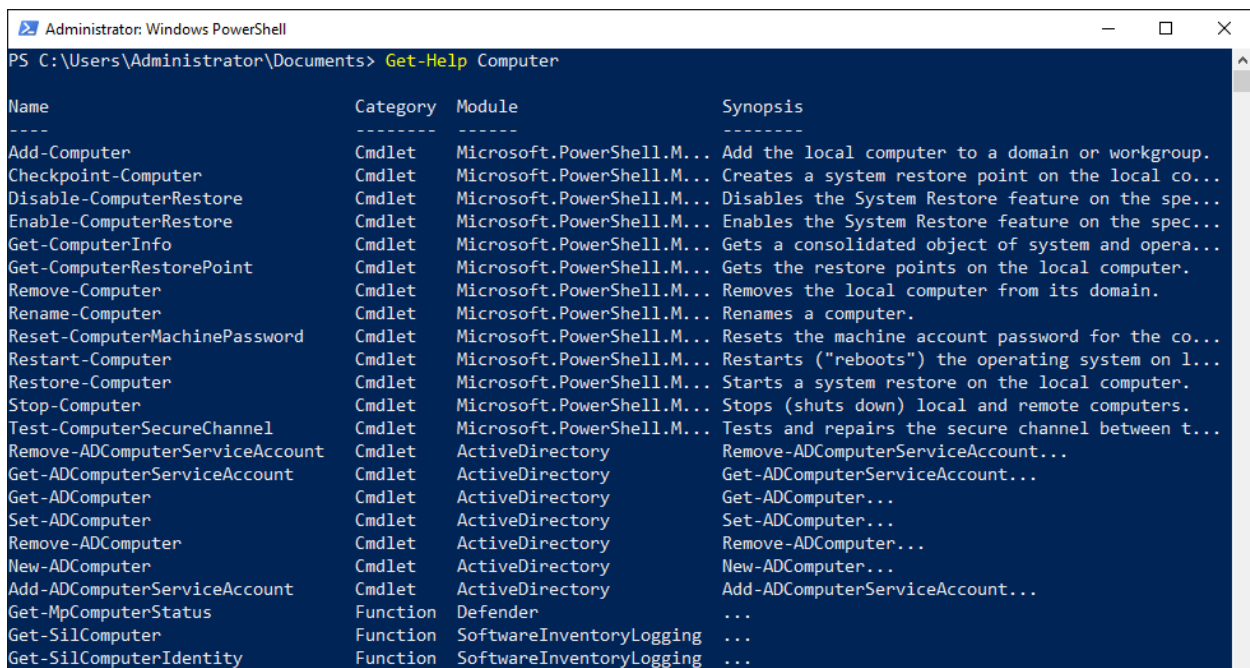
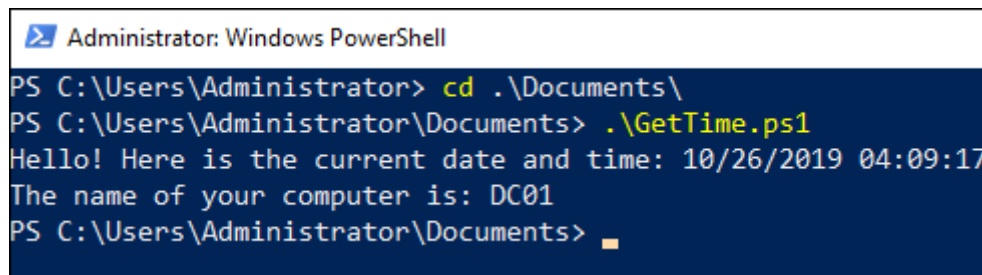
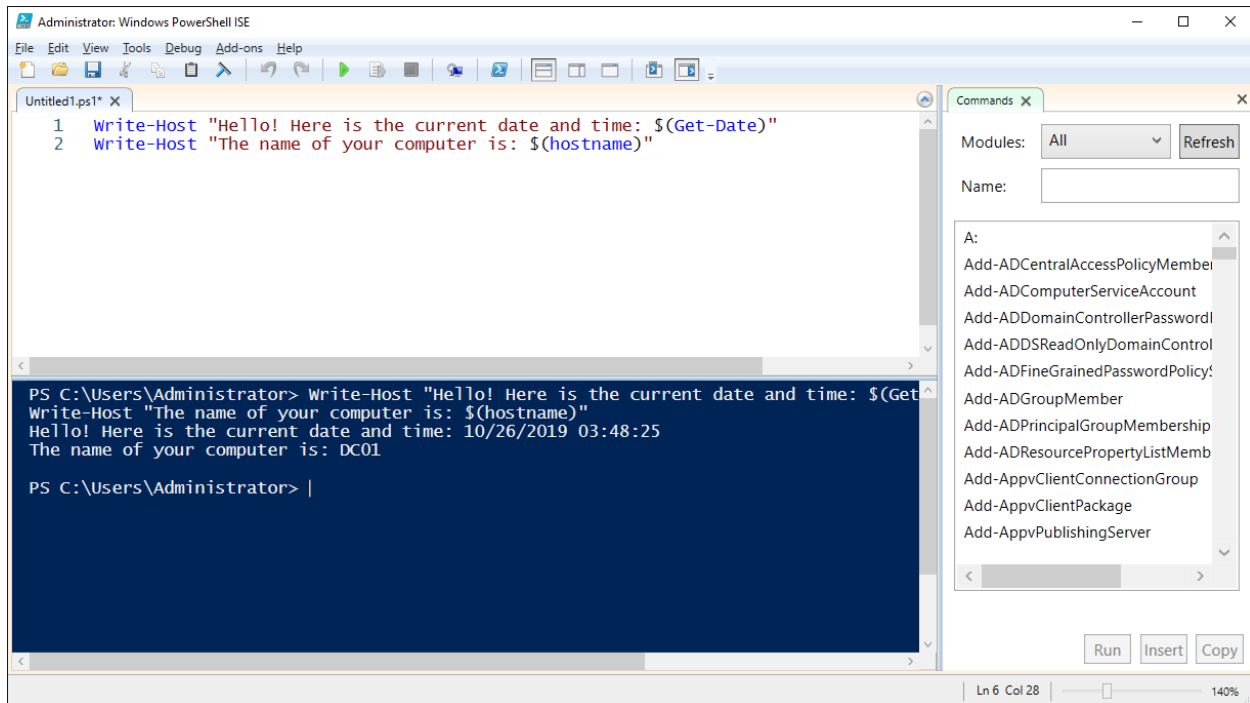
Execution Policy Change
The execution policy helps protect you from scripts that you do not trust. Changing the execution policy might expose you to the security risks described in the about_Execution_Policies help topic at https://go.microsoft.com/fwlink/?LinkID=135170. Do you want to change the execution policy?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "N"): y
PS C:\Users\Administrator>
```



```
Administrator: Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1* X
1 write-Host "Hello! Here is the current date and time:"

PS C:\Users\Administrator> write-Host "Hello! Here is the current date and time:"
Hello! Here is the current date and time:

PS C:\Users\Administrator>
```



```
Administrator: Windows PowerShell
PS C:\Users\Administrator\Documents> Get-Help Restart-Computer

NAME
Restart-Computer

SYNOPSIS
Restarts ("reboots") the operating system on local and remote computers.

SYNTAX
Restart-Computer [[-ComputerName] <String[]>] [[-Credential] <PSCredential>] [-AsJob] [-Confirm]
[-DcomAuthentication {Default | None | Connect | Call | Packet | PacketIntegrity | PacketPrivacy | Unchanged}]
[-Force] [-Impersonation {Default | Anonymous | Identify | Impersonate | Delegate}] [-ThrottleLimit <Int32>]
[-WhatIf] [<CommonParameters>]

Restart-Computer [[-ComputerName] <String[]>] [[-Credential] <PSCredential>] [-Confirm] [-DcomAuthentication
{Default | None | Connect | Call | Packet | PacketIntegrity | PacketPrivacy | Unchanged}] [-Delay <Int16>] [-For
{Wmi | WinRM | PowerShell}] [-Force] [-Impersonation {Default | Anonymous | Identify | Impersonate | Delegate}]
[-Protocol {DCOM | WsMan}] [-Timeout <Int32>] [-Wait] [-WhatIf] [-WsmanAuthentication {Default | Basic | Negotiate
| CredSSP | Digest | Kerberos}] [<CommonParameters>]

DESCRIPTION
The Restart-Computer cmdlet restarts the operating system on the local and remote computers.
```

## Chapter 2: Core Infrastructure Tasks

Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server

 Add Roles and Features Wizard ✕

### Add features that are required for Active Directory Domain Services?

You cannot install Active Directory Domain Services unless the following role services or features are also installed.

- [Tools] Group Policy Management
- ▲ Remote Server Administration Tools
  - ▲ Role Administration Tools
    - ▲ AD DS and AD LDS Tools
      - Active Directory module for Windows PowerShell
      - ▲ AD DS Tools
        - [Tools] Active Directory Administrative Center
        - [Tools] AD DS Snap-Ins and Command-Line Tools

Include management tools (if applicable)



# Installation progress

- Before You Begin
- Installation Type
- Server Selection
- Server Roles
- Features
- AD DS
- DNS Server
- DHCP Server
- Confirmation
- Results**

## View installation progress

### **i** Feature installation

Configuration required. Installation succeeded on DC01.

- Active Directory Domain Services**  
Additional steps are required to make this machine a domain controller.  
[Promote this server to a domain controller](#)
- DHCP Server**  
[Launch the DHCP post-install wizard](#)  
[Complete DHCP configuration](#)
- DNS Server**
- Group Policy Management**
- Remote Server Administration Tools**  
**Role Administration Tools**  
[AD DS and AD LDS Tools](#)

**i** You can close this wizard without interrupting running tasks. View task progress or open this page again by clicking Notifications in the command bar, and then Task Details.

[Export configuration settings](#)

< Previous    Next >    Close    Cancel

# Deployment Configuration

- Deployment Configuration**
- Domain Controller Options
- Additional Options
- Paths
- Review Options
- Prerequisites Check
- Installation
- Results

## Select the deployment operation

- Add a domain controller to an existing domain
- Add a new domain to an existing forest
- Add a new forest

## Specify the domain information for this operation

Root domain name:

[More about deployment configurations](#)

< Previous    **Next >**    Install    Cancel

# Review Options

TARGET SERVER  
DC01

- Deployment Configuration
- Domain Controller Options
  - DNS Options
- Additional Options
- Paths
- Review Options**
- Prerequisites Check
- Installation
- Results

### Review your selections:

Configure this server as the first Active Directory domain controller in a new forest.

The new domain name is "ad.cookbook.packt.com". This is also the name of the new forest.

The NetBIOS name of the domain: COOKBOOK

Forest Functional Level: Windows Server 2016

Domain Functional Level: Windows Server 2016

Additional Options:

- Global catalog: Yes
- DNS Server: Yes
- Create DNS Delegation: No

These settings can be exported to a Windows PowerShell script to automate additional installations

View script

[More about installation options](#)

< Previous    Next >    Install    Cancel

A task notification window titled "Post-deployment Configura..." with a warning icon. The main text reads "Configuration required for DHCP Server at DC01" and includes a blue link "Complete DHCP configuration". The window has a "TASKS" dropdown and a close button (X). Below the main content is a "Task Details" section.

```
Administrator: Windows PowerShell
True No NoChangeNeeded {}

PS C:\Users\Administrator> Install-ADDSForest -DomainName ad.cookbook.packt.com -DomainMode WinThreshold -DomainNetbiosName COOKBOOK
SafeModeAdministratorPassword: *****
Confirm SafeModeAdministratorPassword: *****

The target server will be configured as a domain controller and restarted when this operation is complete.
Do you want to continue with this operation?
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): y
WARNING: Windows Server 2019 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.
For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).
WARNING: A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "ad.cookbook.packt.com". Otherwise, no action is required.
WARNING: Windows Server 2019 domain controllers have a default for the security setting named "Allow cryptography algorithms compatible with Windows NT 4.0" that prevents weaker cryptography algorithms when establishing security channel sessions.
For more information about this setting, see Knowledge Base article 942564 (http://go.microsoft.com/fwlink/?LinkId=104751).
WARNING: A delegation for this DNS server cannot be created because the authoritative parent zone cannot be found or it does not run Windows DNS server. If you are integrating with an existing DNS infrastructure, you should manually create a delegation to this DNS server in the parent zone to ensure reliable name resolution from outside the domain "ad.cookbook.packt.com". Otherwise, no action is required.

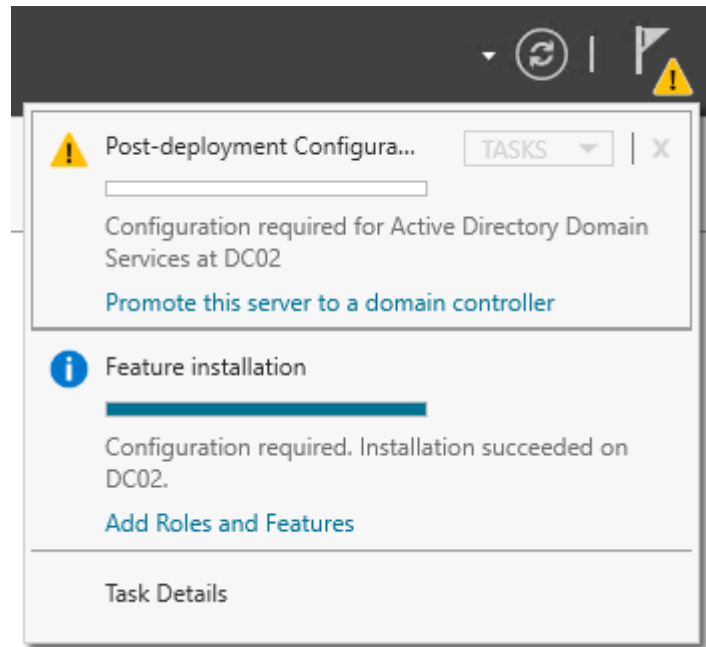
Message Context RebootRequired Status
-----
Operation completed successfully DCPromo.General.1.3 False Success

PS C:\Users\Administrator> .
```

Select one or more roles to install on the selected server.

Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server
- DNS Server
- Fax Server



## Deployment Configuration

TARGET SERVER  
DC02

### Deployment Configuration

Domain Controller Options

Additional Options

Paths

Review Options

Prerequisites Check

Installation

Results

Select the deployment operation

- Add a domain controller to an existing domain
- Add a new domain to an existing forest
- Add a new forest

Specify the domain information for this operation

Domain:

Supply the credentials to perform this operation

cookbook\administrator

Active Directory Users and Computers

File Action View Help

Active Directory Users and Com

- > Saved Queries
- ▼ ad.cookbook.packt.com
  - > Builtin
  - > Computers
  - > Domain Controllers
  - > ForeignSecurityPrincipal:
  - > Managed Service Accou
  - > Users

Name	Type	Description
Builtin	builtinDomain	
Computers	Container	Default container for up...
Domain Con...	Organizational...	Default container for do...
ForeignSecu...	Container	Default container for sec...
Managed Se...	Container	Default container for ma...
Users	Container	Default container for up...

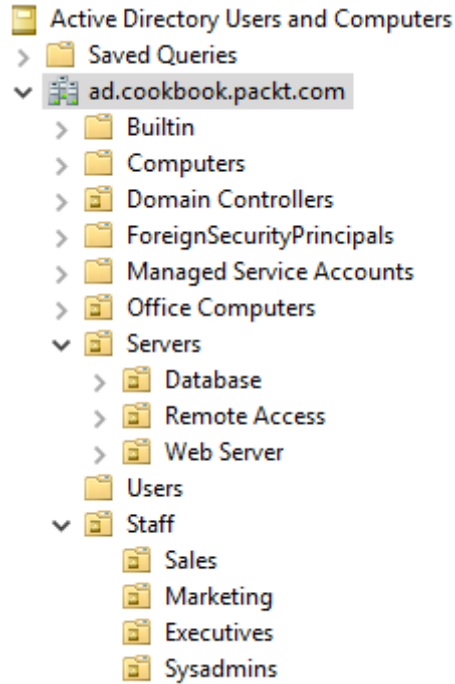
Active Directory Users and Computers

File Action View Help

Active Directory Users and Com

- > Saved Queries
- ▼ ad.cookbook.packt.com
  - Builtin
  - Computers
  - > Domain Controllers
  - > ForeignSecurityPrincipal:
  - > Managed Service Accou
  - > Users

Name	Type	Description
COOKBOOK-WIN10	Computer	
WEB01	Computer	
VPN01	Computer	
RDP01	Computer	
DA01	Computer	
SQL01	Computer	



Name	Type	Description
COOKBOOK-WIN10	Computer	
DA01	Computer	
RDP01		
SQL01		
VPN01		
WEB01		

Context menu for RDP01:

- Add to a group...
- Disable Account
- Reset Account
- Move...
- Manage

```
Windows PowerShell
PS C:\Users\mhenderson> ping router
Ping request could not find host router. Please check the name and try again.
PS C:\Users\mhenderson> Test-Connection router -Count 1
Test-Connection : Testing connection to computer 'router' failed: No such host is known
At line:1 char:1
+ Test-Connection router -Count 1
+ ~~~~~
+ CategoryInfo          : ResourceUnavailable: (router:String) [Test-Connection], PingException
+ FullyQualifiedErrorId : TestConnectionException,Microsoft.PowerShell.Commands.TestConnectionCommand
```

DNS Manager

File Action View Help

← → ↻ ↺ ↻ ? 📄 📄 📄

DNS

- DC01
  - Forward Lookup Zones
    - \_msdcs.ad.cookbook.pactk.com
    - ad.cookbook.pactk.com
  - Reverse Lookup Zones
  - Trust Points
  - Conditional Forwarders

Name	Type	Data
_msdcs		
_sites		
_tcp		
_udp		
DomainDnsZones		
ForestDnsZones		
(same as parent folder)	Start of Authority (SOA)	[152], dc01.ad.cookbook.pactk.com
(same as parent folder)	Name Server (NS)	dc01.ad.cookbook.pactk.com
(same as parent folder)	Name Server (NS)	dc02.ad.cookbook.pactk.com
(same as parent folder)	Host (A)	172.16.97.3
(same as parent folder)	Host (A)	172.16.97.2
CA01	Host (A)	172.16.97.7
Cookbook-Win10	Host (A)	172.16.97.4
dc01	Host (A)	172.16.97.2

New Host

Name (uses parent domain name if blank):

Fully qualified domain name (FQDN):

IP address:

Create associated pointer (PTR) record

Allow any authenticated user to update DNS records with the same owner name

```
PS C:\Users\mhenderson> ping router
```

```
Pinging router.ad.cookbook.packt.com [172.16.97.1] with 32 bytes of data:
```

```
Reply from 172.16.97.1: bytes=32 time<1ms TTL=64
```

```
Reply from 172.16.97.1: bytes=32 time<1ms TTL=64
```

```
Reply from 172.16.97.1: bytes=32 time<1ms TTL=64
```

```
Reply from 172.16.97.1: bytes=32 time<1ms TTL=64
```

```
Ping statistics for 172.16.97.1:
```

```
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

```
Approximate round trip times in milli-seconds:
```

```
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
PS C:\Users\mhenderson> Test-Connection router -Count 1
```

Source	Destination	IPV4Address	IPV6Address	Bytes	Time(ms)
-----	-----	-----	-----	-----	-----
COOKBOOK-W...	router	172.16.97.1		32	0

New Resource Record

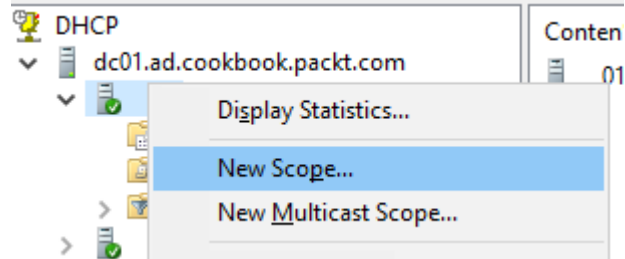


## Alias (CNAME)

Alias name (uses parent domain if left blank):

Fully qualified domain name (FQDN):

Fully qualified domain name (FQDN) for target host:





Configuration settings for DHCP Server

Enter the range of addresses that the scope distributes.

Start IP address:

End IP address:

---

Configuration settings that propagate to DHCP Client

Length:

Subnet mask:

Administrator: Windows PowerShell

```
PS C:\Windows\system32> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Connection-specific DNS Suffix . : ad.cookbook.packt.com
    Link-local IPv6 Address . . . . . : fe80::b9cf:f266:2032:f560%4
    IPv4 Address. . . . . : 172.16.97.51
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.16.97.1
```

Windows PowerShell

```
PS C:\Users\mhenderson> Get-NetAdapter

Name      InterfaceDescription      ifIndex Status  MacAddress      LinkSpeed
----      -
Ethernet  Microsoft Hyper-V Network Adapter  4 Up      00-15-5D-0F-05-28  10 Gbps
```

New Reservation ? X

Provide information for a reserved client.

Reservation name: web01

IP address: 172 . 16 . 97 . 84

MAC address: 00-15-5D-0F-05-28

Description: WEB01 Server

Supported types

- Both
- DHCP
- BOOTP

Add Close

New Object - Computer X

Create in: ad.cookbook.packt.com/Servers/Web Server

Computer name: WEB01

Computer name (pre-Windows 2000): WEB01

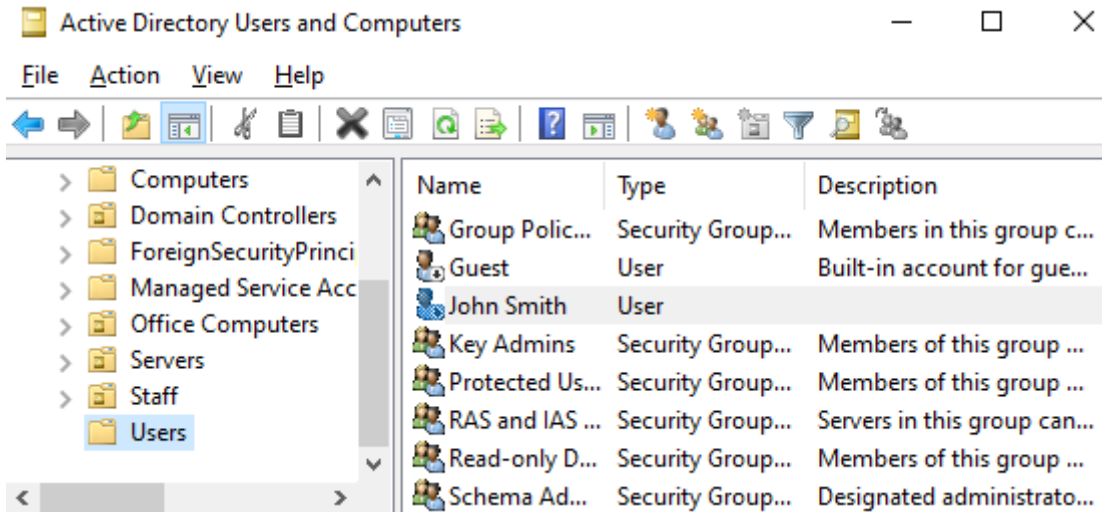
The following user or group can join this computer to a domain.

User or group: Default: Domain Admins Change...

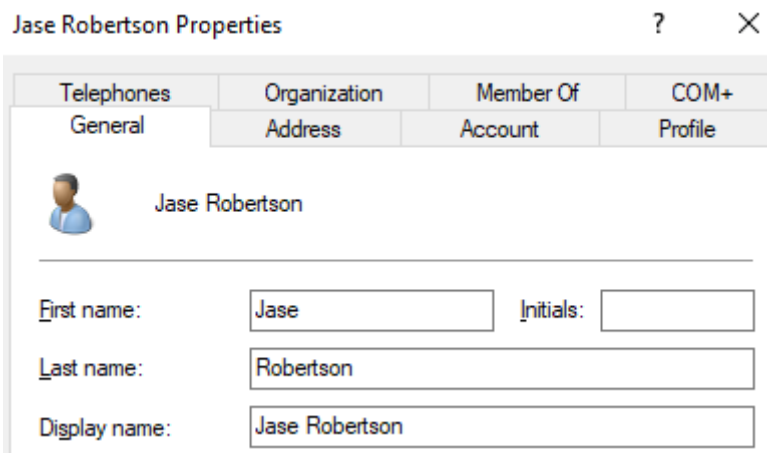
Assign this computer account as a pre-Windows 2000 computer

OK Cancel Help

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Import-Module ActiveDirectory
PS C:\Users\mhenderson> New-ADUser -Name "John Smith" -UserPrincipalName "jsmith@cookbook.packt.com" -SamAccountName "jsm"
```



```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> New-ADUser -Name "Jase Robertson" -UserPrincipalName "jrobertson@cookbook.packt.com" -SamAccountName "jrobertson" -GivenName "Jase" -Surname "Robertson" -DisplayName "Jase Robertson" -AccountPassword (Read-Host -AsSecureString "AccountPassword") -ChangePasswordAtLogon $true -Enabled $true
AccountPassword: *****
PS C:\Users\mhenderson>
```



Jase Robertson Properties ? X

Telephones	Organization	Member Of	COM+
General	Address	Account	Profile

User logon name:  
jrobertson @cookbook.packt.com

User logon name (pre-Windows 2000):  
COOKBOOK\ jrobertson

Logon Hours... Log On To...

Unlock account

Account options:  
 User must change password at next logon

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> Enter-PSSession DC01
[DC01]: PS C:\Users\mhenderson\Documents> hostname
DC01
[DC01]: PS C:\Users\mhenderson\Documents> (Get-CimInstance Win32_OperatingSystem).LastBootUpTime
Saturday, 2 November 2019 10:38:50 AM
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> (Get-CimInstance -ComputerName DC01,DC02 Win32_OperatingSystem).LastBootUpTime
Sunday, 3 November 2019 7:53:44 PM
Sunday, 3 November 2019 4:46:31 AM
```

# Chapter 3: Networking

```
Windows PowerShell
PS C:\Users\mhenderson> Test-Connection web01
```

Source	Destination	IPV4Address	IPV6Address	Bytes	Time(ms)
DC02	web01	172.16.97.5		32	0
DC02	web01	172.16.97.5		32	0
DC02	web01	172.16.97.5		32	0
DC02	web01	172.16.97.5		32	0

Windows Defender Firewall with Advanced Security

File Action View Help

Windows Defender Firewall with Advanced Security

Inbound Rules				Actions
Name	Group	Profile		Inbound Rules
✓ AllJoyn Router (TCP-In)	AllJoyn Router	Domai...		New Rule...
✓ AllJoyn Router (UDP-In)	AllJoyn Router	Domai...		Filter by Profile
BranchCache Content Retrieval (HTTP-In)	BranchCache - Content Retr...	All		Filter by State
BranchCache Hosted Cache Server (HTT...	BranchCache - Hosted Cach...	All		Filter by Group
BranchCache Peer Discovery (WSD-In)	BranchCache - Peer Discove...	All		

New Inbound Rule Wizard

### Protocol and Ports

Specify the protocols and ports to which this rule applies.

**Steps:**

- Rule Type
- Program
- Protocol and Ports
- Scope

To which ports and protocols does this rule apply?

Protocol type: ICMPv4

Protocol number: 1

### Action

Specify the action to be taken when a connection matches the conditions specified in the rule.

<b>Steps:</b>	What action should be taken when a connection matches the specified conditions?
<input type="radio"/> Rule Type	
<input type="radio"/> Program	
<input type="radio"/> Protocol and Ports	
<input type="radio"/> Scope	
<input checked="" type="radio"/> Action	
<input type="radio"/> Profile	
<input type="radio"/> Name	

**Allow the connection**  
This includes connections that are protected with IPsec as well as those are not.

**Allow the connection if it is secure**  
This includes only connections that have been authenticated by using IPsec. Connections will be secured using the settings in IPsec properties and rules in the Connection Security Rule node.

**Block the connection**

### Protocol and Ports

Specify the protocols and ports to which this rule applies.

<b>Steps:</b>	To which ports and protocols does this rule apply?
<input type="radio"/> Rule Type	
<input type="radio"/> Program	
<input checked="" type="radio"/> Protocol and Ports	
<input type="radio"/> Scope	
<input type="radio"/> Action	
<input type="radio"/> Profile	
<input type="radio"/> Name	

Protocol type:

Protocol number:

Local port:

Example: 80, 443, 5000-5010

Remote port:

Example: 80, 443, 5000-5010

IP Address X

Specify the IP addresses to match:

This IP address or subnet:

Examples: 192.168.0.12  
 192.168.1.0/24  
 2002:9d3b:1a31:4:208:74ff:fe39:6c43  
 2002:9d3b:1a31:4:208:74ff:fe39:0/112

This IP address range:

From:

To:

Predefined set of computers:

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Get-NetIPInterface -AddressFamily IPv4
```

ifIndex	InterfaceAlias	AddressFamily	NlMtu(Bytes)	InterfaceMetric	Dhcp	ConnectionState	PolicyStore
25	External	IPv4	1500	15	Enabled	Connected	ActiveStore
4	Internal	IPv4	1500	15	Disabled	Connected	ActiveStore
1	Loopback Pseudo-Interface 1	IPv4	4294967295	75	Disabled	Connected	ActiveStore

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Set-NetIPInterface -InterfaceAlias "External" -InterfaceMetric 20
PS C:\Users\mhenderson> Get-NetIPInterface -AddressFamily IPv4
```

ifIndex	InterfaceAlias	AddressFamily	NlMtu(Bytes)	InterfaceMetric	Dhcp	ConnectionState	PolicyStore
25	External	IPv4	1500	20	Enabled	Connected	ActiveStore
4	Internal	IPv4	1500	15	Disabled	Connected	ActiveStore
1	Loopback Pseudo-Interface 1	IPv4	4294967295	75	Disabled	Connected	ActiveStore

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> New-NetRoute -DestinationPrefix "172.16.120.0/24" -InterfaceIndex 4 -NextHop 172.16.97.1
```

ifIndex	DestinationPrefix	NextHop	RouteMetric	ifMetric	PolicyStore
4	172.16.120.0/24	172.16.97.1	256	15	ActiveStore
4	172.16.120.0/24	172.16.97.1	256		Persiste...

```
PS C:\Users\mhenderson> Get-NetRoute
```

ifIndex	DestinationPrefix	NextHop	RouteMetric	ifMetric	PolicyStore
25	255.255.255.255/32	0.0.0.0	256	20	ActiveStore
4	255.255.255.255/32	0.0.0.0	256	15	ActiveStore
1	255.255.255.255/32	0.0.0.0	256	75	ActiveStore
25	224.0.0.0/4	0.0.0.0	256	20	ActiveStore
4	224.0.0.0/4	0.0.0.0	256	15	ActiveStore
1	224.0.0.0/4	0.0.0.0	256	75	ActiveStore
25	172.16.200.255/32	0.0.0.0	256	20	ActiveStore
25	172.16.200.220/32	0.0.0.0	256	20	ActiveStore
25	172.16.200.0/24	0.0.0.0	256	20	ActiveStore
4	172.16.120.0/24	172.16.97.1	256	15	ActiveStore

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> Add-BgpPeer -Name router -LocalIPAddress 172.16.97.5 -PeerIPAddress 172.16.97.1 -PeerASN 64999  
PS C:\Users\mhenderson> Get-BgpRouteInformation
```

DestinationNetwork	NextHop	LearnedFromPeer	State	LocalPref	MED
172.16.114.0/24	172.16.97.1	router	Best	100	
172.16.200.0/24	172.16.97.1	router	Best	100	
172.16.201.0/24	172.16.97.1	router	Best	100	

Windows PowerShell

```
PS C:\Users\mhenderson> ping web01
```

```
Pinging web01.ad.cookbook.packt.com [172.16.97.5] with 32 bytes of data:  
Request timed out.  
Request timed out.  
Request timed out.  
Request timed out.
```

```
Ping statistics for 172.16.97.5:
```

```
Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

Telnet web01



Windows PowerShell

```
PS C:\Users\mhenderson> Test-NetConnection web01 -Port 80
```

```
ComputerName      : web01  
RemoteAddress     : 172.16.97.5  
RemotePort       : 80  
InterfaceAlias   : Ethernet  
SourceAddress     : 172.16.97.51  
TcpTestSucceeded : True
```



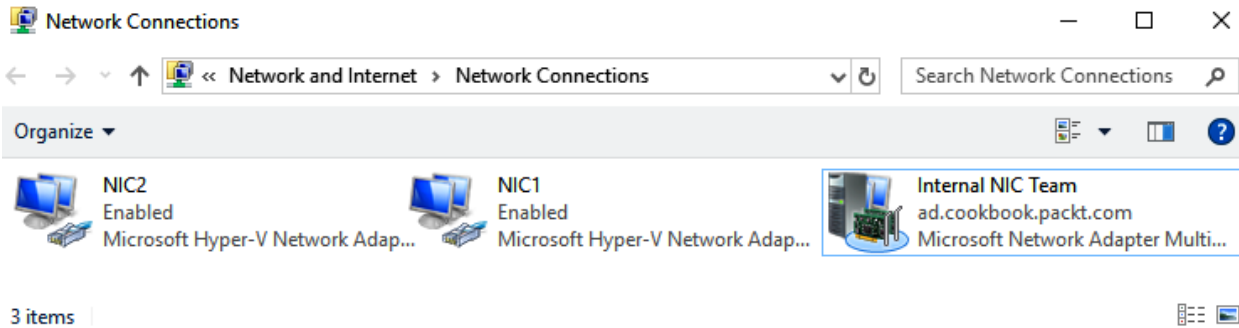


Team name:

Internal NIC Team

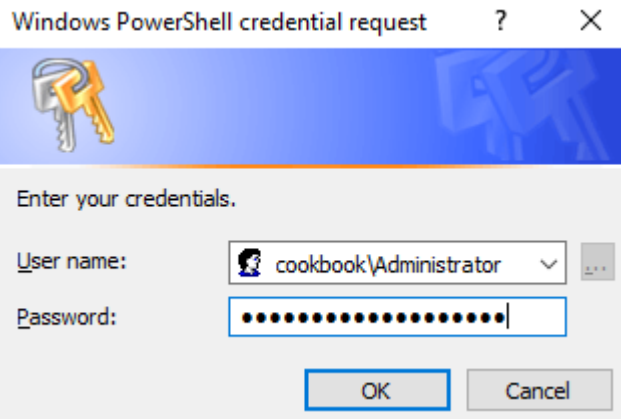
Member adapters:

In Team	Adapter	Speed	State	Reason
<input checked="" type="checkbox"/>	Ethernet	10 Gbps		
<input checked="" type="checkbox"/>	Ethernet 2	10 Gbps		



Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> Rename-Computer -NewName web02 -Restart
```



Computer name, domain, and workgroup settings

Computer name: web02  
Full computer name: web02.ad.cookbook.packt.com  
Computer description:  
Domain: ad.cookbook.packt.com

# Chapter 4: Working with Certificates

Add Roles and Features Wizard — □ ×

## Select destination server

DESTINATION SERVER  
CA01.ad.cookbook.packt.com

Before You Begin

Installation Type

**Server Selection**

Server Roles

Features

Confirmation

Results

Select a server or a virtual hard disk on which to install roles and features.

Select a server from the server pool  
 Select a virtual hard disk

Server Pool

Filter:

Name	IP Address	Operating System
DC01.ad.cookbook.packt.com	172.16.97.2	Microsoft Windows Server
DC02.ad.cookbook.packt.com	172.16.97.3	Microsoft Windows Server
CA01.ad.cookbook.packt.com	172.16.97.7	Microsoft Windows Server
web01.ad.cookbook.packt.com	172.16.97.84	Microsoft Windows Server

<  >

4 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

< Previous Next > Install Cancel

Add Roles and Features Wizard — □ ×

## Select role services

DESTINATION SERVER  
CA01.ad.cookbook.packt.com

Before You Begin

Installation Type

Server Selection

Server Roles

Features

AD CS

**Role Services**

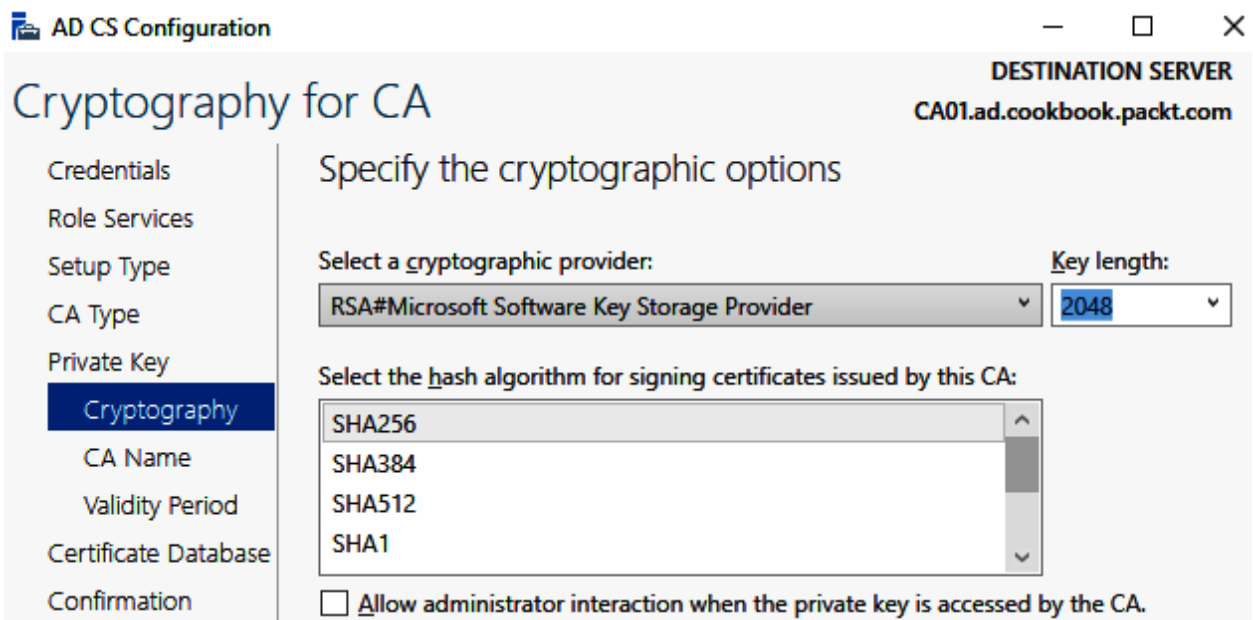
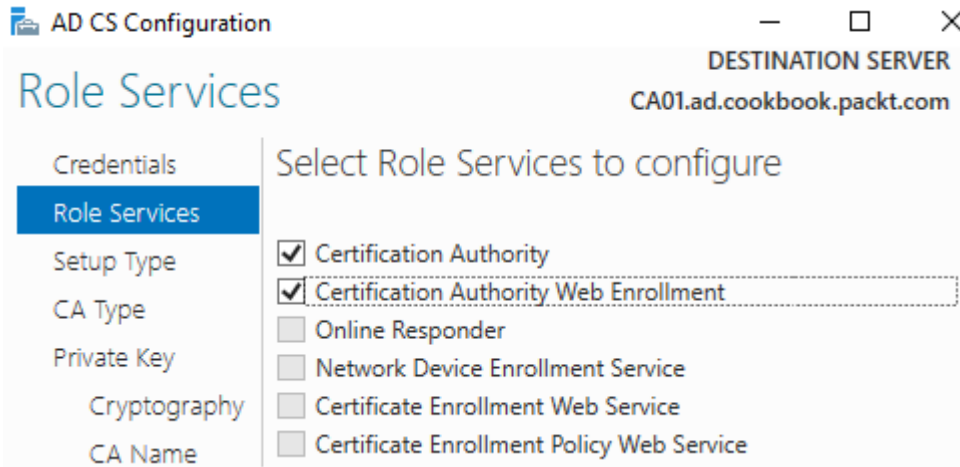
Select the role services to install for Active Directory Certificate Services

Role services

- Certification Authority
- Certificate Enrollment Policy Web Service
- Certificate Enrollment Web Service
- Certification Authority Web Enrollment**
- Network Device Enrollment Service
- Online Responder

Description

Certification Authority Web Enrollment provides a simple Web interface that allows users to perform tasks such as request and renew certificates, retrieve certificate revocation lists (CRLs), and enroll for smart card certificates.



## CA Name

DESTINATION SERVER  
CA01.ad.cookbook.packt.com

- Credentials
- Role Services
- Setup Type
- CA Type
- Private Key
  - Cryptography
  - CA Name**
  - Validity Period
- Certificate Database
- Confirmation
- Progress

Specify the name of the CA

Type a common name to identify this certification authority (CA). This name is added to all certificates issued by the CA. Distinguished name suffix values are automatically generated but can be modified.

Common name for this CA:

Packt Cookbook Root CA

Distinguished name suffix:

DC=ad,DC=cookbook,DC=packt,DC=com

Preview of distinguished name:

CN=Packt Cookbook Root CA,DC=ad,DC=cookbook,DC=packt,DC=

## Results

DESTINATION SERVER  
CA01.ad.cookbook.packt.com

- Credentials
- Role Services
- Setup Type
- CA Type
- Private Key
  - Cryptography

The following roles, role services, or features were configured:

**Active Directory Certificate Services****Certification Authority****Configuration succeeded**[More about CA Configuration](#)**Certification Authority Web Enrollment****Configuration succeeded**[More about Web Enrollment Configuration](#)

## Select role services

DESTINATION SERVER  
CA02.ad.cookbook.packt.com

- Before You Begin
- Installation Type
- Server Selection
- Server Roles
- Features
- AD CS
- Role Services**

Select the role services to install for Active Directory Certificate Services

## Role services

- Certification Authority**
- Certificate Enrollment Policy Web Service
- Certificate Enrollment Web Service
- Certification Authority Web Enrollment
- Network Device Enrollment Service
- Online Responder

## Description

Certification Authority (CA) is used to issue and manage certificates. Multiple CAs can be linked to form a public key infrastructure.

## CA Type

DESTINATION SERVER  
CA02.ad.cookbook.packt.com

- Credentials
- Role Services
- Setup Type
- CA Type**
- Private Key
  - Cryptography
  - CA Name
  - Certificate Request
- Certificate Database
- Confirmation

Specify the type of the CA

When you install Active Directory Certificate Services (AD CS), you are creating or extending a public key infrastructure (PKI) hierarchy. A root CA is at the top of the PKI hierarchy and issues its own self-signed certificate. A subordinate CA receives a certificate from the CA above it in the PKI hierarchy.

- Root CA**  
Root CAs are the first and may be the only CAs configured in a PKI hierarchy.
- Subordinate CA**  
Subordinate CAs require an established PKI hierarchy and are authorized to issue certificates by the CA above them in the hierarchy.

## CA Name

DESTINATION SERVER  
CA02.ad.cookbook.packt.com

- Credentials
- Role Services
- Setup Type
- CA Type
- Private Key
  - Cryptography
  - CA Name**

Specify the name of the CA

Type a common name to identify this certification authority (CA). This name is added to all certificates issued by the CA. Distinguished name suffix values are automatically generated but can be modified.

Common name for this CA:

Packt Cookbook Web CA

## Certificate Request

DESTINATION SERVER  
CA02.ad.cookbook.packt.com

- Credentials
- Role Services
- Setup Type
- CA Type
- Private Key
  - Cryptography
  - CA Name
  - Certificate Request**
- Certificate Database

## Request a certificate from parent CA

You require a certificate from a parent certification authority (CA) to allow this subordinate CA to issue certificates. You can request a certificate from an online CA or you can store your request to a file to submit to the parent CA.

- Send a certificate request to a parent CA:

Select:

- CA name  
 Computer name

Parent CA: CA01.ad.cookbook.packt.com\Packt Cookbook Root CA

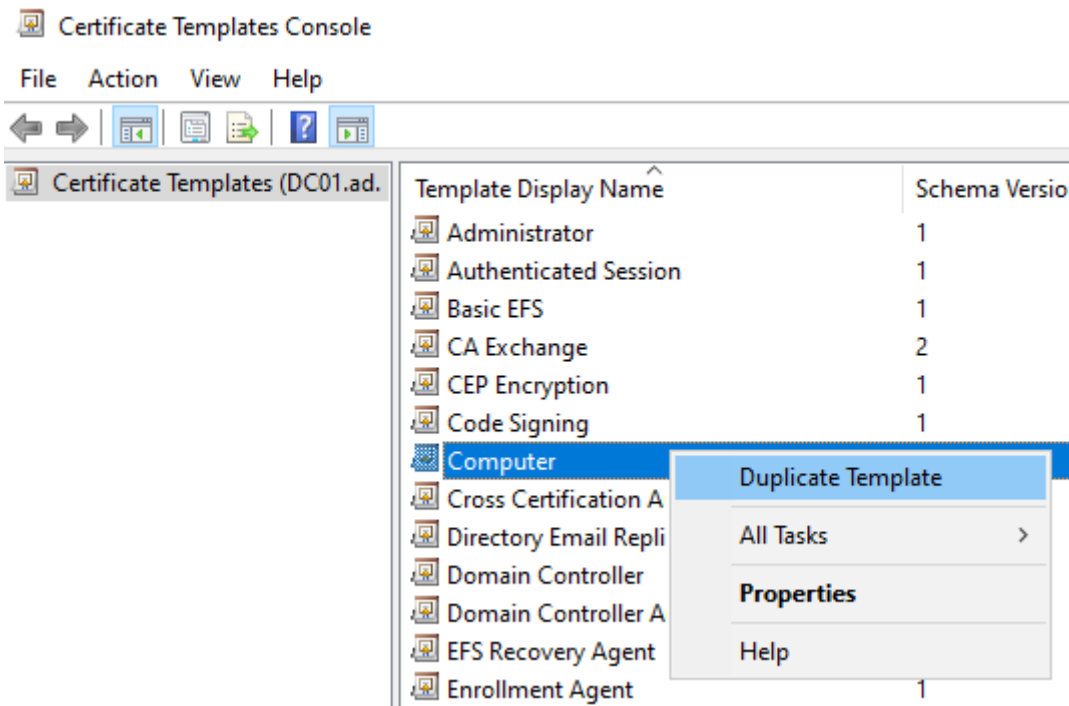
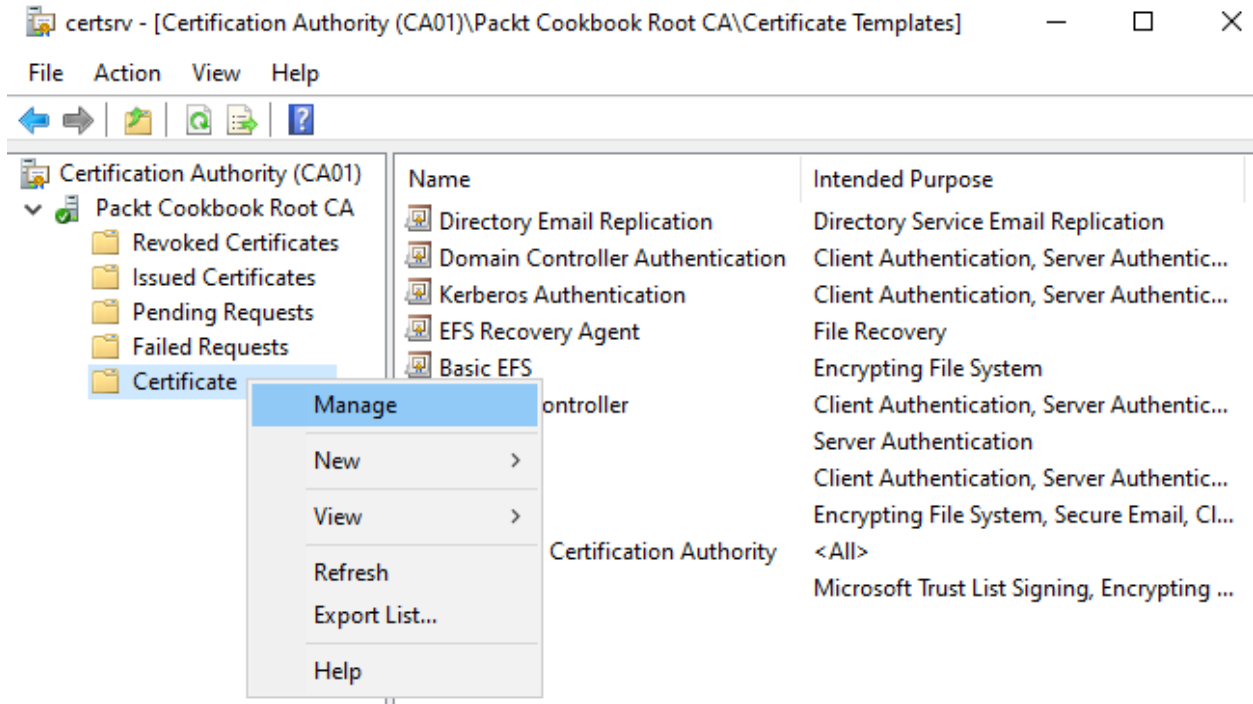
Select...

certsrv - [Certification Authority (Local)]

File Action View Help



Certification Authority (Local)	Name
	Retarget Certification Authority...
	View >
	Export List...
	Help





Properties of New Template



Subject Name	Server	Issuance Requirements
Superseded Templates		Extensions
Security		
Compatibility	General	Request Handling
	Cryptography	Key Attestation

Template display name:

Template name:

Validity period:  years

Renewal period:  weeks

Build from this Active Directory information

Select this option to enforce consistency among subject names and to simplify certificate administration.

Subject name format:

Include e-mail name in subject name

Include this information in alternate subject name:

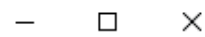
E-mail name

DNS name

User principal name (UPN)

Service principal name (SPN)

certsrv - [Certification Authority (CA01)\Packt Cookbook Root CA\Certificate Templates]



File Action View Help

Navigation icons: back, forward, home, refresh, print, help

Name	Intended Purpose
Directory Email Replication	Directory Service Email Replication
Domain Controller Authentication	Client Authentication, Server Authentic...
Kerberos Authentication	Client Authentication, Server Authentic...
EFS Recovery Agent	File Recovery
Basic EFS	Encrypting File System
troller	Client Authentication, Server Authentic...
certion	Client Authentication, Server Authentic...
Certification Authority	Encrypting File System, Secure Email, Cl...
	<All>
	Microsoft Trust List Signing, Encrypting ...

Context menu for Certificate Templates:

- Manage
- New > Certificate Template to Issue
- View >
- Refresh
- Export List...
- Help

IPSec Certificate Properties



Subject Name		Issuance Requirements																				
General	Compatibility	Request Handling	Cryptography	Key Attestation																		
Superseded Templates		Extensions	Security	Server																		
<p>Group or user names:</p> <ul style="list-style-type: none"> <li>Authenticated Users</li> <li>Mark Henderson (mhenderson@cookbook.packt.com)</li> <li>Domain Admins (COOKBOOK\Domain Admins)</li> <li>Domain Computers (COOKBOOK\Domain Computers)</li> <li>Enterprise Admins (COOKBOOK\Enterprise Admins)</li> </ul> <p style="text-align: right;"> <input type="button" value="Add..."/> <input type="button" value="Remove"/> </p>																						
<p>Permissions for Domain Computers</p> <table border="1"> <thead> <tr> <th></th> <th>Allow</th> <th>Deny</th> </tr> </thead> <tbody> <tr> <td>Full Control</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Read</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Write</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Enroll</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Autoenroll</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>						Allow	Deny	Full Control	<input type="checkbox"/>	<input type="checkbox"/>	Read	<input type="checkbox"/>	<input type="checkbox"/>	Write	<input type="checkbox"/>	<input type="checkbox"/>	Enroll	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Autoenroll	<input type="checkbox"/>	<input type="checkbox"/>
	Allow	Deny																				
Full Control	<input type="checkbox"/>	<input type="checkbox"/>																				
Read	<input type="checkbox"/>	<input type="checkbox"/>																				
Write	<input type="checkbox"/>	<input type="checkbox"/>																				
Enroll	<input checked="" type="checkbox"/>	<input type="checkbox"/>																				
Autoenroll	<input type="checkbox"/>	<input type="checkbox"/>																				

This snap-in will always manage certificates for:



- My user account
- Service account
- Computer account

- Console Root
- Certificates (Local Computer)
  - Personal
    - Trusted
    - Enterprise
    - Intermediate
    - Trusted
    - Untrusted
    - Third-Party
    - Trusted
    - Client
    - Preview

Object Type

There are no items to show in this view.

- Find Certificates...
- All Tasks >
  - Find Certificates...
  - Request New Certificate...
  - Import...
  - Advanced Operations >
- View >
- New Window from Here
- New Taskpad View...
- Refresh

Active Directory Enrollment Policy		
<input type="checkbox"/> Computer	 STATUS: Available	Details ▾
<input checked="" type="checkbox"/> IPsec Certificate	 STATUS: Available	Details ▾

Show all templates



**Welcome**

Use this Web site to request a certificate for your Web browser, e-mail client, or other program. By using a certificate, you can verify your identity to people you communicate with over the Web, sign and encrypt messages, and, depending upon the type of certificate you request, perform other security tasks.

You can also use this Web site to download a certificate authority (CA) certificate, certificate chain, or certificate revocation list (CRL), or to view the status of a pending request.

For more information about Active Directory Certificate Services, see [Active Directory Certificate Services Documentation](#).

**Select a task:**

- [Request a certificate](#)
- [View the status of a pending certificate request](#)
- [Download a CA certificate, certificate chain, or CRL](#)

### Submit a Certificate Request or Renewal Request

To submit a saved request to the CA, paste a base-64-encoded CMC or PKCS #10 certificate request or PKCS #7 renewal request generated by an external source (such as a Web server) in the Saved Request box.

#### Saved Request:

Base-64-encoded certificate request (CMC or PKCS #10 or PKCS #7):

```
-----BEGIN CERTIFICATE REQUEST-----  
MIICyzCCAbMCAQAwYUxCzAJBgNVBAYTAKFVMMSw  
b2tiY29rLnBhY2t0LmNvbTEwMBQGA1UEBwwNVm1j  
CgwWUGFja3QgQ29va2Jvb2sgRXhhbXBsZTELMakG  
Ak1UMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIB  
NksjRhCy3SwJ2kPjjqDgmutIUeuUOH24I4UwKeHK
```

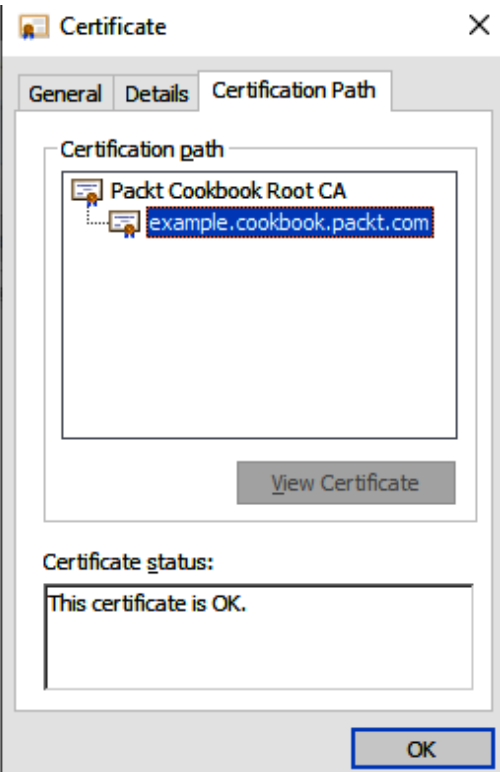
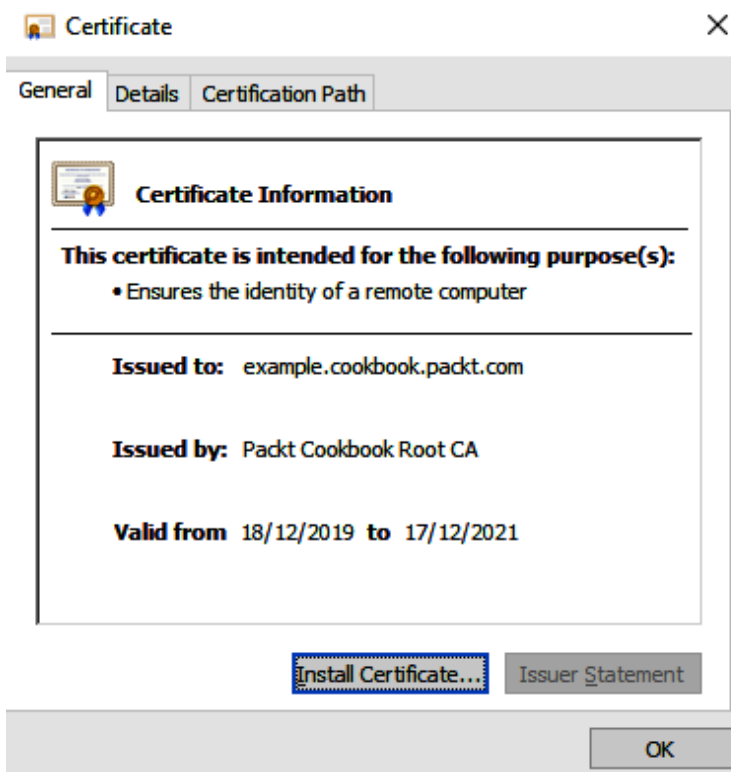
#### Certificate Template:

Web Server

#### Additional Attributes:

Attributes:

Submit >



```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Get-Certificate -Template WebECDH -DnsName exampleservice.cookbook.packt.com -CertStoreLocation cert:\LocalMachine\My

Status Certificate
-----
Issued [Subject]...

```

certlm - [Certificates - Local Computer\Personal\Certificates]

File Action View Help

Issued To	Issued By	Expiration Date	Intended Purposes	Friendly Name	Status	C
exampleservice.cookbook.packt.com	Packt Cookbook Root CA	12/18/2021	Server Authenticati...	<None>	1.	
web01.ad.cookbook.packt.com	Packt Cookbook Root CA	12/17/2021	Server Authenticati...	<None>	IP	

Personal store contains 2 certificates.

### IPSec Certificate Properties

Subject Name: Issuance Requirements

General Compatibility Request Handling Cryptography Key Attestation

Superseded Templates Extensions Security Server

Group or user names:

- Authenticated Users
- Mark Henderson (mhenderson@cookbook.packt.com)
- Domain Admins (COOKBOOK\Domain Admins)
- Domain Computers (COOKBOOK\Domain Computers)
- Enterprise Admins (COOKBOOK\Enterprise Admins)

Add... Remove

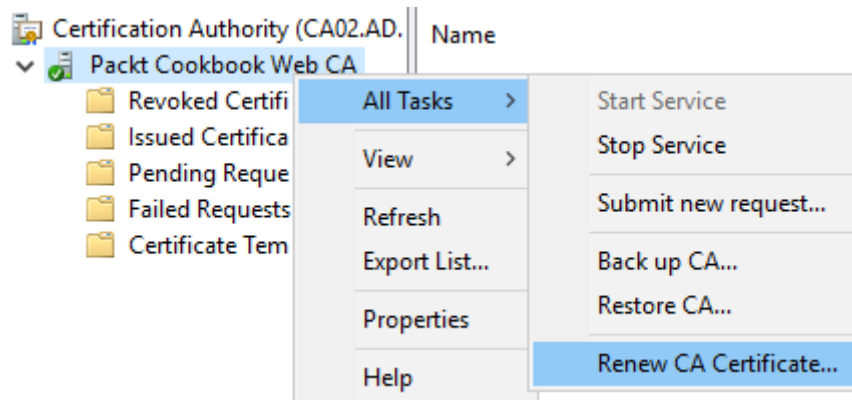
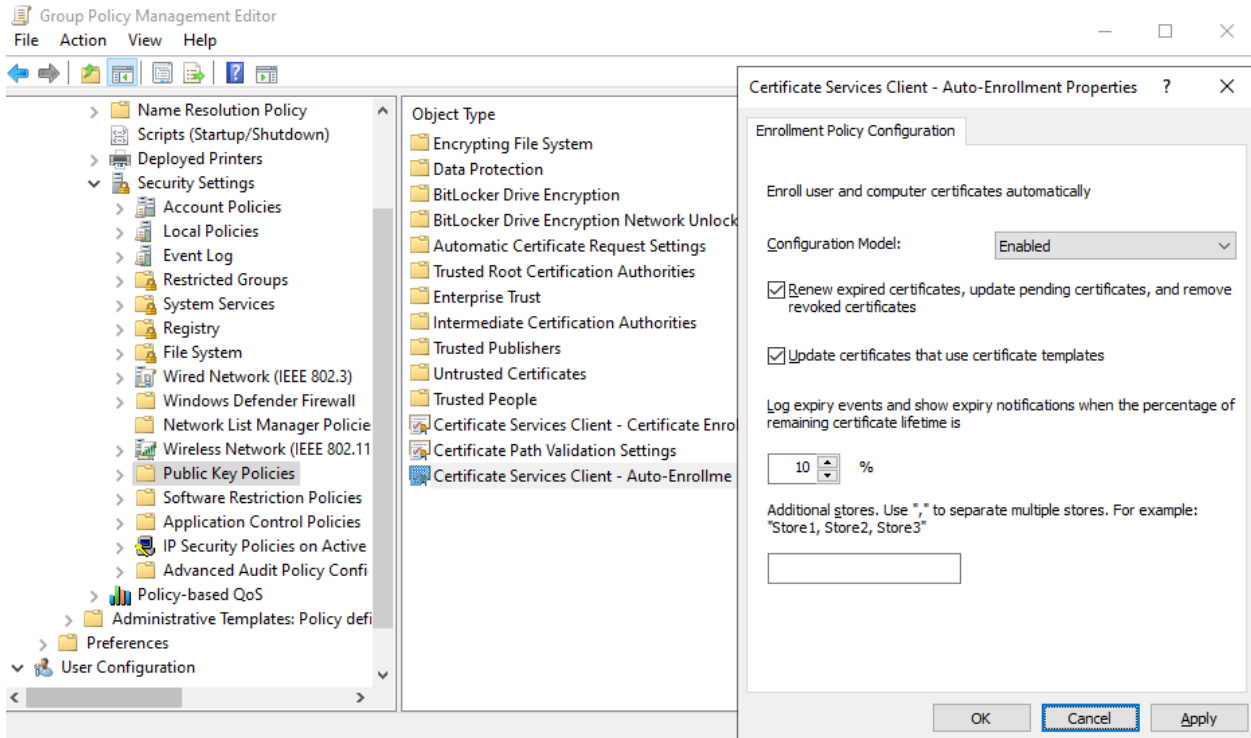
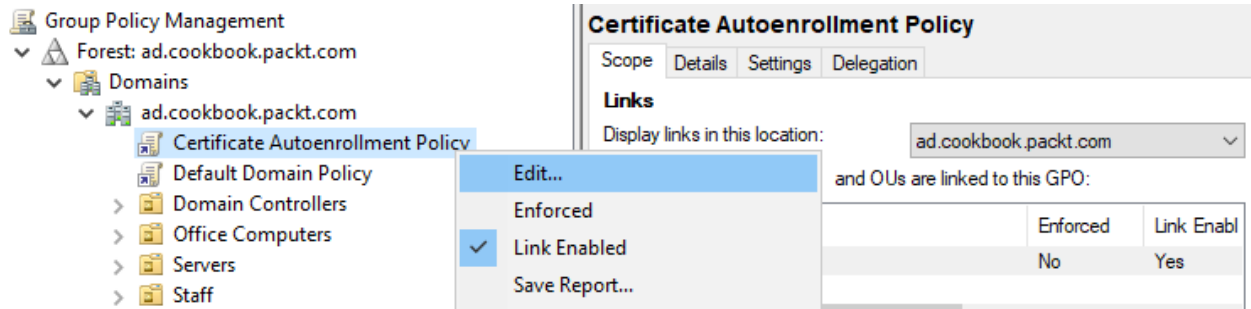
Permissions for Domain Computers

	Allow	Deny
Full Control	<input type="checkbox"/>	<input type="checkbox"/>
Read	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Write	<input type="checkbox"/>	<input type="checkbox"/>
Enroll	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Autoenroll	<input checked="" type="checkbox"/>	<input type="checkbox"/>

For special permissions or advanced settings, click Advanced.

Advanced

OK Cancel Apply Help



## Renew CA Certificate



In addition to obtaining a new certificate for your certification authority (CA), you also have the option of generating a new signing key.

You need a new certificate for your CA when:



The lifetime of the certificates you are currently issuing is reduced.

You need a new signing key when:



The signing key is compromised.

You have a program that requires a new signing key to be used with a new CA certificate.

The current certificate revocation list (CRL) is too big, and you want to move some of the information to a new CRL.

Do you want to generate a new public and private key pair? The cryptographic service provider and hash algorithm settings will be preserved. If the existing key length is less than 1024 bits, it may be increased.

Yes

No

OK

Cancel

## CA Certificate Request



Select an online CA to send the request

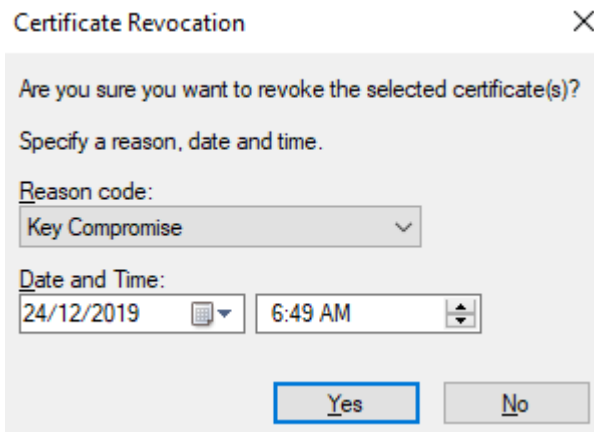
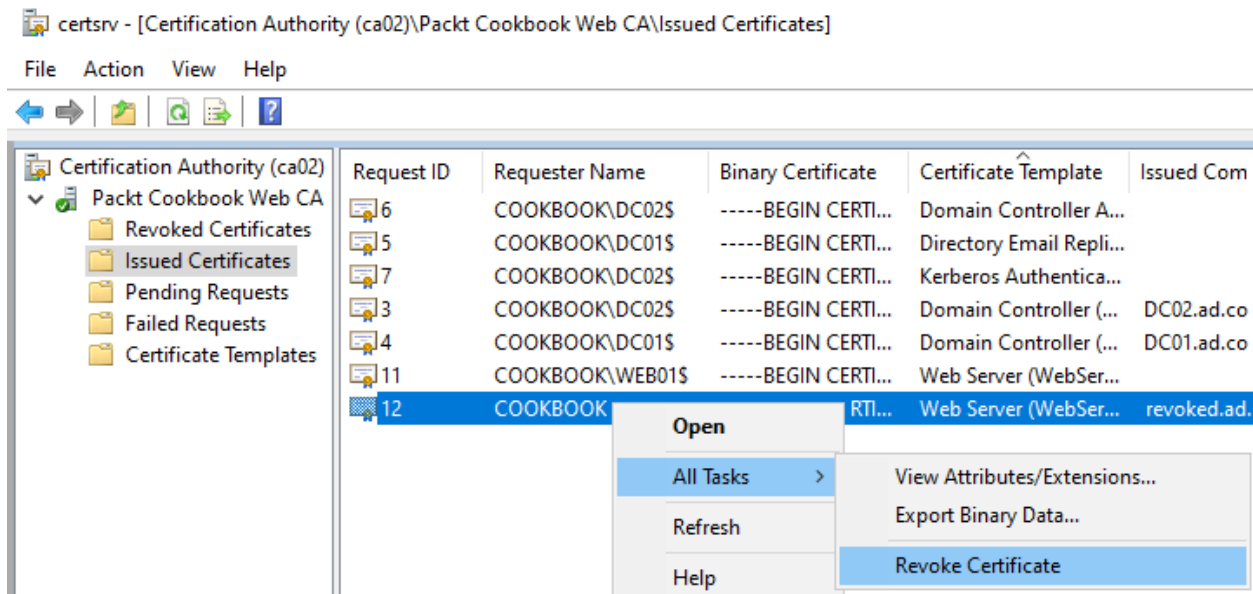
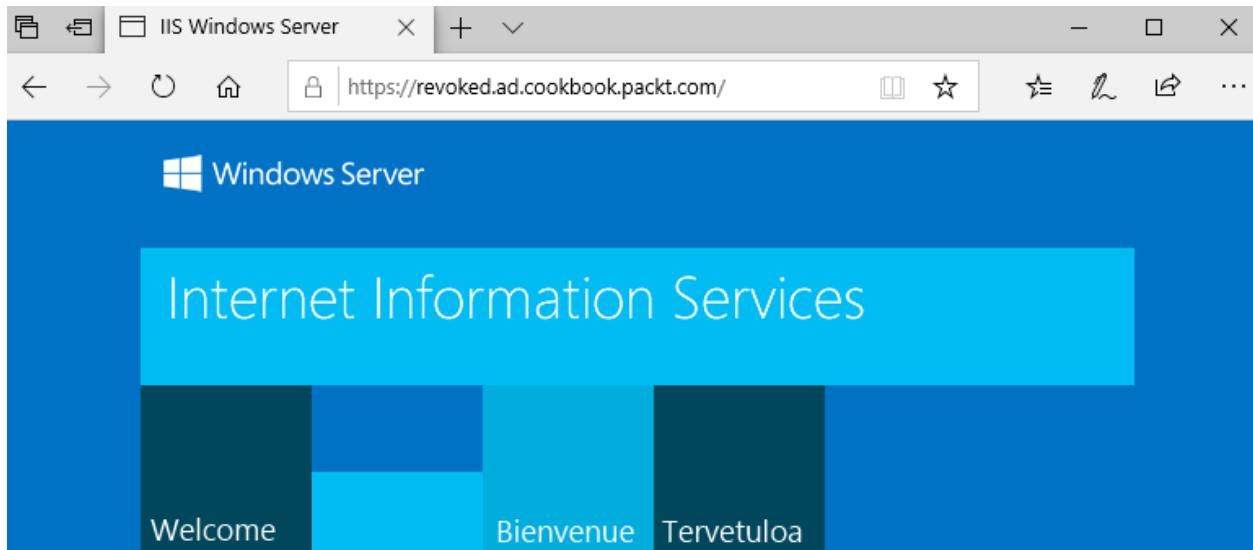
Computer Name:

Parent CA:

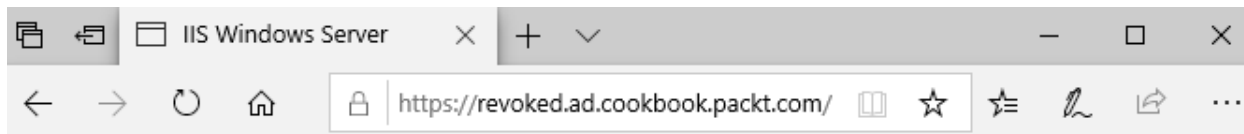
If you want to send the request to an offline CA, click Cancel and send the request file at C:\CA02.ad.cookbook.packt.com\_Packt Cookbook Web CA(1).req to your parent CA.

OK

Cancel







## This site is not secure

This might mean that someone's trying to fool you or steal any info you send to the server. You should close this site immediately.

[Go to your Start page](#)

### Details

This website's security certificate has been revoked, so you can't go there at this time.

Error Code:

ERROR\_INTERNET\_SEC\_CERT\_REVOKED

```
Issuer: CN=Packt Cookbook Web CA, DC=ad, DC=cookbook, DC=packt, DC=com
NotBefore: 24/12/2019 6:26 AM
NotAfter: 19/12/2021 7:53 AM
Subject: CN=revoked.ad.cookbook.packt.com
Serial: 5f000000caec16fc56b3661840002000000c
Template: WebServer
Cert: bb3cb031c7a81bd8175c36d8b9fd52758a03e78e
The certificate is revoked. 0x80092010 (-2146885616 CRYPT_E_REVOKED)
-----
Certificate is REVOKED
Leaf certificate is REVOKED (Reason=1)
CertUtil: -verify command completed successfully.
```

## Chapter 5: Internet Information Services

[ ]	Volume Activation Services	VolumeActivation
[ ]	Web Server (IIS)	Web-Server
[ ]	Web Server	Web-WebServer
[ ]	Common HTTP Features	Web-Common-Http
[ ]	Default Document	Web-Default-Doc
[ ]	Directory Browsing	Web-Dir-Browsing
[ ]	HTTP Errors	Web-Http-Errors
[ ]	Static Content	Web-Static-Content
[ ]	HTTP Redirection	Web-Http-Redirect
[ ]	WebDAV Publishing	Web-DAV-Publishing
[ ]	Health and Diagnostics	Web-Health

```
Administrator: Windows PowerShell
PS C:\> Install-WindowsFeature Web-Server,Web-Common-Http,Web-Mgmt-Console -Restart

Start Installation...
24%
[ooooooooooooooooooooo]
```

- ▾  Web Server (IIS) (7 of 43 installed)
  - ▾  Web Server (7 of 34 installed)
    - Common HTTP Features (4 of 6 installed)
    - Health and Diagnostics (1 of 6 installed)
    - Performance (1 of 2 installed)
    - Security (1 of 9 installed)

# Sites

Filter:  Go  Group by: No Grouping

Name	ID	Status	Binding
Default Web Site	1	Started (ht...	*:80 (http),*:443 (https)

- Add Website...
- Set Website Defaults...
- Bindings...
- Basic Settings...
- Explore
- Edit Permissions...
- Remove
- Rename
- View Applications
- View Virtual Directories
- Manage Website
  - Restart
  - Start
  - Stop
  - Browse \*:80 (http)
  - Browse \*:443 (https)
- Help

NewWebsite

File Home Share View

This PC > Local Disk (C:) > inetpub > NewWebsite

Name	Date modified	Type
default	12/26/2019 1:26 AM	HTML Document

```
Administrator: Windows PowerShell
PS C:\inetpub\NewWebsite> New-Item default.htm

Directory: C:\inetpub\NewWebsite

Mode                LastWriteTime         Length Name
----                -
-a-----          12/26/2019   1:26 AM             0 default.htm

PS C:\inetpub\NewWebsite>
```

Site name:  Application pool:

Content Directory

Physical path:

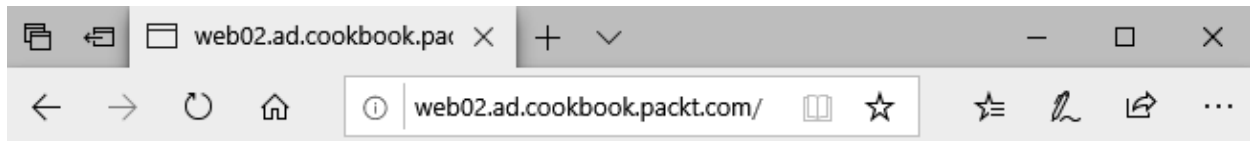
Pass-through authentication

Binding

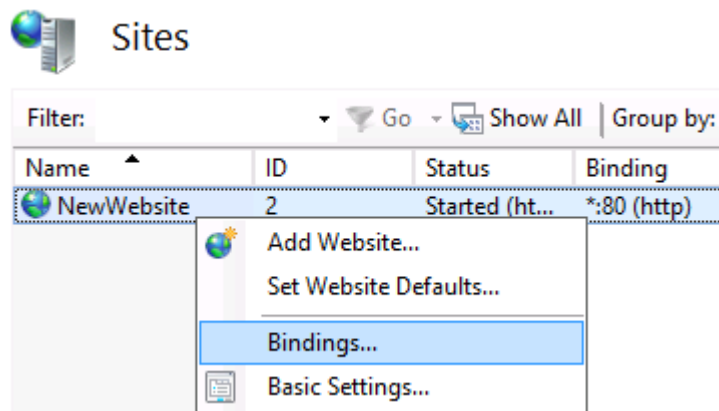
Type:  IP address:  Port:

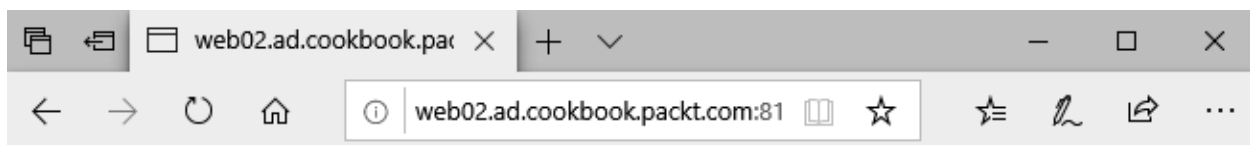
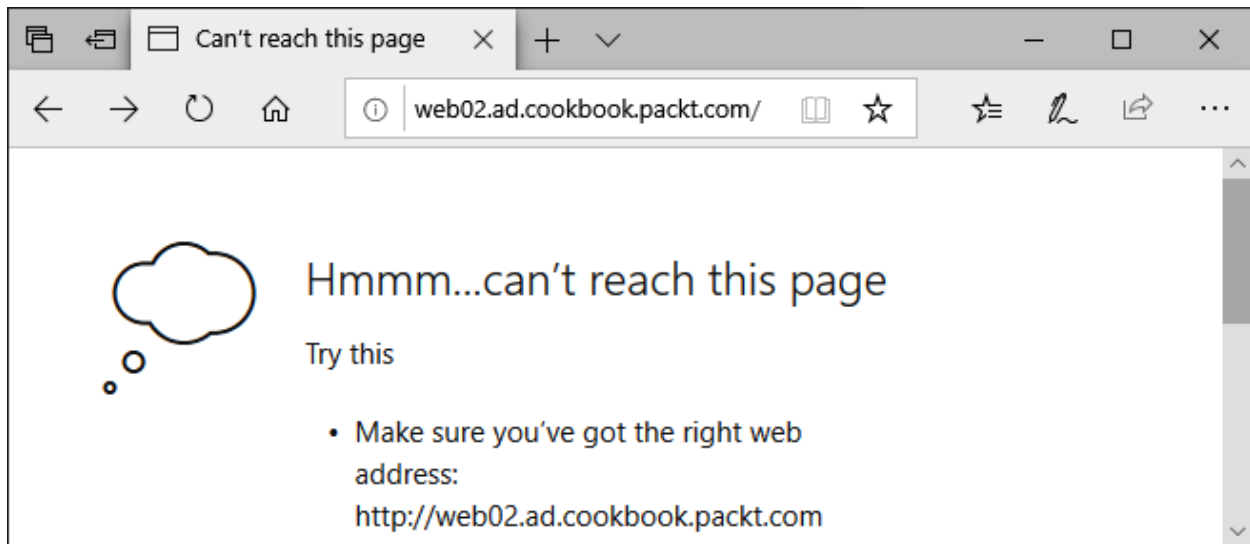
Host name:

Example: www.contoso.com or marketing.contoso.com

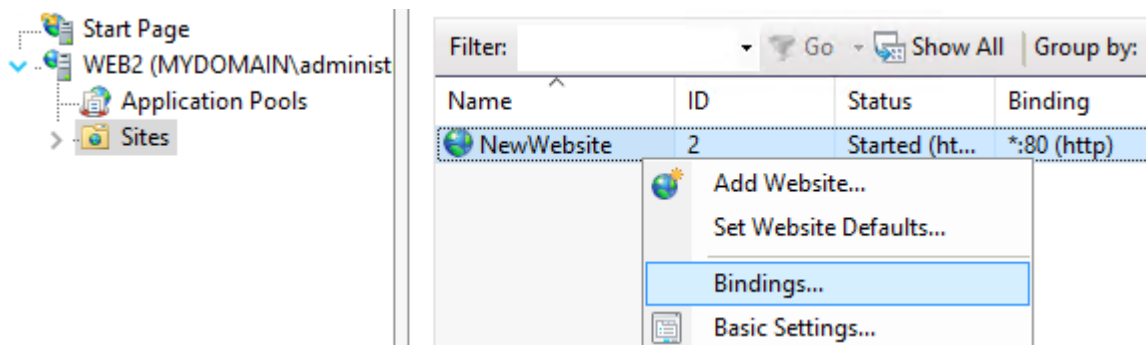


Congratulations, you are viewing our new website!





Congratulations, you are viewing our new website!



Add Site Binding

Type: https IP address: All Unassigned Port: 443

Host name:

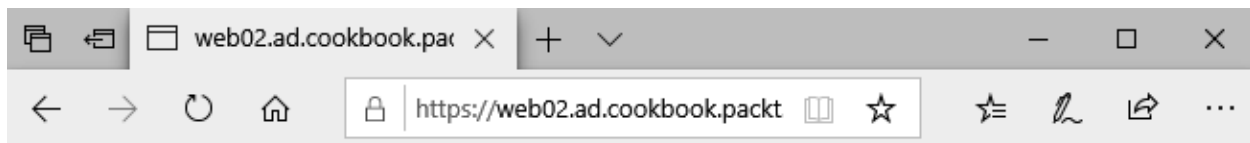
Require Server Name Indication

Disable HTTP/2

Disable OCSP Stapling

SSL certificate:  
web02.ad.cookbook.packt.com Select... View...

OK Cancel



Congratulations, you are viewing our new website!

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> dir Cert:\LocalMachine\My

PSParentPath: Microsoft.PowerShell.Security\Certificate::LocalMachine\My

Thumbprint                               Subject
-----
75406C674A26138CB17E3C6B8E3ACA972AFD07B7  CN=web02.ad.cookbook.packt.com

PS C:\Users\mhenderson> $Cert = "75406C674A26138CB17E3C6B8E3ACA972AFD07B7"
PS C:\Users\mhenderson> New-WebBinding -Name "NewWebsite" -Protocol HTTPS
PS C:\Users\mhenderson> $Binding = Get-WebBinding -Name "NewWebsite" -Protocol HTTPS
PS C:\Users\mhenderson> $Binding

protocol bindingInformation sslFlags
-----
HTTPS *:443: 0

PS C:\Users\mhenderson> $Binding.AddSslCertificate($Cert,"my")
```

## WEB2 Home

Filter:  Go  Show All | Group by: Area


IIS

- Authentic...
- Compression
- Default Document
- Directory Browsing
- Error Pages
- Handler Mappings
- HTTP Respon...
- Logging
- MIME Types
- Modules
- Output Caching
- Request Filtering
- Server Certificates**
- Worker Processes

Management

- Configurat... Editor
- Feature Delegation
- Shared Configurat...

Request Certificate ? X

 **Distinguished Name Properties**

Specify the required information for the certificate. State/province and City/locality must be specified as official names and they cannot contain abbreviations.

Common name:

Organization:


Organizational unit:

City/locality:

State/province:

Country/region:

Request Certificate ? X

 **Cryptographic Service Provider Properties**


Select a cryptographic service provider and a bit length. The bit length of the encryption key determines the certificate's encryption strength. The greater the bit length, the stronger the security. However, a greater bit length may decrease performance.

Cryptographic service provider:

Bit length:




Request Certificate ? X

 **File Name**

Specify the file name for the certificate request. This information can be sent to a certification authority for signing.

Specify a file name for the certificate request:

Complete Certificate Request ? X

 **Specify Certificate Authority Response**


Complete a previously created certificate request by retrieving the file that contains the certificate authority's response.

File name containing the certification authority's response:

Friendly name:

Select a certificate store for the new certificate:

▼

←  Extract Compressed (Zipped) Folders X

Select a Destination and Extract Files

Files will be extracted to this folder:

Show extracted files when complete

This PC > Local Disk (C:) > inetpub > win-acme >

Name	Date modified	Type	Size
Scripts	1/8/2020 12:11 AM	File folder	
public_suffix_list.dat	12/19/2019 7:12 AM	DAT File	211 KB
settings.json	12/19/2019 7:12 AM	JSON File	2 KB
settings_default.json	12/19/2019 7:12 AM	JSON File	2 KB
version	12/19/2019 7:13 AM	Text Document	1 KB
wacs	12/19/2019 7:13 AM	Application	44,054 KB
Web_Config	12/19/2019 7:12 AM	XML Document	1 KB

- Quick access
- Desktop
- Downloads
- Documents
- Pictures
- Site1
- This PC
- Network

C:\inetpub\win-acme\wacs.exe

```
[INFO] A simple Windows ACMEv2 client (WACS)
[INFO] Software version 2.1.2.641 (RELEASE, UNPLUGGABLE)
[INFO] IIS version 10.0
[INFO] Running with administrator credentials
[WARN] Scheduled task not configured yet
[INFO] Please report issues at https://github.com/PKISharp/win-acme

N: Create new certificate (simple for IIS)
M: Create new certificate (full options)
L: List scheduled renewals
R: Renew scheduled
S: Renew specific
A: Renew *all*
O: More options...
Q: Quit
```

```
C:\inetpub\win-acme\wacs.exe
[INFO] Running in mode: Interactive, Simple

Please select which website(s) should be scanned for host names. You may
input one or more site identifiers (comma separated) to filter by those
sites, or alternatively leave the input empty to scan *all* websites.

6: LetsEncrypt Test (1 binding)
2: Site1 (1 binding)
3: Site2 (1 binding)
4: Site3 (1 binding)
5: Site4 (1 binding)

Site identifier(s) or <ENTER> to choose all: 6

1: packt-le-test.443.org (Site 6)

You may either choose to include all listed bindings as host names in your
certificate, or apply an additional filter. Different types of filters are
available.

1: Pick specific bindings from the list
2: Pick bindings based on a search pattern
3: Pick *all* bindings

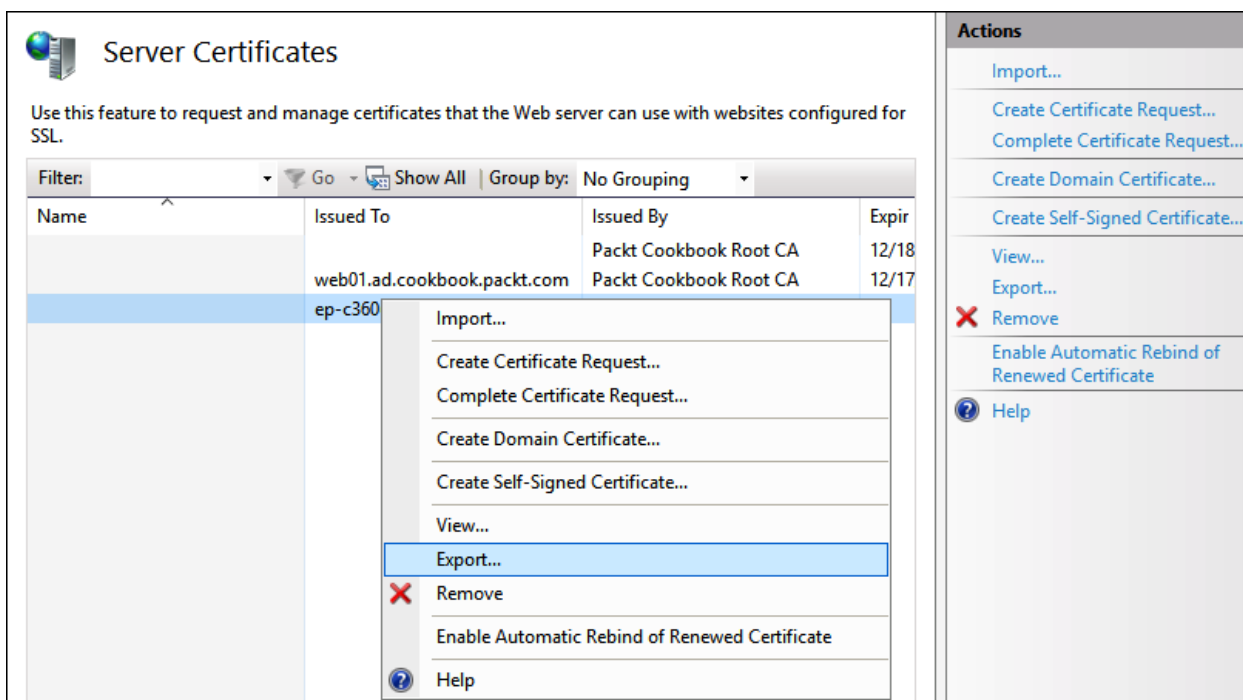
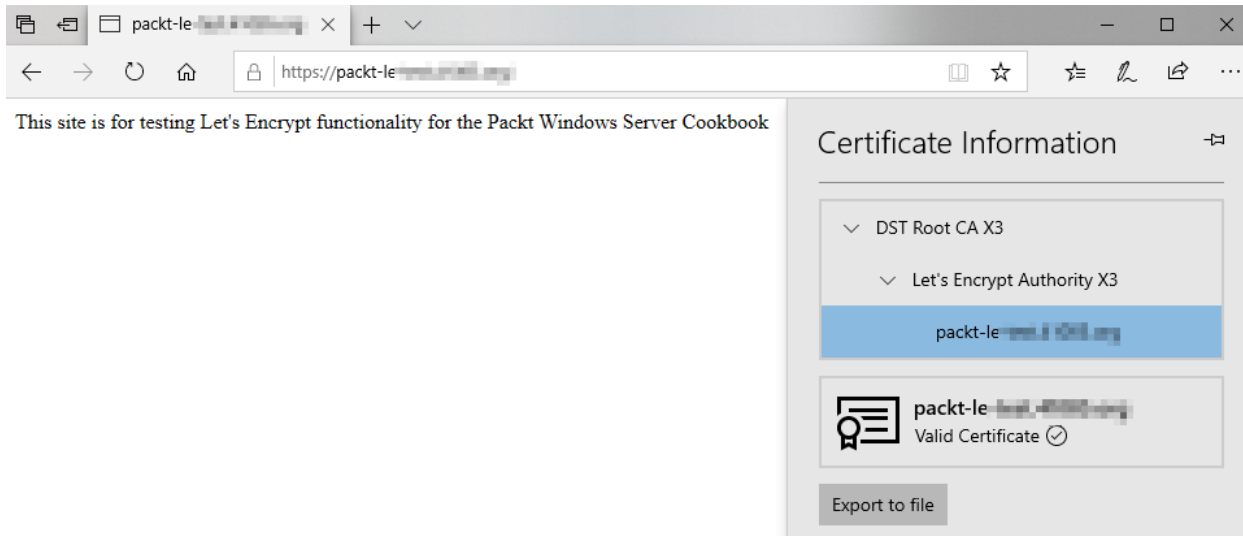
How do you want to pick the bindings?: 3

1: packt-le-test.443.org (Site 6)

Continue with this selection? (y*/n) _
```

```
C:\inetpub\win-acme\wacs.exe

[INFO] Authorize identifier: packt-le-test.443.org
[INFO] Authorizing packt-le-test.443.org using http-01 validation (SelfHosting)
[INFO] Authorization result: valid
[INFO] Requesting certificate [IIS] site 6 (any host)
[INFO] Store with CertificateStore...
[INFO] Installing certificate in the certificate store
[INFO] Adding certificate [IIS] site 6 (any host) 2020/1/8 0:20:19 to store WebHosting
[INFO] Installing with IIS...
[INFO] Adding new https binding *:443:packt-le-test.443.org
[INFO] Committing 1 https binding changes to IIS
[INFO] Adding Task Scheduler entry with the following settings
[INFO] - Name win-acme renew (acme-v02.api.letsencrypt.org)
[INFO] - Path C:\inetpub\win-acme
[INFO] - Command wacs.exe --renew --baseuri "https://acme-v02.api.letsencrypt.org/"
[INFO] - Start at 09:00:00
[INFO] - Time limit 02:00:00
[INFO] Adding renewal for [IIS] site 6 (any host)
[INFO] Next renewal scheduled at 2020/3/3 0:20:24
```



Export Certificate

Export to:  
 ...

Password:

Confirm password:

OK Cancel

Import Certificate

Certificate file (.pfx):  
 ...


Password:

Select Certificate Store:  
 v

Allow this certificate to be exported

OK Cancel

**Valid from 12/18/2019 to 12/17/2021**

 You have a private key that corresponds to this certificate.

```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Get-Item Cert:\LocalMachine\My\39B9CC61BD1C6577C31CE8C058507796D88F55CE | Export-PfxCertificate
-FilePath export.pfx -Password (Read-Host -AsSecureString -Prompt "Password")
Password: *****

Directory: C:\Users\mhenderson

Mode                LastWriteTime         Length Name
----                -
-a----             1/2/2020   2:43 AM           2841 export.pfx
  
```



# Server Certificates

Use this feature to request and manage certificates that the Web server can use with websites configured for SSL.

Name	Issued To	Issued By	Expires
	web01.ad.cookbook.packt.com	Packt Cookbook Root CA	12/18
		Packt Cookbook Root CA	12/17

**Actions**

- Import...
- Create Certificate Request...
- Complete Certificate Request...
- Create Domain Certificate...
- Create Self-Signed Certificate...
- [Enable Automatic Rebind of Renewed Certificate](#)
- Help

Task Scheduler (Local)

- Task Scheduler Library
  - Microsoft
    - Windows
      - .NET Framework
      - Active Directory Rights Management
      - AppID
      - Application Experience
      - ApplicationData
      - AppxDeploymentClient
      - Autochk
      - BitLocker
      - Bluetooth
      - BrokerInfrastructure
      - CertificateServicesClient
      - Chkdsk

Name	Status	Triggers
AikCertEnrollTask	Ready	Custom Trigger
CryptoPolicyTask	Ready	Custom Trigger
IIS-AutoCertRebind	Ready	On event - Log: Microsoft-Windows-CertificateServices
KeyPreGenTask	Ready	Multiple triggers defined
SystemTask	Ready	Multiple triggers defined
UserTask	Ready	Multiple triggers defined

General | **Triggers** | Actions | Conditions | Settings | History

Name: IIS-AutoCertRebind

Location: \Microsoft\Windows\CertificateServicesClient

Author:

inetpub

File Home Share View

← → ↕ ↑ > This PC > Local Disk (C:) > inetpub >

Name	Date modified
custerr	10/26/2019 5:20 AM
history	12/23/2019 10:38 ...
logs	12/23/2019 10:37 ...
Site1	1/4/2020 7:16 PM
Site2	1/4/2020 7:17 PM
Site3	1/4/2020 7:17 PM
Site4	1/4/2020 7:17 PM
temp	10/25/2019 11:53 ...
wwwroot	10/26/2019 5:20 AM

Site name:  Application pool:

Content Directory

Physical path:

Pass-through authentication

Binding

Type:  IP address:  Port:

Host name:

Example: www.contoso.com or marketing.contoso.com

Internet Information Services (IIS) Manager

WEB01 > Sites

File View Help

Connections

- Start Page
- WEB01 (COOKBOOK\mhende)
  - Application Pools
  - Sites
    - Default Web Site
    - Site1
    - Site2
    - Site3
    - Site4

Sites

Filter:  Go  Group by: No Grouping

Name	ID	Status	Binding	Path
Default Web Site	1	Started (ht...	*:80 (http),*:443 (https)	%SystemDrive%\inetpub\wwwroot
Site1	2	Started (ht...	*:81 (http)	C:\inetpub\Site1
Site2	3	Started (ht...	*:82 (http)	C:\inetpub\Site2
Site3	4	Started (ht...	*:83 (http)	C:\inetpub\Site1
Site4	5	Started (ht...	*:84 (http)	C:\inetpub\Site4

```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Get-NetIPAddress | Format-Table

ifIndex IPAddress                               PrefixLength
-----
17      fe80::30c0:90f5:1477:7701%17                 64
1       ::1                                           128
17      172.16.97.24                                 24
17      172.16.97.23                                 24
17      172.16.97.22                                 24
17      172.16.97.21                                 24
1       127.0.0.1                                    8

```

Edit Site Binding ? X

Type:  IP address:  Port:

Host name:

Example: www.contoso.com

Name	Type	Data
site1	Host (A)	172.16.97.21
site2	Host (A)	172.16.97.22
site3	Host (A)	172.16.97.23
site4	Host (A)	172.16.97.24

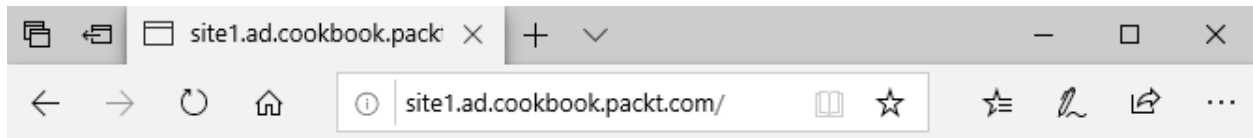
Edit Site Binding ? X

Type:  IP address:  Port:

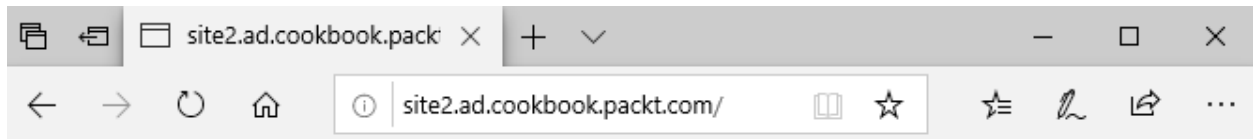
Host name:

Example: www.contoso.com or marketing.contoso.com





This is from site1.ad.cookbook.packt.com



This is from site2.ad.cookbook.packt.com

# Chapter 6: Remote Access

Select the role services to install for Remote Access

**Role services**

- DirectAccess and VPN (RAS)
- Routing
- Web Application Proxy

Remote Access Management Console

Configuration

DirectAccess and VPN

RA01

### Remote Access Setup

Configure Remote Access, including DirectAccess and VPN.

#### Configure Remote Access

DirectAccess & VPN settings have not yet been configured. Select one of the wizard options.

- [Run the Getting Started Wizard](#)  
Use this wizard to configure DirectAccess and VPN quickly, with default recommended settings.
- [Run the Remote Access Setup Wizard](#)  
Use this wizard to configure DirectAccess and VPN with custom settings.

Group Policy Management

File Action View Window Help

Group Policy Management

- Forest: ad.cookbook.packt.com
  - Domains
    - ad.cookbook.packt.com
      - Certificate Autoenrollment Policy
      - Default Domain Policy
      - Domain Controllers
      - Office Computers
      - Servers
      - Staff
      - Group Policy Objects
        - Certificate Autoenrollment Policy
        - Default Domain Controllers Policy
        - Default Domain Policy
        - DirectAccess Server Settings
        - WMI Filters
        - Starter GPOs

### DirectAccess Server Settings

Scope: Details Settings Delegation Status

**Links**

Display links in this location: ad.cookbook.packt.com

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
[Empty table body]			

**Security Filtering**

The settings in this GPO can only apply to the following groups, users, and computers:

Name
Authenticated Users

- Default Domain Controllers Policy
- Default Domain Policy
- DirectAccess Server Settings
- > WMI Filters
- > Starter GPOs
- > Sites
- Group Policy Modeling

### Security Filtering

The settings in this GPO can only apply to the following groups, users, and computers:

Name

RA01\$ (COOKBOOK\RA01\$)

- Add...
- Remove
- Properties

- Servers
  - Database
  - Remote Access
  - Web Server
  - Staff

Create a GPO in this domain, and Link it here...

Link an Existing GPO...

- Group Policy Management
  - Forest: ad.cookbook.packt.com
    - Domains
      - ad.cookbook.packt.com
        - Certificate Autoenrollment Policy
        - Default Domain Policy
        - Domain Controllers
        - Office Computers
          - Laptops
            - DirectAccess Client Settings
        - Servers
        - Staff
          - Executives
          - Marketing
          - Sales
          - Sysadmins
        - Group Policy Objects
          - Certificate Autoenrollment Policy
          - Default Domain Controllers Policy

### DirectAccess Client Settings

Scope Details Settings Delegation

#### Links

Display links in this location: ad.cookbook.packt.com

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
Laptops	No	Yes	ad.cookbook.packt.com/

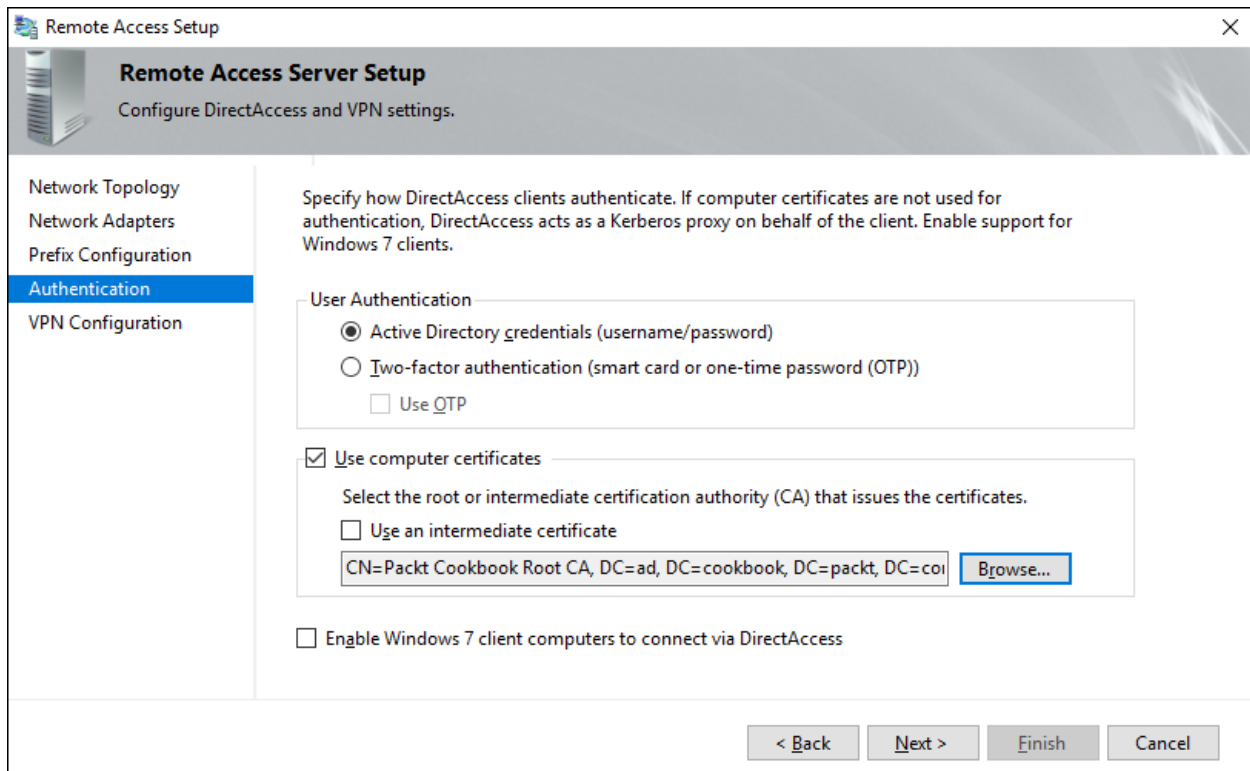
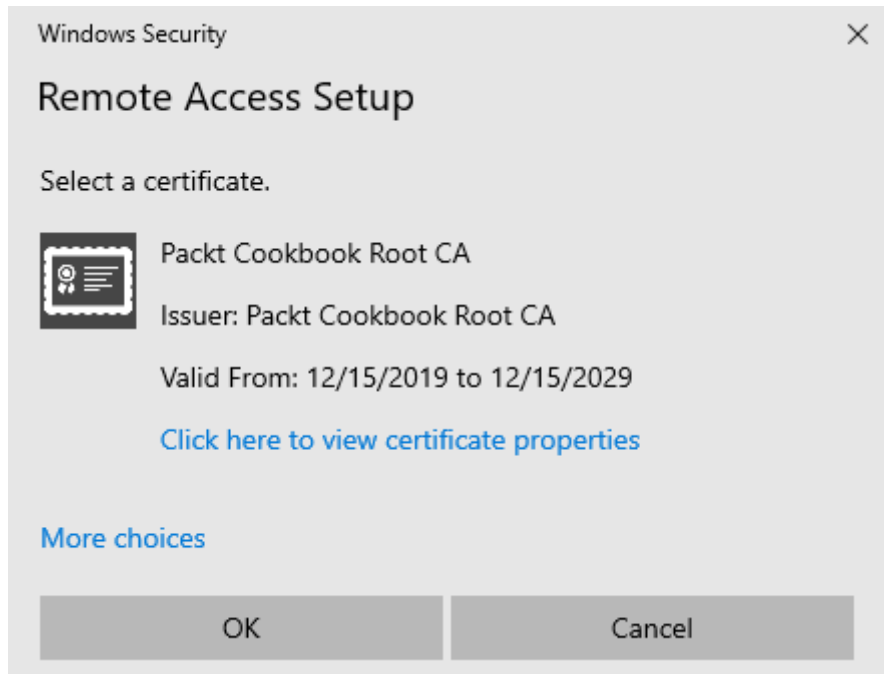
#### Security Filtering

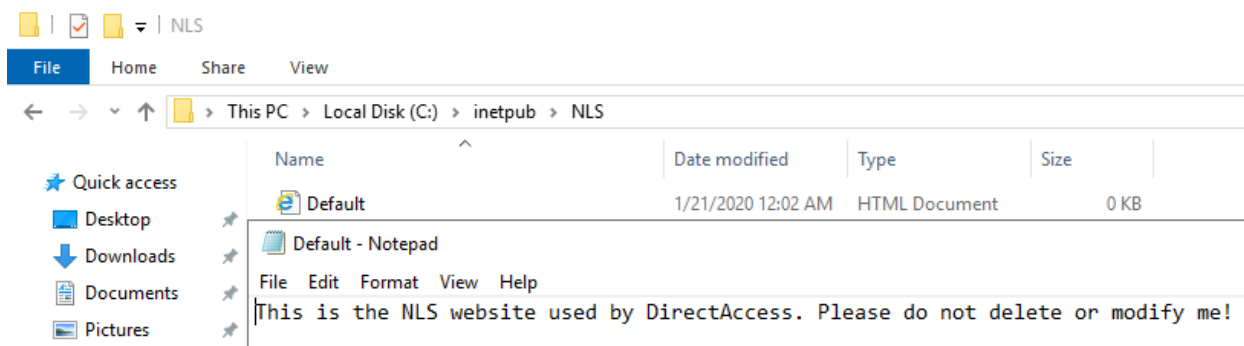
The settings in this GPO can only apply to the following groups, users, and computers:

Name

DirectAccess Enabled Computers (COOKBOOK\DirectAccess Enabled Computers)

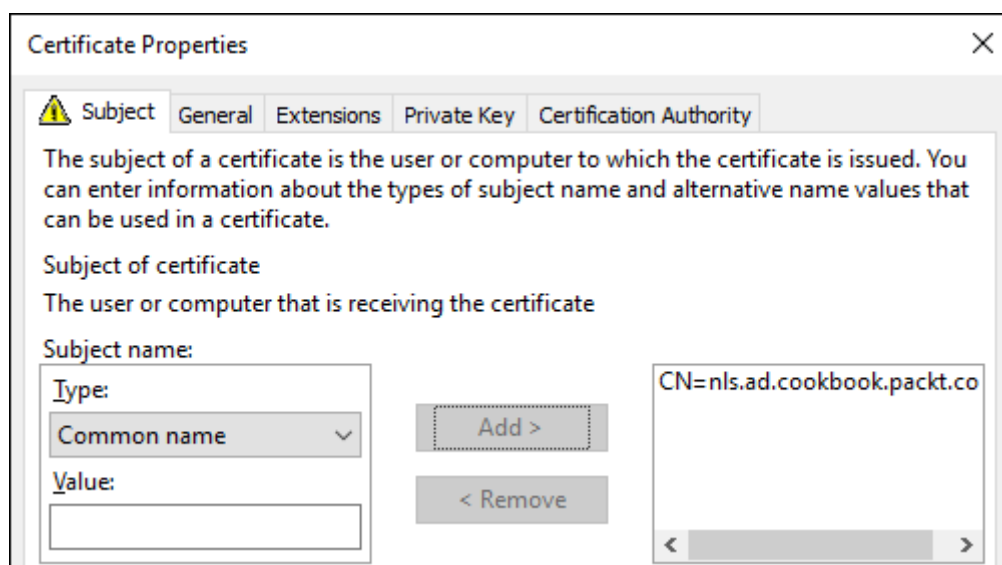
- Add...
- Remove
- Properties





### Active Directory Enrollment Policy

- Computer STATUS: Available [Details](#)
- Custom Web Server STATUS: Available [Details](#)  
 [More information is required to enroll for this certificate. Click here to configure settings.](#)
- DA Cert STATUS: Available [Details](#)
- IPsec Certificate STATUS: Available [Details](#)



**Add Website** [?] [X]

Site name:  Application pool:

**Content Directory**

Physical path:

Pass-through authentication

**Binding**

Type:  IP address:  Port:

Host name:

Require Server Name Indication

Disable HTTP/2

Disable OCSP Stapling

SSL certificate:

Start Website immediately

**Remote Access Server**

Define configuration and network settings for the Remote Access server.

Multisite Deployment ^

Enable Multisite

Load Balanced Cluster ^

Enable Load Balancing

Enable Load Balancing

## External Dedicated IP Addresses

Before You Begin

Load Balancing Method

**External DIPs**

Internal DIPs

Summary

Completion

Configure dedicated IP addresses (DIPs) for the server external adapter. With load balancing enabled, the current primary DIPs of the network adapters will be used as the virtual IP addresses (VIPs) for the load balanced cluster.

IPv4 address:   
Example: 203.0.113.18

Subnet mask:   
Example: 255.255.0.0

Enable Load Balancing

## Internal Dedicated IP Addresses

Before You Begin

Load Balancing Method

External DIPs

**Internal DIPs**

Summary

Completion

Configure dedicated IP addresses (DIPs) for the server internal adapter. With load balancing enabled, the current primary DIPs of the network adapters will be used as the virtual IP addresses (VIPs) for the load balanced cluster.

IPv4 address:   
Example: 10.0.0.18

Subnet mask:   
Example: 255.255.0.0

Load Balanced Cluster ^

Configure Load Balancing S...

**Add or Remove Servers**

Disable Load Balancing

**Add a Server** [Close]

## Network Adapters

Select Server

- Network Adapters**
- Network Location Server
- VPN IP Addresses
- Summary
- Completion

Select the network adapters that connect to the external and internal network.

External adapter:  203.0.113.13 [Details](#)

Internal adapter:  172.16.97.19 [Details](#)

Select the certificate used to authenticate IP-HTTPS connections.

Use a self-signed certificate

**Add or Remove Servers** [Close]

## Add or Remove Servers

Add or remove servers from a load balanced cluster. The cluster must contain at least one server.

Server Name	External Adapter	Internal Adapter	VPN Static Pool
RA02.AD.COOKBOOK.PACKT.COM	External	Internal	172.16.97.171 - 172.16.97.190
RA01.AD.COOKBOOK.PACKT.COM	External	Internal	172.16.97.150 - 172.16.97.169

VPN ^

- Open RRAS Management
- Enable VPN**
- Enable Site-to-Site VPN



IP Address Assignment **Authentication**

Address assignment method:

Assign addresses automatically

With this option enabled, addresses are assigned by a DHCP server.

Assign addresses from a static address pool

Add IP address ranges to the static pool. Addresses are assigned from the first range before continuing to the next.

	From	To	Number
	10.0.1.1	10.0.1.254	254
▶▶			

## Step 2



### Remote Access Server

Define configuration and network settings for the Remote Access server.

Edit..

Select the certificate used to authenticate IP-HTTPS connections:

Use a self-signed certificate created automatically by DirectAccess

CN=directaccess. [redacted]

Browse...



Some configuration changes have not been applied. Click Finish to apply the changes.

Finish...

**Connection Details** ⌵

Connect Using DirectAccess  
 Total Bytes In 201608  
 Total Bytes Out 311496  
 Connection start 6/10/2016 12:52:43 PM  
 Authentication Machine Certificate, User Nt  
 ISP Address -

< ||| >

**Access Details** ⌵

Protocol	Port	IP Address
6	80	192.168.250.45
6	445	192.168.250.18
17	389	192.168.250.2

Protocol/Tunnel	Duration	Server
Pptp	<input checked="" type="checkbox"/>	User Name
IPHttps	<input checked="" type="checkbox"/>	Host Name
IPHttps	<input checked="" type="checkbox"/>	ISP Address
IPHttps	<input checked="" type="checkbox"/>	Protocol/Tunnel
	<input checked="" type="checkbox"/>	Duration
		IPv4 Address
		IPv6 Address
		Type
	<input checked="" type="checkbox"/>	Server
		Total Bytes
		Total Bytes In
		Total Bytes Out
		Connection Start Time
		Health Status
		Authentication Method
		Activity Status
		Rate

Configuration  
DirectAccess and VPN

Dashboard

Operations Status

Remote Client Status

Reporting

## Remote Access Reporting



Inbox accounting must be configured before reporting can be used.

[Configure Accounting](#)

Configure Accounting



### Configure Accounting

Configure accounting settings for Remote Access data logging.

Configure settings for Remote Access accounting.

#### Select Accounting Method

Use RADIUS accounting

Select this setting to store logs and generate reports using a local or remote RADIUS server.

Use inbox accounting

Select this setting to store logs using the Windows Internal Database (WID) and generate reports on this server.

#### Configure Accounting Settings

Accounting method:

Store accounting logs for last

Apply

Cancel

# Chapter 7: Remote Desktop Services

**Add Roles and Features Wizard** DESTINATION SERVER  
No servers are selected.

### Select installation type

Before You Begin  
**Installation Type**  
Deployment Type  
Deployment Scenario  
Role Services  
RD Connection Broker

Select the installation type. You can install roles and features on a running physical computer or virtual machine, or on an offline virtual hard disk (VHD).

- Role-based or feature-based installation**  
Configure a single server by adding roles, role services, and features.
- Remote Desktop Services installation**  
Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment.

**Add Roles and Features Wizard** DESTINATION SERVER  
Standard deployment selected

### Select deployment scenario

Before You Begin  
Installation Type  
Deployment Type  
**Deployment Scenario**  
Role Services  
RD Connection Broker  
RD Web Access

Remote Desktop Services can be configured to allow users to connect to virtual desktops, RemoteApp programs, and session-based desktops.

- Virtual machine-based desktop deployment**  
Virtual machine-based desktop deployment allows users to connect to virtual desktop collections that include published RemoteApp programs and virtual desktops.
- Session-based desktop deployment**  
Session-based desktop deployment allows users to connect to session collections that include published RemoteApp programs and session-based desktops.

**Add Roles and Features Wizard** DESTINATION SERVER  
Standard deployment selected

### Specify RD Connection Broker server

Before You Begin  
Installation Type  
Deployment Type  
Deployment Scenario  
Role Services  
**RD Connection Broker**  
RD Web Access  
RD Session Host  
Confirmation  
Completion

Select the servers from the server pool on which to install the RD Connection Broker role service.

**Server Pool**

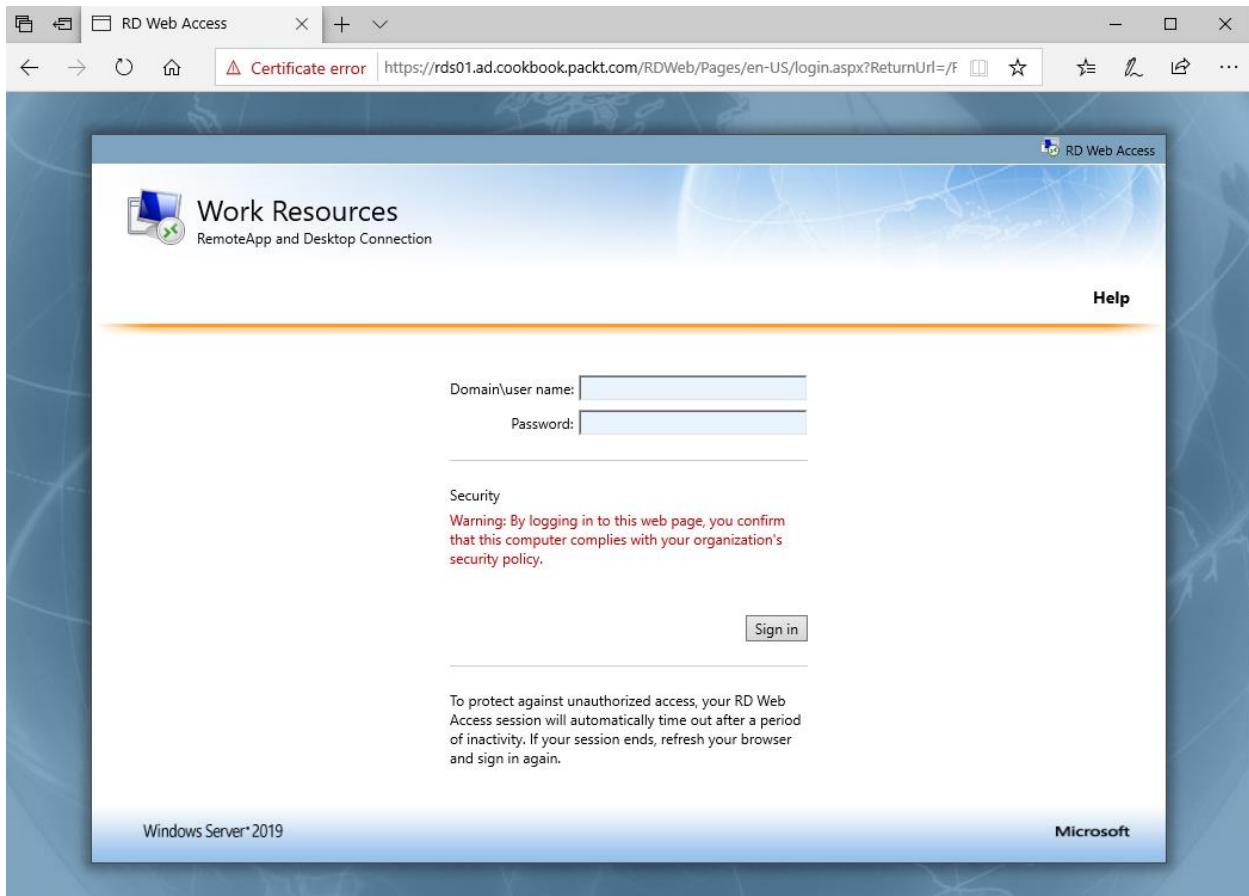
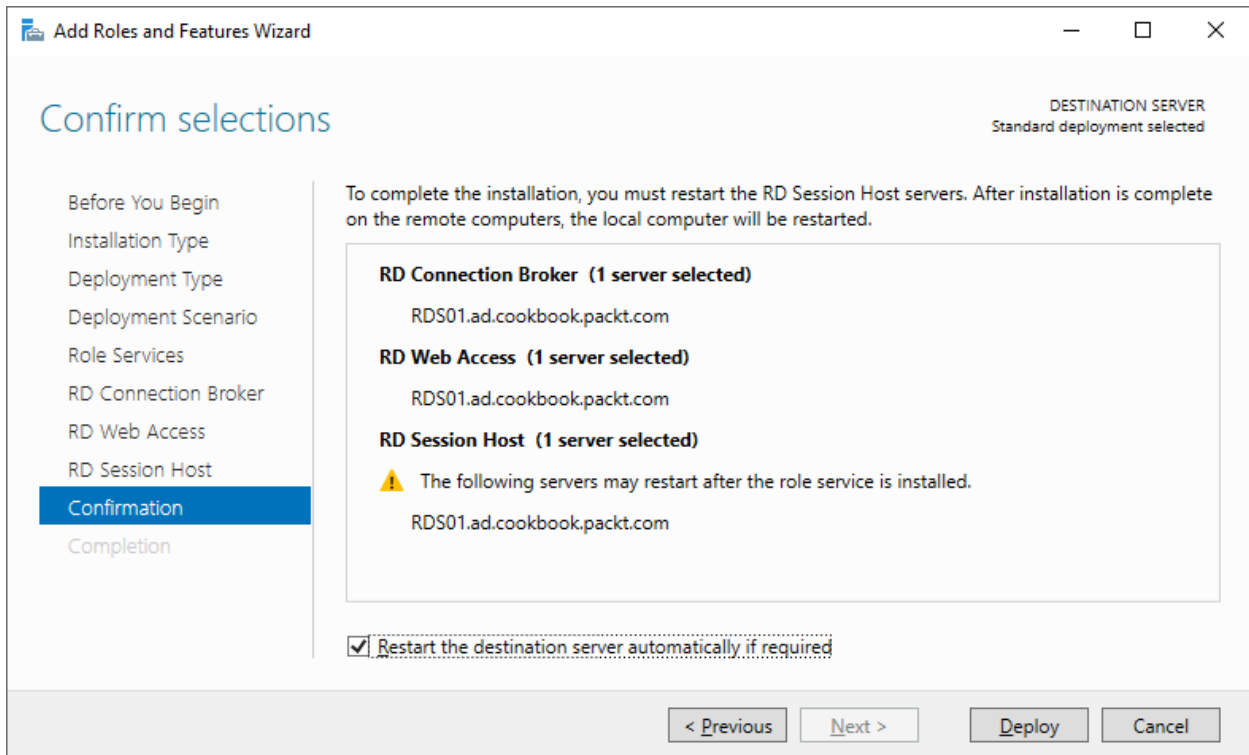
Filter:

Name	IP Address	Operating
RDS01.ad.cookbook.pac...	172.16.97.54	

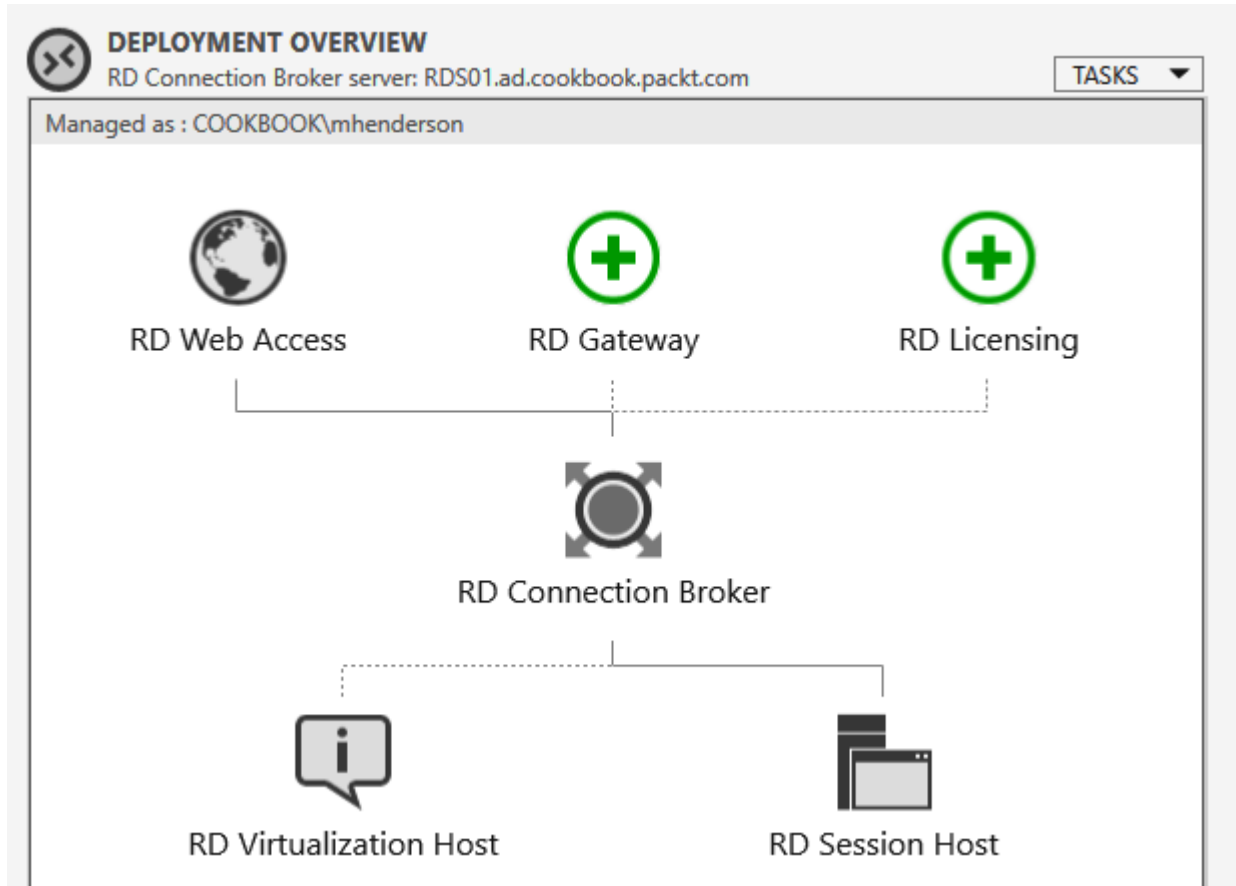
**Selected**

Computer

- AD.COOKBOOK.PACKT.CO  
RDS01



- 2 Add roles and features
- 3 [Add other servers to manage](#)
- 4 Create a server group



### Session-based desktop deployment

- 2 Add RD Session Host servers
- 3 Create session collections

### Add RD Session Host Servers

## Select a server

**Server Selection**  
Confirmation  
Results

This wizard allows you to add RD Session Host servers to your deployment. Select the servers on which to install the RD Session Host role service.

**Server Pool**

Filter:

Name	IP Address
DC01.ad.cookbook.packt...	172.16.97.2
CA02.ad.cookbook.packt...	172.16.97.50
DC02.ad.cookbook.packt...	172.16.97.3
CA01.ad.cookbook.packt...	172.16.97.7
web01.ad.cookbook.pac...	
web02.ad.cookbook.pac...	172.16.97.62
RDS02.ad.cookbook.pac...	172.16.97.53

**Selected**

Computer

- AD.COOKBOOK.PACKT.CO  
RDS02

### Programs

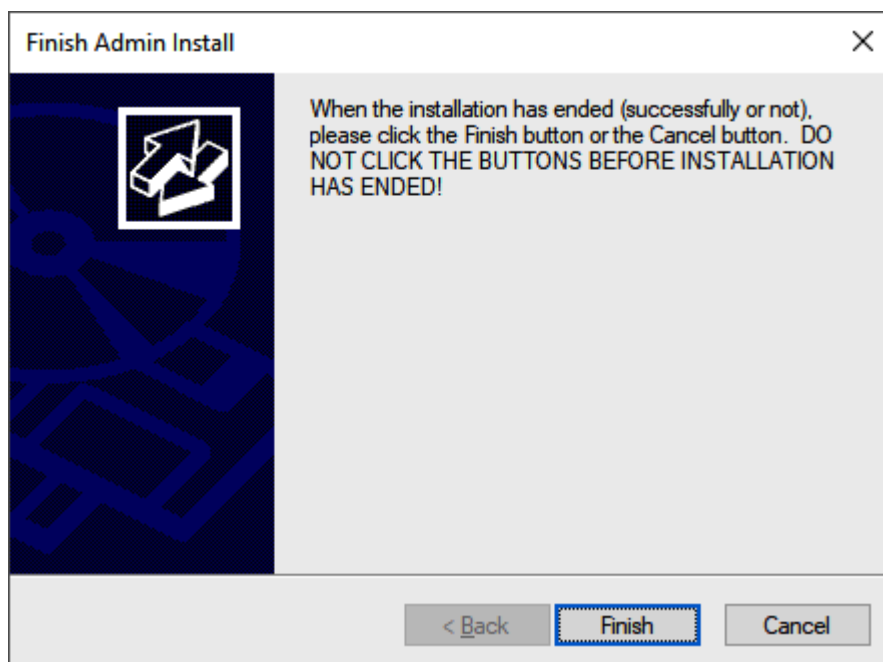
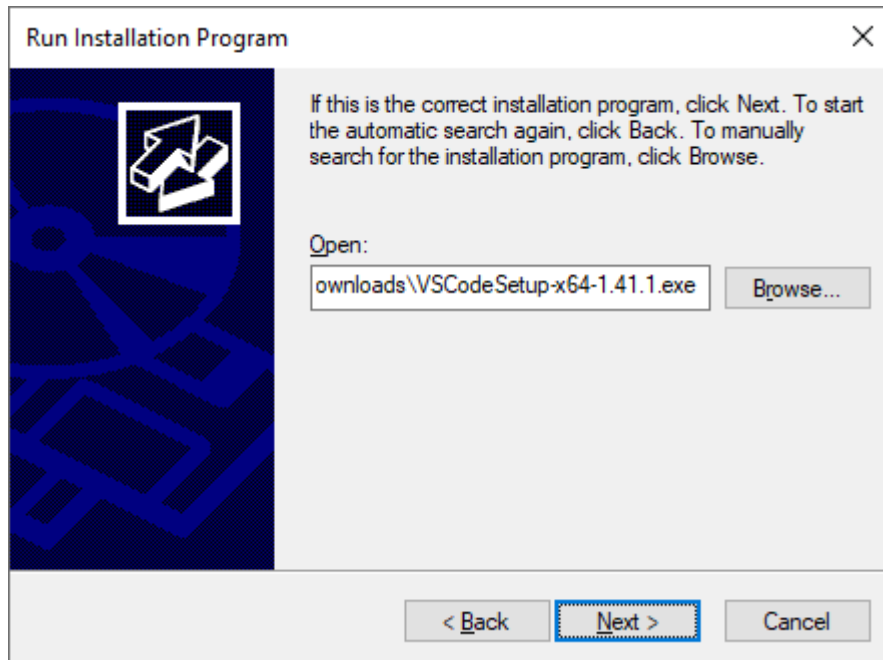
Control Panel > Programs >

- Control Panel Home
- System and Security
- Network and Internet
- Hardware
- Programs**
- User Accounts

**Programs and Features**  
[Uninstall a program](#) | [Turn Windows features on or off](#) | [View installed updates](#) | [Run programs made for previous versions of Windows](#) | [How to install a program](#)

**Default Programs**  
[Change default settings for media or devices](#)

**Install Application on Remote Desktop...**



```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> change user /install
User session is ready to install applications.
PS C:\Users\mhenderson> █
```



```
Administrator: Windows PowerShell

PS C:\Users\mhenderson> change user /execute
User session is ready to execute applications.
PS C:\Users\mhenderson> _
```

Server Manager

Server Manager ▸ Remote Desktop Services ▸ Collections ▸ My RDSH Se

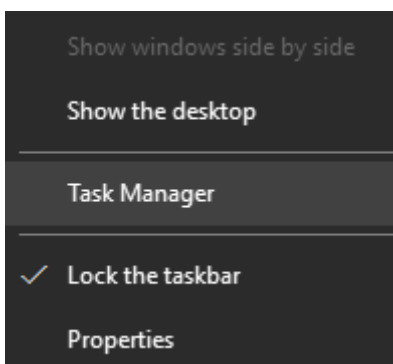
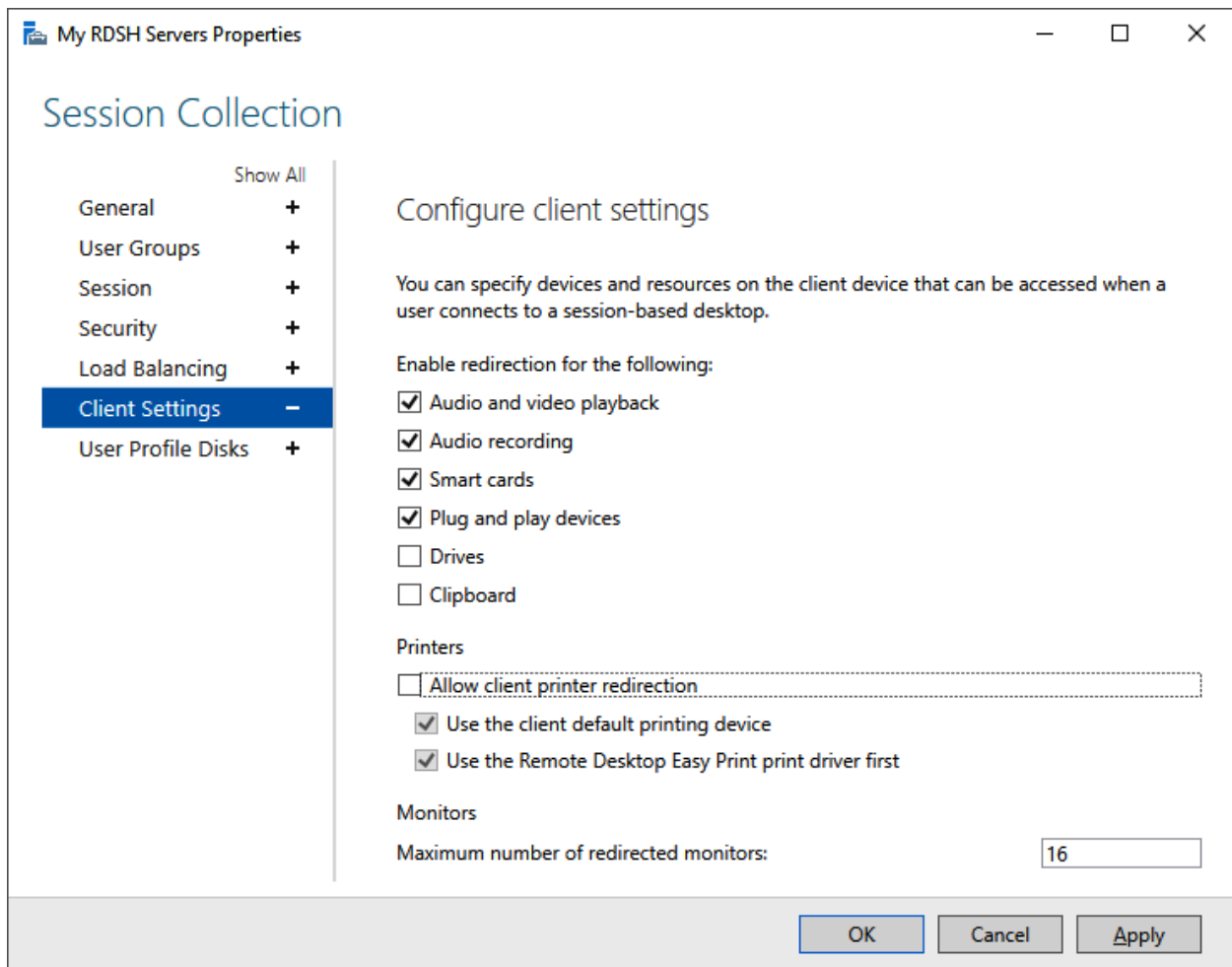
Overview  
Servers  
Collections  
**My RDSH Servers**

**PROPERTIES**  
Properties of the collection

Collection Type	Session
Resources	Remote Desktop
User Group	COOKBOOK\Domain Users

TASKS ▾  
Edit Properties

REMOTEAPP PROGRAMS



Task Manager

File Options View

Processes Performance **Users** Details Services

User	Status	53% CPU	96% Memory
> jkrause (15)			
> administrator (17)			

- ID
- Session
- Client name
- ✓ Status
- ✓ CPU
- ✓ Memory

Task Manager

File Options View

Processes Performance **Users** Details Services

User	ID	Status	64% CPU	93% Memory
> jkrause (20)	3		9.1%	121.1 MB
> administrator (20)	1		3.3%	72.3 MB

Administrator: Command Prompt

```
C:\>mstsc /shadow:3 /control
C:\>_
```

Remote Desktop Connection


Connecting to: RDS1

Cancel

⏪ Fewer details Disconnect Sign out

**Support & Downloads**


**MFC-J625DW**



▶ Not your product?

- Downloads ▶
- FAQs & Troubleshooting ▶
- Manuals ▶
- Consumables & Accessories ▶
- Supported OS ▶
- Specification ▶

**United States(English)**



▶ Change Country (Language)

MFC-J625DW

## Downloads

### Select Your Operating System (OS)

**STEP 1: Select OS Family**

Windows
  Mac
  Linux
  Mobile

**STEP 2: Select OS Version**

Windows® 10 (32-bit)
  Windows Vista® (64-bit)

Windows® 10 (64-bit)
  Windows® XP (32-bit)

Windows® 8.1 (32-bit)
  Windows® XP (64-bit)

Windows® 8.1 (64-bit)
  Windows Server® 2012 R2 (64-bit)

Windows® 8 (32-bit)
  Windows Server® 2012 (64-bit)

Windows® 8 (64-bit)
  Windows Server® 2008 R2 (64-bit)

Windows® RT
  Windows Server® 2008 (32-bit)

Windows® 7 (32-bit)
  Windows Server® 2008 (64-bit)

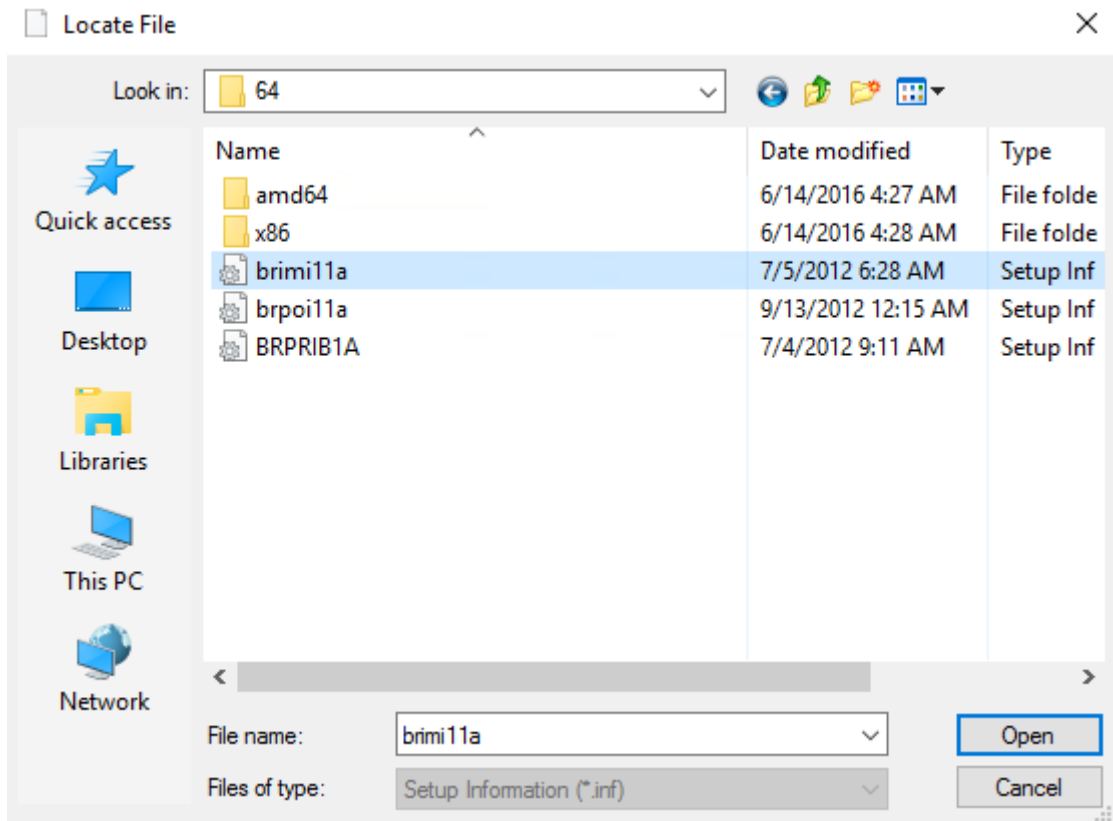
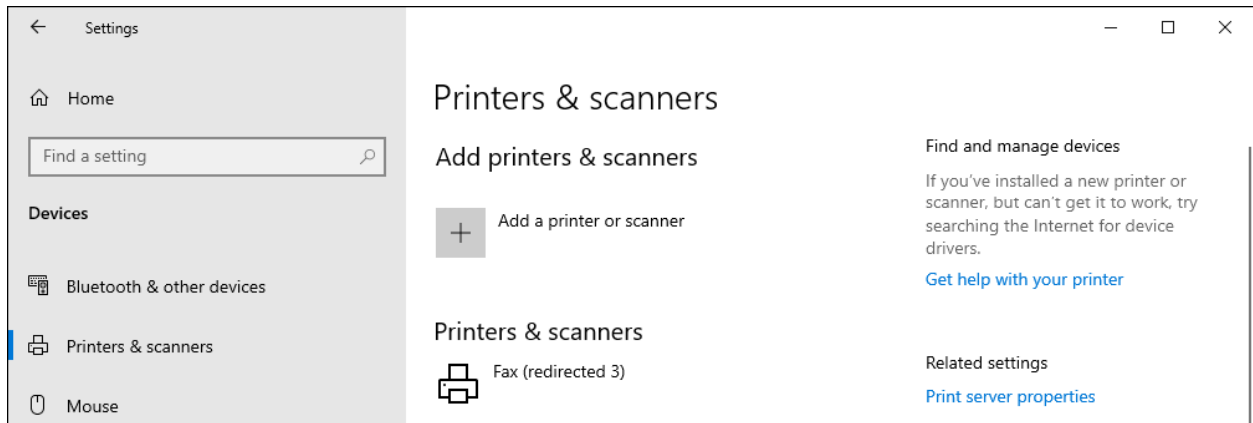
Windows® 7 (64-bit)
  Windows Server® 2003 (32-bit)

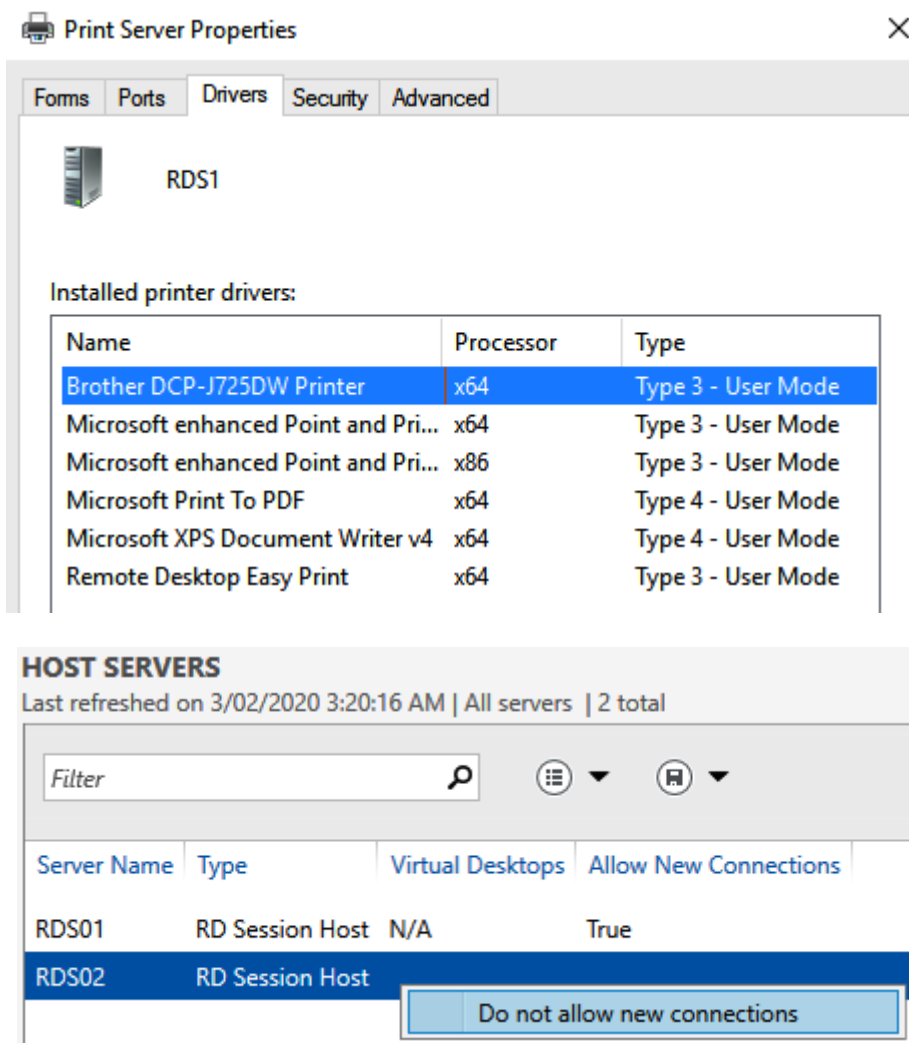
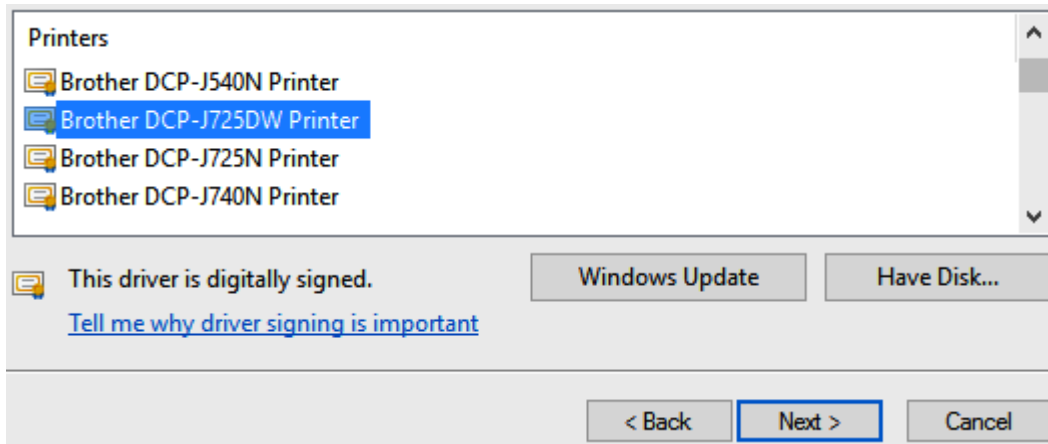
Windows Vista® (32-bit)
  Windows Server® 2003 (64-bit)



### Drivers

Title	Description	Release Date (Version)	Size
<a href="#">Printer Driver &amp; Scanner Driver for Local Connection</a>	This download only includes the printer and scanner (WIA and/or TWAIN) drivers, <a href="#">...more</a>	11/28/2012 (D1)	23.04 MB
<a href="#">Add Printer Wizard Driver</a>	This download only includes the printer drivers and is for users who are familiar with <a href="#">...more</a>	11/28/2012 (1.11)	23.04 MB





## HOST SERVERS

Last refreshed on 3/02/2020 3:22:07 AM | All servers | 2 total

Server Name	Type	Virtual Desktops	Allow New Connections
RDS01	RD Session Host	N/A	True
RDS02	RD Session Host	N/A	

Allow new connections

## REMOTEAPP PROGRAMS

Published RemoteApp programs | 0 total

TASKS ▾

*Remote Desktop is published for the users of the collection.*

[Publish RemoteApp programs](#)

*Publishing RemoteApp programs will unpublish the Remote Desktop.*

**Publish RemoteApp Programs**

### Select RemoteApp programs

RemoteApp Programs

- Confirmation
- Publishing
- Completion

Select the RemoteApp programs to publish to the My RDSH Servers collection. To add a RemoteApp program to the list, click Add.

The RemoteApp programs are populated from RDS01.AD.COOKBOOK.PACKT.COM.

RemoteApp Program	Location
<input type="checkbox"/> System Information	%SYSTEMDRIVE%\Windows\system32\msinfo3...
<input type="checkbox"/> Task Manager	%SYSTEMDRIVE%\Windows\system32\taskmgr...
<input type="checkbox"/> Visual Studio Code	%SYSTEMDRIVE%\Program Files\Microsoft VS C...
<input type="checkbox"/> Windows Media Player	%SYSTEMDRIVE%\Program Files (x86)\Windows...
<input type="checkbox"/> Windows Memory Diagnostic	%SYSTEMDRIVE%\Windows\system32\MdSche...
<input type="checkbox"/> Windows PowerShell	%SYSTEMDRIVE%\Windows\System32\Window...
<input type="checkbox"/> Windows Speech Recognition	%SYSTEMDRIVE%\Windows\Speech\Common\s...
<input checked="" type="checkbox"/> WordPad	%SYSTEMDRIVE%\Program Files\Windows NT\...
<input type="checkbox"/> XPS Viewer	%SYSTEMDRIVE%\Windows\system32\xpsrchv...

Add...

Verify that the program is installed on all the RD Session Host servers in the collection.

< Previous   Next >   Publish   Cancel

RD Web Access

Certificate error <https://rds01.ad.cookbook.packt.com/RDWeb/Pages/en-US/login.aspx?ReturnUrl=/f>

# Work Resources

RemoteApp and Desktop Connection

Help

Domain\user name:

Password:

You must enter a valid domain name.

Security

Warning: By logging in to this web page, you confirm that this computer complies with your organization's security policy.

Sign in

To protect against unauthorized access, your RD Web Access session will automatically time out after a period of inactivity. If your session ends, refresh your browser and sign in again.

Windows Server 2019 Microsoft

RD Web Access

Certificate error <https://rds01.ad.c>

# Work Resources

RemoteApp and Desktop Connection

## RemoteApp and Desktops

Current folder: /

WordPad



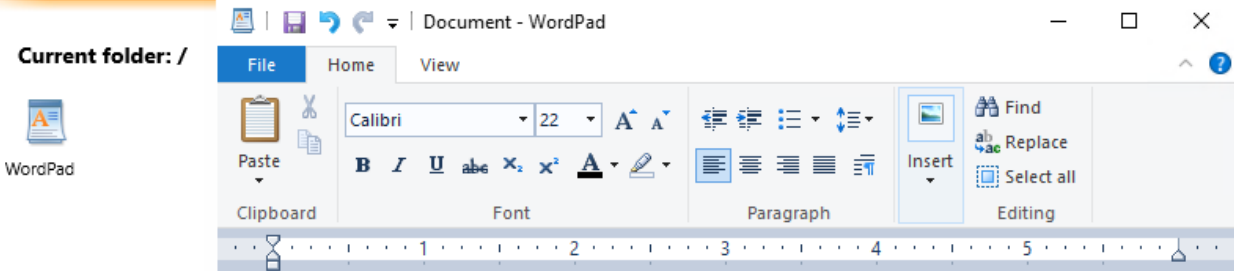


## Work Resources

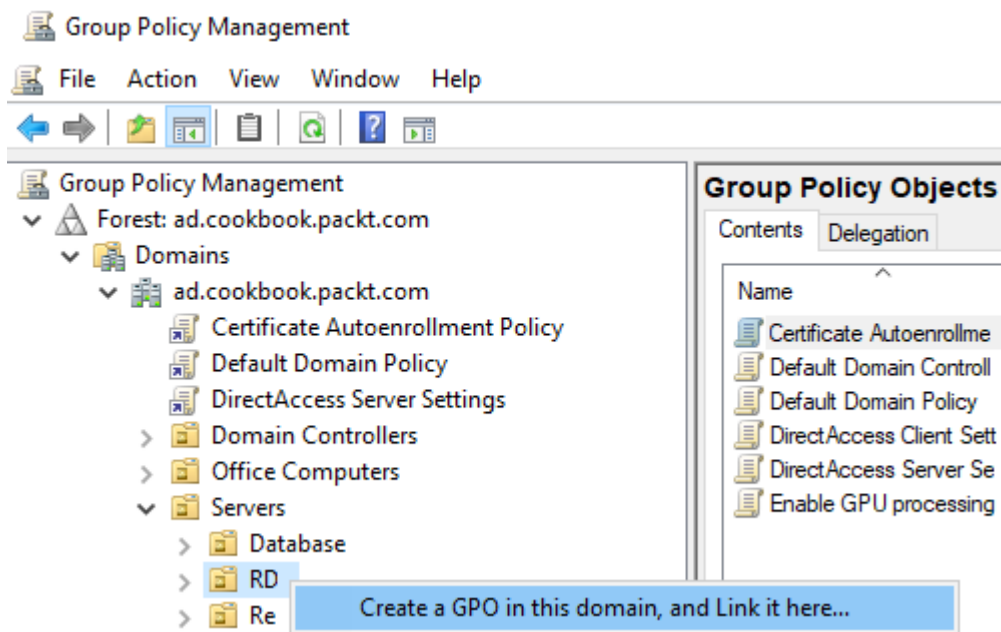
RemoteApp and Desktop Connection

RemoteApp and Desktops

Help



It works! This is being run as a RemoteApp from one of our RDS servers.



Group Policy Management Editor

File Action View Help

Remote Desktop Services

- RD Licensing
- Remote Desktop Connection Client
- Remote Desktop Session Host
  - Connections
  - Device and Resource Redirection
  - Licensing
  - Printer Redirection
  - Profiles
  - RD Connection Broker
  - Remote Session Environment
  - Security
  - Session Time Limits
  - Temporary folders
- RSS Feeds
- Search
- Security Center
- Shutdown Options
- Smart Card
- Software Protection Platform

Remote Session Environment

Setting	State
RemoteFX for Windows Server 2008 R2	Not configured
Limit maximum color depth	Not configured
Enforce Removal of Remote Desktop Wallpaper	Not configured
Use hardware graphics adapters for all Remote Desktop Serv...	Enabled
Limit maximum display resolution	Not configured

Requirements:

Use hardware graphics adapters for all Remote Desktop Services sessions

Use hardware graphics adapters for all Remote Desktop Services sessions

Previous Setting Next Setting

Not Configured    Comment:   
 Enabled  
 Disabled

Supported on: At least Windows Server 2012, Windows 8 or Windows RT

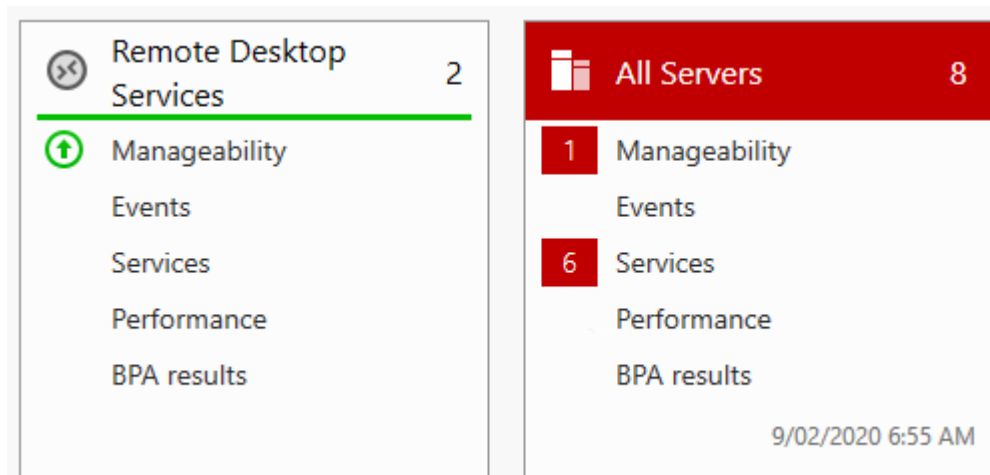
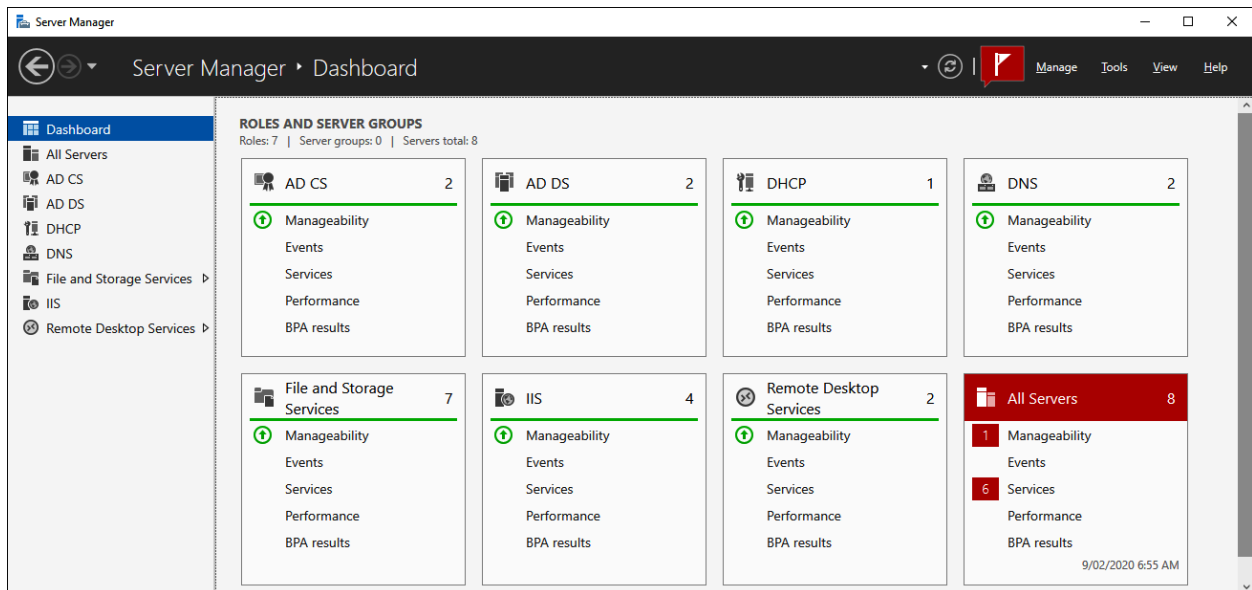
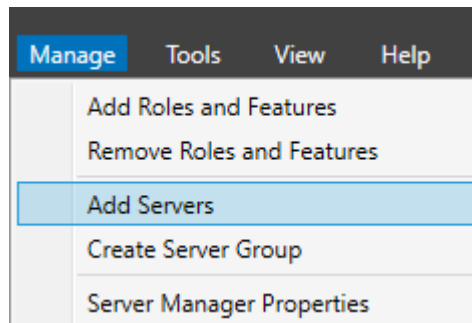
Administrator: Windows PowerShell

```

COMPUTER SETTINGS
-----
CN=RDS01,OU=RDS,OU=Servers,DC=ad,DC=cookbook,DC=packt,DC=com
Last time Group Policy was applied: 2/3/2020 at 12:39:14 AM
Group Policy was applied from:      DC02.ad.cookbook.packt.com
Group Policy slow link threshold:   500 kbps
Domain Name:                        COOKBOOK
Domain Type:                         Windows 2008 or later

Applied Group Policy Objects
-----
  Enable GPU processing
  Default Domain Policy
  Certificate Autoenrollment Policy
  
```

# Chapter 8: Monitoring and Backup



6 Services

Hide Alert Criteria

Start types:  Service status:   
 Services:  Servers:

Server Name	Display Name	Service Name	Status	Start Type
CA02	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)
DC01	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)
DC02	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)
RDS01	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)
RDS02	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)
WEB02	Downloaded Maps Manager	MapsBroker	Stopped	Automatic (Delayed Start)

Start Services

Stop Services

Restart Services

Pause Services

Resume Services

Copy

Server Manager

Server Manager ▸ AD DS Manage Tools View Help

- Dashboard
- All Servers
- AD CS
- AD DS
- DHCP
- DNS
- File and Storage Services ▸
- IIS
- Remote Desktop Services ▸

**SERVICES**  
All servers | 2 total

Filter

Server Name	IPv4 Address	Manageability	Last Update	Windows Activation
DC01	172.16.97.2	Online - Performance counters not started	9/02/2020 6:55:59 AM	00431-10000-00000-AA503 (Activated)
DC02	172.16.97.3	Online - Performance counters not started	9/02/2020 6:55:59 AM	00431-10000-00000-AA135 (Activated)

**EVENTS**  
All events | 5 total

Filter

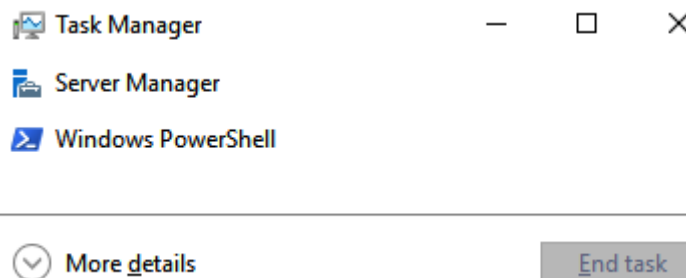
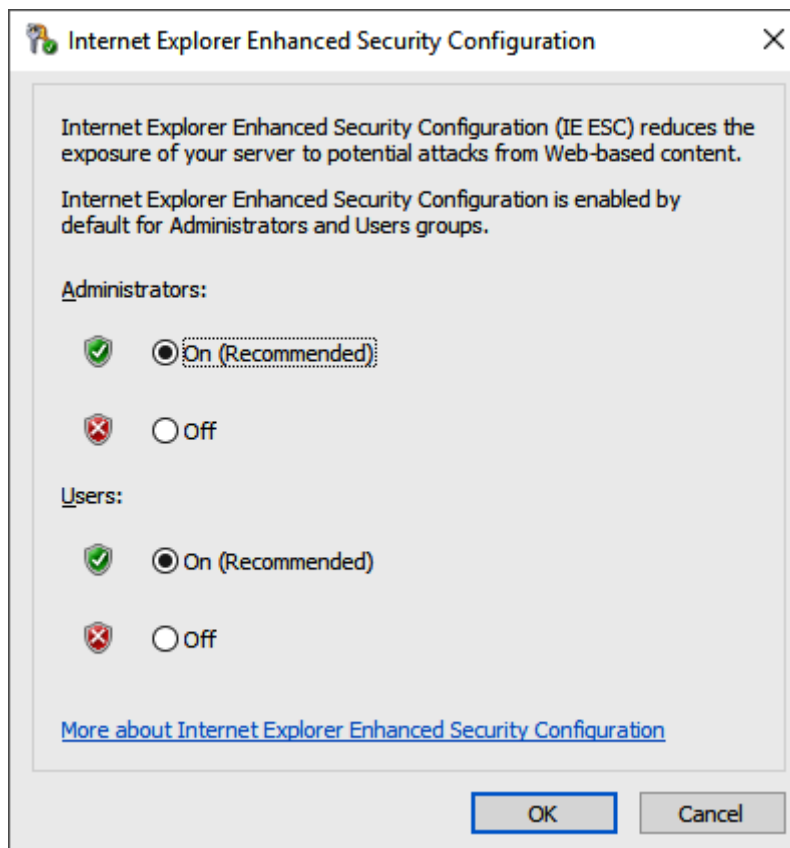
Server Name	ID	Severity	Source	Log	Date and Time
-------------	----	----------	--------	-----	---------------

## EVENTS

All events | 5 total

TASKS ▾

Server Name	ID	Severity	Source	Log	Date and Time
DC01	2089	Warning	Microsoft-Windows-ActiveDirectory_DomainService	Directory Service	8/02/2020 11:27:30 PM
DC01	2089	Warning	Microsoft-Windows-ActiveDirectory_DomainService	Directory Service	8/02/2020 11:27:30 PM
DC01	2089	Warning	Microsoft-Windows-ActiveDirectory_DomainService	Directory Service	8/02/2020 11:27:30 PM
DC01	2089	Warning	Microsoft-Windows-ActiveDirectory_DomainService	Directory Service	8/02/2020 11:27:30 PM
DC01	2089	Warning	Microsoft-Windows-ActiveDirectory_DomainService	Directory Service	8/02/2020 11:27:30 PM



Task Manager

File Options View

Processes Performance Users Details Services

Name	CPU	Memory
> SQL Server Windows NT - 64 Bit	2.7%	1,406,380.5 MB
> scollector	0.1%	397.2 MB
> Internet Server NT Service	0%	313.6 MB
> signalfx-agent	0%	253.9 MB
> Service Host: Local System (18)	0%	242.7 MB
> Local Security Authority Proces...	0%	198.8 MB
> Antimalware Service Executable	0.1%	151.6 MB
WMI Provider Host	0%	135.5 MB
> Service Host: Local Service (Net...	0.2%	72.1 MB

^ Fewer details End task

Task Manager

File Options View

Processes Performance Users Details Services

User	Status	20% CPU	78% Memory
mhenderson (25)		20.4%	241.7 MB
Administrator: Windows P...		0%	19.9 MB
Client Server Runtime Proc...		0%	1.4 MB
COM Surrogate		0%	2.0 MB
COM Surrogate		0%	1.6 MB
Console Window Host		0%	3.4 MB
CTF Loader		0%	4.5 MB
Desktop Window Manager		1.0%	30.4 MB
Host Process for Windows ...		0%	2.3 MB
RDP Clipboard Monitor		0%	5.6 MB
Runtime Broker		0%	1.9 MB
Runtime Broker		0%	2.0 MB

Fewer details Disconnect

Task Manager

File Options View

Processes Performance Users Details Services

CPU 5% 3.07 GHz

Memory 1.4/1.5 TB (93%)

Ethernet Not connected

Ethernet Not connected

Ethernet S: 199 Mbps R: 33.1 Mbps

### CPU

Intel(R) Xeon(R) CPU E5-2697A v4 @ 2.60GHz

Logical processors

6%	2%	5%	1%	33%	5%	13%	2%	4%	1%	12%	1%	8%	0%	5%	3%
3%	0%	3%	3%	3%	2%	9%	3%	73%	0%	1%	3%	1%	5%	2%	4%
1%	0%	3%	8%	1%	1%	6%	0%	2%	0%	1%	0%	0%	1%	6%	1%
13%	0%	3%	3%	9%	3%	1%	0%	1%	0%	0%	2%	6%	1%	1%	1%

Utilization: 5% Speed: 3.07 GHz

Maximum speed: 2.60 GHz  
Sockets: 2  
Cores: 32  
Logical processors: 64

Processes: 72 Threads: 3422 Handles: 88892

Up time: 86:11:02:56

Virtualization: Enabled  
L1 cache: 2.0 MB  
L2 cache: 8.0 MB  
L3 cache: 80.0 MB

Change graph to >  
Show kernel times  
Graph summary view  
View >  
Copy Ctrl+C

Fewer details | Open Resource Monitor

Resource Monitor

File Monitor Help

Overview CPU Memory Disk Network

### CPU

6% CPU Usage 100% Maximum Frequency

Image	PID	Descrip...	Status	Threads	CPU	Averag...
<input type="checkbox"/> Image						
<input type="checkbox"/> ShellExperienceHost.exe	19984	Windo...	Suspe...	92	0	0.00
<input type="checkbox"/> SearchUI.exe	16884	Search ...	Suspe...	13	0	0.00
<input type="checkbox"/> sqlservr.exe	5292	SQL Se...	Runni...	760	4	3.83
<input type="checkbox"/> perfmon.exe	4200	Resour...	Runni...	20	0	0.31
<input type="checkbox"/> System Interrupts	-	Deferr...	Runni...	-	0	0.25
<input type="checkbox"/> signalfx-agent.exe	19764	signalf...	Runni...	131	0	0.14
<input type="checkbox"/> svchost.exe (LocalServiceNet...	1672	Host Pr...	Runni...	18	0	0.12
<input type="checkbox"/> LogStasher.exe	11780	Log St...	Runni...	20	0	0.07
<input type="checkbox"/> svchost.exe (netsvcs)	1512	Host Pr...	Runni...	83	0	0.06

### Disk

11 MB/sec Disk I/O 10% Highest Active Time

### Network

268 Mbps Network I/O 1% Network Utilization

### Memory

0 Hard Faults/sec 91% Used Physical Memory

Views

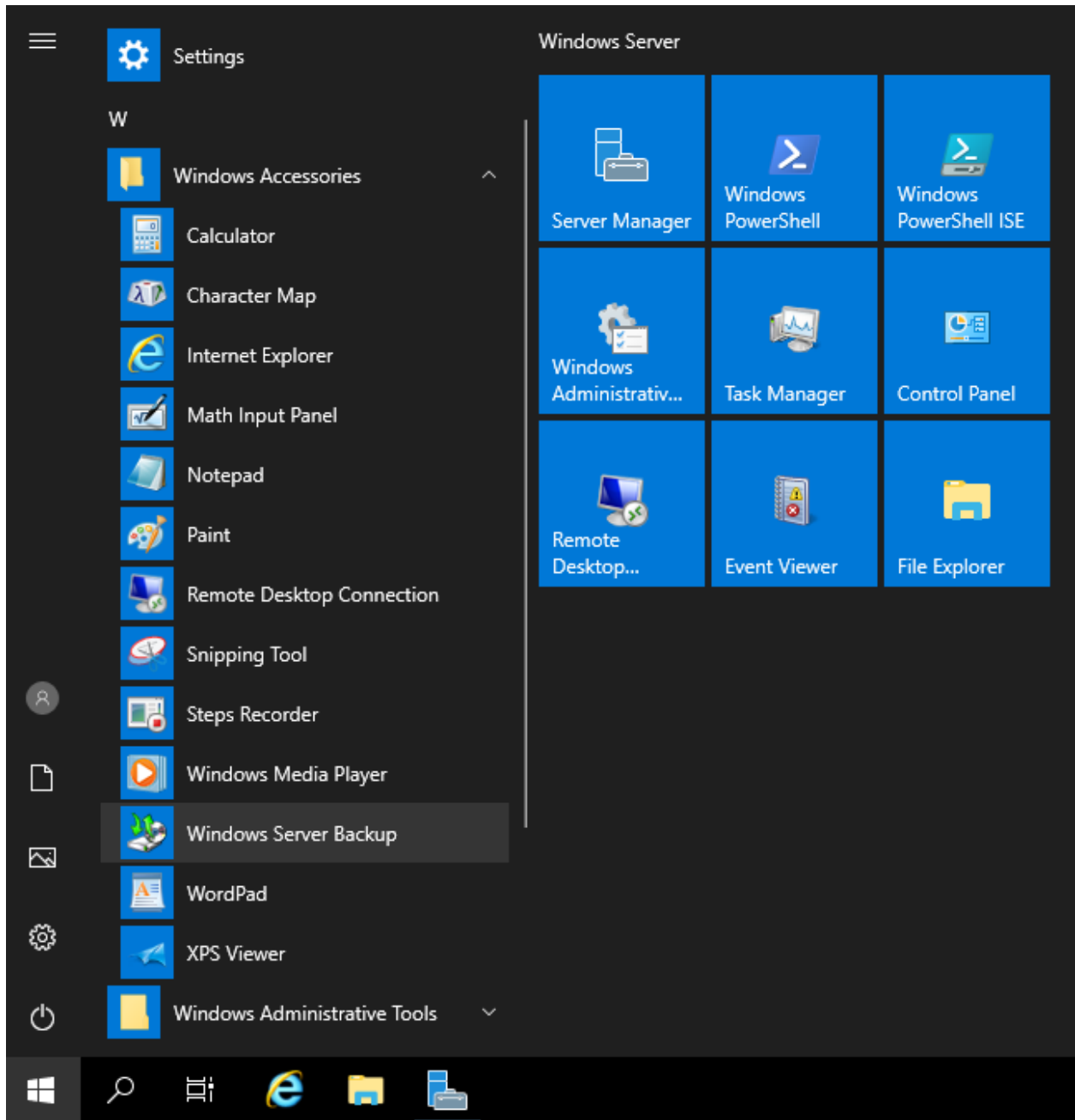
CPU 100%

60 Seconds 0%

Disk 100 MB/sec

Network 1 Gbps





Backup Schedule Wizard

## Select Backup Configuration

Getting Started

**Select Backup Configurat...**

Specify Backup Time

Specify Destination Type

Select Destination Disk

Confirmation

Summary

What type of configuration do you want to schedule?

Full server (recommended)  
I want to back up all my server data, applications and system state.  
Backup size: 14.97 GB

Custom  
I want to choose custom volumes, files for backup.

Backup Schedule Wizard

## Specify Backup Time

Getting Started

Select Backup Configurat...

**Specify Backup Time**

Specify Destination Type

Select Destination Disk

Confirmation

Summary

How often and when do you want to run backups?

Once a day  
Select time of day: 2:00 AM

More than once a day  
Click an available time and then click Add to add it to the backup schedule.

Available time:	Scheduled time:
12:00 AM	9:00 PM
12:30 AM	

Backup Schedule Wizard

## Select Destination Disk

Getting Started  
 Select Backup Configurat...  
 Specify Backup Time  
 Specify Destination Type  
**Select Destination Disk**  
 Confirmation  
 Summary

Select one or more disks to store your backups. You can use multiple backup disks if you want to store disks offsite.

Available disks:

Disk	Name	Size	Used Space	Volumes in D...
<input checked="" type="checkbox"/> 1	Microsoft Virtual Disk	127.00 GB	0 KB	

**Actions**

Local Backup ▲

- Backup Schedule...
- Backup Once...
- Recover...

Recovery Wizard

## Select Backup Date

Getting Started  
**Select Backup Date**  
 Select Recovery Type  
 Select Items to Recover  
 Specify Recovery Options  
 Confirmation  
 Recovery Progress

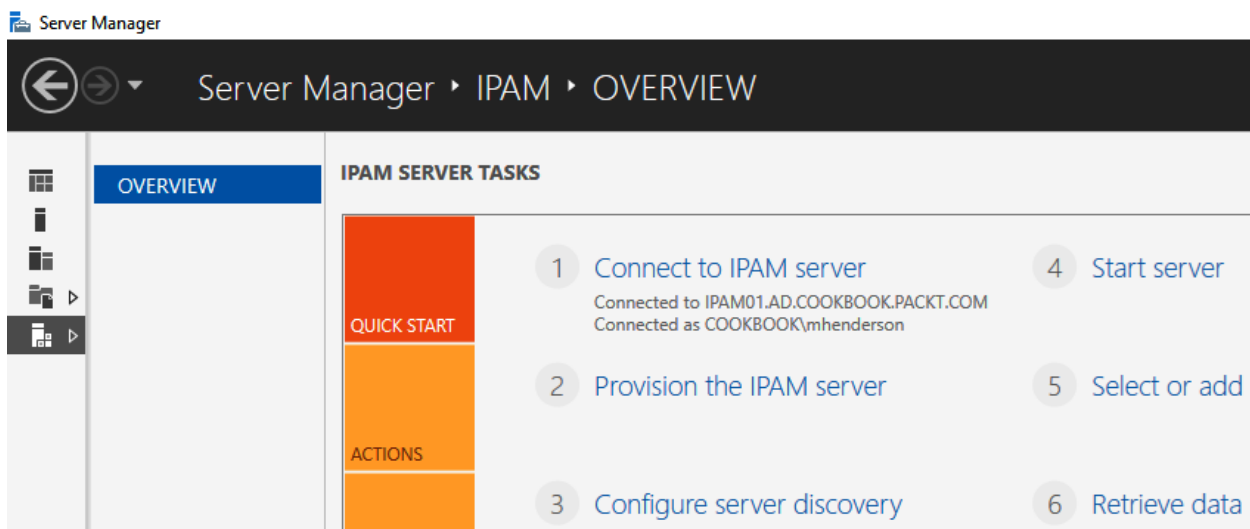
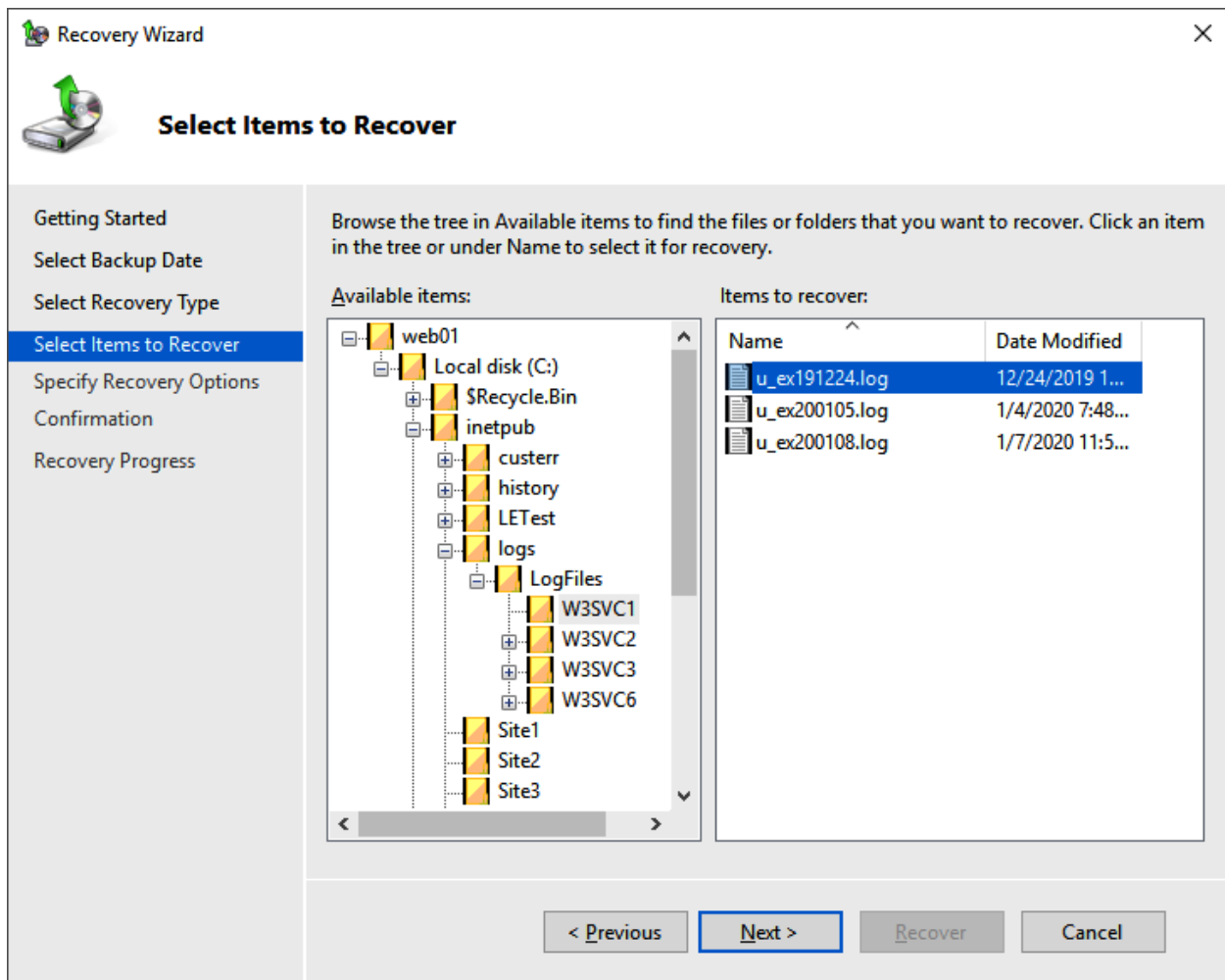
Oldest available backup: 2/16/2020 12:59 AM  
 Newest available backup: 2/16/2020 12:59 AM

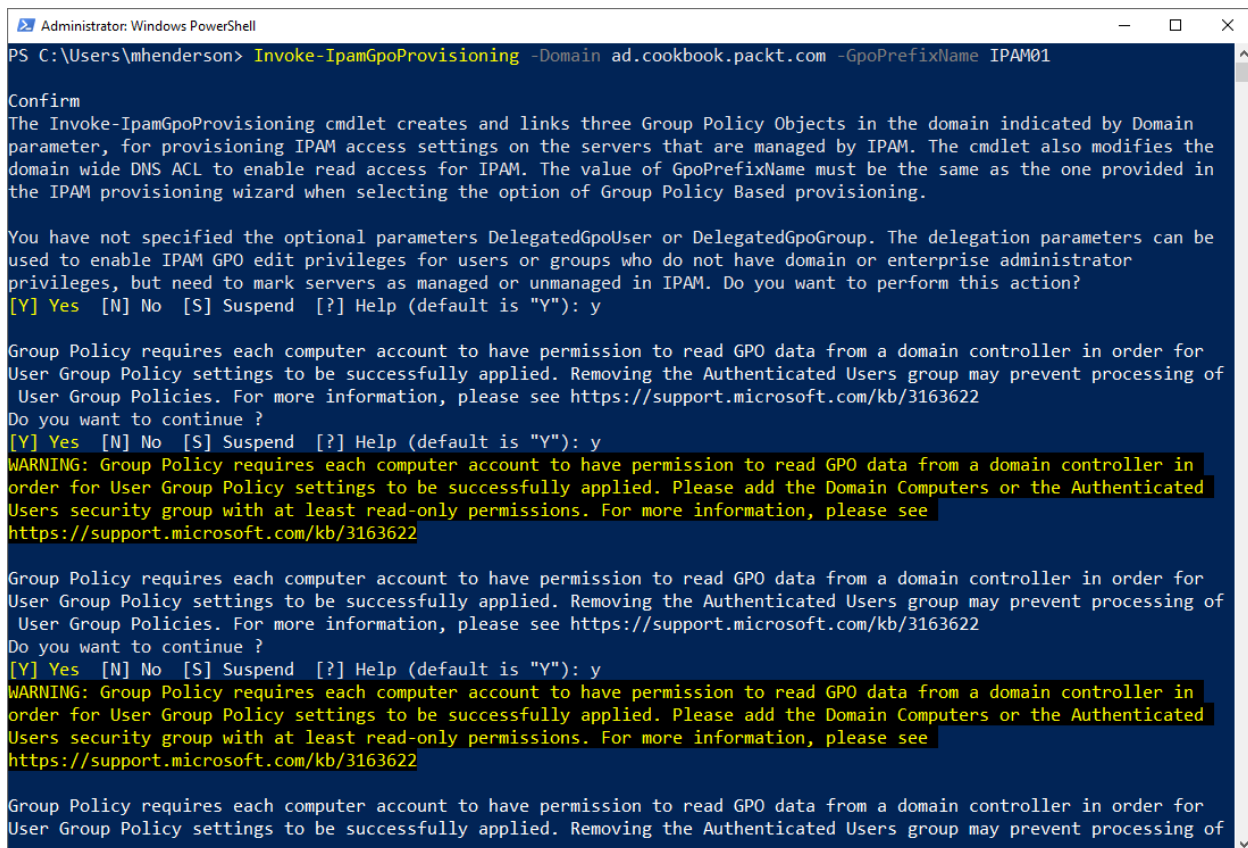
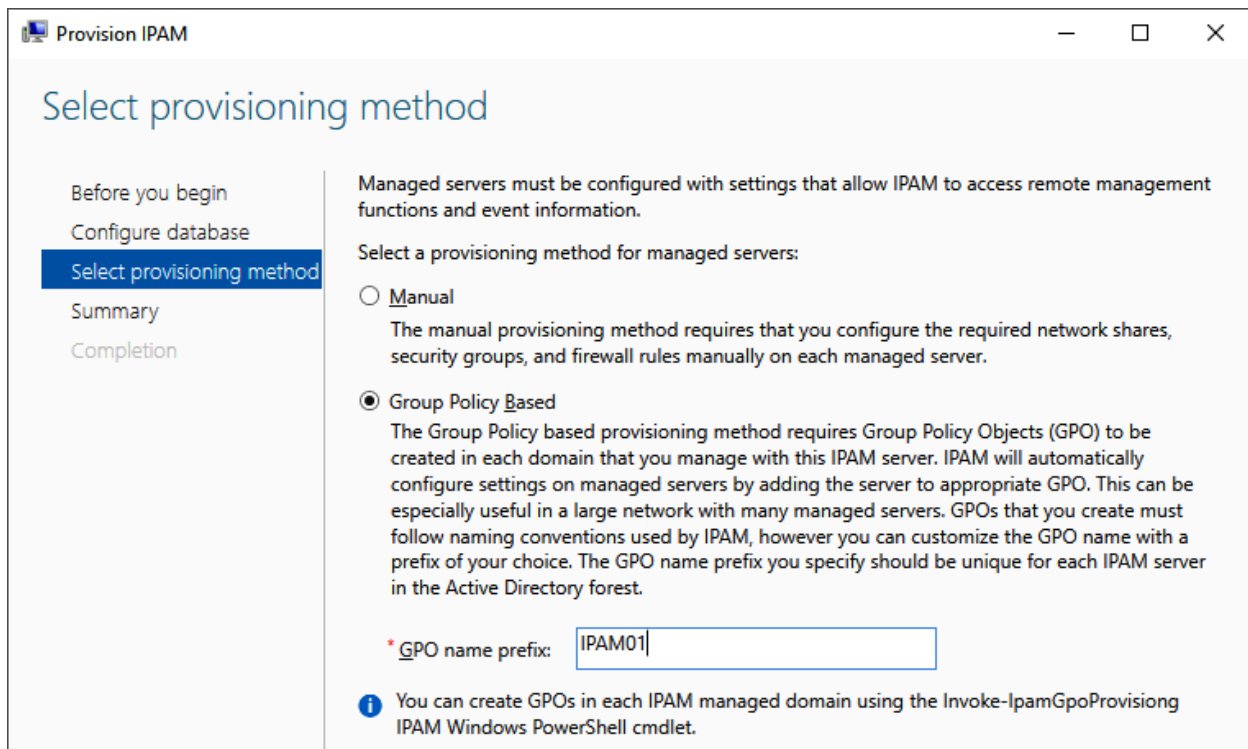
Available backups  
 Select the date of a backup to use for recovery. Backups are available for dates shown in bold.

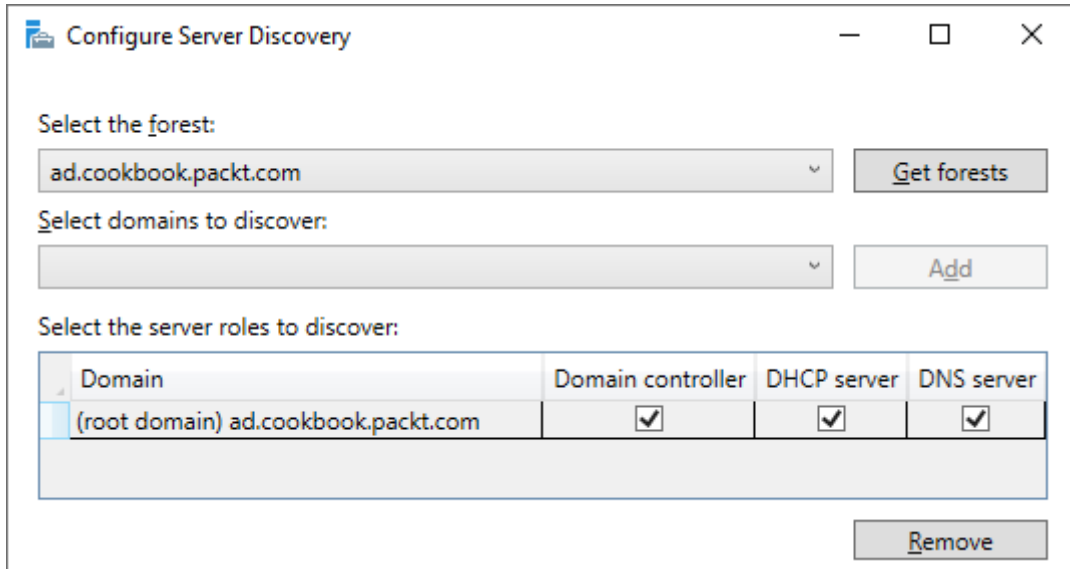
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
<b>16</b>	17	18	19	20	21	22
23	24	25	26	27	28	29

Backup date: 2/16/2020  
 Time: 12:59 AM  
 Location: FullBackup  
 Status: Available online  
 Recoverable items: [Local disk \(C:\), Re...](#)

< Previous   **Next >**   Recover   Cancel







Recommended Action	Manageability Status	IPAM Access Status	Server Name	DNS Suffix	Domain Name
Set Manageability Status Unspecified	Unspecified	Blocked	DC02	ad.cookbook.packt.com	ad.cookbook.packt.com
Set Manageability Status Unspecified	Unspecified	Blocked			d.cookbook.packt.com

- 
- 
- 
-

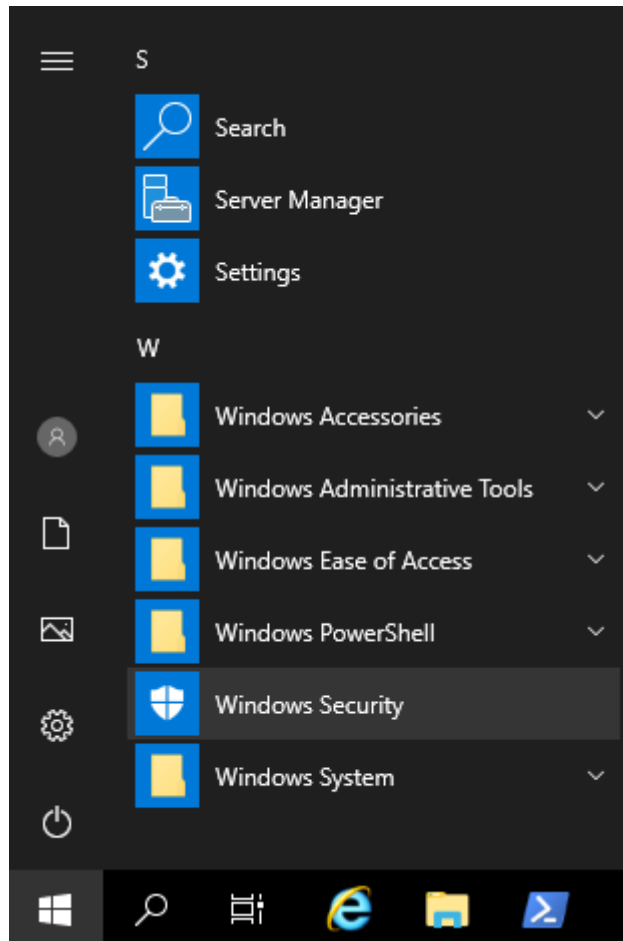
**Server Manager**

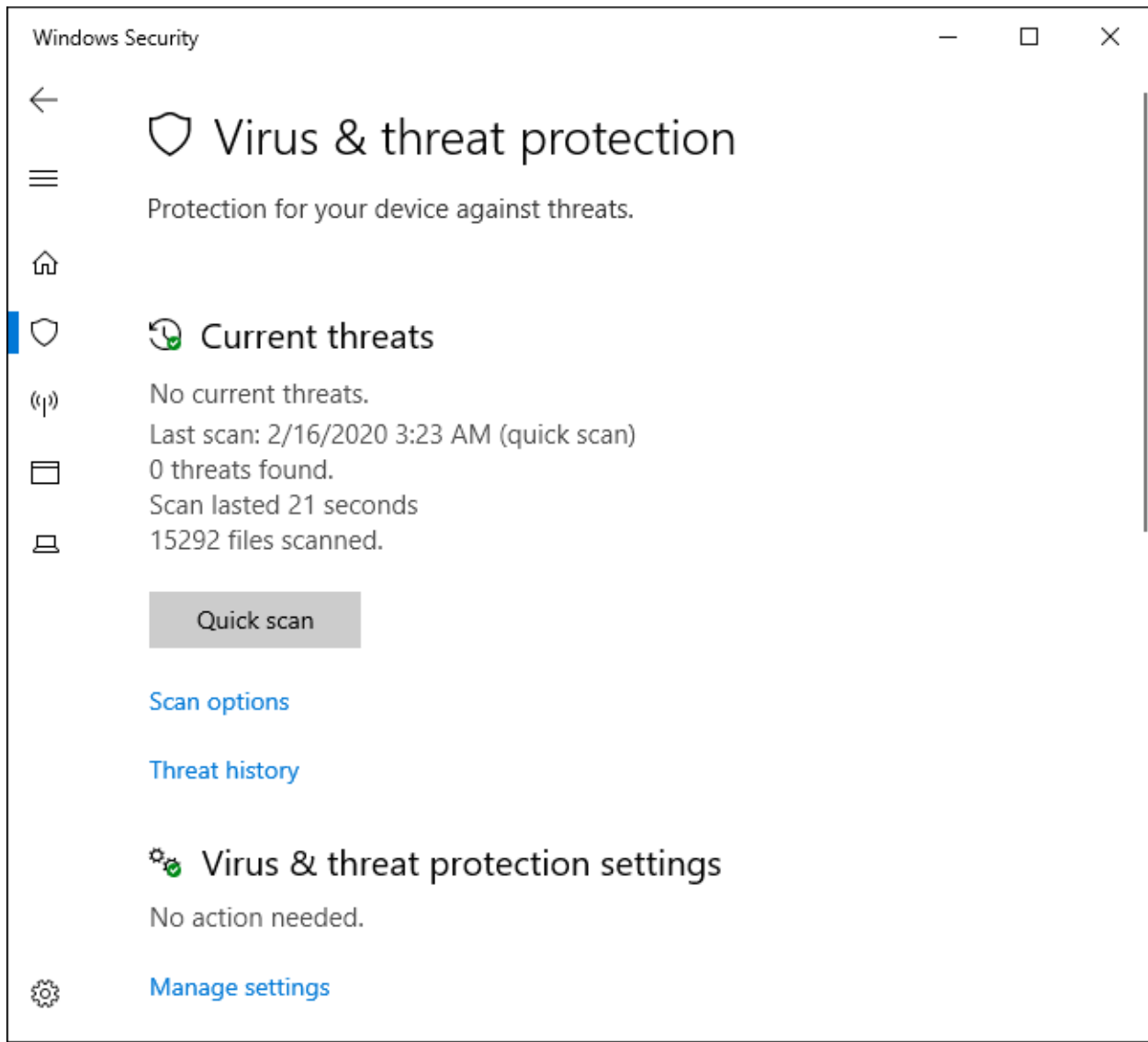
IPAM > IP ADDRESS SPACE > IP Address Range Groups > IPv4

IPv4 | 1 total

Current view: IP Address Ranges

Utilization	Overl...	Network	Start IP Address	End IP Address	Access Scope	Virtu...	Managed...	Service Instance	Assignme...	Percentag...	Assigne...	Utilized A
	No	172.16.97.0/24	172.16.97.50	172.16.97.250	\Global	No	MS DHCP	DC01.ad.cookboo...	Dynamic	3.48	201	7










## Protected folders



Windows system folders are protected by default. You can also add additional protected folders.



 Add a protected folder



Drive (C:)  
C:\inetpub



# Chapter 9: System Insights

## Settings

- User
  - Account
  - Personalization
  - Language / Region
  - Suggestions
- Gateway
  - Extensions**
  - Azure
- Development

## Extensions

We might have to restart the Windows Admin Center gateway after installing an extension, temporarily affecting availability for anyone else currently using this gateway.

Available extensions   **Installed extensions**   Feeds

33 items

Name ↑	Version	Created by	Status
System Insights	1.30.0	Microsoft	Update available (1.33...
Updates	1.94.0	Microsoft	Installed
Virtual machines and switches	1.218.0	Microsoft	Installed

The screenshot shows a web browser window displaying the Windows Admin Center interface. The address bar shows the URL: `https://localhost:6516/servermanager/connections/server/ca01.ad.cookbook.pa`. The page title is "ca01.ad.cookbook.packt.com". On the left, a "Tools" sidebar lists various system management tools, with "System Insights" highlighted. The main content area features the heading "System Insights" and a graphic of a server icon with bidirectional arrows and an upward-trending line graph. Below the graphic, a text block states: "System Insights introduces predictive analytics natively in Windows Server to help give you increased insight into the functioning of your server." A blue button labeled "Install" is positioned at the bottom right of the main content area. A link "Get an overview of System Insights" is also present.

Capabilities - System In: x +

https://localhost:6516/servermanager/connections/server/ca01.ad.cookbook.packt.com/tools/system-insights

Windows Admin Center Server Manager Microsoft

### ca01.ad.cookbook.packt.com

#### Tools

Search Tools

- Services
- Storage
- Storage Migration Service
- Storage Replica
- System Insights**
- Updates
- Settings

#### System Insights

Invoke More 4 items Search

Capability name ↑	State	Status	Status description	Last run
<a href="#">CPU capacity forecasting</a>	Enabled	Ok	CPU usage is forecasted to remain within the ...	21/02/2020, 11:00:02 am
<a href="#">Networking capacity for...</a>	Enabled	Ok	Network usage is forecasted to remain within...	21/02/2020, 11:00:02 am
<a href="#">Total storage consumpti...</a>	Enabled	Ok	Disk usage is forecasted to remain within the ...	21/02/2020, 11:00:02 am
<a href="#">Volume consumption for...</a>	Enabled	Ok	Volume usage is forecasted to remain within ...	21/02/2020, 11:00:02 am

Capability - System Insk x +

https://localhost:6516/servermanager/connections/server/ca01.ad.cookbook.packt.com/tools/system-insights/capabilities/forecasting/CPU%20capacity%20forecasting

Windows Admin Center Server Manager Microsoft

### ca01.ad.cookbook.packt.com

#### System Insights > CPU capacity forecasting overview

Invoke Settings Disable

##### Overview

Status	Status description	Last run	Schedule
Ok	CPU usage is forecasted to remain within the available capacity.	21/02/2020, 11:00:02 am	Everyday

##### Forecast

CPU

##### History

Status	Status description	Last run ↑
Ok	CPU usage is forecasted to remain within the available capacity.	01/02/2020, 11:00:02 am
Ok	CPU usage is forecasted to remain within the available capacity.	02/02/2020, 11:00:01 am

## System Insights

Invoke Settings Enable Disable Add or remove capabilities (Preview)

Capability name ↑	State	Status	Status description
<a href="#">CPU capacity forecasting</a>	Enabled	Ok	CPU usage is forecas

Capability - System Insights | <https://localhost:6516/servermanager/connections/server/ca01.ad.cookbook.packt.com/tools/system-insights/insights-settings>

Windows Admin Center Server Manager

### ca01.ad.cookbook.packt.com

Tools < System Insights > **Add or remove capabilities** PREVIEW Feedback

[+ Install](#) [x Remove](#) 5 items

Capability name ↑	Status	Installed version	Created by
CPU capacity forecasting (Default)	Installed	6.2.18362.1	Microsoft Corporation
Networking capacity forecasting (Default)	Installed	6.2.18362.1	Microsoft Corporation
Physical disk anomaly detection	Not Installed	-	Microsoft

#### Capability details - Physical disk anomaly detection

Description  
Physical Disk Anomaly Detection

ID  
Microsoft.WindowsServer.SystemInsights.Capabilities.AnomalyDetection

Version  
1.0.52

Capability - System Insights | <https://localhost:6516/servermanager/connections/server/ca01.ad.cookbook.packt.com/tools/system-insights/c>

Windows Admin Center Server Manager

### ca01.ad.cookbook.packt.com

Tools < System Insights > **Physical disk anomaly detection overview** PREVIEW Feedback

[Invoke](#) [Settings](#) [Disable](#)

#### Overview

We show warnings for disks that behave differently — but not necessarily worse — than they normally do. This can be useful as an additional signal to understand workloads on your system.

Status	Status description
<span>None</span>	-

Last run	Schedule
Never	Everyday

#### Disk inventory

Windows Admin Center Server Manager

### ca01.ad.cookbook.packt.com

Tools < System Insights > **Networking capacity forecasting overview**

[Invoke](#) [Settings](#) [Disable](#)

ca01.ad.cookbook.packt.com

Tools

Search Tools

- Events
- Files
- Firewall
- Installed apps
- Local users & groups
- Networks
- PacketMon
- PowerShell
- Processes
- Registry
- Remote Desktop
- Roles & features
- Scheduled tasks
- Services
- Storage
- Storage Migration Service

Networking capacity forecasting settings

Schedule

Schedule

Actions

Scheduled predictions

Enabled

Schedule type

Daily

Daily schedule type

Days of week

Days

- Select All
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

Time of day

3:00 AM

Save Discard Close



```
Windows PowerShell
[ca01]: PS C:\Users\mhenderson\Documents> $Insight = Get-Content (Get-InsightsCapabilityResult -Name "Volume consumption forecasting" -History | Sort-Object LastRun -Descending | Select-Object -First 1).Output | ConvertFrom-Json
[ca01]: PS C:\Users\mhenderson\Documents> $Insight

Status                : Ok
StatusDescription     : Volume usage is forecasted to remain within the available capacity.
ForecastingResults    : @{Identifier=0c1d8bae-1864-4e09-a918-669371355c9d; IdentifierFriendlyName=Recovery; Status=Ok; StatusDescription=Volume usage is forecasted to remain within the available capacity.; Limit=554692608; ObservationSeries=System.Object[]; Prediction=System.Object[]},
                       @{{Identifier=7ceac3fa-68a8-4ff3-8a1b-9df381ed49cd; IdentifierFriendlyName=(C:); Status=Ok; StatusDescription=Volume usage is forecasted to remain within the available capacity.; Limit=135687827456; ObservationSeries=System.Object[]; Prediction=System.Object[]},
                       @{{Identifier=da235053-2790-40d5-ada0-7f91a170fb8e; IdentifierFriendlyName=da235053-2790-40d5-ada0-7f91a170fb8e; Status=Ok; StatusDescription=Volume usage is forecasted to remain within the available capacity.; Limit=99614720; ObservationSeries=System.Object[]; Prediction=System.Object[]}}
AnomalyDetectionResults :
GenericResult           :
```

```
Windows PowerShell
[ca01]: PS C:\Users\mhenderson\Documents> $Insight.ForecastingResults[1]

Identifier                : 7ceac3fa-68a8-4ff3-8a1b-9df381ed49cd
IdentifierFriendlyName    : (C:)
Status                   : Ok
StatusDescription         : Volume usage is forecasted to remain within the available capacity.
Limit                    : 135687827456
ObservationSeries         : @{DateTime=1/11/2019 12:00:00 AM; Values=System.Object[]}, @{{DateTime=2/11/2019 12:00:00 AM; Values=System.Object[]},
@{DateTime=3/11/2019 12:00:00 AM; Values=System.Object[]},
@{DateTime=4/11/2019 12:00:00 AM; Values=System.Object[]}...}
Prediction                : @{{DateTime=28/01/2020 12:00:00 AM; Values=System.Object[]}, @{{DateTime=29/01/2020 12:00:00 AM; Values=System.Object[]},
@{DateTime=30/01/2020 12:00:00 AM; Values=System.Object[]},
@{DateTime=31/01/2020 12:00:00 AM; Values=System.Object[]}...}
```

```
Windows PowerShell
PS C:\Users\mhenderson> $Servers = @("core01", "core02")
PS C:\Users\mhenderson> Invoke-Command -ComputerName $Servers -ScriptBlock { Get-Host }

PSComputerName : core01
RunspaceId     : d1160a13-e362-4ed1-995c-1b0482d1e367
Name           : ServerRemoteHost
Version        : 1.0.0.0
InstanceId     : 37d2e391-9000-4053-ba7a-f5174c7b20de
UI             : System.Management.Automation.Internal.Host.InternalHostUserInterface
CurrentCulture : en-AU
CurrentUICulture : en-US
PrivateData    :
DebuggerEnabled : True
IsRunspacePushed : False
Runspace       : System.Management.Automation.Runspace.LocalRunspace

PSComputerName : core02
RunspaceId     : c7ecfc31-cac2-4ec7-ab71-591b753b6746
Name           : ServerRemoteHost
Version        : 1.0.0.0
InstanceId     : 5b8d650b-6ebb-4f81-9928-5c29ddd0fef9
UI             : System.Management.Automation.Internal.Host.InternalHostUserInterface
CurrentCulture : en-AU
CurrentUICulture : en-US
PrivateData    :
DebuggerEnabled : True
IsRunspacePushed : False
Runspace       : System.Management.Automation.Runspace.LocalRunspace
```

```
Windows PowerShell
PS C:\Users\mhenderson> $InsightsData = Invoke-Command -ComputerName $Servers -ScriptBlock $InsightsScript
PS C:\Users\mhenderson> $InsightsData

Status : Ok
StatusDescription : Disk usage is forecasted to remain within the available capacity.
ForecastingResults : @{Identifier=TotalStorage; IdentifierFriendlyName=TotalStorage; Status=Ok;
                    StatusDescription=Disk usage is forecasted to remain within the available capacity.;
                    Limit=136365211648; ObservationSeries=System.Collections.ArrayList;
                    Prediction=System.Collections.ArrayList}}
AnomalyDetectionResults :
GenericResult :
PSComputerName : core01
RunspaceId     : 409aa464-1793-4440-82a6-065e7436dd90

Status : Ok
StatusDescription : Disk usage is forecasted to remain within the available capacity.
ForecastingResults : @{Identifier=TotalStorage; IdentifierFriendlyName=TotalStorage; Status=Ok;
                    StatusDescription=Disk usage is forecasted to remain within the available capacity.;
                    Limit=136365211648; ObservationSeries=System.Collections.ArrayList;
                    Prediction=System.Collections.ArrayList}}
AnomalyDetectionResults :
GenericResult :
PSComputerName : core02
RunspaceId     : 72e9855a-2f7a-421d-b4e6-c69cbc526acc
```



```
Windows PowerShell
PS C:\Users\mhenderson> $GroupedData = $InsightsData.ForecastingResults.Prediction | Where-Object { $_.DateTime -ge $StartDate -and $_.DateTime -le $EndDate } | Group-Object DateTime
PS C:\Users\mhenderson> $GroupedData
```

Count	Name	Group
2	6/03/2020 12:00:00 AM	{@{DateTime=6/03/2020 12:00:00 AM; Values=System.Collections.ArrayList}, @{}...
2	7/03/2020 12:00:00 AM	{@{DateTime=7/03/2020 12:00:00 AM; Values=System.Collections.ArrayList}, @{}...
2	8/03/2020 12:00:00 AM	{@{DateTime=8/03/2020 12:00:00 AM; Values=System.Collections.ArrayList}, @{}...

```
Windows PowerShell
PS C:\Users\mhenderson> $GroupedData | ForEach-Object {
>>
>> $Totals = $_.Group.Values | Measure-Object -Sum
>> Write-Host "$($_.Name) $($Totals.Sum/1Gb)Gb"
>>
>> }
6/03/2020 12:00:00 AM 14.2232435098021Gb
7/03/2020 12:00:00 AM 14.2607292285324Gb
8/03/2020 12:00:00 AM 14.2995653985459Gb
```

# Chapter 10: Group Policy

New GPO ✕

Name:

Source Starter GPO:

- Group Policy Objects
  - Certificate Autoenrollment Policy
  - Default Domain Controllers Policy
  - Default Domain Policy
  - DirectAccess Client Settings
  - DirectAccess Server Settings
  - Enable GPU processing
  - IPAM01\_DC\_NPS
  - IPAM01\_DHCP
  - IPAM01\_DNS
  - Map Network Drives

**Security Filtering**

The settings in this GPO can only apply to the following groups, users, and computers:

Name
Authenticated Users

**Map Network Drives**

Scope

**Links**

Display links in this location:

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
< [Progress Bar] >			

**Security Filtering**

The settings in this GPO can only apply to the following groups, users, and computers:

Name
Sales Group (COOKBOOK\Sales Group)

ad.cookbook.packct.com

- Certificate Autoenrollment Policy
- Default Domain Policy
- DirectAccess Server Settings
- IPAM01\_DC\_NPS
- IPAM01\_DHCP
- IPAM01\_DNS
- Domain Controllers
- Office Computers
  - Enable GPU processing
  - Laptops
- Servers
- Staff
- Group Pol

Name
Certificate Autoenrollment ...
Default Domain Controller...
Default Domain Policy
DirectAccess Client Settings
DirectAccess Server Setti...
Enable GPU processing
IPAM01_DC_NPS
IPAM01_DHCP
IPAM01_DNS
Map Network Drives

Context Menu:

- Create a GPO in this domain, and Link it here...
- Link an Existing GPO...

Group Policy Management

File Action View Window Help

Group Policy Management

- Forest: ad.cookbook.packct.com
  - Domains
    - ad.cookbook.packct.com
      - Certificate Autoenrollment Policy
      - Default Domain Policy
      - DirectAccess Server Settings
      - IPAM01\_DC\_NPS
      - IPAM01\_DHCP
      - IPAM01\_DNS
      - Domain Controllers
      - Office Computers
        - Enable GPU processing
        - Laptops
      - Servers
      - Staff
      - Group Policy Objects
        - Certificate Autoenrollment Policy
        - Default Domain Controllers Policy
        - Default Domain Policy
        - DirectAccess Client Settings
        - DirectAccess Server Settings
        - Enable GPU processing
        - IPAM01\_DC\_NPS
        - IPAM01\_DHCP
        - IPAM01\_DNS
        - Map Network Drives

**Map Network Drives**

Scope Details Settings Delegation Status

**Links**

Display links in this location: ad.cookbook.packct.com

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
Laptops	No	Yes	ad.cookbook.packct.com/Office Computers/Laptops

**Security Filtering**

The settings in this GPO can only apply to the following groups, users, and computers:

Name

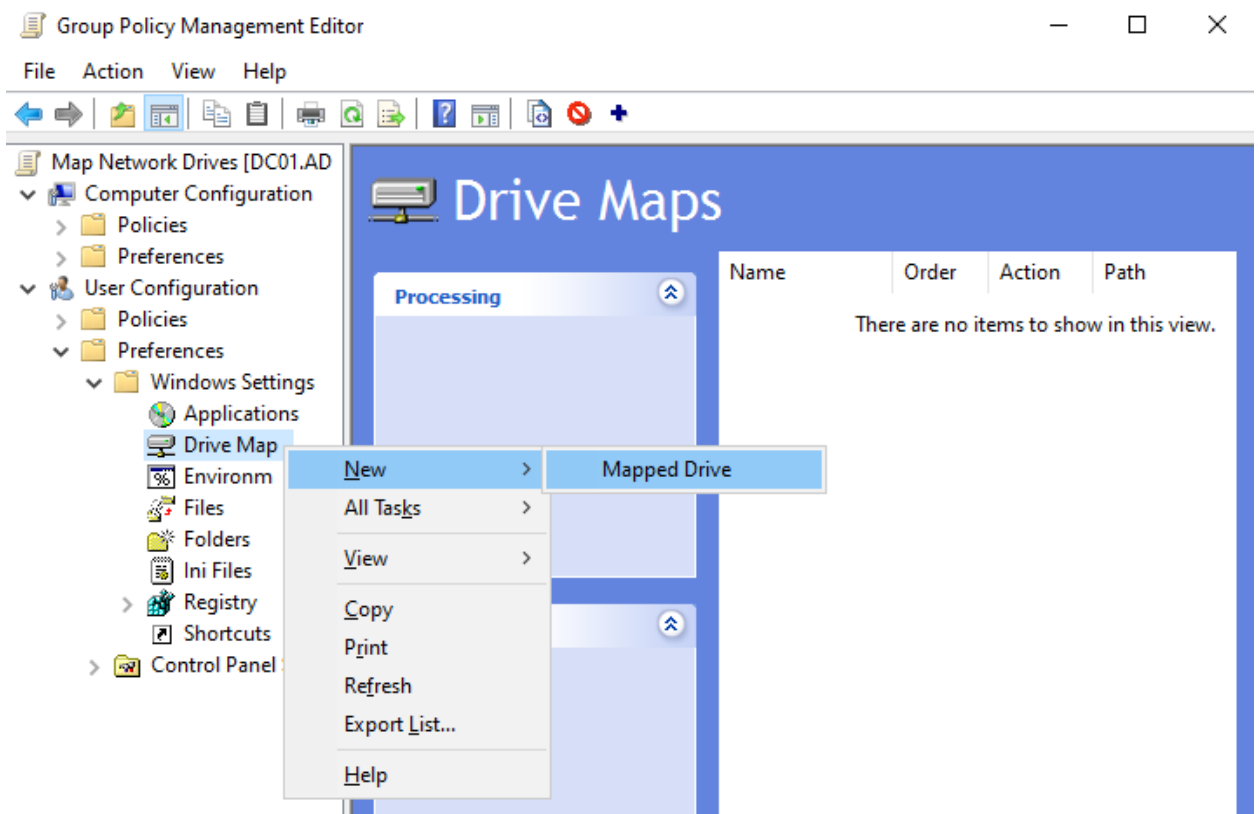
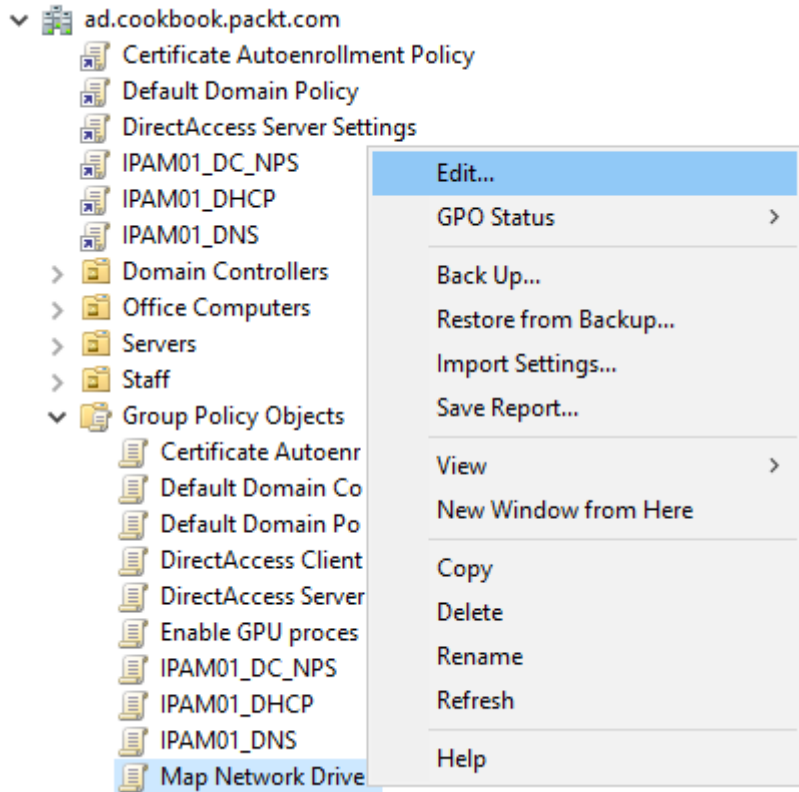
Sales Group (COOKBOOK\Sales Group)

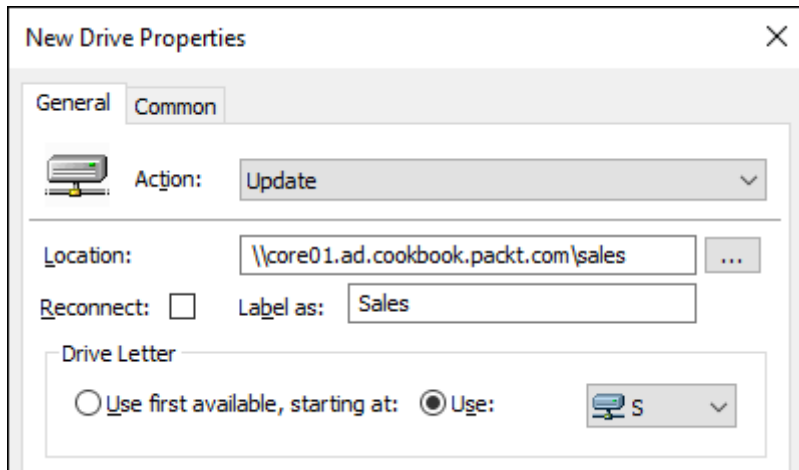
Add... Remove Properties

**WMI Filtering**

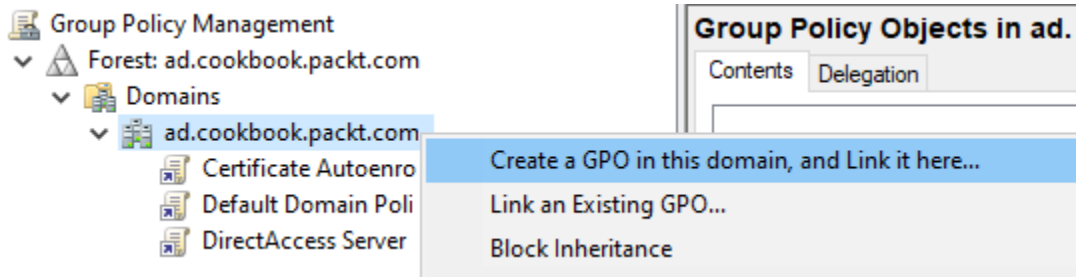
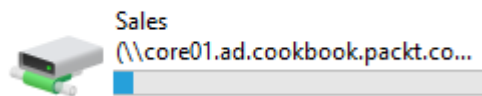
This GPO is linked to the following WMI filter:

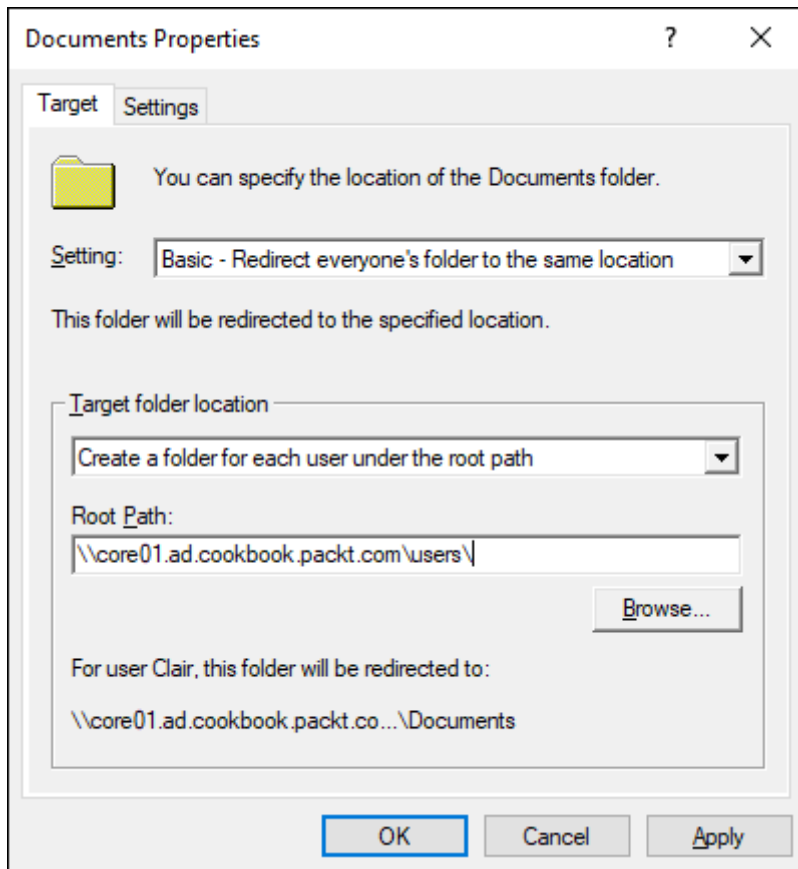
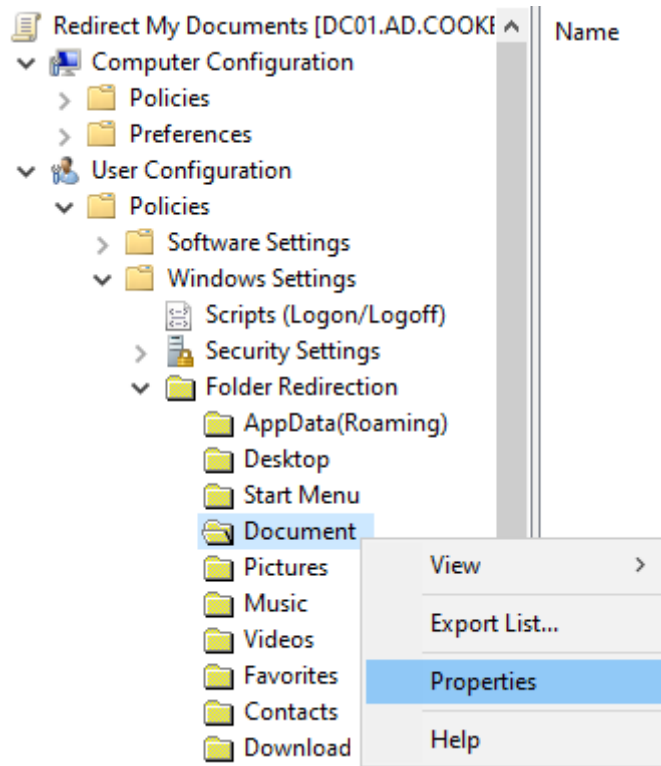
<none> Open

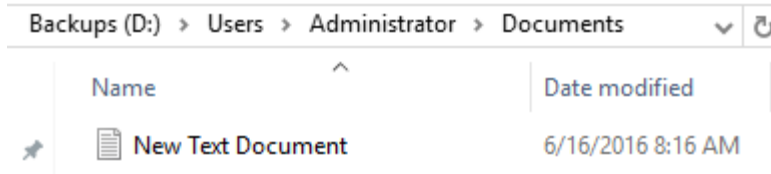




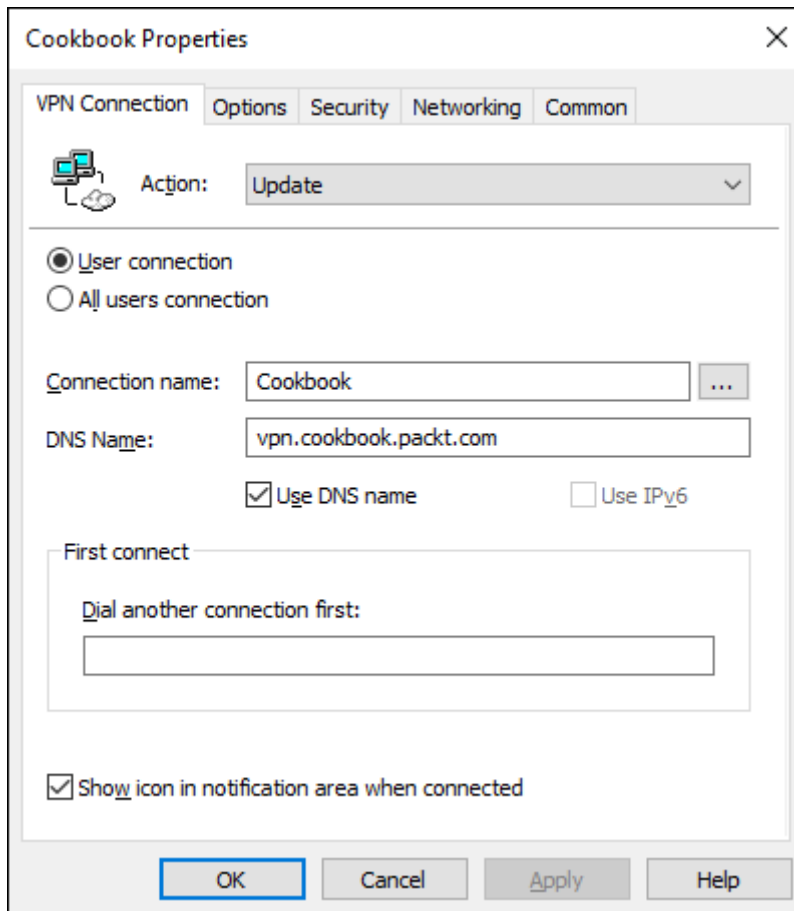
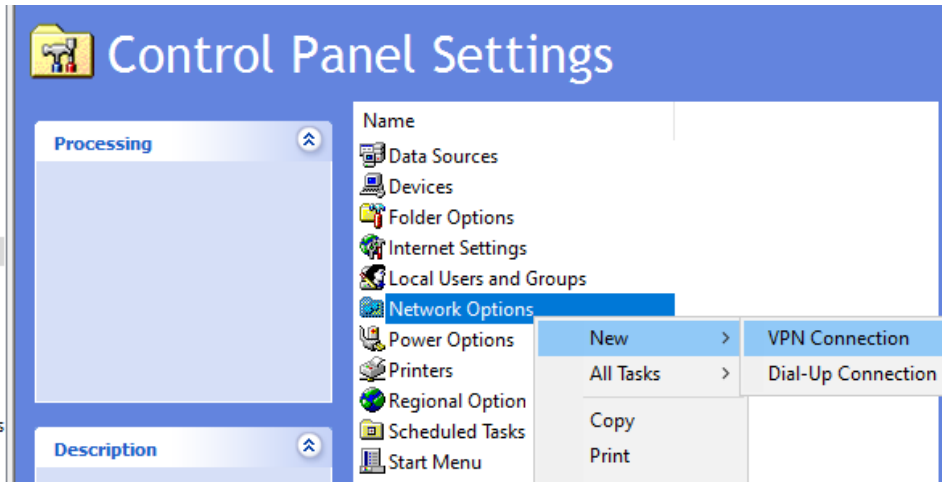
Network locations (1)

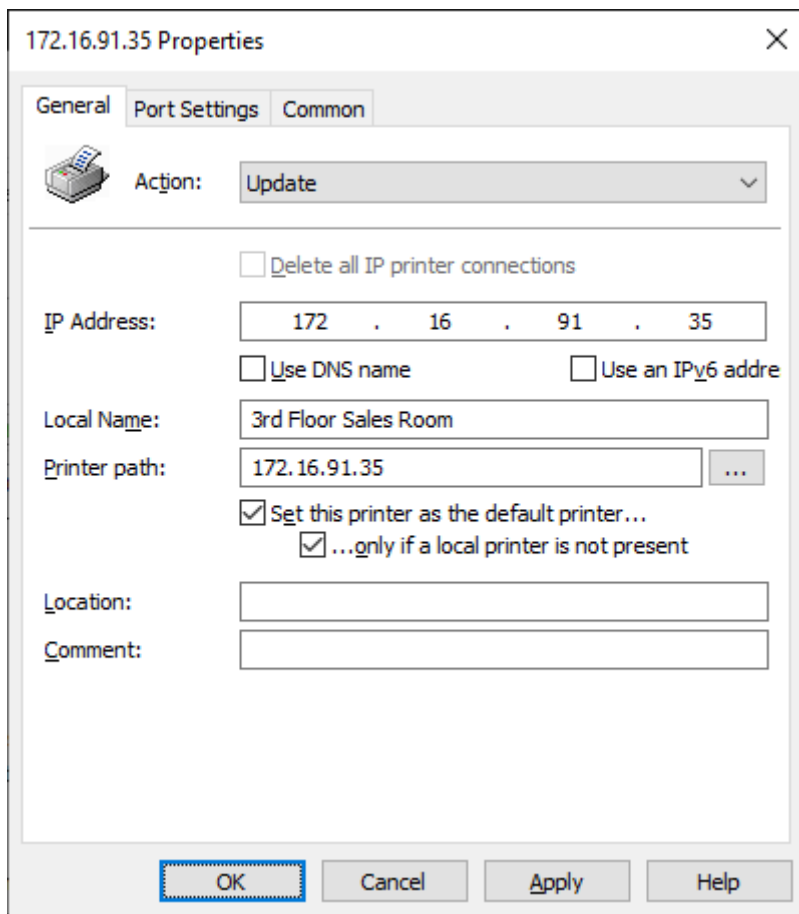
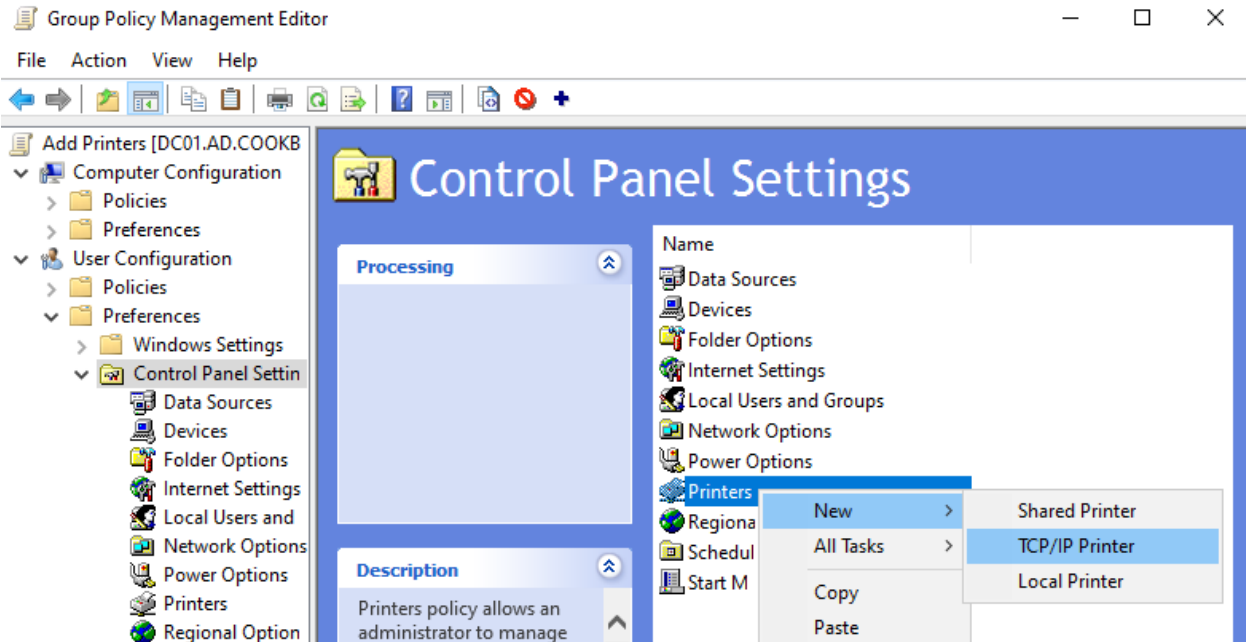




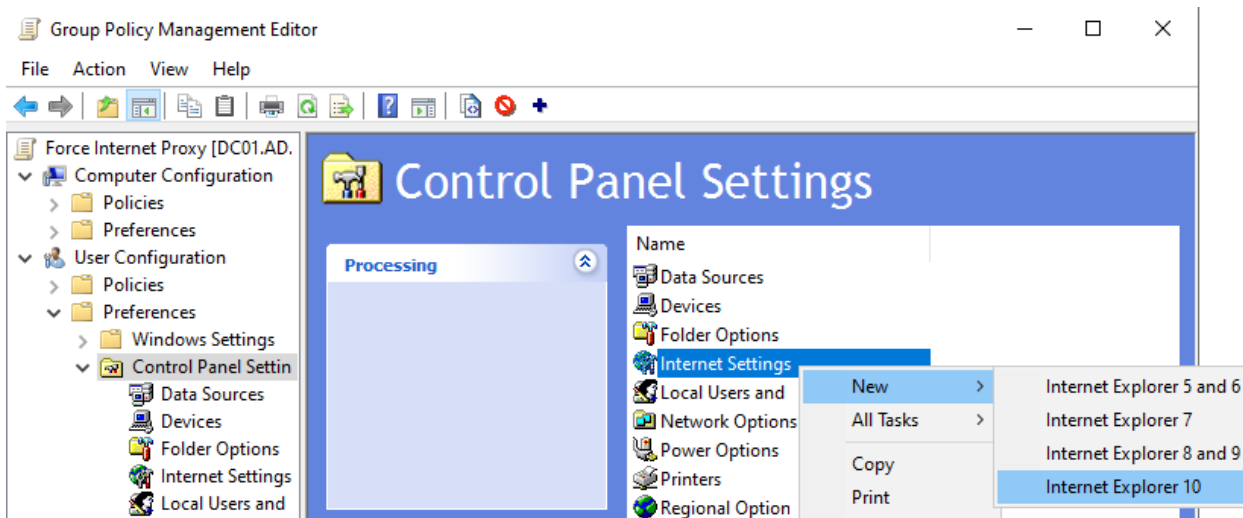


- Create VPN Profile [DC01.AD.C
- Computer Configuration
  - Policies
  - Preferences
- User Configuration
  - Policies
  - Preferences
    - Windows Settings
      - Control Panel Settings









### Local Area Network (LAN) Settings

Automatic configuration  
Automatic configuration may override manual settings. To ensure the use of manual settings, disable automatic configuration.

Automatically detect settings

Use automatic configuration script

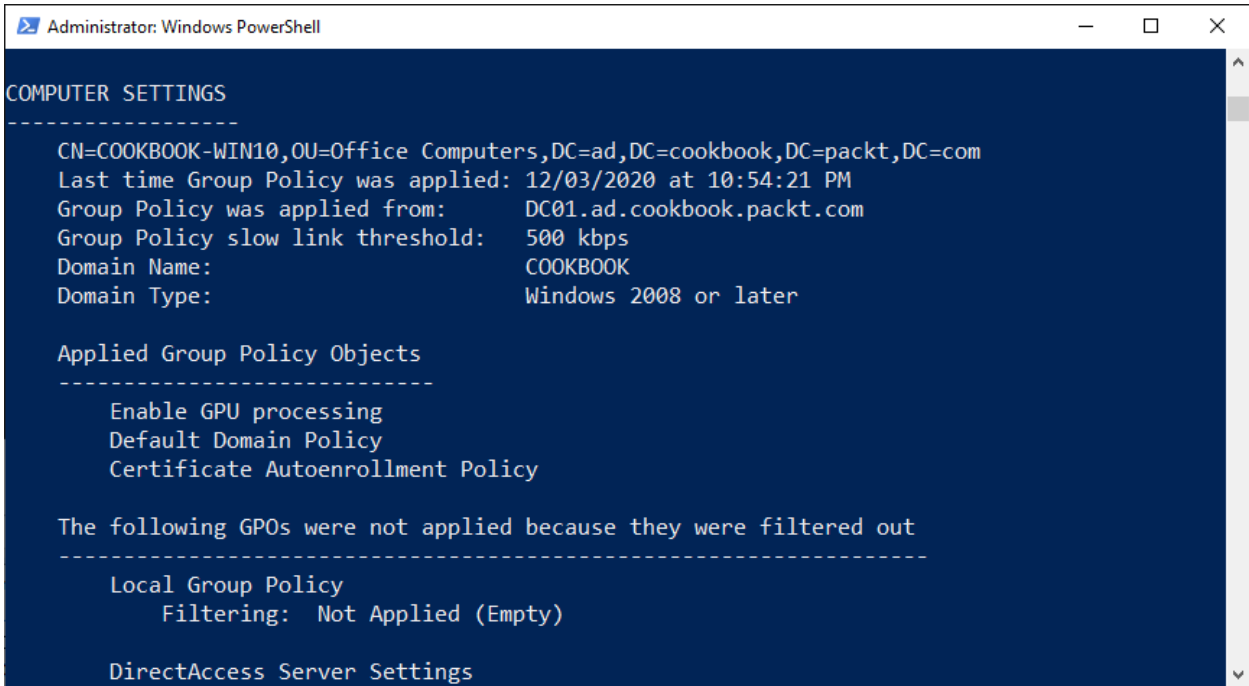
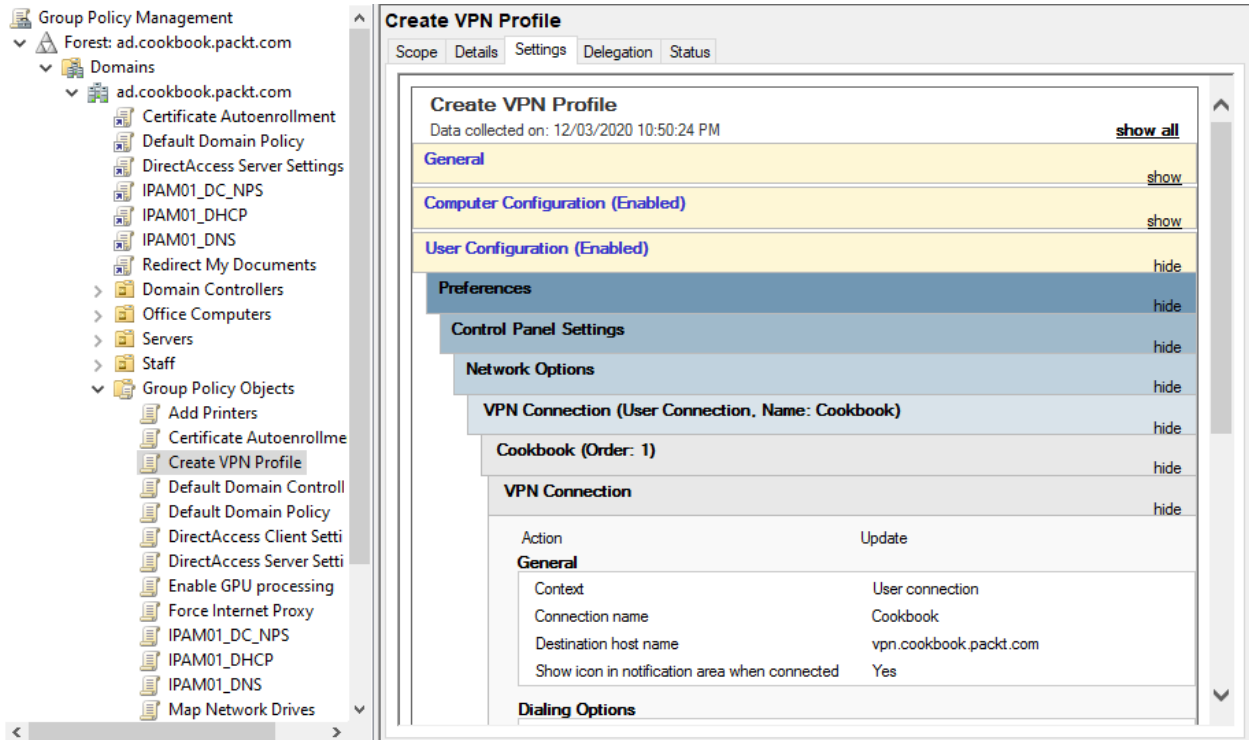
Address:

Proxy server

Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections).

Address:  Port:

Bypass proxy server for local addresses



```

Administrator: Windows PowerShell
USER SETTINGS
-----
CN=Mark Henderson,OU=Sysadmins,OU=Staff,DC=ad,DC=cookbook,DC=packt,DC=com
Last time Group Policy was applied: 12/03/2020 at 10:54:21 PM
Group Policy was applied from:      DC01.ad.cookbook.packt.com
Group Policy slow link threshold:   500 kbps
Domain Name:                        COOKBOOK
Domain Type:                         Windows 2008 or later

Applied Group Policy Objects
-----
    Redirect My Documents

The following GPOs were not applied because they were filtered out
-----
    Local Group Policy
        Filtering:  Not Applied (Empty)

The user is a part of the following security groups
-----
    Domain Users
    Everyone
  
```

COOKBOOK\mhendersc x + v

file:///C:/Users/mhenderson/Documents/gpresult.html

### Group Policy Results

COOKBOOK\mhenderson on COOKBOOK\COOKBOOK-WIN10  
Data collected on: 12/03/2020 10:56:36 PM [show all](#)

**Summary** [hide](#)

During last **computer policy** refresh on 12/03/2020 10:54:21 PM

- ✔ No Errors Detected
- ⚠ A fast link was detected [More information...](#)

During last **user policy** refresh on 12/03/2020 10:54:22 PM

- ✔ No Errors Detected
- ⚠ A fast link was detected [More information...](#)

**Computer Details** [hide](#)

**General** [hide](#)

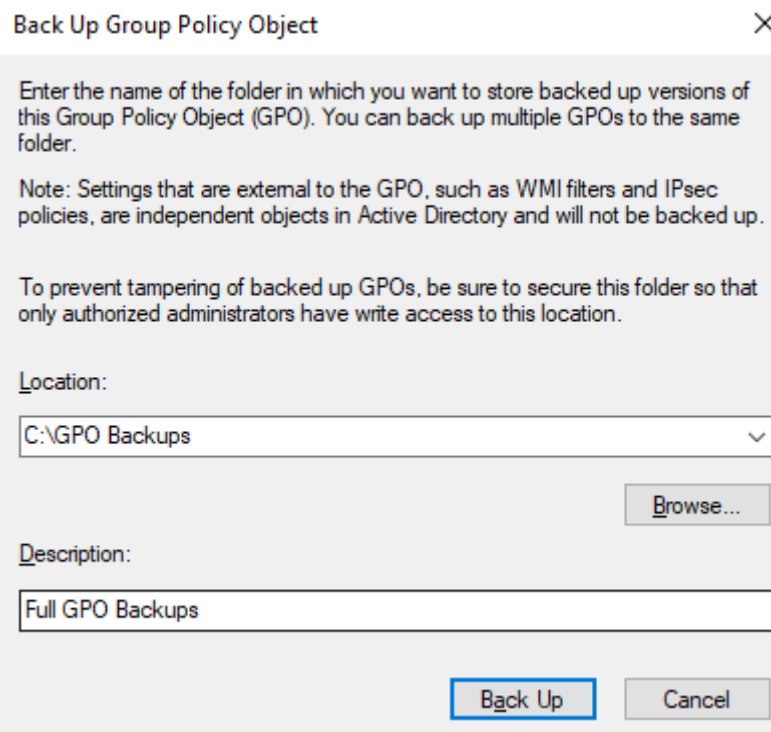
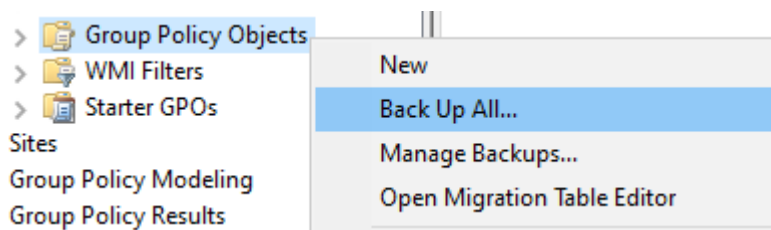
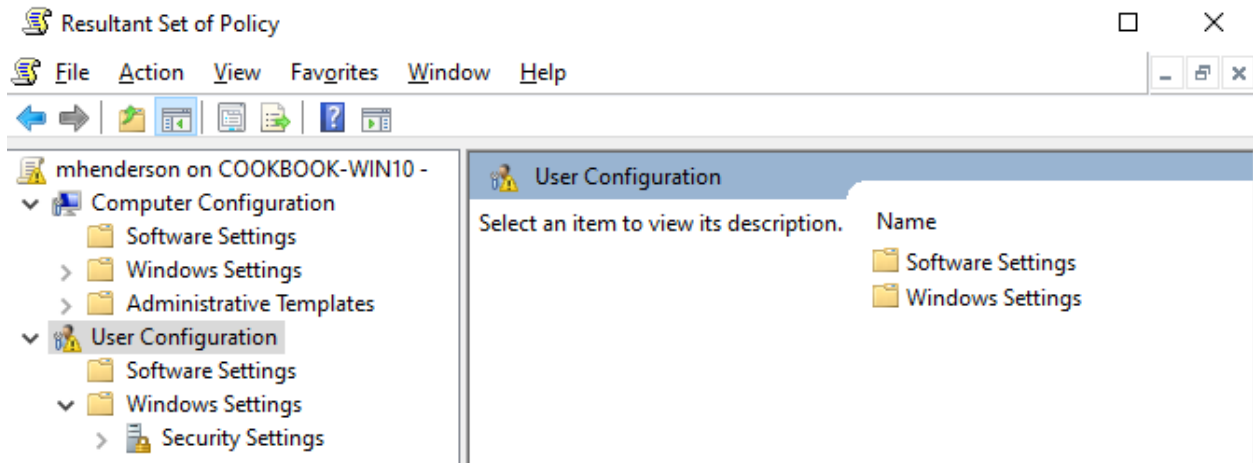
Computer name	COOKBOOK\COOKBOOK-WIN10
Domain	ad.cookbook.packt.com
Site	Default-First-Site-Name
Organizational Unit	ad.cookbook.packt.com/Office Computers
Security Group Membership	<a href="#">show</a>

**Component Status** [hide](#)

Component Name	Status	Time Taken	Last Process Time	Event Log
Group Policy Infrastructure	Success	288 Millisecond(s)	12/03/2020 10:54:21 PM	<a href="#">View Log</a>
Registry	Success	109 Millisecond(s)	10/03/2020 11:07:21 PM	<a href="#">View Log</a>
Security	Success	390 Millisecond(s)	10/03/2020 11:07:21 PM	<a href="#">View Log</a>

**Settings** [hide](#)

**Policies** [hide](#)



Backup



Backup progress:



Status:

- GPO: DirectAccess Server Settings...Succeeded

---

- GPO: Enable GPU processing...Succeeded

---

- GPO: Force Internet Proxy...Succeeded

---

- GPO: IPAM01\_DC\_NPS...Succeeded

---

- GPO: IPAM01\_DHCP...Succeeded

---

- GPO: IPAM01\_DNS...Succeeded

---

- GPO: Map Network Drives...Succeeded

---

- GPO: Redirect My Documents...Succeeded

---

- 14 GPOs were successfully backed up.
- 0 GPOs were not backed up.

OK

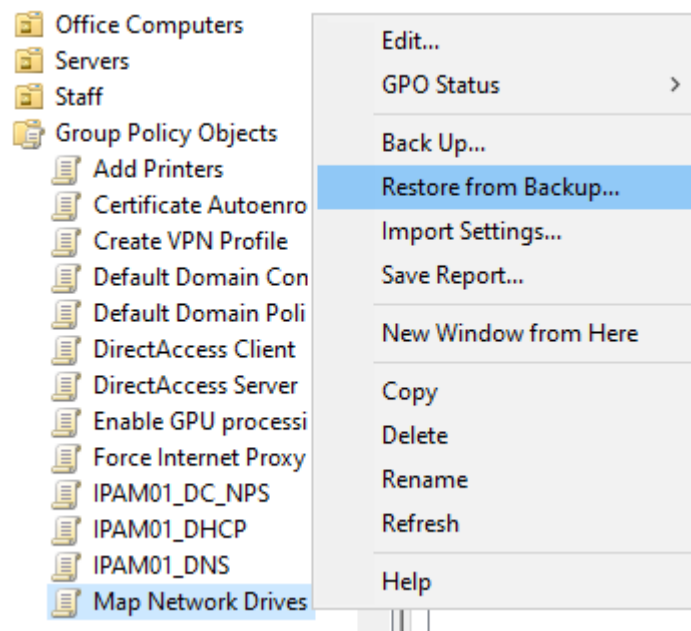
Cancel

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Import-Module GroupPolicy
PS C:\Users\mhenderson> Backup-GPO -Path 'C:\GPO Backups\' -All

DisplayName      : IPAM01_DHCP
GpoId            : 277ab5e1-5afc-49a3-98f4-2510ac4a9204
Id              : ebcccc89-704b-4fa4-a2f9-dae77b7a915f
BackupDirectory : C:\GPO Backups\
CreationTime    : 12/03/2020 11:06:58 PM
DomainName      : ad.cookbook.packt.com
Comment         :

DisplayName      : Default Domain Policy
GpoId            : 31b2f340-016d-11d2-945f-00c04fb984f9
Id              : 8ffabe35-2882-494e-8430-79e71f51af56
BackupDirectory : C:\GPO Backups\
CreationTime    : 12/03/2020 11:06:59 PM
DomainName      : ad.cookbook.packt.com
Comment         :

DisplayName      : Certificate Autoenrollment Policy
GpoId            : 64fef7a7-1643-475f-b400-396e97bd03dc
Id              : 0d6e4083-6ec1-4c97-8237-fc293f368a71
BackupDirectory : C:\GPO Backups\
CreationTime    : 12/03/2020 11:06:59 PM
DomainName      : ad.cookbook.packt.com
Comment         :
```



## Restore Group Policy Object Wizard



### Source GPO

Select the GPO which you want to restore.



Backed up GPOs:

Name	Time Stamp	Description
Map Network Drives	12/03/2020 11:05:19 ...	Full GPO Backups
Map Network Drives	12/03/2020 11:07:01 ...	

< [Progress Bar] >

[View Settings...](#)

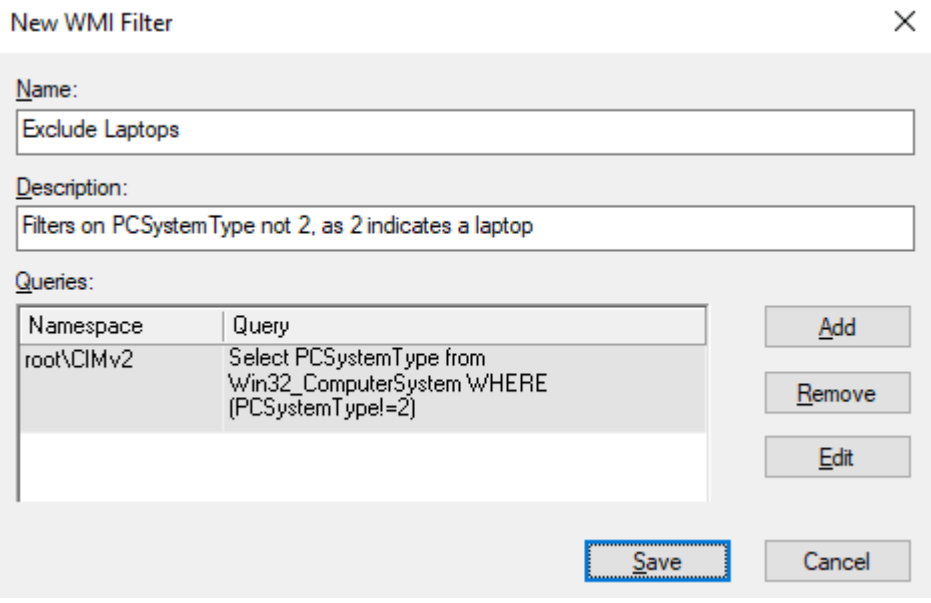
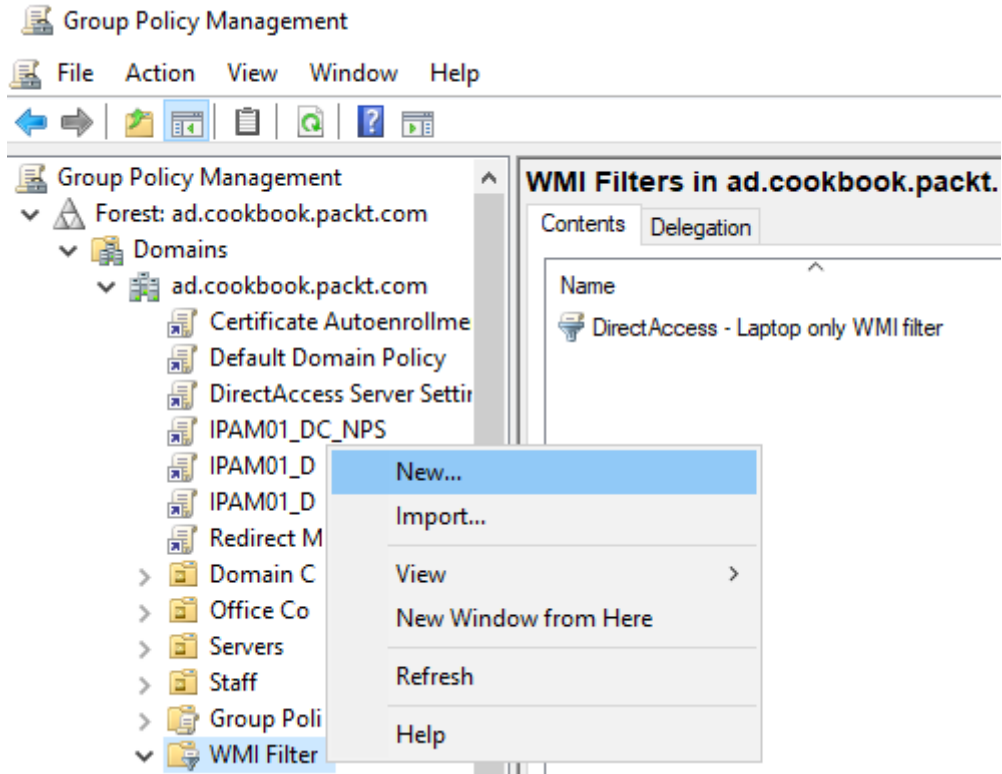
< Back   **Next >**   Cancel   Help

Administrator: Windows PowerShell



```
PS C:\Users\mhenderson> Restore-GPO -Name "Map Network Drives" -Path 'C:\GPO Backups\'
```

```
DisplayName      : Map Network Drives
DomainName       : ad.cookbook.packt.com
Owner            : COOKBOOK\Domain Admins
Id               : bacf7916-b64f-4db0-a1e6-f5f901bfe7de
GpoStatus        : AllSettingsEnabled
Description      :
CreationTime     : 10/03/2020 5:11:51 AM
ModificationTime : 12/03/2020 11:09:29 PM
UserVersion      : AD Version: 3, SysVol Version: 3
ComputerVersion  : AD Version: 1, SysVol Version: 1
WmiFilter        :
```





Group Policy Management

File Action View Window Help

IPAM01\_DHCP  
IPAM01\_DNS  
Redirect My Documents  
Domain Controllers  
Office Computers  
Servers  
Staff  
Group Policy Objects  
Add Printers  
Certificate Autoenroll  
Create VPN Profile  
Default Domain Cont  
Default Domain Polic  
DirectAccess Client S  
DirectAccess Server S  
Enable GPU processi  
Force Internet Proxy  
IPAM01\_DC\_NPS  
IPAM01\_DHCP  
IPAM01\_DNS  
Desktop Power Profil  
Map Network Drives  
Redirect My Docume  
WMI Filters  
DirectAccess - Lapt

### Desktop Power Profile

Scope Details Settings Delegation Status

**Links**

Display links in this location: ad.cookbook.packt.com

The following sites, domains, and OUs are linked to this GPO:

Location	Enforced	Link Enabled	Path
Office Computers	No	Yes	ad.cookbook.packt.co

**Security Filtering**

The settings in this GPO can only apply to the following groups, users, and computers:

Name

Authenticated Users

Add... Remove Properties

**WMI Filtering**

This GPO is linked to the following WMI filter:

Exclude Laptops Open

en-US

File Home Share View

This PC > Local Disk (C:) > Windows > PolicyDefinitions > en-US

Name	Date modified	Type	Size
DFS.adml	19/03/2019 6:20 AM	ADML File	2 KB
DigitalLocker.adml	19/03/2019 6:20 AM	ADML File	2 KB
DirectAccess Connectivity Assistant GP.adml	5/02/2010 2:28 AM	ADML File	9 KB
DiskDiagnostic.adml	19/03/2019 6:20 AM	ADML File	4 KB
DiskNVCache.adml	19/03/2019 6:20 AM	ADML File	5 KB
DiskQuota.adml	19/03/2019 6:20 AM	ADML File	10 KB
Display.adml	19/03/2019 6:20 AM	ADML File	6 KB
DistributedLinkTracking.adml	19/03/2019 6:20 AM	ADML File	2 KB
DmaGuard.adml	19/03/2019 6:20 AM	ADML File	2 KB
DnsClient.adml	19/03/2019 6:20 AM	ADML File	31 KB
DWM.adml	19/03/2019 6:20 AM	ADML File	5 KB
EAIIME.adml	19/03/2019 6:20 AM	ADML File	10 KB
EarlyLaunchAM.adml	19/03/2019 6:20 AM	ADML File	3 KB

210 items | 1 item selected 8.38 KB



- DirectAccess Connectivity Assistant [DC01.AD.CO ^
- Computer Configuration
  - Policies
    - Software Settings
    - Windows Settings
    - Administrative Templates: Policy definit
      - Control Panel
        - DirectAccess Connectivity Assistant
      - Network

DirectAccess Connectivity Assistant

Setting	State	Comment
PortalName	Not configured	No
Support Email	Not configured	No
Corporate Portal Site	Not configured	No
DTEs	Not configured	No
LocalNamesOn	Not configured	No
Corporate Resources	Not configured	No

# Chapter 11: File Services and Data Control

Add Roles and Features Wizard

— □ ×

## Select server roles

DESTINATION SERVER  
File01.ad.cookbook.packt.com

Before You Begin

Installation Type

Server Selection

**Server Roles**

Features

Confirmation

Results

Select one or more roles to install on the selected server.

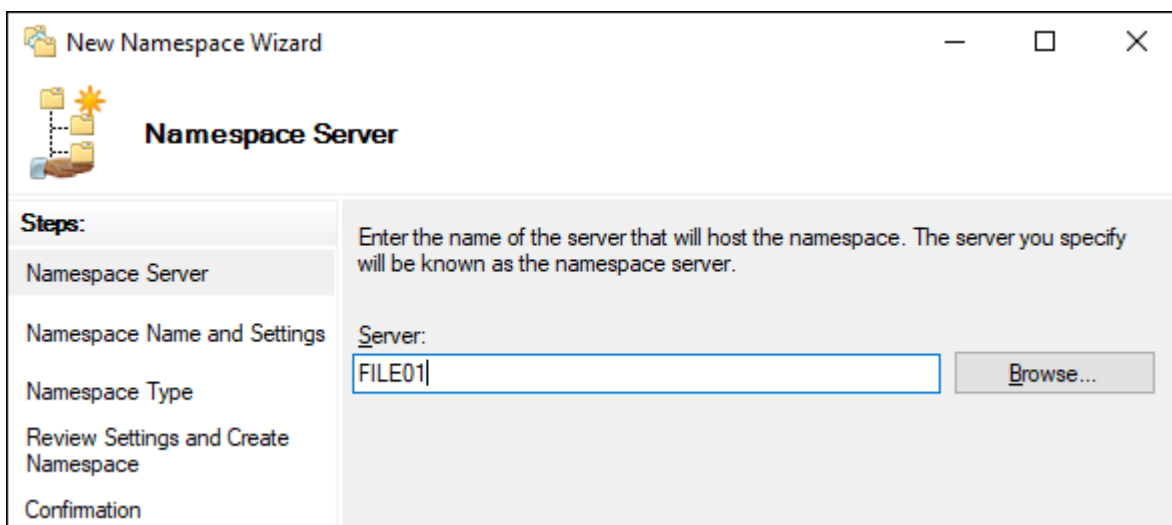
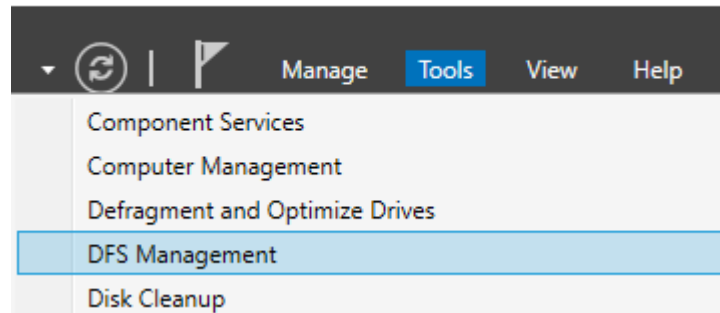
### Roles

- File and Storage Services (1 of 12 installed)
  - File and iSCSI Services
    - File Server
    - BranchCache for Network Files
    - Data Deduplication
    - DFS Namespaces
    - DFS Replication**
    - File Server Resource Manager
    - File Server VSS Agent Service
    - iSCSI Target Server
    - iSCSI Target Storage Provider (VDS and VSS)
    - Server for NFS
    - Work Folders

### Description

DFS Replication is a multimaster replication engine that enables you to synchronize folders on multiple servers across local or wide area network (WAN) network connections. It uses the Remote Differential Compression (RDC) protocol to update only the portions of files that have changed since the last replication. DFS Replication can be used in conjunction with DFS Namespaces, or by itself.

— □ ×



Edit Settings ✕

Namespace server:

Shared folder:

Local path of shared folder:

---

Shared folder permissions:

All users have read-only permissions


All users have read and write permissions

Administrators have full access; other users have read-only permissions

Administrators have full access; other users have read and write permissions

Use custom permissions:

New Namespace Wizard — □ ✕


**Namespace Type**

**Steps:**

- [Namespace Server](#)
- [Namespace Name and Settings](#)
- Namespace Type**
- [Review Settings and Create Namespace](#)
- [Confirmation](#)

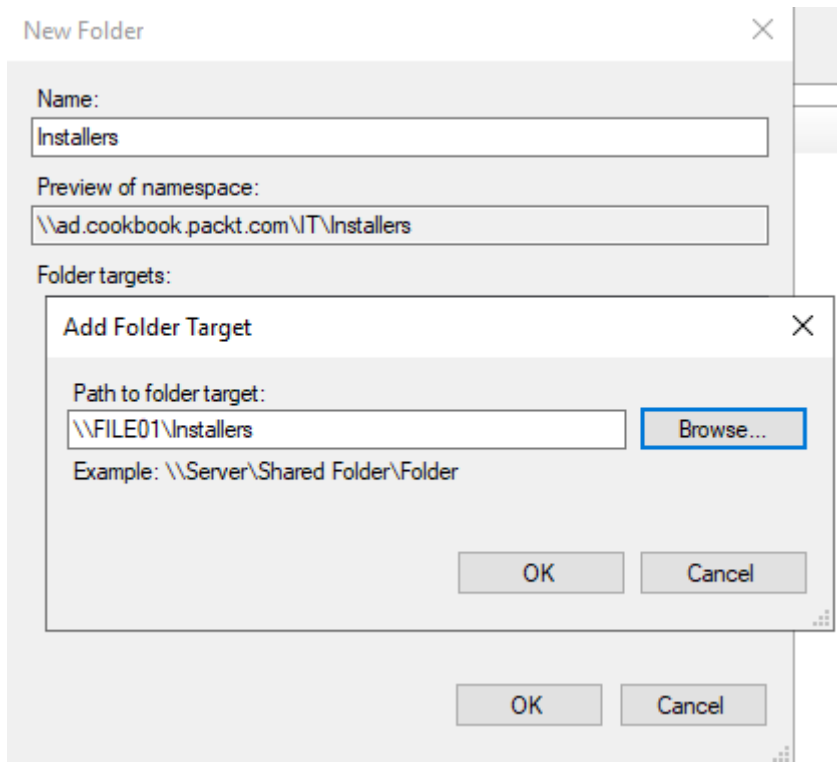
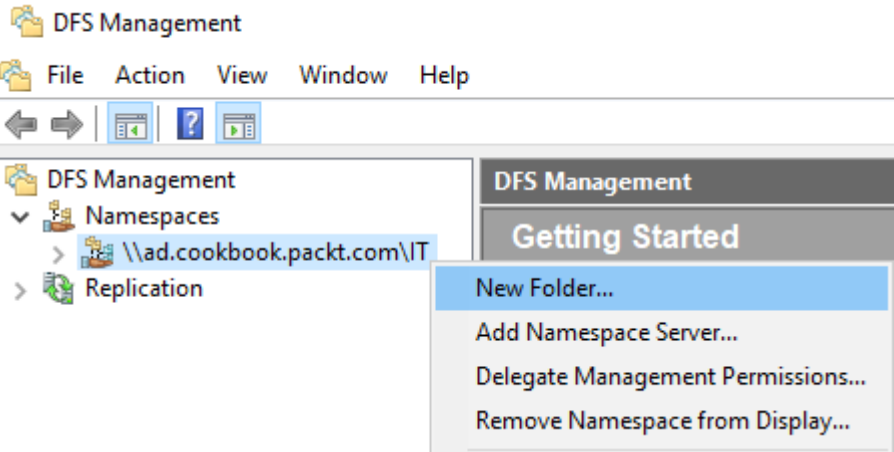
Select the type of namespace to create.

**Domain-based namespace**

A domain-based namespace is stored on one or more namespace servers and in Active Directory Domain Services. You can increase the availability of a domain-based namespace by using multiple servers. When created in Windows Server 2008 mode, the namespace supports increased scalability and access-based enumeration.

**Enable Windows Server 2008 mode**

Preview of domain-based namespace:



Create Share ✕

Server name:

Share name:

Local path of shared folder:

---

Shared folder permissions:

- All users have read-only permissions
- All users have read and write permissions
- Administrators have full access; other users have read-only permissions
- Administrators have full access; other users have read and write permissions
- Use custom permissions:

File Explorer window showing the path: Network > cookbook > it

Navigation pane (left):

- Quick access
- Desktop
- Downloads
- Documents

Name	Date modified	Type
Installers	3/16/2020 7:44 PM	File folder

```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Import-Module dfsn
PS C:\Users\mhenderson> New-DfsnRoot -TargetPath "\\file01\IT" -Type DomainV2 -Path "\\cookbook\IT"

Path          Type          Properties TimeToLiveSec State  Description
-----
\\cookbook\IT Domain V2          300          Online

PS C:\Users\mhenderson> New-Item -ItemType Directory -Path C:\Shares\Installers

Directory: C:\Shares

Mode                LastWriteTime         Length Name
----                -
d-----           3/16/2020   8:05 PM             Installers

PS C:\Users\mhenderson> New-SmbShare -Path C:\Shares\Installers\ -Name Installers

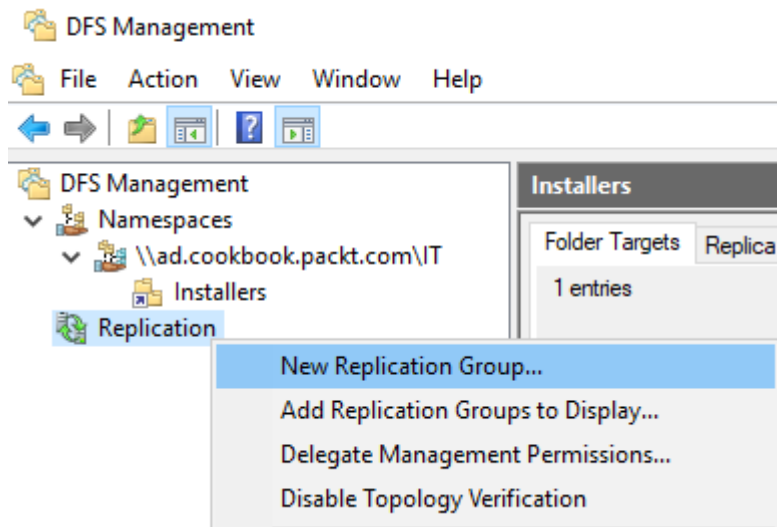
Name          ScopeName Path          Description
-----
Installers *   C:\Shares\Installers

PS C:\Users\mhenderson> New-DfsnFolder -Path "\\cookbook\IT\Installers" -TargetPath "\\file01\Installers"

Path          State TimeToLiveSec Properties Description
-----
\\cookbook\IT\Installers Online 300

PS C:\Users\mhenderson>

```





## Replication Group Members

**Steps:**

[Replication Group Type](#)

[Name and Domain](#)

**[Replication Group Members](#)**

[Topology Selection](#)

[Hub Members](#)

Click Add and then select two or more servers that will become members of the replication group.

Members:

Server	Domain
FILE01	ad.cookbook.packt.com
FILE02	ad.cookbook.packt.com



## Primary Member

**Steps:**

[Replication Group Type](#)

[Name and Domain](#)

**[Replication Group Members](#)**

[Topology Selection](#)

[Replication Group Schedule and Bandwidth](#)

Select the server that contains the content you want to replicate to other members. This server is known as the primary member.

Primary member:

FILE01



If the folders to be replicated already exist on multiple servers, the folders and files on the primary member will be authoritative during initial replication.



Add Folder to Replicate



Member:

FILE01

Local path of folder to replicate:

C:\Shares\Installers

Browse...

Example: C:\Documents

Select or type a name to represent this folder on all members of the replication group. This name is known as the replicated folder name.

Use name based on path:

Installers

Use custom name:

Example: Documents

Permissions >>

OK

Cancel

Edit ✕

**General**

Member:

Select the initial status of the replicated folder on this member.

Membership status:

Disabled  
 The replicated folder will not be stored on this member.

Enabled  
 Keep the following folder synchronized with other members.

Local path of folder:

Example: C:\Data

Make the selected replicated folder on this member read-only.

DFS Management

File Action View Window Help

DFS Management

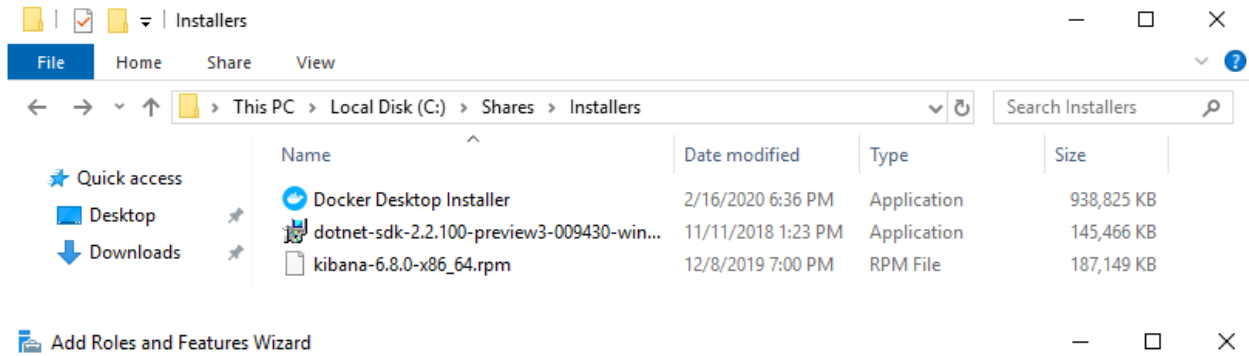
- Namespaces
  - \\ad.cookbook.packt.com\IT
    - Installers
- Replication
  - FileServers

FileServers (ad.cookbook.packt.com)

Memberships Connections Replicated Folders Delegation

2 entries

State	Local Path	Membershi...	Member	Replicated ...
[-] Replicated Folder: Installers (2 items)				
	C:\Shares\Installers	Enabled	FILE01	Installers
	C:\Shares\Installers	Enabled	FILE02	Installers



## Select server roles

DESTINATION SERVER  
File01.ad.cookbook.pactk.com

- Before You Begin
- Installation Type
- Server Selection
- Server Roles**
- Features
- Confirmation
- Results

Select one or more roles to install on the selected server.

### Roles

- File and Storage Services (4 of 12 installed)
  - File and iSCSI Services (3 of 11 installed)
    - File Server (Installed)
    - BranchCache for Network Files
    - Data Deduplication
    - DFS Namespaces (Installed)
    - DFS Replication (Installed)
    - File Server Resource Manager
    - File Server VSS Agent Service
    - iSCSI Target Server**
    - iSCSI Target Storage Provider (VDS and VSS)

### Description

iSCSI Target Server provides services and management tools for iSCSI targets.

### Storage location:

- Select by volume:

Volume	Free Space	Capacity	File System
C:	113 GB	126 GB	NTFS

The iSCSI virtual disk will be saved at \iSCSIVirtualDisk on the selected volume.

## Specify iSCSI virtual disk size

iSCSI Virtual Disk Location

iSCSI Virtual Disk Name

iSCSI Virtual Disk Size

iSCSI Target

Target Name and Access

Access Servers

Enable authentication ser...

Confirmation

Results

Free space: 113 GB

Size: 10 GB

 Fixed size

This type of disk provides better performance and is recommended for servers running applications with a high level of disk activity. The virtual hard disk is created using the size of the fixed virtual hard disk. It does not change when data is added or deleted.

 Clear the virtual disk on allocation

Note: Un-selecting is NOT RECOMMENDED. Clearing a disk to zero will remove any fragments of data that remained on underlying storage, thus protecting from information leaks.

## Select a method to identify the initiator:

 Query initiator computer for ID (not supported on Windows Server 2008 R2, Windows 7, or earlier):

file01.ad.cookbook.packt.com

Browse...

 Select from the initiator cache on the target server: Enter a value for the selected type

Type:

Value:

IQN

Browse...

OK

Cancel

Microsoft iSCSI



The Microsoft iSCSI service is not running. The service is required to be started for iSCSI to function correctly. To start the service now and have the service start automatically each time the computer restarts, click the Yes button.

Yes

No

iSCSI Initiator Properties



Targets Discovery Favorite Targets Volumes and Devices RADIUS Configuration

Target portals

The system will look for Targets on following portals:

Refresh

Address	Port	Adapter	IP address
---------	------	---------	------------

To add a target portal, click Discover Portal.

Discover Portal...

Discover Target Portal



Enter the IP address or DNS name and port number of the portal you want to add.

To change the default settings of the discovery of the target portal, click the Advanced button.

IP address or DNS name:

file01.ad.cookbook.packt.com

Port: (Default is 3260.)

3260

Advanced...

OK

Cancel

er...

## iSCSI TARGETS

C:\iSCSIVirtualDisks\Databases.vhdx on File01

Name	Server Name	Target IQN	Target Status	Initiator ID
Database1	File01	iqn.1991-05.com.microsoft:file01-database1-target	Not Connected	

Disable Target  
Remove Target  
Properties

Add initiator ID

Select a method to identify the initiator:

- Query initiator computer for ID (not supported on Windows Server 2008 R2, Windows 7, or earlier):

file02.ad.cookbook.packt.com

Browse...

Connect To Target

Target name:

iqn.1991-05.com.microsoft:file01-database1-target

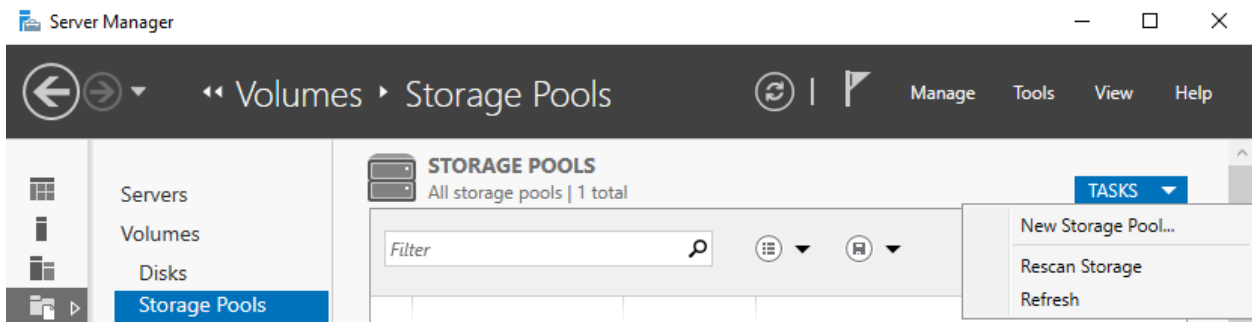
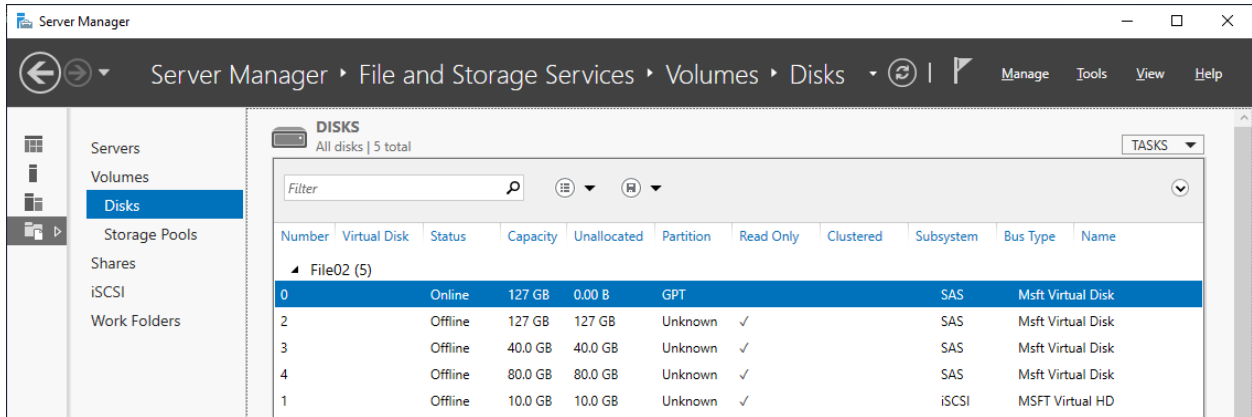
- Add this connection to the list of Favorite Targets.  
This will make the system automatically attempt to restore the connection every time this computer restarts.

Enable multi-path

Advanced...

OK

Cancel



## Select physical disks for the storage pool

- Before You Begin
- Storage Pool Name
- Physical Disks**
- Confirmation
- Results

On select storage subsystems you can additionally allocate disks as hot spares that can replace failed disks.

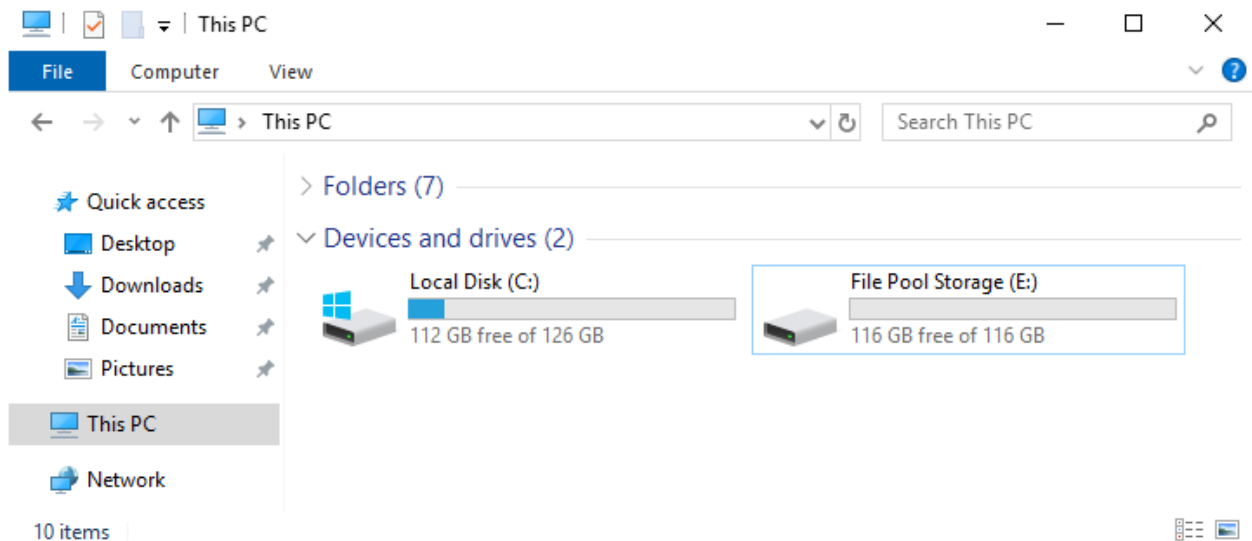
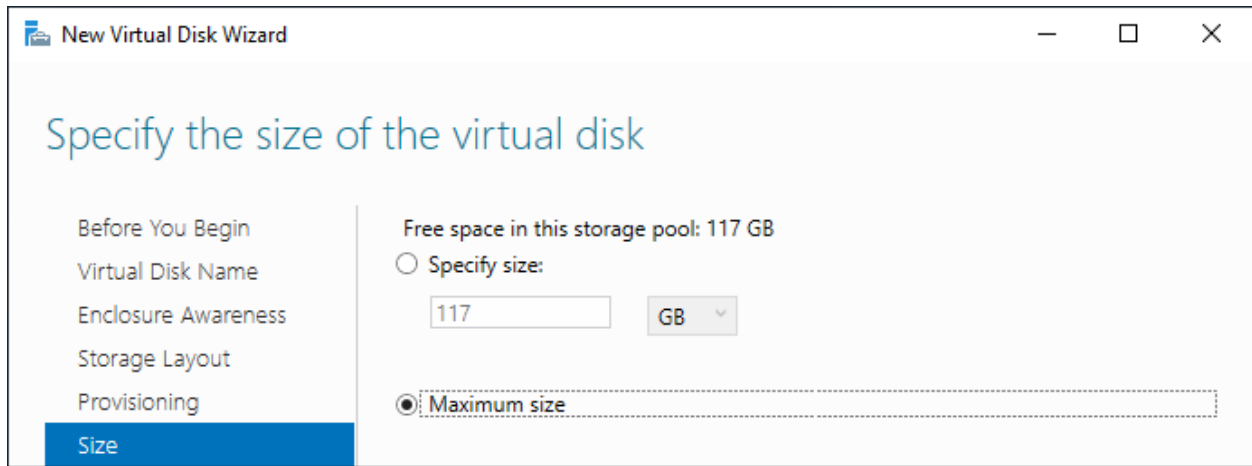
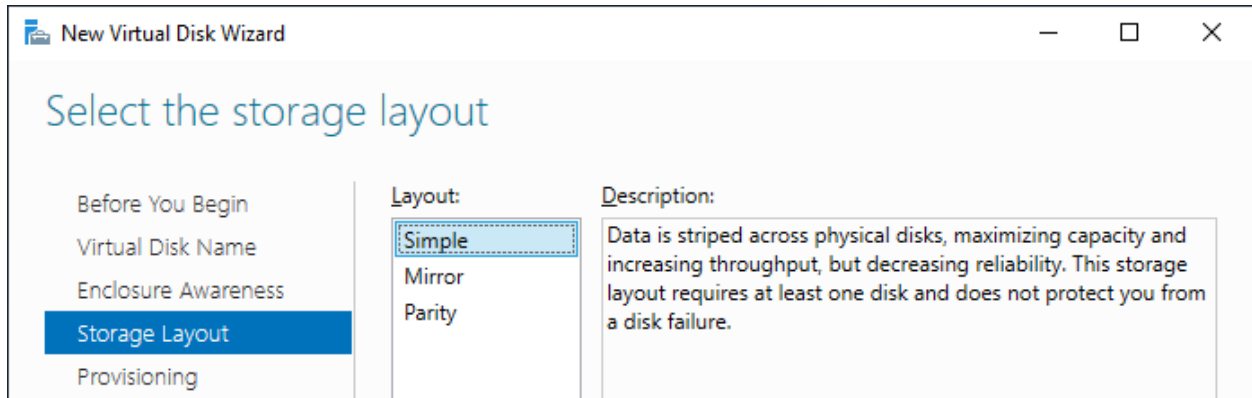
### Physical disks:

<input type="checkbox"/>	Slot	Name	Capacity	Bus	RPM	Model	Allocation
<input checked="" type="checkbox"/>		Msft Virtual Disk (File02)	80.0 GB	SAS		Virtual Disk	Automatic
<input checked="" type="checkbox"/>		Msft Virtual Disk (File02)	127 GB	SAS		Virtual Disk	Automatic
<input checked="" type="checkbox"/>		Msft Virtual Disk (File02)	40.0 GB	SAS		Virtual Disk	Automatic
<input type="checkbox"/>		MSFT Virtual HD (File02)	10.0 GB	iSCSI		Virtual HD	Automatic

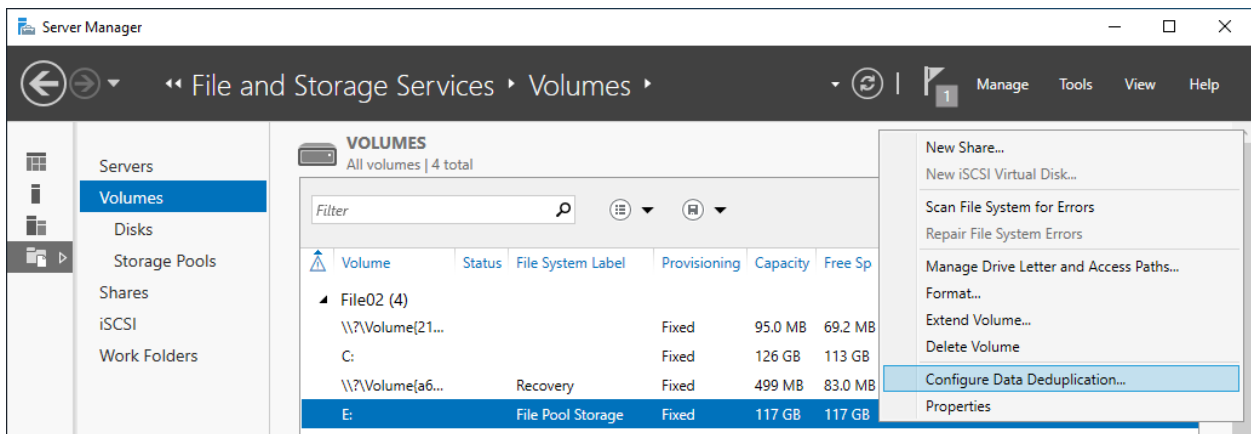
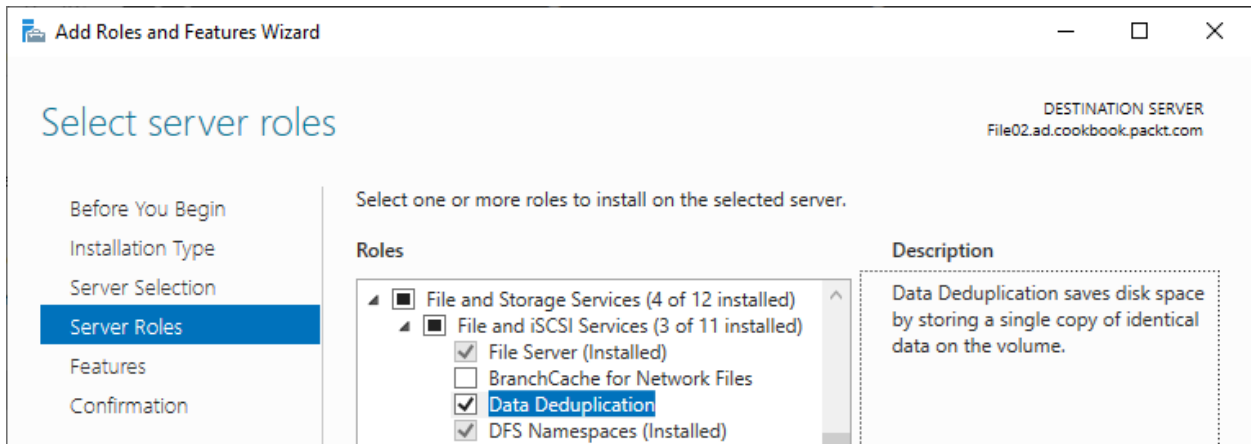
Total selected capacity: 247 GB

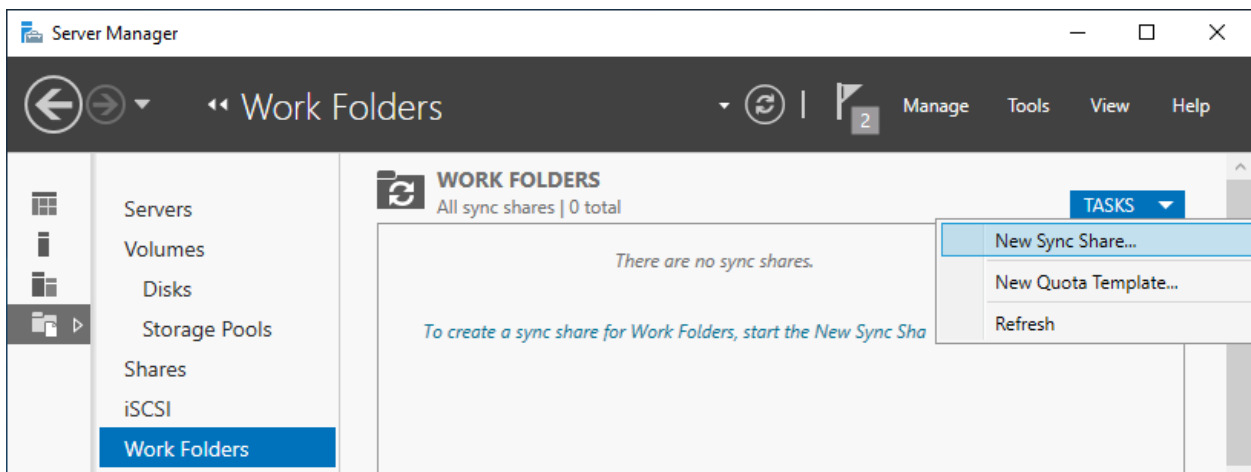
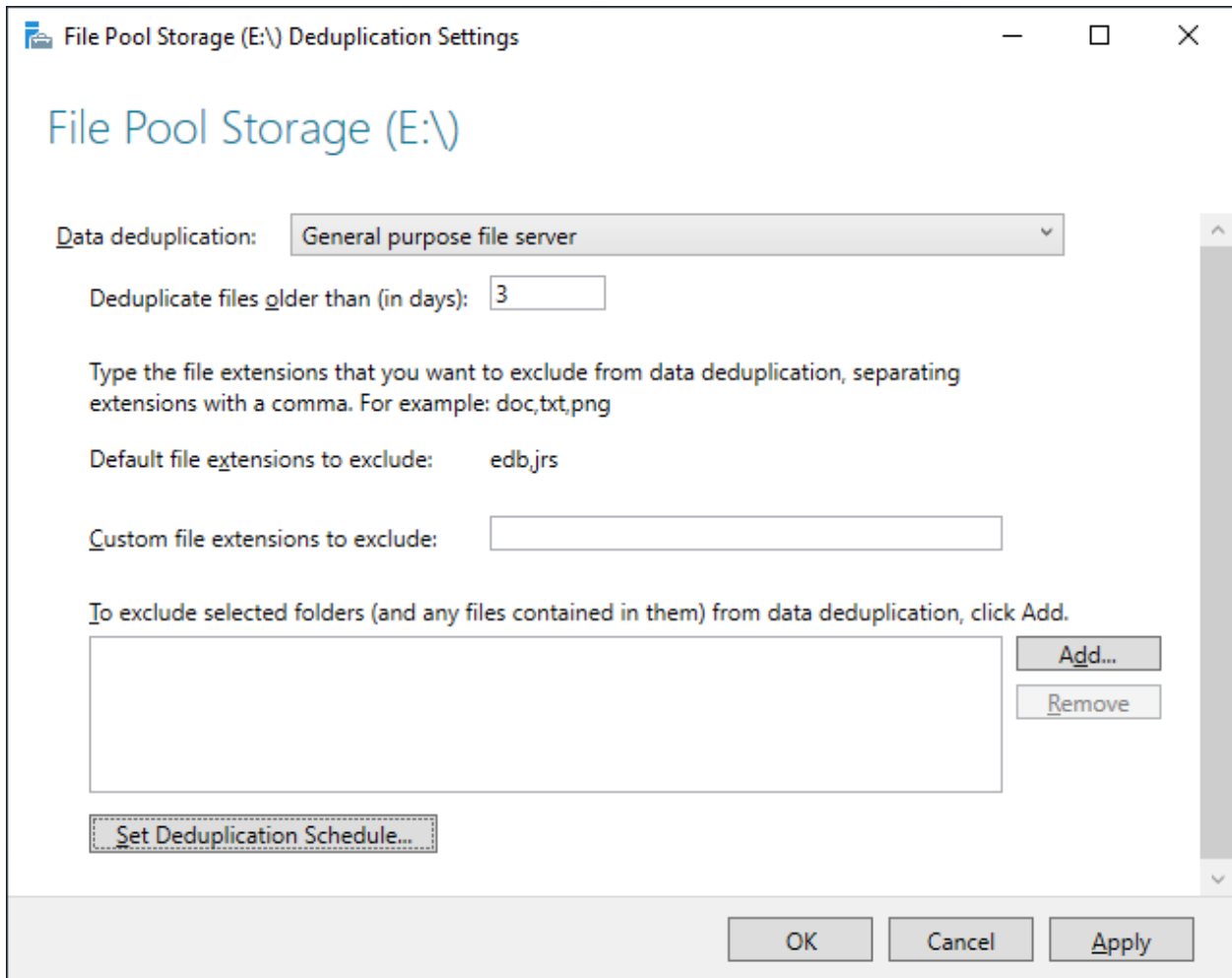
**i** Selecting these disks will create a local pool.

< Previous    Next >    Create    Cancel









New Sync Share Wizard

## Select the server and path

Before You Begin

**Server and Path**

User Folder Structure

Sync Share Name

Sync Access

PC Security Policies

Confirmation

Results

**S**erver:

Server Name	Status	Cluster Role	Owner Node
File02	Online	Not Clustered	

**i** Only servers and clustered file server instances that have Work Folders installed are shown.

**L**ocation:

Select by file share:

Name	Path

Enter a local path:

C:\WorkFolders

< Previous   Next >   Create   Cancel

New Sync Share Wizard

## Grant sync access to groups

Before You Begin

Server and Path

User Folder Structure

Sync Share Name

**Sync Access**

PC Security Policies

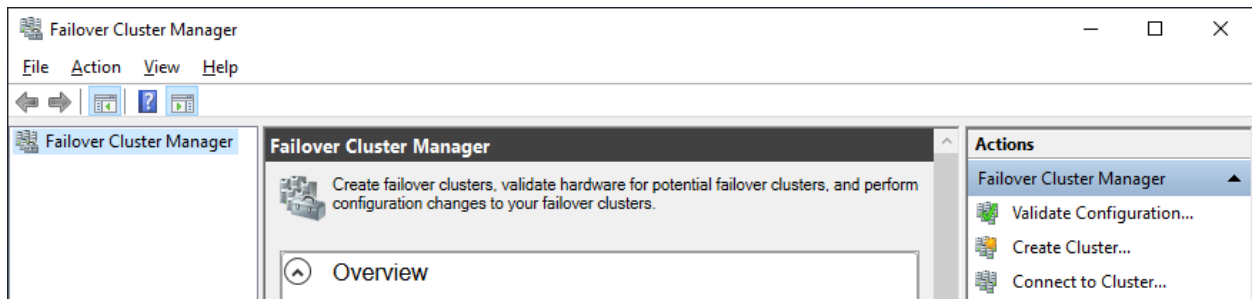
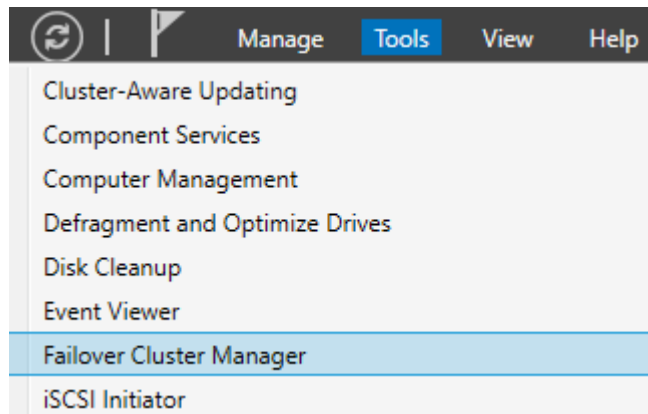
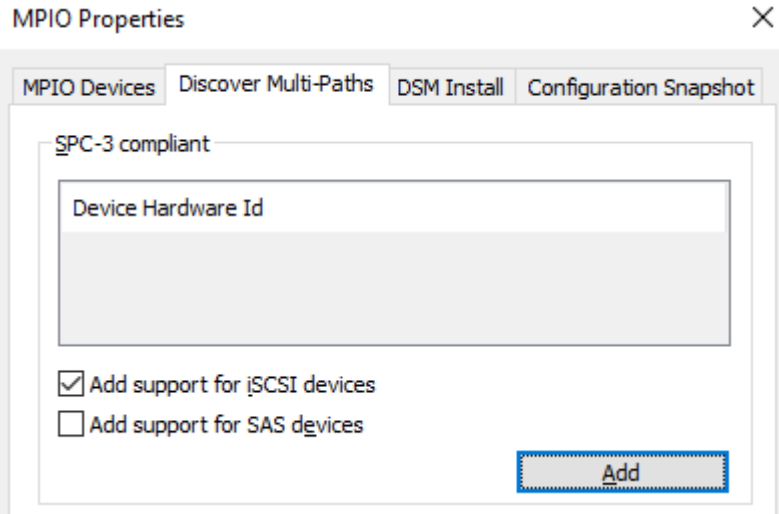
Confirmation

Results

Domain	Principal	Description
COOKBOOK	WorkFolders	

Disable inherited permissions and grant users exclusive access to their files

< Previous   Next >   Create   Cancel





## Select Servers or a Cluster

Before You Begin

Select Servers or a Cluster

Testing Options

Confirmation

Validating

Summary

To validate a set of servers, add the names of all the servers.  
To test an existing cluster, add the name of the cluster or one of its nodes.

Enter name:

Selected servers:

file03.ad.cookbook.packt.com	<input type="button" value="Add"/>
file04.ad.cookbook.packt.com	<input type="button" value="Remove"/>



- Failover Cluster Manager
- ▼ sofs.ad.cookbook.packt.co
  - Roles
  - Nodes
  - ▼ Storage
    - Disks
    - Pools
    - Enclosures

Pools (1)				
Name	Status	Health Status	Owner Node	Operational Status
Cluster Pool 1	Online	Healthy	file04	OK

New Volume Wizard

## Select the server and disk

Before You Begin

Server and Disk

Size

Drive Letter or Folder

File System Settings

Confirmation

Results

Server:

Provision to	Status	Cluster Role	Destination
file03	Online	Cluster Node	Local
file04	Online	Cluster Node	Local
sofs	Online	Cluster Name	Cluster Available Storage

Disk:

Disk	Virtual Disk	Capacity	Free Space	Subsystem
Disk 4	SOFS	117 GB	117 GB	Clustered Windows Storage

# Failover Cluster Manager

File Action View Help



Failover Cluster Manager

- sofs.ad.cookbook.packt.co
  - Roles
  - Nodes
  - Storage
    - Disks**
    - Pools
    - Enclosures

### Disks (1)

Search Queries

Name	Status	Assigned To	Owner Node
Cluster Virtual Disk (SOF...	Online		

- Bring Online
- Take Offline
- Add to Cluster Shared Volumes**

# Failover Cluster Manager

File Action View Help

Failover Cluster Manager

- scaleout-fileserver.ad.cook
  - Roles
  - Nodes

### Roles (0)

Search Queries Print Refresh

Name	Status	Type	Owner Node	Priority
------	--------	------	------------	----------

### Actions

- Roles
- Configure Role...

# High Availability Wizard

## Select Role

Before You Begin

- Select Role**
- File Server Type
- Client Access Point
- Select Storage
- Confirmation

Select the role that you want to configure for high availability:

- DFS Namespace Server
- DHCP Server
- Distributed Transaction Coordinator (DTC)
- File Server**
- Generic Application

Description:  
A File Server provides a central location on your network where files are shared for use by users or by applications.

# Failover Cluster Manager

File Action View Help



- Failover Cluster Manager
  - sofs.ad.cookbook.packt.com
    - Roles
    - Nodes
    - Storage
      - Disks
      - Pools
      - Enclosures
      - Networks

### Roles (1)

Search

Name	Status	Type	Owner Node
sofs01			

- Start Role
- Stop Role
- Add File Share

## New Share Wizard

Select the server and path for this share

- Select Profile
- Share Location**
- Share Name
- Other Settings
- Permissions
- Confirmation
- Results

Server:

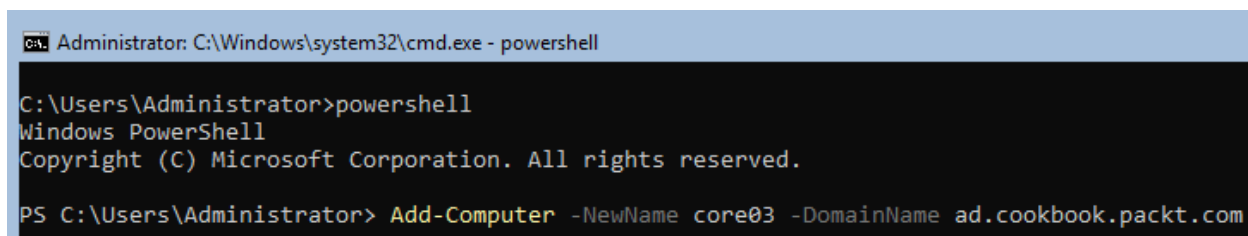
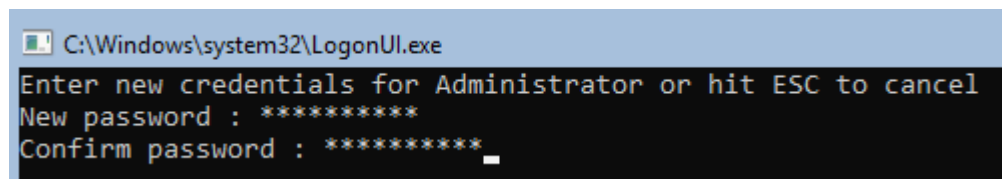
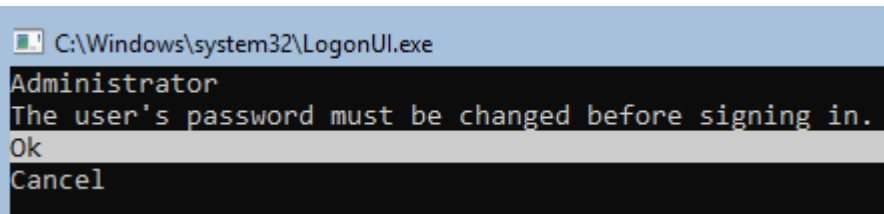
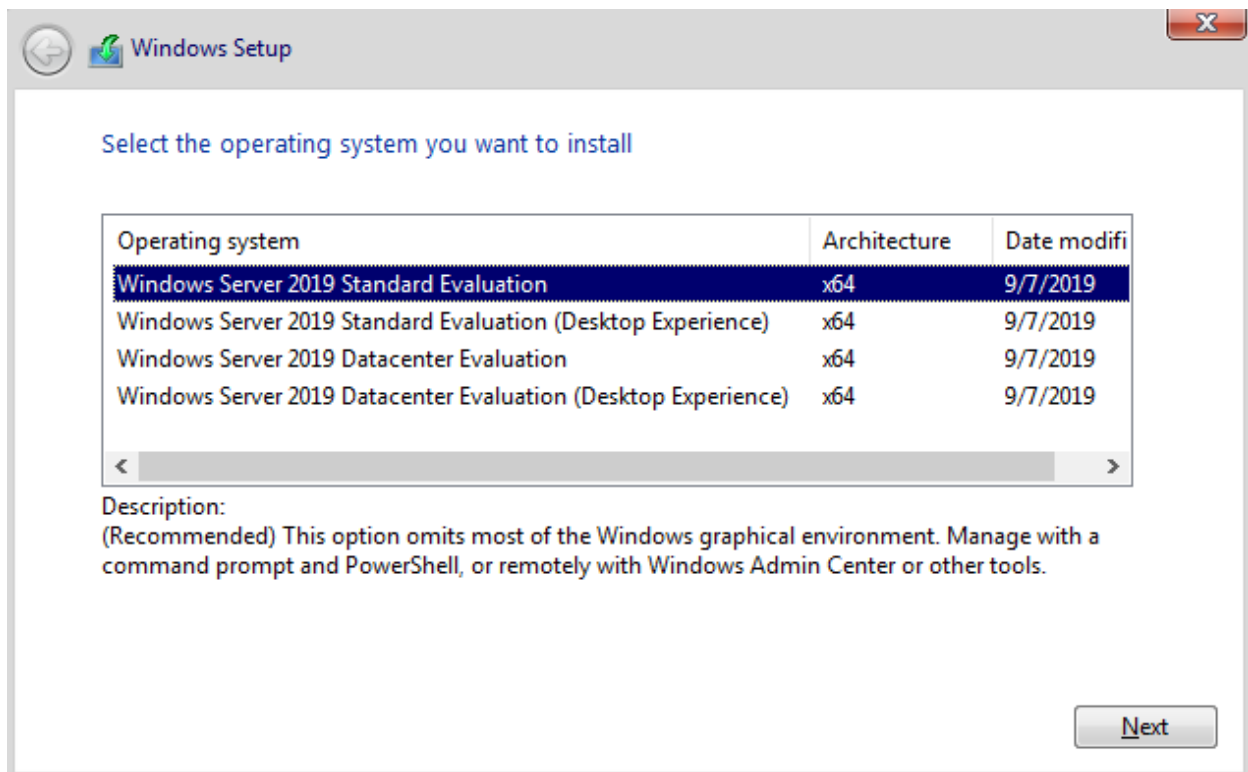
Server Name	Status	Cluster Role	Owner Node
sofs01	Online	Scale-Out File...	

Share location:

Select by volume:

Volume	Free Space	Capacity	File System
C:\ClusterStorage\SOFS	117 GB	117 GB	CSVFS

## Chapter 12: Server Core

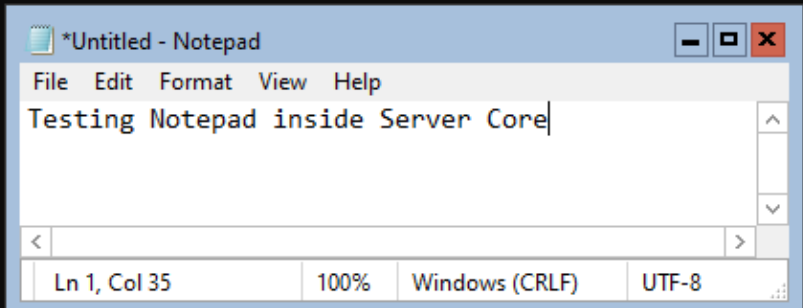




Administrator: C:\Windows\system32\cmd.exe

C:\Users\mhenderson>notepad

C:\Users\mhenderson>



Administrator: C:\Windows\system32\cmd.exe - sconfig

Microsoft (R) Windows Script Host Version 5.812  
Copyright (C) Microsoft Corporation. All rights reserved.

Inspecting system...

=====  
Server Configuration  
=====

- |                                 |                               |
|---------------------------------|-------------------------------|
| 1) Domain/Workgroup:            | Domain: ad.cookbook.packt.com |
| 2) Computer Name:               | CORE01                        |
| 3) Add Local Administrator      |                               |
| 4) Configure Remote Management  | Enabled                       |
| 5) Windows Update Settings:     | DownloadOnly                  |
| 6) Download and Install Updates |                               |
| 7) Remote Desktop:              | Disabled                      |
| 8) Network Settings             |                               |
| 9) Date and Time                |                               |
| 10) Telemetry settings          | Unknown                       |
| 11) Windows Activation          |                               |
| 12) Log Off User                |                               |
| 13) Restart Server              |                               |
| 14) Shut Down Server            |                               |
| 15) Exit to Command Line        |                               |

Enter number to select an option:

```
Administrator: C:\Windows\system32\cmd.exe - sconfig

Select Network Adapter Index# (Blank=Cancel): 1

-----
Network Adapter Settings
-----

NIC Index           1
Description         Microsoft Hyper-V Network Adapter
IP Address          172.16.97.55      fe80::6da2:7c9f:9232:1498
Subnet Mask         255.255.255.0
DHCP enabled        True
Default Gateway     172.16.97.1      fe80::215:5dff:fe7f:506
Preferred DNS Server 172.16.97.2
Alternate DNS Server 172.16.97.3

1) Set Network Adapter Address
2) Set DNS Servers
3) Clear DNS Server Settings
4) Return to Main Menu

Select option: █
```

```
Administrator: C:\Windows\system32\cmd.exe - powershell
PS C:\Users\mhenderson> Install-WindowsFeature Server-Gui-Shell, Server-Gui-Mgmt-Infra
Install-WindowsFeature : ArgumentNotValid: The role, role service, or feature name is not valid:
'Server-Gui-Shell,Server-Gui-Mgmt-Infra'. The name was not found.
At line:1 char:1
+ Install-WindowsFeature Server-Gui-Shell, Server-Gui-Mgmt-Infra
+ ~~~~~
+ CategoryInfo          : InvalidArgument: (Server-Gui-Shell,Server-Gui-Mgmt-Infra:String) [Install-WindowsFeature
], Exception
+ FullyQualifiedErrorId : NameDoesNotExist,Microsoft.Windows.ServerManager.Commands.AddWindowsFeatureCommand

Success Restart Needed Exit Code      Feature Result
-----
False No InvalidArgs {}
```

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Remove-WindowsFeature Server-Gui-Shell, Server-Gui-Mgmt-Infra
Remove-WindowsFeature : ArgumentNotValid: The role, role service, or feature name is not valid:
'Server-Gui-Shell,Server-Gui-Mgmt-Infra'. The name was not found.
At line:1 char:1
+ Remove-WindowsFeature Server-Gui-Shell, Server-Gui-Mgmt-Infra
+ ~~~~~
+ CategoryInfo          : InvalidArgument: (Server-Gui-Shell,Server-Gui-Mgmt-Infra:String) [Uninstall-WindowsFeatu
re], Exception
+ FullyQualifiedErrorId : NameDoesNotExist,Microsoft.Windows.ServerManager.Commands.RemoveWindowsFeatureCommand

Success Restart Needed Exit Code      Feature Result
-----
False No InvalidArgs {}
```

- SMTP Server
- ▷  SNMP Service
- Telnet Client
- TFTP Client
- VM Shielding Tools for Fabric Management
- Windows Biometric Framework
- ▷  Windows Defender Features (Installed)

**Add Roles and Features Wizard**

Select destination server

DESTINATION SERVER  
core01.ad.cookbook.packt.com

Before You Begin  
Installation Type  
**Server Selection**  
Server Roles  
Features  
Confirmation  
Results

Select a server or a virtual hard disk on which to install roles and features.

Select a server from the server pool  
 Select a virtual hard disk

Server Pool

Filter:

Name	IP Address	Operating System
CA01.ad.cookbook.packt...	172.16.97.7	Microsoft Windows Server Standard
CA02.ad.cookbook.packt...	172.16.97.60	Microsoft Windows Server 2019 Standard Evaluation
core01.ad.cookbook.pac...	169.254.20.152...	Microsoft Windows Server Standard
core02.ad.cookbook.pac...	172.16.97.56,1...	Microsoft Windows Server Standard

**Add Servers**

Active Directory | DNS | Import

Location:

Operating System:

Name (CN):

Name	Operating System
core01	Windows Server Standard
core02	Windows Server Standard
CORE03	Windows Server 2019 Standard Evaluation

3 Computer(s) found

Selected



Computer

- ▲ AD.COOKBOOK.PACKT.COM (3)
  - core01
  - core02
  - CORE03

3 Computer(s) selected

Help

**SERVERS**  
All servers | 22 total

Filter   

Server Name	IPv4 Address	Manageability
appserver01	-	Kerberos target resolution error
CA01	172.16.97.7	Online - Performance counters not started
CA02	172.16.97.60	Online - Performance counters not started
CORE01	1	ce counters not started
CORE02	1	ce counters not started
CORE03	1	ce counters not started
DC01	1	ce counters not started

- Add Roles and Features
- Restart Server
- Computer Management
- Remote Desktop Connection

**Add Roles and Features Wizard** DESTINATION SERVER  
core01.ad.cookbook.packt.com

## Select destination server

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Confirmation

Results

Select a server or a virtual hard disk on which to install roles and features.

Select a server from the server pool

Select a virtual hard disk

**Server Pool**

Filter:

Name	IP Address	Operating System
DC01.ad.cookbook.packt...	172.16.97.2	Microsoft Windows Server 2019 Standard Evaluation
file03.ad.cookbook.packt...	172.16.97.50,1...	Microsoft Windows Server 2019 Standard Evaluation
CA02.ad.cookbook.packt...	172.16.97.60	Microsoft Windows Server 2019 Standard Evaluation
core01.ad.cookbook.pac...	169.254.20.152...	Microsoft Windows Server Standard
DC02.ad.cookbook.packt...	172.16.97.3	Microsoft Windows Server 2019 Standard Evaluation
core02.ad.cookbook.pac...	172.16.97.56,1...	Microsoft Windows Server Standard
CORE03.ad.cookbook.pa...	172.16.97.51	Microsoft Windows Server 2019 Standard Evaluation

8 Computer(s) found

This page shows servers that are running Windows Server 2012 or a newer release of Windows Server, and that have been added by using the Add Servers command in Server Manager. Offline servers and newly-added servers from which data collection is still incomplete are not shown.

< Previous Next > Install Cancel

# Select server roles

DESTINATION SERVER  
core01.ad.cookbook.packt.com

- Before You Begin
- Installation Type
- Server Selection
- Server Roles**
- Features
- DHCP Server
- Confirmation
- Results

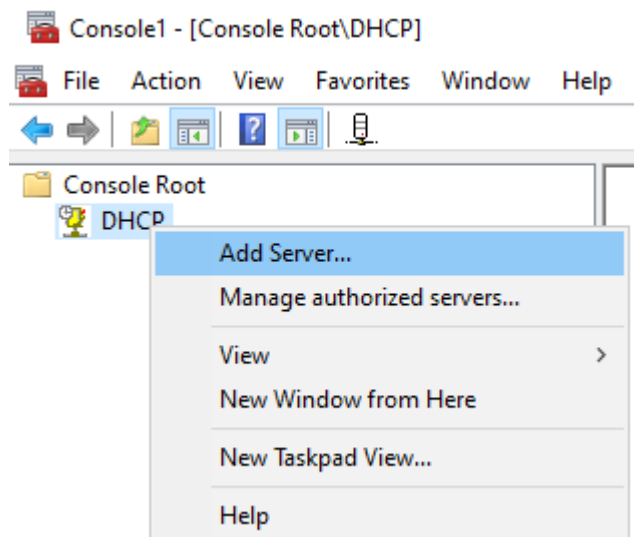
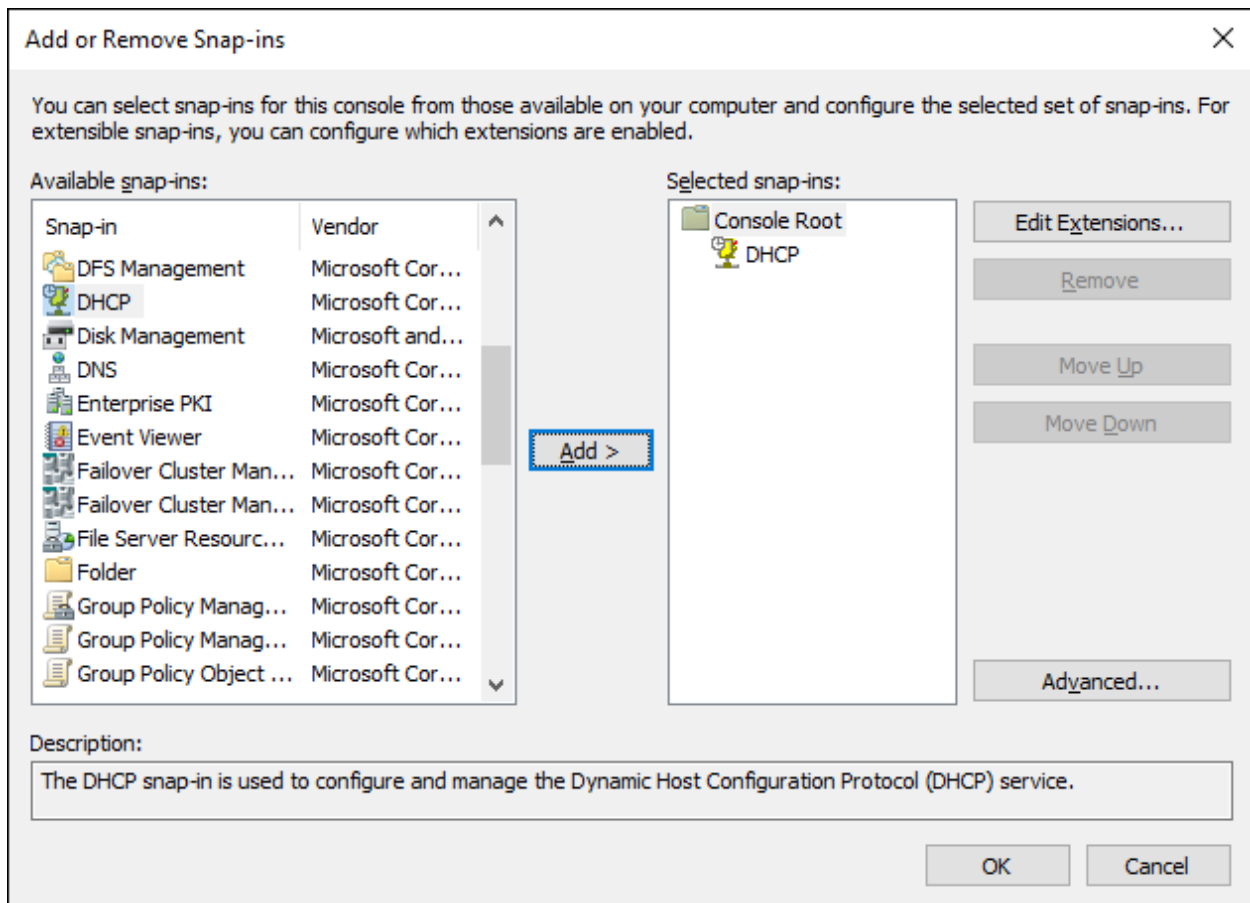
Select one or more roles to install on the selected server.

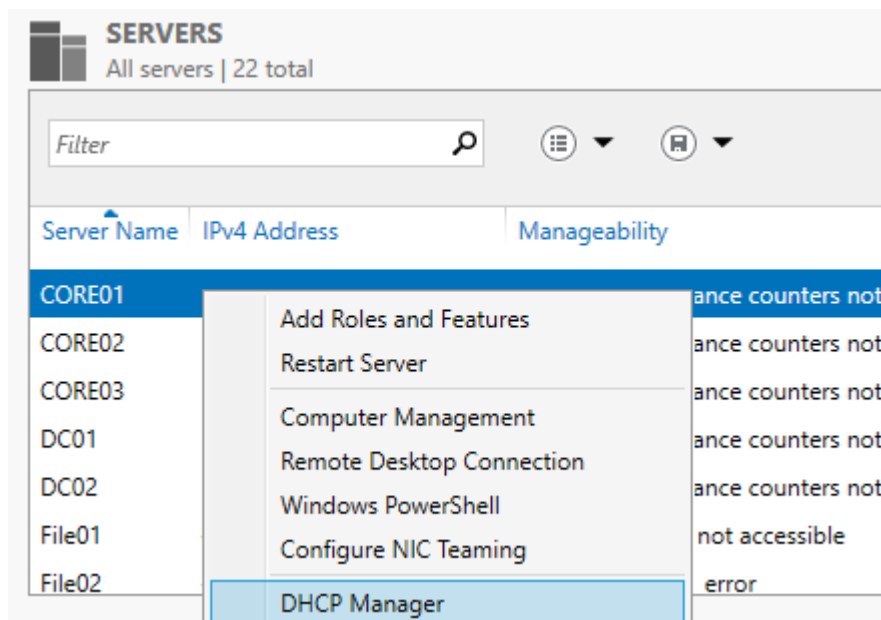
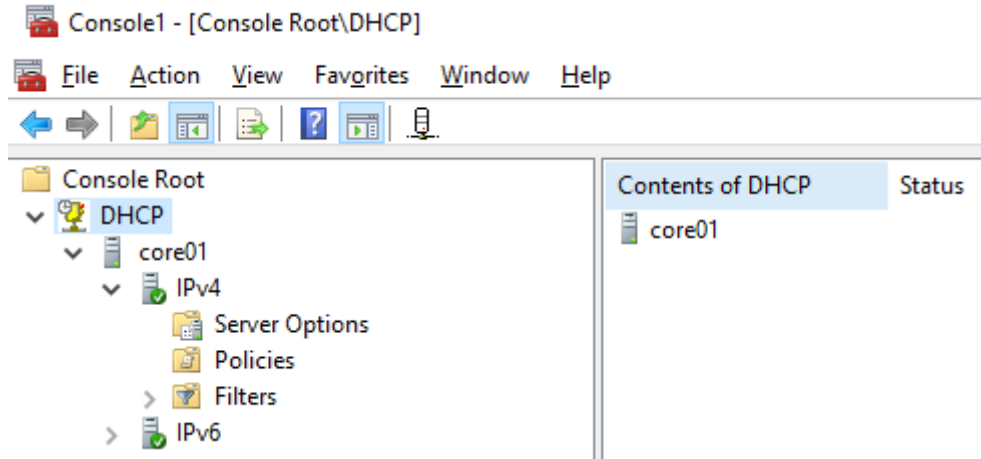
### Roles

- Active Directory Certificate Services
- Active Directory Domain Services
- Active Directory Federation Services
- Active Directory Lightweight Directory Services
- Active Directory Rights Management Services
- Device Health Attestation
- DHCP Server**
- DNS Server
- ▷  **File and Storage Services (2 of 12 installed)**
  - Host Guardian Service
  - Hyper-V
  - Print and Document Services
  - Remote Access
  - Remote Desktop Services
  - Volume Activation Services
  - Web Server (IIS)
  - Windows Deployment Services
  - Windows Server Update Services

### Description

Dynamic Host Configuration Protocol (DHCP) Server enables you to centrally configure, manage, and provide temporary IP addresses and related information for client computers.





SERVERS		
All servers   22 total		
Filter <input type="text"/>		
Server Name	IPv4 Address	Manageability
CORE01		ance counters
CORE02		ance counters
CORE03		ance counters
DC01		ance counters
DC02		ance counters
File01		not accessibl
File02		error

System

Control Panel > System and Security > System

Control Panel Home


- Device Manager
- Remote settings
- System protection
- Advanced system settings

View basic information about your computer

Windows edition

Windows 10 Pro

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System

Processor: Intel(R) Xeon(R) Gold 5215 CPU @ 2.50GHz 2.49 GHz

Installed memory (RAM): 4.01 GB

System type: 64-bit Operating System, x64-based processor

Pen and Touch: No Pen or Touch Input is available for this Display

Computer name, domain, and workgroup settings

Computer name: Cookbook-Win10 [Change settings](#)

Full computer name: Cookbook-Win10.ad.cookbook.packt.com

```
Administrator: Windows PowerShell
[core01.ad.cookbook.packt.com]: PS C:\Users\mhenderson\Documents> hostname
core01
[core01.ad.cookbook.packt.com]: PS C:\Users\mhenderson\Documents>
```

```
Administrator: Windows PowerShell
[core01.ad.cookbook.packt.com]: PS C:\Users\mhenderson\Documents> Remove-WindowsFeature DHCP

Collecting data...
10%
[oooooooooooo]
```

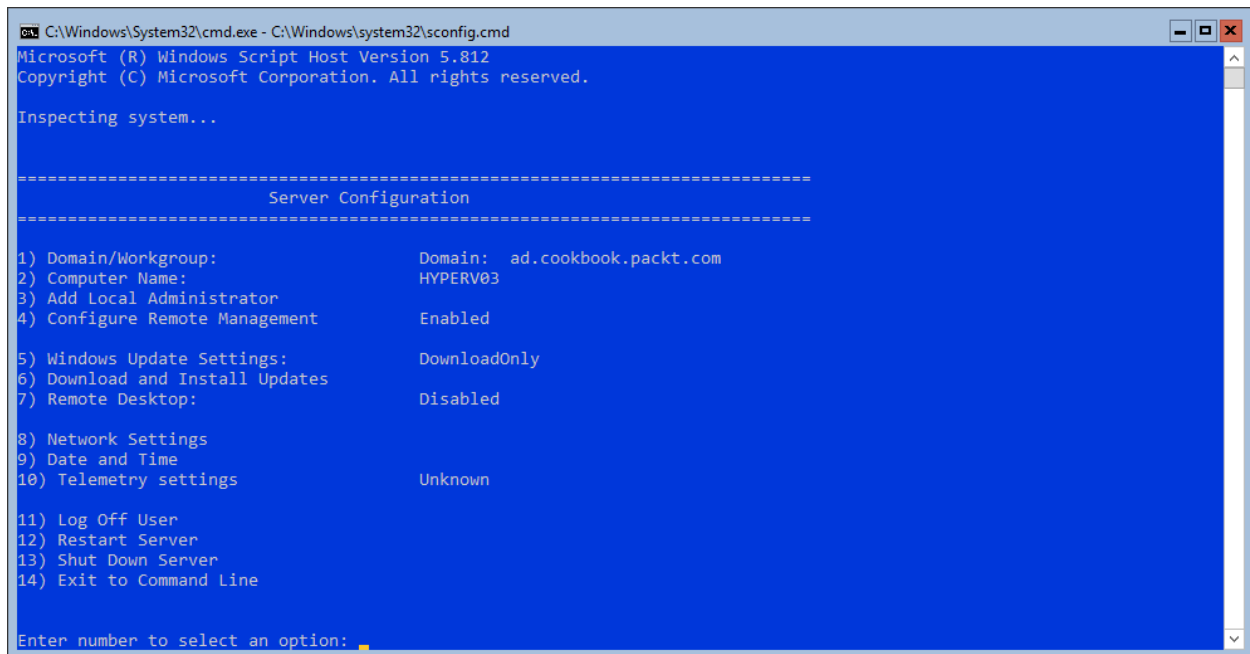
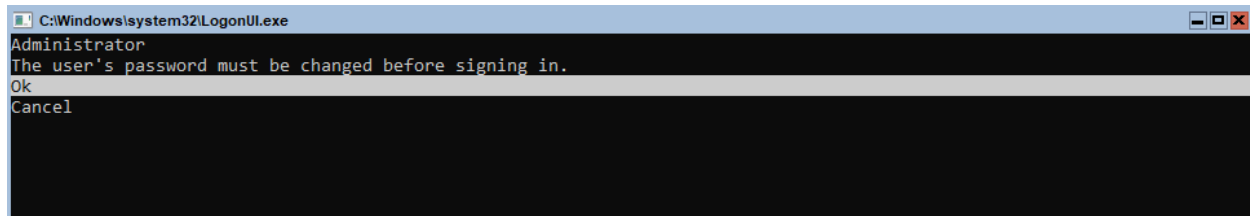
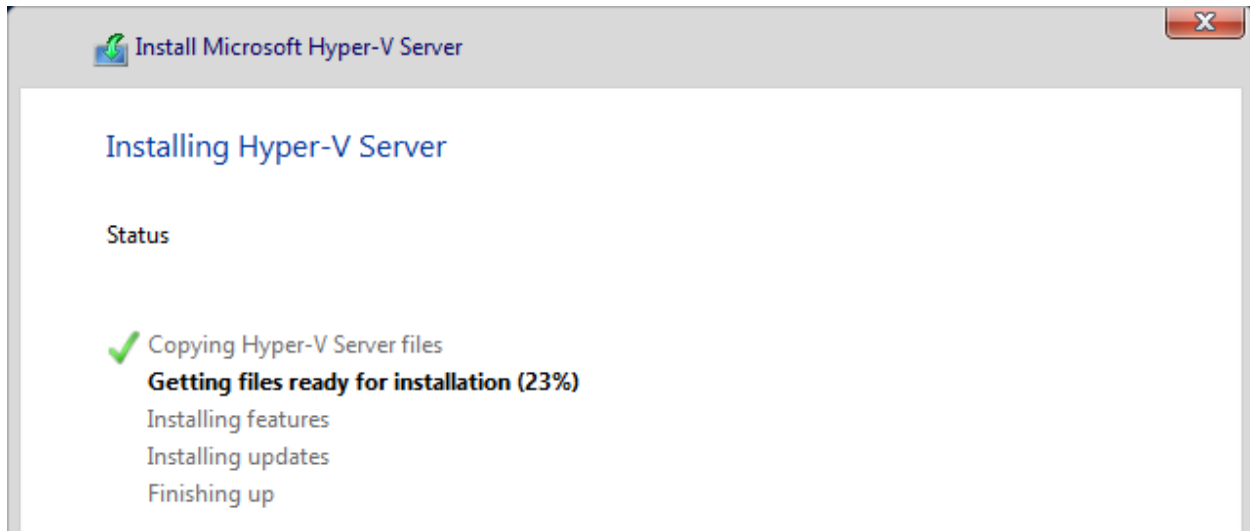


# Chapter 13: Working with Hyper-V

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Install-WindowsFeature Hyper-V -IncludeManagementTools -Restart

Start Installation...
20%
[ooooooooooooooooooooooooooooo]
```

The screenshot shows the Hyper-V Manager application window. The title bar reads "Hyper-V Manager". The menu bar includes "File", "Action", "View", and "Help". The left-hand pane shows a tree view with "Hyper-V Manager" and "HYPERV01" listed. The main area is divided into three sections: "Virtual Machines", "Checkpoints", and "Details". The "Virtual Machines" section contains a table with columns "Name", "State", "CPU Usage", "Assigned Memory", and "Upd". Below the table, it states "No virtual machines were found on this server." The "Checkpoints" section states "No virtual machine selected." The "Details" section states "No item selected." On the right side, there is an "Actions" pane for "HYPERV01" with the following options: "New", "Import Virtual Machine...", "Hyper-V Settings...", "Virtual Switch Manager...", "Virtual SAN Manager...", "Edit Disk...", "Inspect Disk...", "Stop Service", "Remove Server", "Refresh", "View", and "Help". At the bottom of the window, a status bar displays the message "Expand: Completed successfully."



System

Control Panel > System and Security > System

Control Panel Home

View basic information about your computer

Device Manager  
Remote settings  
System protection  
Advanced system settings

Windows edition  
Windows 10 Pro  
© 2019 Microsoft Corporation. All rights reserved.

System  
Processor: Intel(R) Xeon(R) Gold 5215 CPU @ 2.50GHz 2.49 GHz  
Installed memory (RAM): 4.00 GB

Windows 10

Hyper-V Manager

File Action View Help

Hyper-V Manager  
HYPERV01  
HYPERV02  
HYPERV03

Name	State	CPU Usage	Assigned Memory	Uptime
No virtual machines were found on this server.				

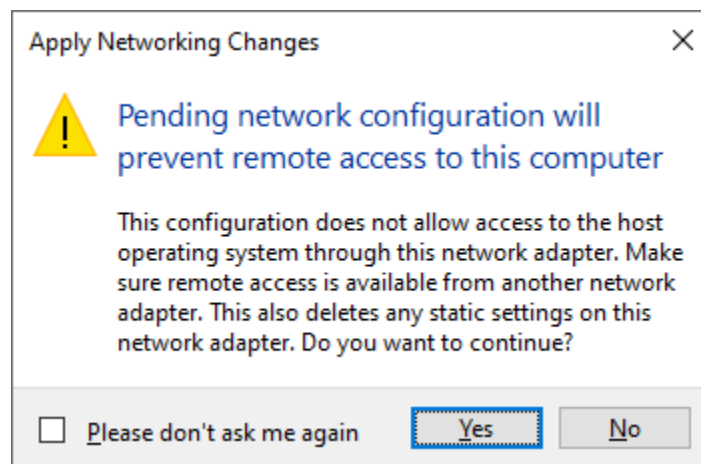
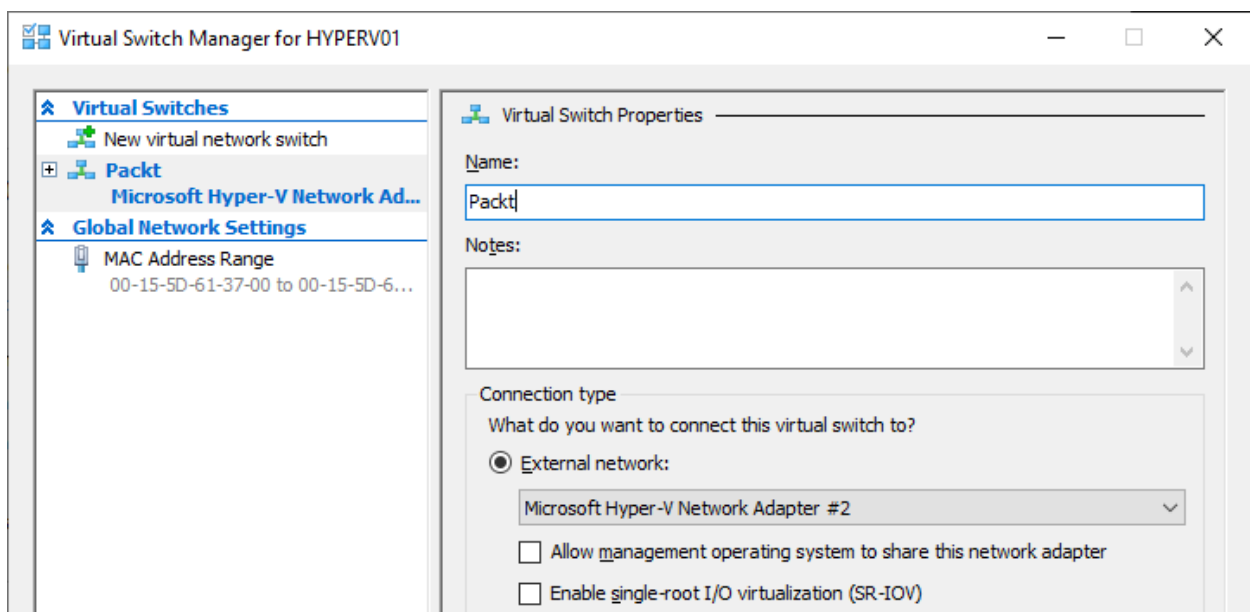
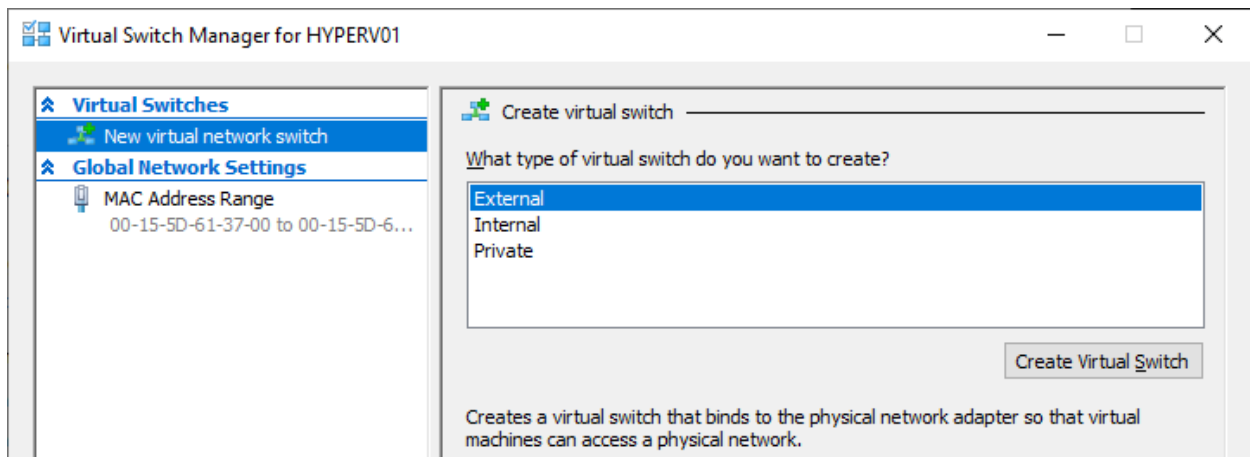
Actions

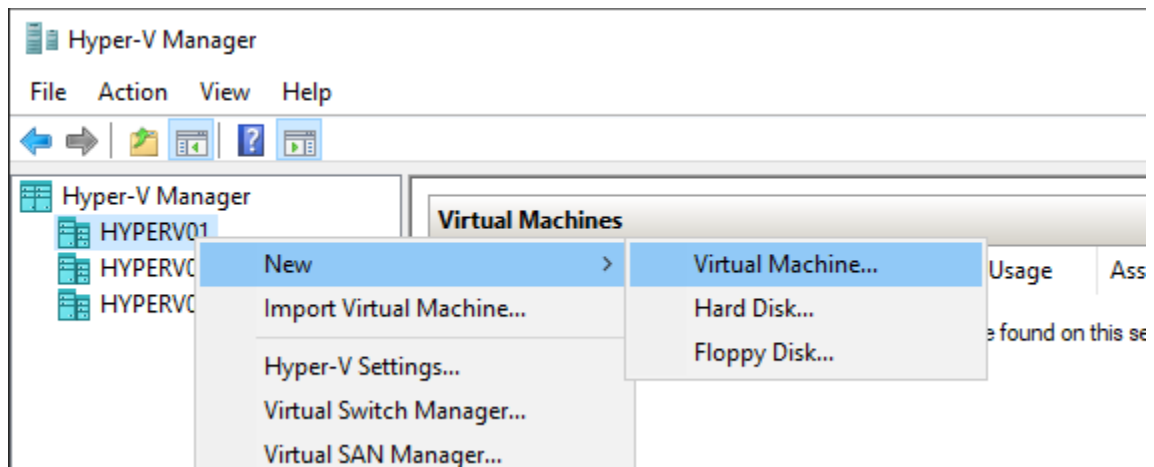
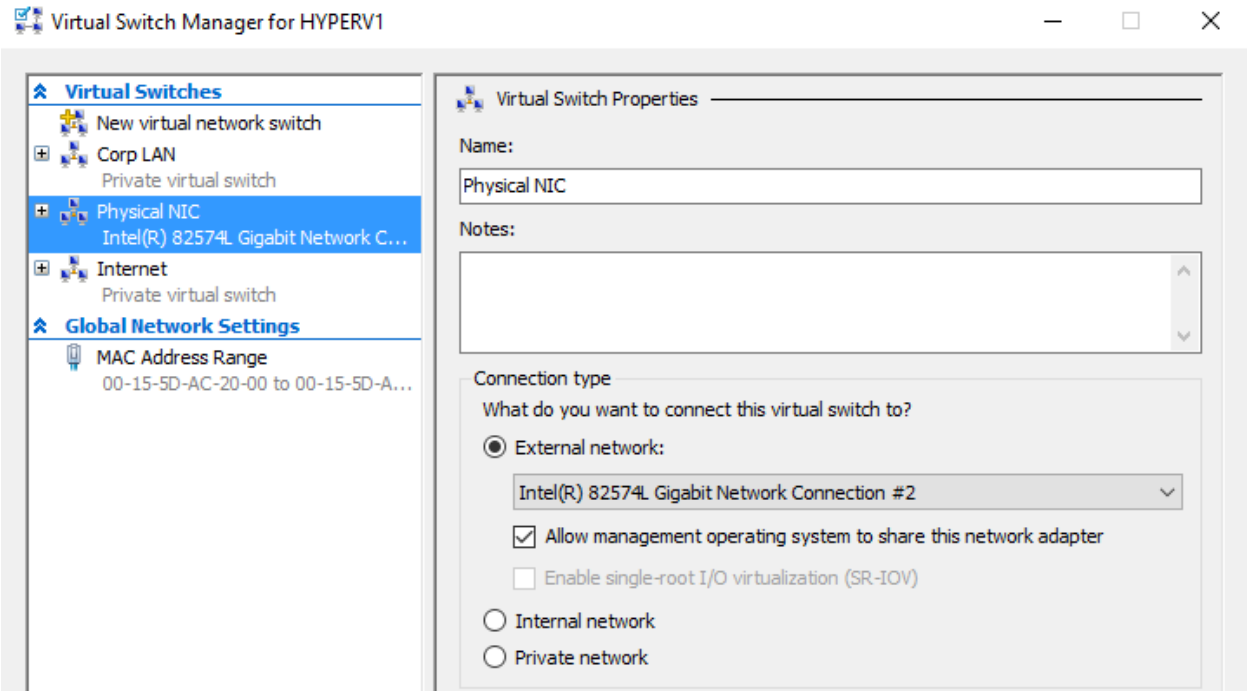
- HYPERV01
- New
- Import Virtual Machine...
- Hyper-V Settings...
- Virtual Switch Manager...
- Virtual SAN Manager...

Actions

HYPERV01

- New
- Import Virtual Machine...
- Hyper-V Settings...
- Virtual Switch Manager...
- Virtual SAN Manager...
- Edit Disk...
- Inspect Disk...
- Stop Service
- Remove Server
- Refresh
- View
- Help





New Virtual Machine Wizard

### Specify Name and Location

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary

Choose a name and location for this virtual machine.


The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.

Name:

You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.

Store the virtual machine in a different location

Location:

 If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.

New Virtual Machine Wizard

### Configure Networking

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected.

Connection:

New Virtual Machine Wizard

### Connect Virtual Hard Disk

Before You Begin  
Specify Name and Location  
Specify Generation  
Assign Memory  
Configure Networking  
**Connect Virtual Hard Disk**  
Installation Options  
Summary

A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.

**Cr**eate a virtual hard disk  
Use this option to create a VHDX dynamically expanding virtual hard disk.

Name:

Location:

Size:  GB (Maximum: 64 TB)

**U**se an existing virtual hard disk  
Use this option to attach an existing VHDX virtual hard disk.

Location:

**A**ttach a virtual hard disk later  
Use this option to skip this step now and attach an existing virtual hard disk later.

< Previous   **Next >**   Finish   Cancel

New Virtual Machine Wizard

### Installation Options

Before You Begin  
Specify Name and Location  
Specify Generation  
Assign Memory  
Configure Networking  
Connect Virtual Hard Disk  
**Installation Options**  
Summary

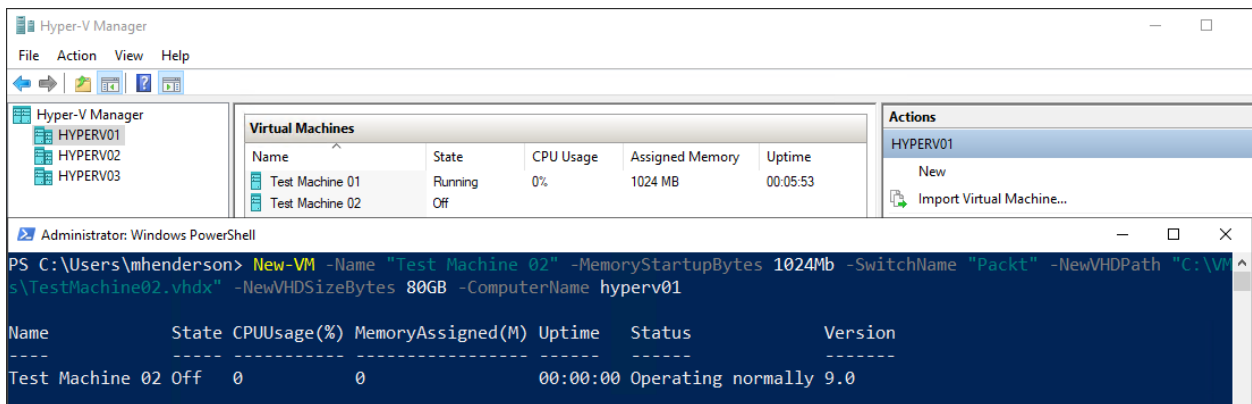
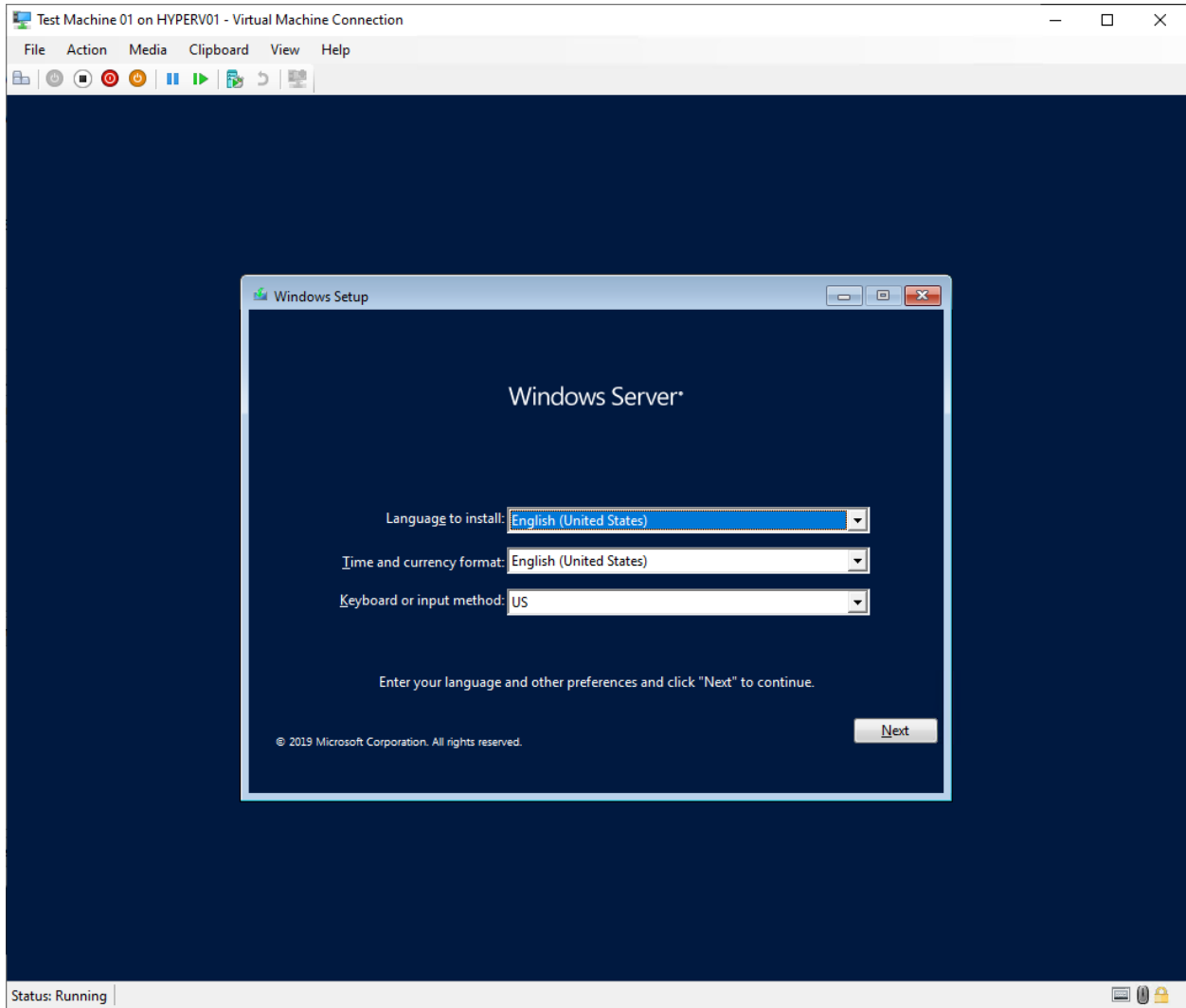
You can install an operating system now if you have access to the setup media, or you can install it later.

Install an operating system later

**I**nstall an operating system from a bootable image file

Media  
Image file (.iso):

Install an operating system from a network-based installation server





Hyper-V Manager

File Action View Help

Hyper-V Manager  
SYDW-MHENDERSON

### Virtual Machines

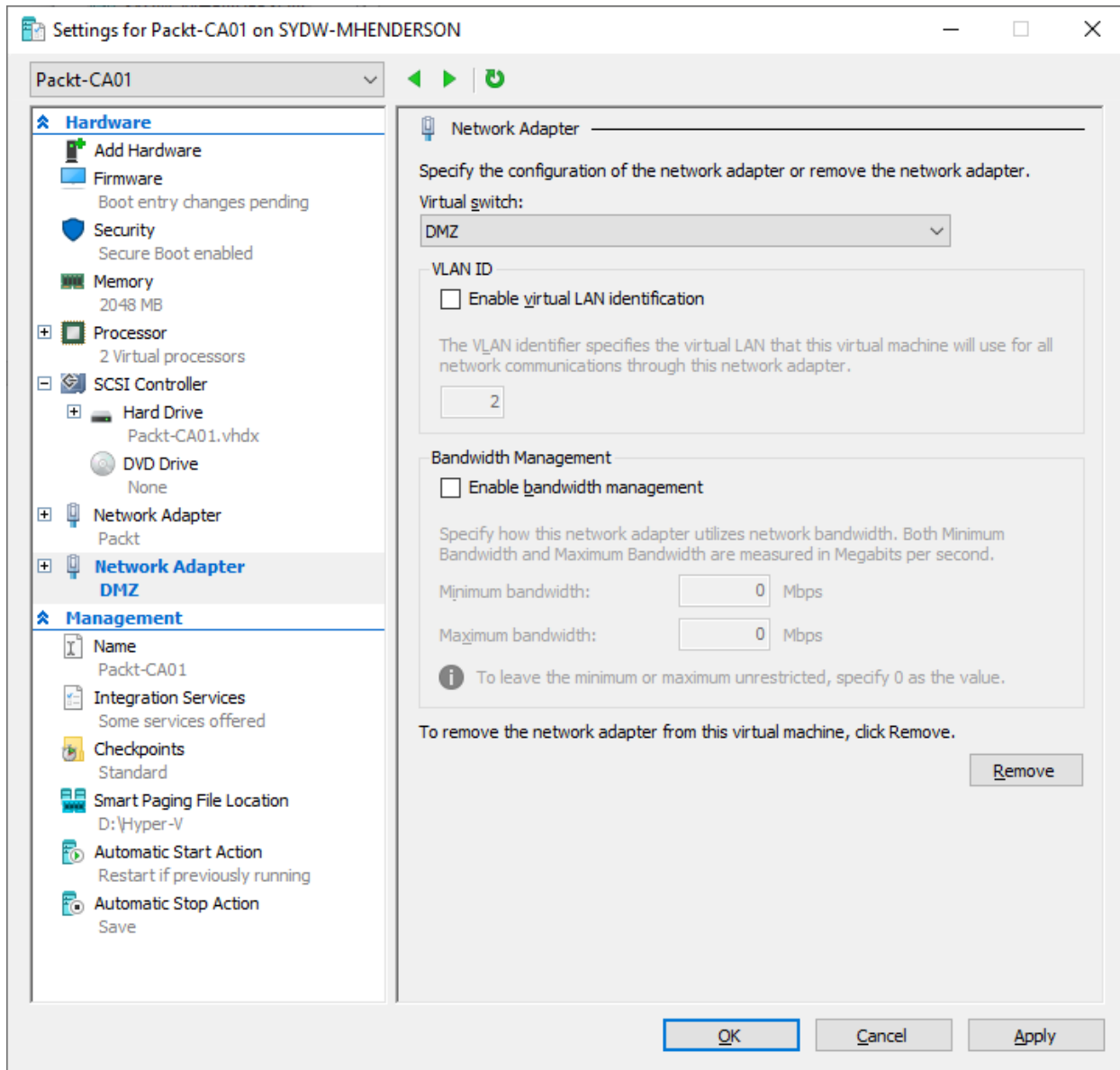
Name	State	CPU Usage	Assigned Memory	Uptime	Status
Packt-CA01	Running	0%	822 MB	13:07:58	
Packt-CA02	Stopped	0%	1606 MB	13:07:55	
Packt-Core01	Stopped	0%	1174 MB	13:07:57	
Packt-Core02	Stopped	0%	2048 MB	13:07:59	
Packt-Core03	Stopped	0%	746 MB	13:07:57	
Packt-DC01	Stopped	0%	1726 MB	13:07:55	
Packt-DC02	Stopped	0%	1514 MB	13:07:57	
Packt-File01	Stopped				
Packt-File02	Stopped				
Packt-File03	Stopped	0%	1786 MB	13:07:58	

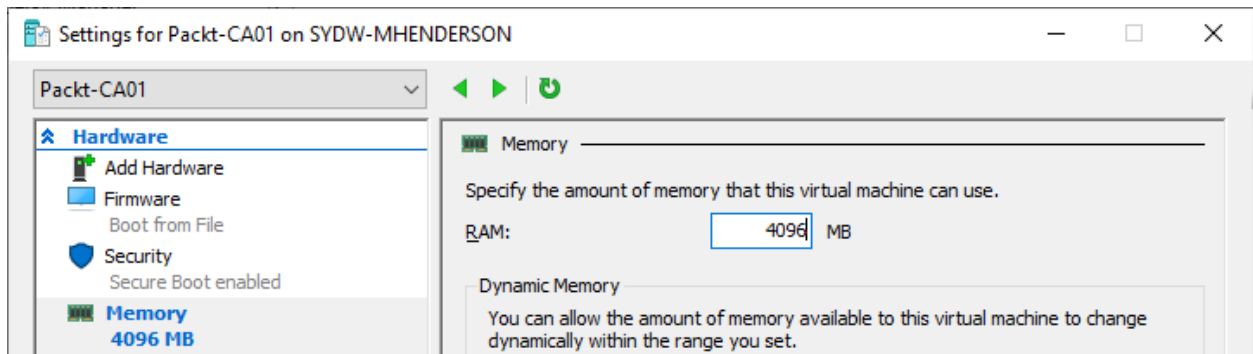
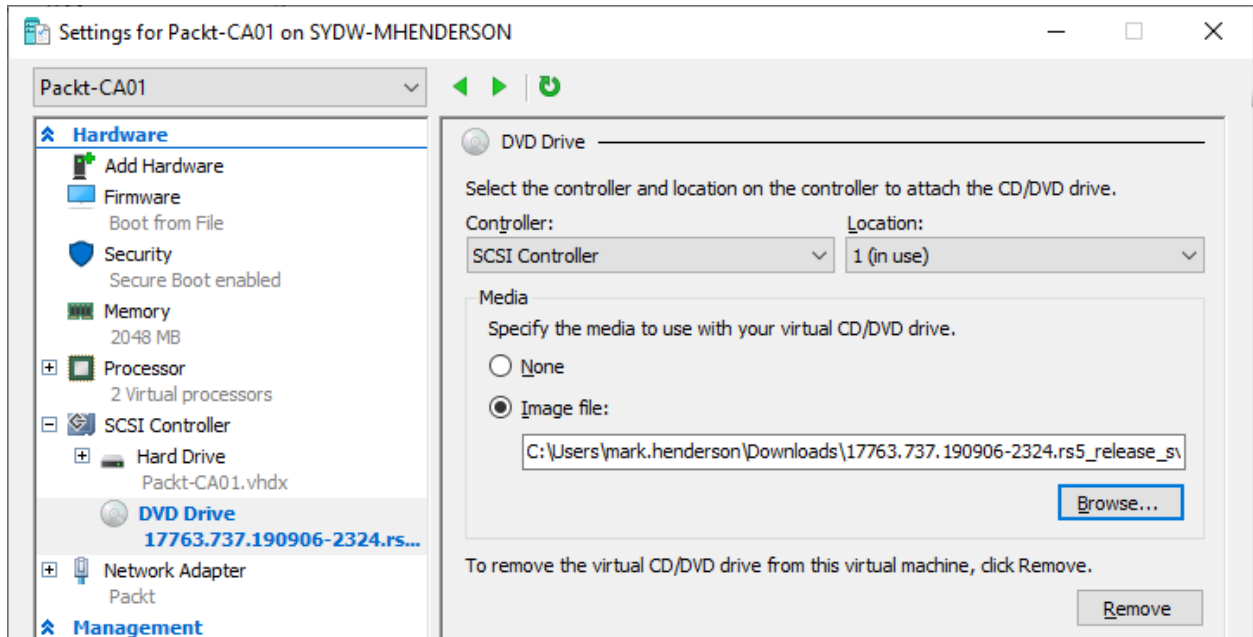
### Checkpoints

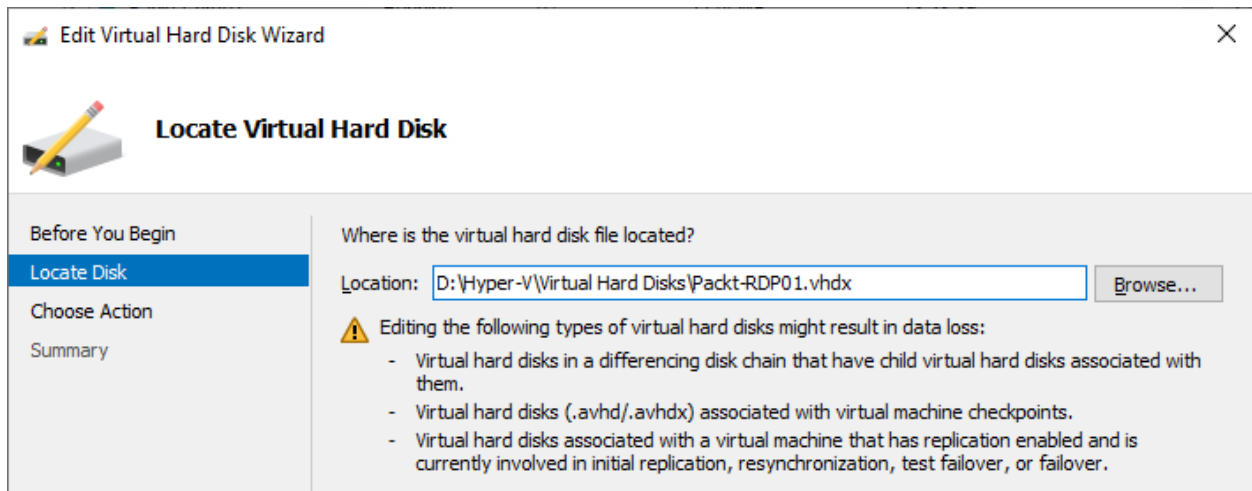
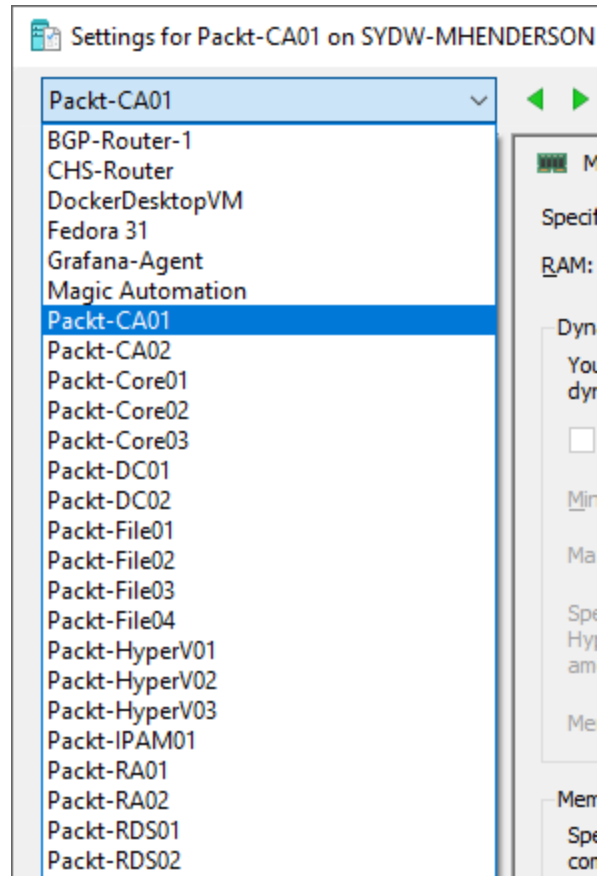
Selected virtual machine has no checkpoints.

Packt-CA01


- Connect...
- Settings...
- Turn Off...
- Shut Down...
- Save
- Pause
- Reset
- Checkpoint
- Move...
- Export...
- Rename...
- Help







Edit Virtual Hard Disk Wizard



### Choose Action

Before You Begin

Locate Disk


**Choose Action**

Summary

What do you want to do to the virtual hard disk?

- C**ompact  
This option compacts the file size of a virtual hard disk. The storage capacity of the virtual hard disk remains the same.
- C**onvert  
This option converts a virtual hard disk by copying the contents to a new virtual hard disk. The new virtual hard disk can use a different type and format than the original virtual hard disk.
- E**xpand  
This option expands the capacity of the virtual hard disk.

Edit Virtual Hard Disk Wizard



### Convert Virtual Hard Disk

Before You Begin

Locate Disk

Choose Action

Choose Disk Format

Choose Disk Type

**Configure Disk**

Select the name and location for the VHDX fixed size disk.

Name:

Hyper-V Manager

File Action View Help

Hyper-V Manager  
SYDW-MHENDERSON

### Virtual Machines

Name	State	CPU Usage	Assig
Packt-DC01	Running	0%	1872
Packt-DC02		0%	1456
Packt-File01			
Packt-File02			
Packt-File03		0%	1786
Packt-File04			
Packt-HyperV		0%	4096
Packt-HyperV		0%	4096
Packt-HyperV		0%	794 M
Packt-IPAM01			

Checkpoint

### Checkpoints

Move...
---------

Administrator: Windows PowerShell

```
PS C:\Users\mark.henderson> Get-VMCheckpoint -VMName "Packt-DC01"
```

VMName	Name	SnapshotType	CreationTime
Packt-DC01	Packt-DC01 - (14/04/2020 - 9:02:15 AM)	Standard	14/04/2020 9:02:19 AM

Settings for Packt-DC01 on SYDW-MHENDERSON

Packt-DC01

- Hardware
  - Add Hardware
  - Firmware
    - Boot from File
  - Security
    - Secure Boot enabled
  - Memory
    - 1024 MB
  - Processor
    - 2 Virtual processors
  - SCSI Controller
    - Hard Drive
      - Packt-DC01-2\_89ECE992-1AA...
    - DVD Drive
      - None
  - Network Adapter
    - Packt
- Management
  - Name
    - Packt-DC01
  - Integration Services
    - Some services offered
  - Checkpoints
    - Standard

Checkpoints

You can configure options for checkpoints for this virtual machine.

Checkpoint Type

- Enable checkpoints

Select the type of checkpoint that will be created when users choose to checkpoint this virtual machine.

- Production checkpoints
  - Use backup technology in the guest operating system to create data-consistent checkpoints that don't include information about running applications.
  - Create standard checkpoints if the guest does not support creation of production checkpoints.
  - Take a checkpoint with full application state if it is not possible to use backup technology inside the guest operating system.
- Standard checkpoints
  - Create application-consistent checkpoints that capture the current state of applications.
- Use automatic checkpoints

Checkpoint File Location

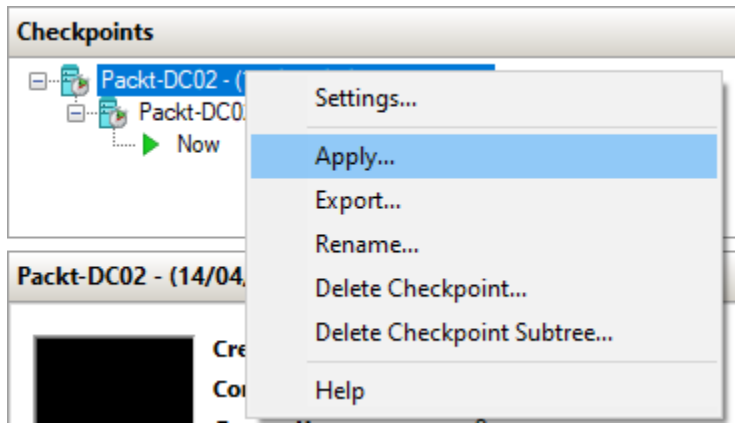
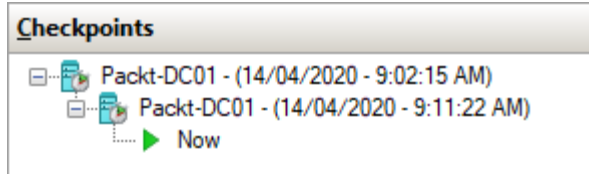
Choose where to store the checkpoint configuration and checkpoint saved state files for this virtual machine.

Virtual Machine Checkpoint

**i** Production checkpoint created.

Backup technology in the guest operating system was used to create a production checkpoint. The running application state wasn't included in the checkpoint operation. You can configure checkpoint options under the virtual machine settings.

Please don't show me this again



```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Test-Cluster -Node hyperv04,hyperv05 -Include "Storage Spaces Direct", "Inventory", "Network", "System Configuration"
WARNING: Network - Validate Network Communication: The test reported some warnings..
WARNING:
Test Result:
HadUnselectedTests, ClusterConditionallyApproved
Testing has completed for the tests you selected. You should review the warnings in the Report. A cluster solution is supported by Microsoft only if you run all cluster validation tests, and all tests succeed (with or without warnings).
Test report file path: C:\Users\mhenderson\AppData\Local\Temp\Validation Report 2020.04.15 At 05.08.27.htm

Mode                LastWriteTime         Length Name
-----
-a----          15/04/2020   5:09 AM           725941 Validation Report 2020.04.15 At 05.08.27.htm
  
```

```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> Enable-ClusterStorageSpacesDirect -CimSession storage-direct

Enable-ClusterStorageSpacesDirect -CimSession storage-direct
0/1 completed
[
- storage-direct: Enabling cluster Storage Spaces Direct
  Waiting until physical disks are claimed
  [ooooooooooooooooooooo
]
15% Complete
  
```

```

Administrator: Windows PowerShell
PS C:\Users\mhenderson> New-StorageTier -StoragePoolFriendlyName S2D* -FriendlyName NestedMirror -ResiliencySettingName Mirror -MediaType HDD -NumberOfDataCopies 4 -CimSession storage-direct

FriendlyName TierClass MediaType ResiliencySettingName FaultDomainRedundancy Size FootprintOnPool StorageEfficiency PSC
omp
ute
rNa
me
-----
NestedMirror Unknown    HDD           Mirror                3                0 B                0 B                sto
  
```



```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> New-Volume -StoragePoolFriendlyName S2D* -FriendlyName HyperV -StorageTierFriendlyNames NestedMirror -StorageTierSizes 100GB -CimSession storage-direct

DriveLetter FriendlyName FileSystemType DriveType HealthStatus OperationalStatus SizeRemaining Size
-----
HyperV CSVFS_ReFS Fixed Healthy OK 98.27 GB 99.94 GB
```

Windows Admin Center x + v  
https://localhost:6516/

Windows Admin Center Microsoft

### Windows Admin Center

**All connections**

+ Add Connect Manage as More v 20 items Search

**Add cluster** Import clusters

Cluster name \*

Found "storage-direct.ad.cookbook.packt.com"

Manage Software-Defined Networking (if set up)

Tag connections with cluster name

Also add servers in the cluster:  
hyperv04.ad.cookbook.packt.com  
hyperv05.ad.cookbook.packt.com

Windows Admin Center Cluster Manager Microsoft

## Volumes

Summary **Inventory**

+ Create Open More 2 items Search

Name	Status	File system	Resiliency	Size	Storage usage
<a href="#">ClusterPerformanc...</a>	OK	ReFS	Two-way mirror	11.9 GB	10%
<a href="#">HyperV</a>	OK	CSVFS_ReFS	Nested two-way mir...	99.9 GB	2%

### Volumes > Volume HyperV

Open Expand Offline Delete

#### Properties

Status	File system	Path	Fault domain awareness
OK	CSVFS_ReFS	C:\ClusterStorage\HyperV\	Server
Total size	Used size	Resiliency	Footprint
99.9 GB	1.67 GB	Nested two-way mirror	400 GB

## General

Any changes will be applied to all cluster nodes.

Virtual Hard Disks Path \*  [Browse](#)

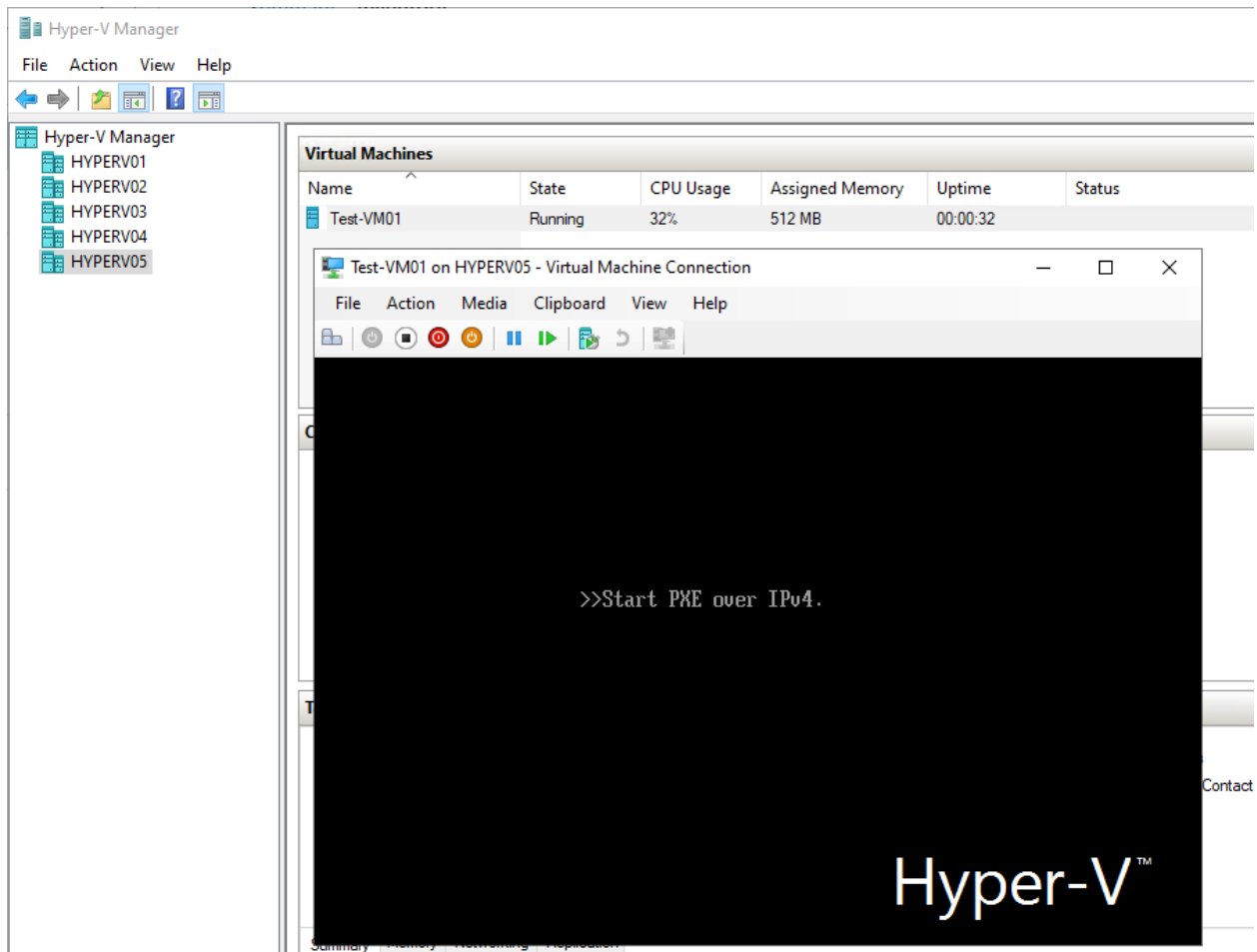
Virtual Machines Path \*  [Browse](#)

## Virtual machines

Summary **Inventory**

+ New < Connect Settings **Start** Shut down Save More

Name	State	Host server	CPU usage	Memory pressure	Memory de
<a href="#">Test-VM01</a>	Stopp...	hyperv05	-	-	-



## Virtual machines

Summary Inventory

+ New <> Connect ⚙ Settings ▶ Start  Shut down 💾 Save More

✓ Name ↑	State	Host server	CPU usage	Memory pressure	Memo
✓ <a href="#">Test-VM01</a>	Runni...	hyperv04	0 %	-	0 B

## Chapter 14: Containers and Docker

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Install-Module DockerMsftProvider

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\mhenderson\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
```

```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> Install-WindowsFeature Containers -Restart

Start Installation...
20%
[ooooooooooooooooooooo ]
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker run hello-world:nanoserver
Unable to find image 'hello-world:nanoserver' locally
nanoserver: Pulling from library/hello-world
0fe89239909b: Pull complete
d5764f3a7b3b: Pull complete
f48f3724e92b: Pull complete
Digest: sha256:2042583887a6cb63ce428aa792258b8f72965bdab285aabf3d3c009443cab6d2
Status: Downloaded newer image for hello-world:nanoserver

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (windows-amd64, nanoserver-1809)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

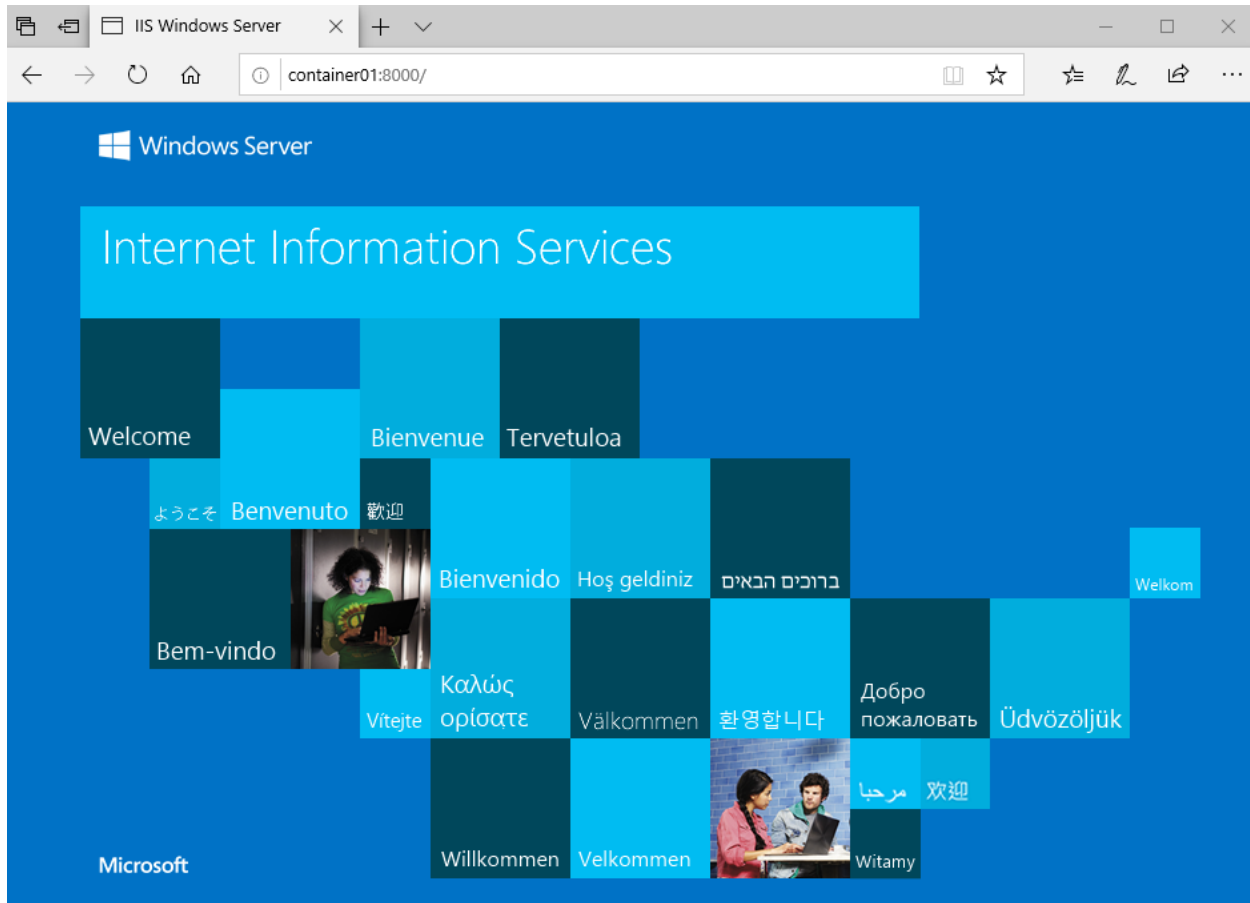
To try something more ambitious, you can run a Windows Server container with:
PS C:\> docker run -it mcr.microsoft.com/windows/servercore powershell

Share images, automate workflows, and more with a free Docker ID:
https://hub.docker.com/

For more examples and ideas, visit:
https://docs.docker.com/get-started/
```

Administrator: Windows PowerShell

```
PS C:\Users\mark.henderson> docker run -d -p 8000:80 --name my-test-site mcr.microsoft.com/windows/servercore/iis
Unable to find image 'mcr.microsoft.com/windows/servercore/iis:latest' locally
latest: Pulling from windows/servercore/iis
9038b92872bc: Already exists
a6e518c4d58b: Already exists
d048700d9dd1: Downloading [=====>] 10.03MB/27.16MB
9eab98f730cb: Download complete
cd912204d23f: Download complete
```



```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED
STATUS            PORTS                               NAMES                   ago
58ce44cbd256      mcr.microsoft.com/windows/servercore/iis "C:\\ServiceMonitor.e..." 4 minutes ago
Up 4 minutes      0.0.0.0:8000->80/tcp                my-test-site
```

Administrator: Windows PowerShell

```
PS C:\Users\mark.henderson> docker exec my-test-site hostname
f217fde45943
```

Administrator: Windows PowerShell

```
PS C:\Users\mark.henderson> docker exec my-test-site powershell ` $ENV:ComputerName
F217FDE45943
```

Administrator: Windows PowerShell

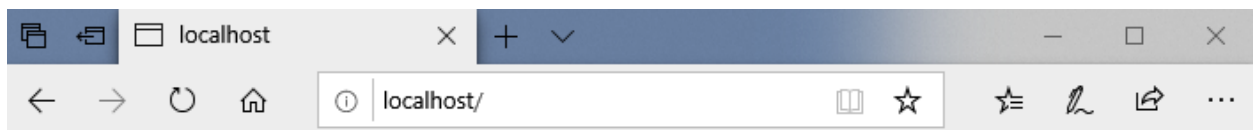
```
PS C:\Users\mark.henderson> docker exec my-test-site powershell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\>
PS C:\Users\mark.henderson> █
```

Administrator: Windows PowerShell

```
Step 5/8 : RUN powershell -Command Stop-Website -Name 'Default Web Site'
---> Using cache
---> 75910e4a37c7
Step 6/8 : RUN powershell -Command New-Website -Name 'NewWebsite' -PhysicalPath C:\inetpub\NewWebsite\
---> Using cache
---> 9c5c7e567858
Step 7/8 : EXPOSE 80/tcp
---> Using cache
---> 17fefcf30dbe
Step 8/8 : ENTRYPOINT ["C:\\ServiceMonitor.exe", "w3svc"]
---> Using cache
---> 022766d22b11
Successfully built 022766d22b11
Successfully tagged my-iis-site:dev
PS C:\Containers\IIS-Container>
```



Congratulations, you are viewing our new website, served from our docker container!

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker exec mongodb mongod --version
db version v3.6.17
git version: 3d6953c361213c5bfab23e51ab274ce592edafe6
OpenSSL version: OpenSSL 1.0.2s-fips 28 May 2019
allocator: tcmalloc
modules: none
build environment:
  distmod: 2008plus-ssl
  distarch: x86_64
  target_arch: x86_64
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker pull mongo:4.2-windowsservercore
4.2-windowsservercore: Pulling from library/mongo
65014b3c3121: Already exists
eac6fba788c9: Already exists
442da5a04696: Already exists
2cd1d4721643: Pull complete
6f67966d3a47: Pull complete
4e3f18459245: Pull complete
ff28a577006c: Downloading 31.1MB/455.6MB
c88cd1efbb2c: Download complete
d1eb8768e3e3: Download complete
bdc5f1e7a5e6: Download complete
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker stop mongodb; docker rm mongodb; docker run -d --restart=always -p 8081:8081 --name mongodb mongo:4.2-windowsservercore
mongodb
mongodb
117a2c83dc95eaaa2e1a789ec1ebe724bf2d14ca66404f90d47bcffff0e2eeb1
PS C:\Users\mhenderson> docker exec mongodb mongod --version
db version v4.2.6
git version: 20364840b8f1af16917e4c23c1b5f5efd8b352f8
allocator: tcmalloc
modules: none
build environment:
  distmod: 2012plus
  distarch: x86_64
  target_arch: x86_64
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker run -d -p 25565:25565 sunghwan2789/minecraft-server:windowsservercore-1809
3958e82411e2de521c204a6a869ae5be38752cc13fed690019f8cbcd6100f69e
PS C:\Users\mhenderson> docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED            STATUS
PORTS              NAMES
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> docker logs 3958e82411e2de521c204a6a869ae5be38752cc13fed690019f8cbcd6100f69e
Please accept the Minecraft EULA at
  https://account.mojang.com/documents/minecraft_eula
by adding the following immediately after 'docker run':
  -e EULA=TRUE
```



```
Administrator: Windows PowerShell
PS C:\Users\mhenderson> docker volume create minecraft
minecraft
PS C:\Users\mhenderson> docker run -d -p 25565:25565 --env EULA=TRUE --restart=always --mount
source=mincraft,target=c:/data sunghwan2789/minecraft-server:windowsservercore-1809
ebdebe7404e2963c496bbc8ede8d7f400eca68701282bcb8c6ad6e5dff8a94af
```

File Explorer window showing the contents of the `_data` directory. The path is `ProgramData > docker > volumes > minecraft > _data`. The directory contains 10 items:

Name	Date modified	Type	Size
logs	25/04/2020 5:51 PM	File folder	
world	25/04/2020 5:50 PM	File folder	
banned-ips.json	25/04/2020 5:51 PM	JSON File	1 KB
banned-players.json	25/04/2020 5:51 PM	JSON File	1 KB
eula	25/04/2020 5:49 PM	Text Document	1 KB
minecraft_server.1.15.2.jar	25/04/2020 5:49 PM	JAR File	35,328 KB
ops.json	25/04/2020 5:51 PM	JSON File	1 KB
server.properties	25/04/2020 5:51 PM	PROPERTIES File	2 KB
usercache.json	25/04/2020 5:51 PM	JSON File	1 KB
whitelist.json	25/04/2020 5:51 PM	JSON File	1 KB

```
Administrator: Windows PowerShell
PS C:\Users\mark.henderson> Install-Module Az

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
```

```
Windows PowerShell
PS C:\Users\mark.henderson> Connect-AzAccount

Account SubscriptionName TenantId Environment
-----
mark.henderson Microsoft Azure Sponsorship b5fc4633 Azur...
```

```
Windows PowerShell
PS C:\Users\mark.henderson> Get-AzStorageAccountKey -ResourceGroupName PacktCookbook -Name packtcontainerstorage

KeyName Value Permissions
-----
key1 A9o3qrXq6Eam63p9sCQo+kM2N9XLDcXS09Z/nke4ZLqsDr+o+iem9LnzT07x0BDtsrWpQwL19MI9AZ0u6a0eKA== Full
key2 bJs8J6V4s90RXbftqW4tAFPMIT9HNC32j0tLcuMo/+1yDK3R5Dxod7y8twb15cXC1DhPWmkpebKDJYnKSGJohw== Full
```

```
Windows PowerShell
>> -Image itzg/minecraft-server
>> -AzureFileVolumeShareName minecraftdata
>> -AzureFileVolumeMountPath "/data"
>> -AzureFileVolumeAccountCredential $credential
>> -Port @(25565)
>> -EnvironmentVariable @{"EULA"="TRUE"}

ResourceGroupName      : PacktCookbook
Id                     : /subscriptions/1a2c28b9-cbf0-4214-b9d6-0087a3b50f25/resourceGroups/PacktCookbook/provider:
                        icrosoft.ContainerInstance/containerGroups/minecraftserver
Name                   : minecraftserver
Type                   : Microsoft.ContainerInstance/containerGroups
Location               : australiaeast
Tags                   :
ProvisioningState      : Succeeded
Containers             : {minecraftserver}
ImageRegistryCredentials :
RestartPolicy         : Always
IpAddress              : 20.193.4.0
DnsNameLabel           : minecraft-server-packt-cookbook
Fqdn                   : minecraft-server-packt-cookbook.australiaeast.azurecontainer.io
Ports                  : {25565}
OsType                 : Linux
Volumes                : {azurefile}
State                  : Running
Events                 : {}
Identity                :
```



### Edit Server Info

Server Name  
Our Container Server

Server Address  
20.43.107.165\_

Server Resource Packs: Prompt

Done

Cancel

### Play Multiplayer

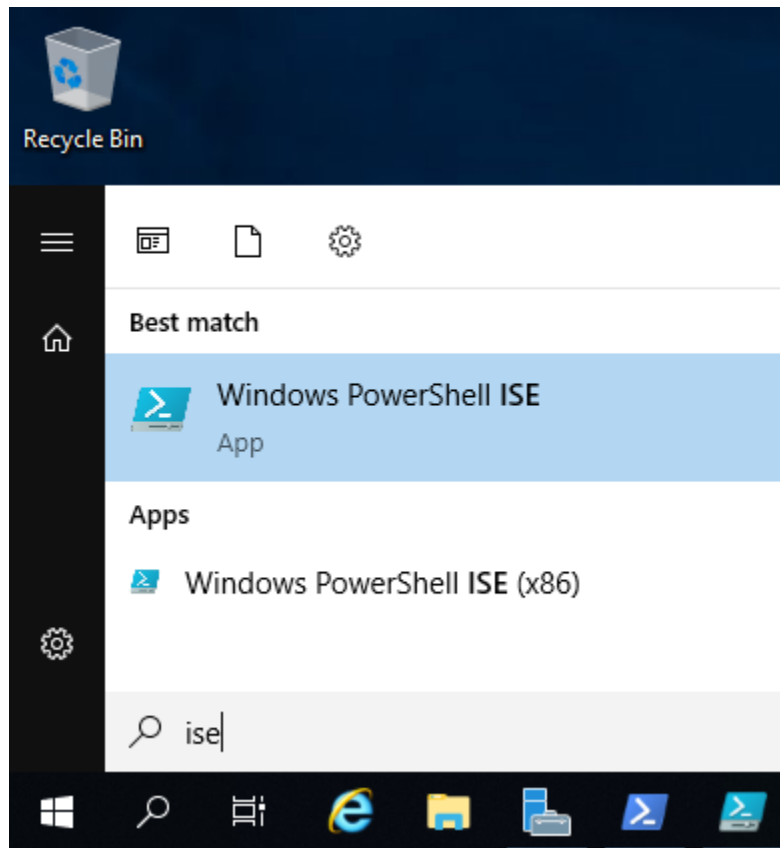
	Our Container Server A Vanilla Minecraft Server powered by Docker	0/20 
---	--	--

Scanning for games on your local network  
o o o

Join Server Direct Connect Add Server

Edit Delete Refresh Cancel

## Chapter 15: Desired State Configuration and Automation



```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
Untitled1.ps1 WebServer.ps1* X
1 Configuration PacktWebServer {
2
3     Import-DscResource -ModuleName PsDesiredStateConfiguration
4     Node 'localhost' {
5         WindowsFeature WebServer {
6             Ensure = "Present"
7             Name    = "Web-Server"
8         }
9     }
10 }
11
```

Administrator: Windows PowerShell

```
PS C:\Users\mhenderson> cd C:\DSC\  
PS C:\DSC> . .\PacktWebServer.ps1  
PS C:\DSC> PacktWebServer
```

Directory: C:\DSC\PacktWebServer

Mode	LastWriteTime	Length	Name
-a----	1/05/2020 2:40 PM	1922	localhost.mof

Administrator: Windows PowerShell

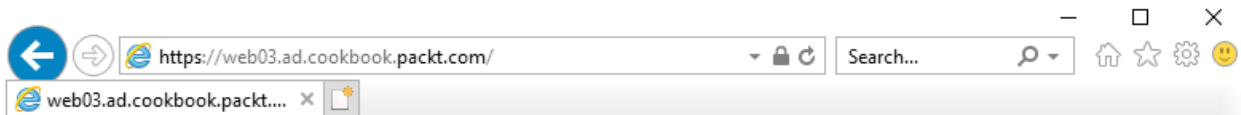
```
PS C:\DSC> . .\PacktWebServer.ps1  
At C:\DSC\PacktWebServer.ps1:3 char:5  
+ Import-DscResource -ModuleName PsDesiredStateConfiguration, xWebA ...  
+ ~~~~~  
Could not find the module 'xWebAdministration'.  
+ CategoryInfo          : ParserError: (:) [], ParseException  
+ FullyQualifiedErrorId : ModuleNotFoundDuringParse  
  
PS C:\DSC> Install-Module xWebAdministration  
  
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
```

Administrator: Windows PowerShell

```
PS C:\DSC> . .\PacktWebServer.ps1  
PS C:\DSC> PacktWebServer  
  
Directory: C:\DSC\PacktWebServer  
  
Mode                LastWriteTime         Length Name  
----                -  
-a----            4/05/2020  5:14 PM           4240 localhost.mof  
  
PS C:\DSC> Start-DscConfiguration -Path .\PacktWebServer\ -Wait -Verbose  
VERBOSE: Perform operation 'Invoke CimMethod' with following parameters, 'methodName' =  
SendConfigurationApply, 'className' = MSFT_DSCLocalConfigurationManager, 'namespaceName' =  
root/Microsoft/Windows/DesiredStateConfiguration'.  
VERBOSE: An LCM method call arrived from computer WEB03 with user sid S-1-5-21-2334587212-2345734337-2459161596-2103.  
VERBOSE: [WEB03]: LCM: [ Start Set      ]  
VERBOSE: [WEB03]: LCM: [ Start Resource ] [[WindowsFeature]WebServer]  
VERBOSE: [WEB03]: LCM: [ Start Test    ] [[WindowsFeature]WebServer]  
VERBOSE: [WEB03]: [[WindowsFeature]WebServer] The operation 'Get-WindowsFeature' started:  
Web-Server  
VERBOSE: [WEB03]: [[WindowsFeature]WebServer] The operation 'Get-WindowsFeature' succeeded:  
Web-Server  
VERBOSE: [WEB03]: LCM: [ End Test      ] [[WindowsFeature]WebServer] in 1.9680 seconds.  
VERBOSE: [WEB03]: LCM: [ Skip Set      ] [[WindowsFeature]WebServer]  
VERBOSE: [WEB03]: LCM: [ End Resource ] [[WindowsFeature]WebServer]  
VERBOSE: [WEB03]: LCM: [ Start Resource ] [[xWebSite]RemoveDefault]  
VERBOSE: [WEB03]: LCM: [ Start Test    ] [[xWebSite]RemoveDefault]  
VERBOSE: [WEB03]: [[xWebSite]RemoveDefault] The Ensure state for website "Default Web Site"  
does not match the desired state.
```



Congratulations, you are viewing our new website, configured by DSC!



Congratulations, you are viewing our new website, configured by DSC!

Administrator: Windows PowerShell

```
PS C:\DSC> Backup-GPO -Name "Enable GPU processing" -Path 'C:\GPO Backups\  
  
DisplayName      : Enable GPU processing  
GpoId            : ac6c4f19-abd7-4ebe-96ae-d96e88c02b7a  
Id              : fc8f14b7-4563-4ea1-b12b-47558b4c26be  
BackupDirectory : C:\GPO Backups\  
CreationTime    : 5/05/2020 6:53:24 AM  
DomainName      : ad.cookbook.packt.com  
Comment         :
```

Administrator: Windows PowerShell

```
PS C:\DSC> ConvertFrom-GPO -Path 'C:\GPO Backups\{FC8F14B7-4563-4EA1-B12B-47558B4C26BE}\'  
WARNING: There are no modules present in the system with the given module specification.  
Gathering GPO Data from C:\GPO Backups\{FC8F14B7-4563-4EA1-B12B-47558B4C26BE}\  
  
Directory: C:\DSC\Output  
  
Mode                LastWriteTime         Length Name  
----                -  
-a----            5/05/2020  6:59 AM             677 DSCFromGPO.ps1  
-a----            5/05/2020  6:59 AM            2322 localhost.mof
```

Administrator: Windows PowerShell

```
PS C:\DSC> Install-Module xWebAdministration, CertificateDsc  
  
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
```

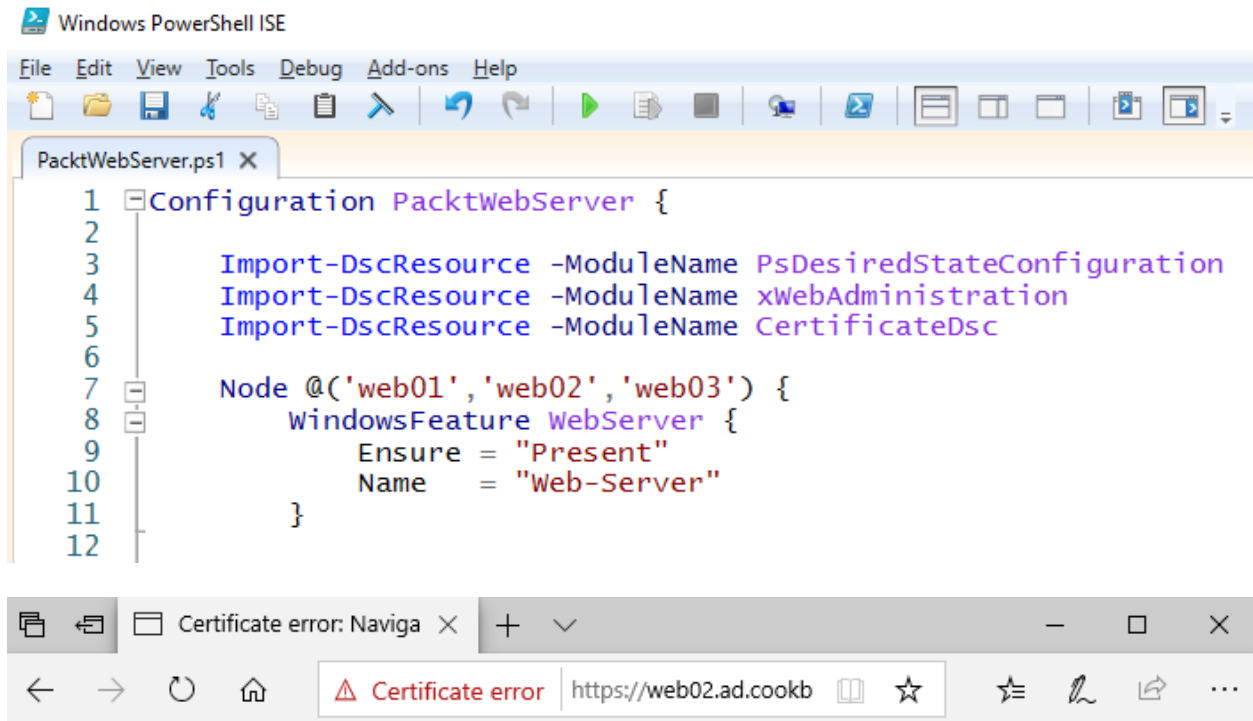
```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
PacktWebServer.ps1* X
52 |         KeyType           = "RSA"
53 |         RequestType        = "CMC"
54 |     }
55 |
56 |
57 | }
58 | }
59 |
60 | PacktWebServer
```

```
Administrator: Windows PowerShell
PS C:\DSC> . .\PacktWebServer.ps1

Directory: C:\DSC\PacktWebServer

Mode                LastWriteTime         Length Name
----                -
-a-----         6/05/2020   7:17 AM         6308 web03.mof
```

```
Administrator: Windows PowerShell
PS C:\DSC> Start-DscConfiguration -Path .\PacktWebServer\ -ComputerName web02 -Wait -Verbose
Start-DscConfiguration : The computer-specific MOF file for computer web02 does not exist in the current directory.
At line:1 char:1
+ Start-DscConfiguration -Path .\PacktWebServer\ -ComputerName web02 -W ...
+ ~~~~~
+ CategoryInfo          : NotSpecified: (:) [Start-DscConfiguration], ArgumentException
+ FullyQualifiedErrorId : System.ArgumentException,Microsoft.PowerShell.DesiredStateConfiguration.Commands.StartDs
cConfigurationCommand
```



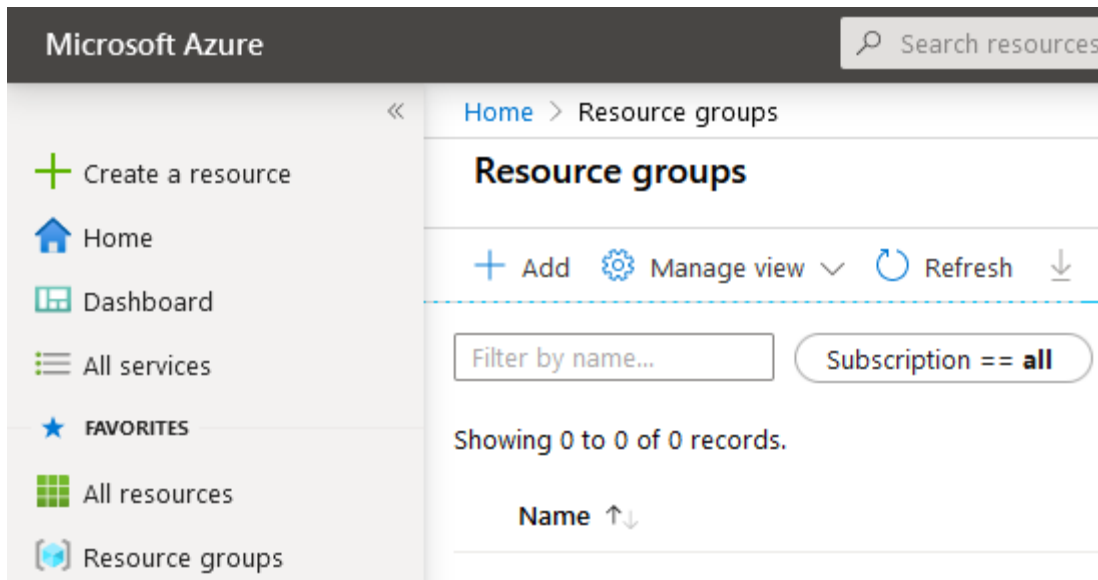
## This site is not secure

This might mean that someone's trying to fool you or steal any info you send to the server. You should close this site immediately.

[Go to your Start page](#)

[Details](#)





## Create a resource group

[Basics](#) [Tags](#) [Review + create](#)

**Resource group** - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

### Project details

Subscription \* ⓘ

Microsoft Azure Sponsorship

Resource group \* ⓘ

PacktCookbook

### Resource details

Region \* ⓘ

(Asia Pacific) Australia Central

## Automation

Microsoft



## Automation

♥ [Save for later](#)

Microsoft

Create

## Add Automation Account □ ×

Name \* ⓘ

PacktDSC ✓

Subscription \*

Microsoft Azure Sponsorship ✓

Resource group \*

PacktCookbook ✓

[Create new](#)

Location \*

(Asia Pacific) Australia Central ✓

Create Azure Run As account \* ⓘ

Yes  No

Home > PacktCookbook

### PacktCookbook

Resource group

Search (Ctrl+/) <<

[+](#) Add [☰](#) Edit columns [🗑](#) Delete resource group [🔄](#) Refresh [➔](#) Move

Subscription ([change](#)) : [Microsoft Azure Sponsorship](#)

Subscription ID :

Tags ([change](#)) : [Click here to add tags](#)

Filter by name...  Type == **all**  Location == **all**  [+🔍 Add filter](#)

Showing 1 to 4 of 4 records.  Show hidden types ⓘ

<input type="checkbox"/> Name ↑↓
<input type="checkbox"/> <a href="#">AzureAutomationTutorial (PacktDSC/AzureAutomationTutorial)</a>
<input type="checkbox"/> <a href="#">AzureAutomationTutorialPython2 (PacktDSC/AzureAutomationTutorialPython2)</a>
<input type="checkbox"/> <a href="#">AzureAutomationTutorialScript (PacktDSC/AzureAutomationTutorialScript)</a>
<input type="checkbox"/> <a href="#">PacktDSC</a>

**Overview**

- Activity log
- Access control (IAM)
- Tags
- Events

**Settings**

- Quickstart
- Deployments
- Policies
- Properties
- Locks



## PacktDSC | Keys

Automation Account

keys

### Account Settings

Keys

Regenerate primary Regenerate secondary

Primary access key

vBa9GEXSifwrDeesOTG1f29MzgJwKGDKGoAykDTAVFeO7R4AW/DIV8a47S1OO3euj7dsp

Secondary access key

tLEUVL0n7WQgu9/5yL6NR9si1JdIB8ZDMQU22AU1WV4YgRHMM+ZrZoDI4ad8Va0blqiv

URL

https://ac-agentservice-prod-1.azure-automation.net/accounts/254a172b-f456-4280-b

Windows PowerShell

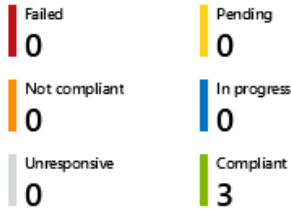
```
PS C:\DSC> . .\EnableAzureDSC.ps1
PS C:\DSC> EnableAzureDSC -ComputerName web01,web02,web03 -RegistrationKey
CpS3cpj2KiSrv0QB4PEdFgrQl3dFUqAhqjLL5sM+w==
```

Directory: C:\DSC\EnableAzureDSC

Mode	LastWriteTime	Length	Name
-a----	7/05/2020 7:32 AM	4256	web01.meta.mof
-a----	7/05/2020 7:32 AM	4256	web02.meta.mof
-a----	7/05/2020 7:32 AM	4256	web03.meta.mof

**Nodes** Configurations Compiled configurations Gallery

**Configuration status**



Nodes ⓘ

Status ⓘ

Node configuration ⓘ

Node	Status	Node configuration	Last seen
WEB01	Compliant		5/7/2020, 5:06 PM
WEB02	Compliant		5/7/2020, 5:06 PM
WEB03	Compliant		5/7/2020, 5:06 PM

Home > PacktCookbook > PacktDSC | Modules gallery

### PacktDSC | Modules gallery

Automation Account

Search: Modules

Shared Resources

- Modules
- Modules gallery

**SpeculationControl**

This module provides the ability to...

Tags: Security ADV180002 Win

### PacktDSC | State configuration (DSC)

Automation Account

Search (Ctrl+/)

+ Add    ✎ Compose configuration    ↻ Refresh    ↻ Reset filters

Nodes    **Configurations**    Compiled configurations    Gallery

Configuration ⓘ

Configuration

No data



# PacktDSC | State configuration (DSC)

Automation Account

Search (Ctrl+/)

+ Add   Compose configuration   Refresh   Reset filters

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve proble...

Nodes   Configurations   Compiled configurations   Gallery

Configuration ⓘ

Search configurations...

Configuration	Compiled Configuration
PacktWebServer	0

[Home](#) > [PacktCookbook](#) > [PacktDSC | State configuration \(DSC\)](#) > [PacktWebServer](#)

## PacktWebServer

Configuration

Compile   Export   Delete

Resource group... : [PacktCookbook](#)

Location : Australia Central

Subscription ID :

Last published : 5/7/2020, 5:52 PM

### Start Compilation Job

PacktWebServer

NODENAME ⓘ

['web01','web02','web03']

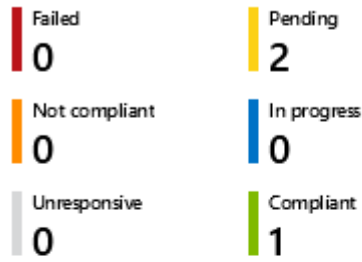
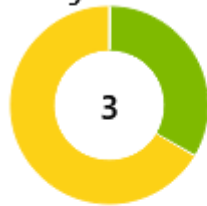
*Optional, String[]*

Compilation jobs   Node configurations

Name	Last updated
PacktWebServer.web01	5/7/2020, 5:57 PM
PacktWebServer.web02	5/7/2020, 5:57 PM
PacktWebServer.web03	5/7/2020, 5:57 PM

**Nodes** Configurations Compiled configurations Gallery

**Configuration status**



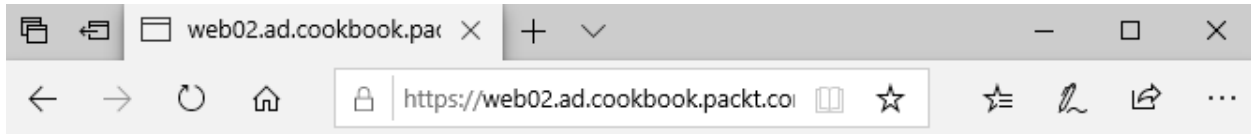
Nodes ⓘ

Search Node names...

Status ⓘ

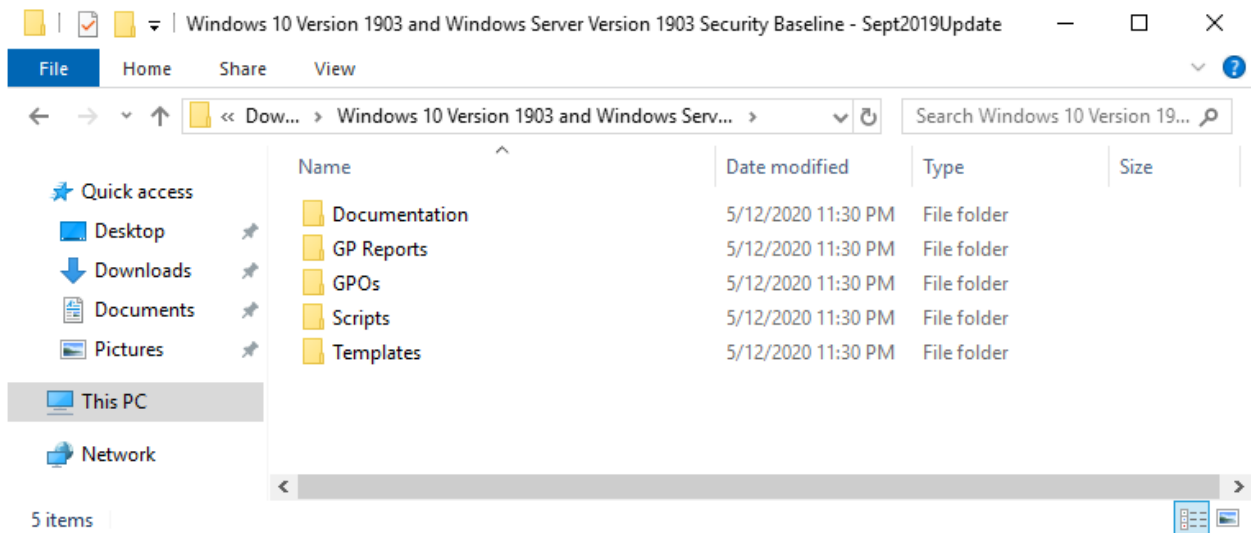
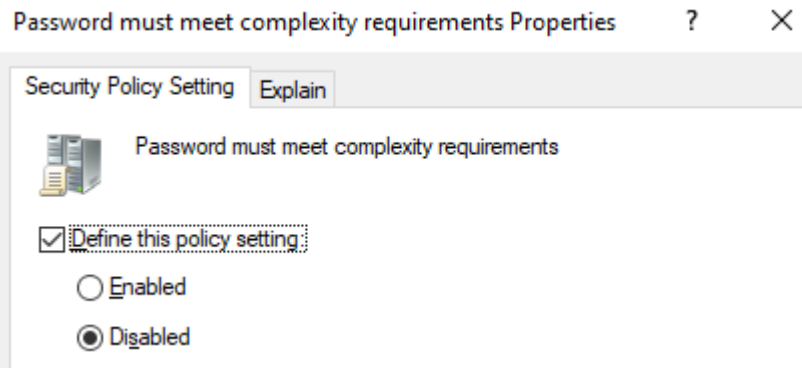
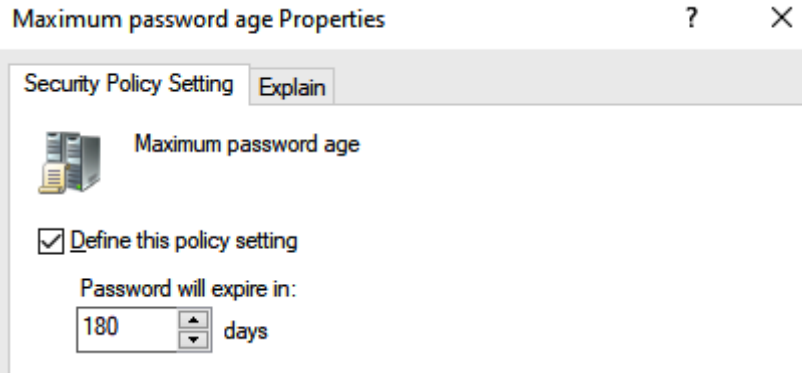
6 selected

Node	Status
WEB01	Pending
WEB02	Compliant
WEB03	Pending

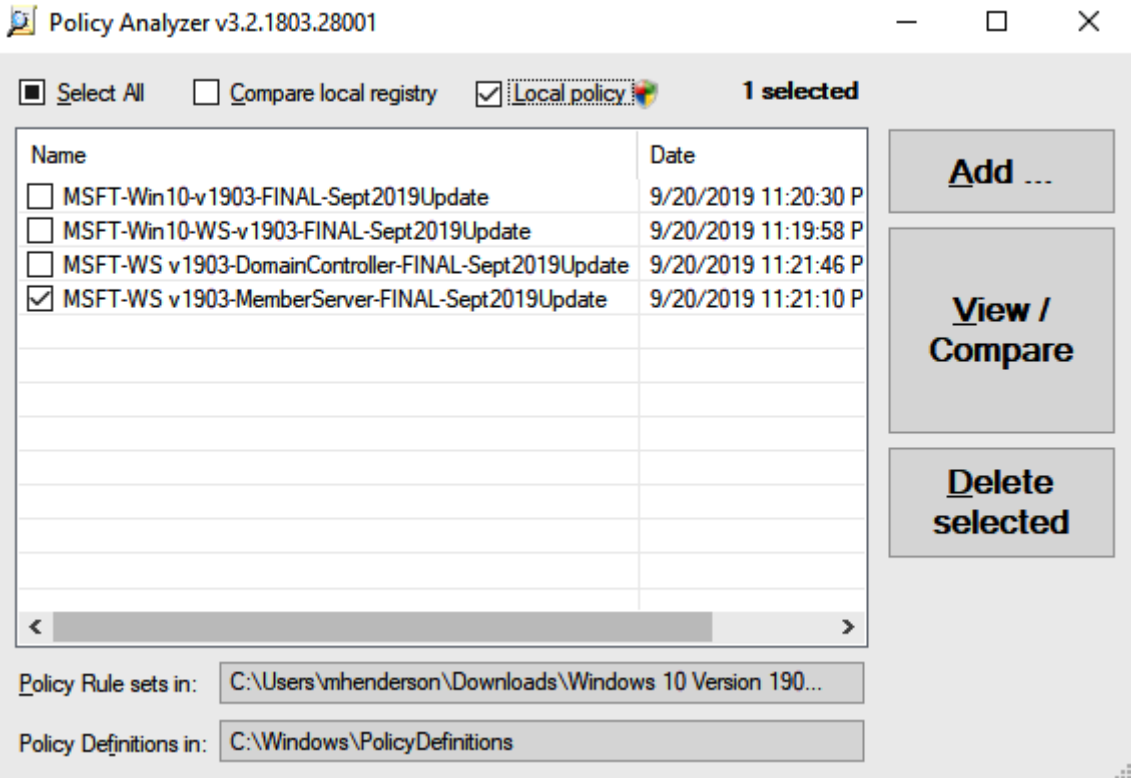
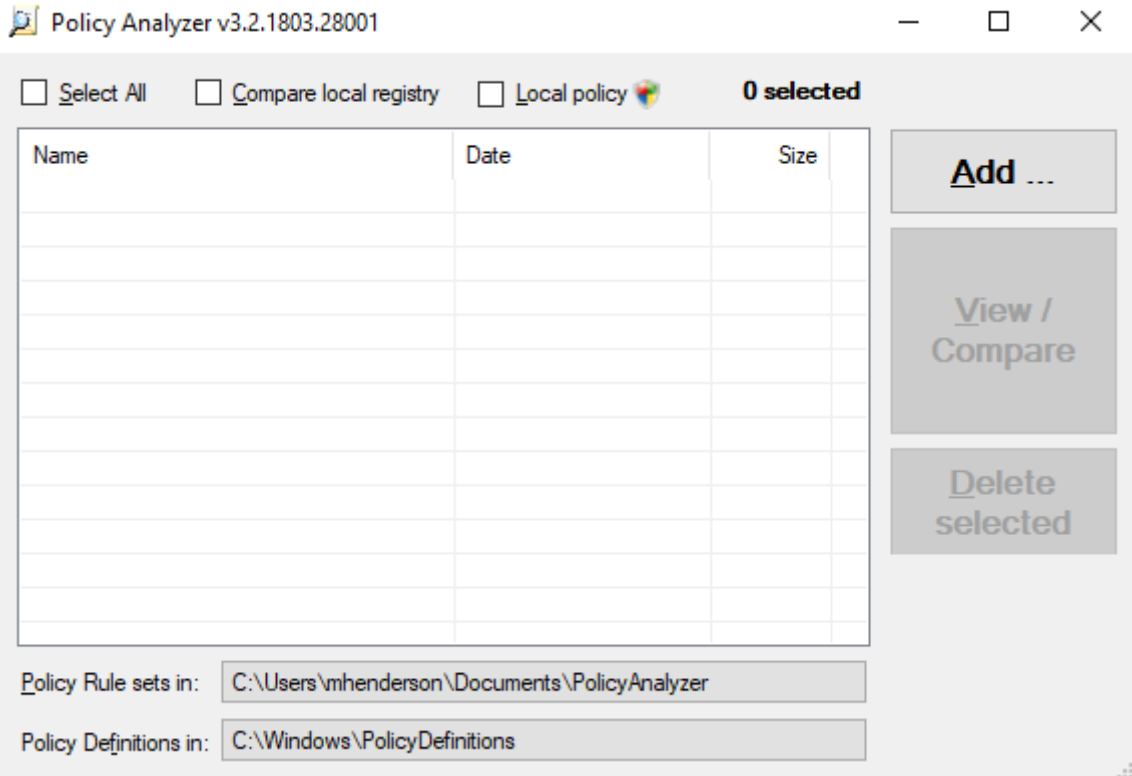


Congratulations, you are viewing our new website, configured by DSC from Azure!









Policy Type	Policy Setting	Local policy	MSFT-WS v1903-MemberSer
Audit Policy	Credential Validation	Success	Success and Fail...
Audit Policy	User Account Management	Success	Success and Fail...
Audit Policy	PNP Activity	No Auditing	Success
Audit Policy	Process Creation	No Auditing	Success
Audit Policy	Loqon/Loqoff	Success	Failure
Audit Policy	Loqon/Loqoff	No Auditing	Success
Audit Policy	Loqon/Loqoff	No Auditing	Success and Fail...
Audit Policy	Object Access	No Auditing	Failure

Security Template	System Access	LockoutBadCount	0	10
Security Template	System Access	MinimumPasswordLength	7	14

**Policy Path:**

Security Settings  
 Account Policies\Password Policy  
 Minimum password length

**Local policy:**

**Option:** 7  
**GPO:** Local policy

**MSFT-WS v1903-MemberServer-FINAL-Sept2019Update:**

**Option:** 14  
**GPO:** MSFT Windows 10 1903 and Server 1903 - Domain Security

```
PS C:\DSC> ConvertFrom-GPO -Path "C:\Users\mhenderson\Downloads\Windows 10 Version 1903 and Windows Server Version 1903 Security Baseline - Sept2019Update\GPOs\{61F0BC30-2A4C-4B8C-92F2-9442FE6DEB9F}" -OutputConfigurationScript
WARNING: There are no modules present in the system with the given module specification.
Gathering GPO Data from C:\Users\mhenderson\Downloads\Windows 10 Version 1903 and Windows Server Version 1903 Security Baseline - Sept2019Update\GPOs\{61F0BC30-2A4C-4B8C-92F2-9442FE6DEB9F}

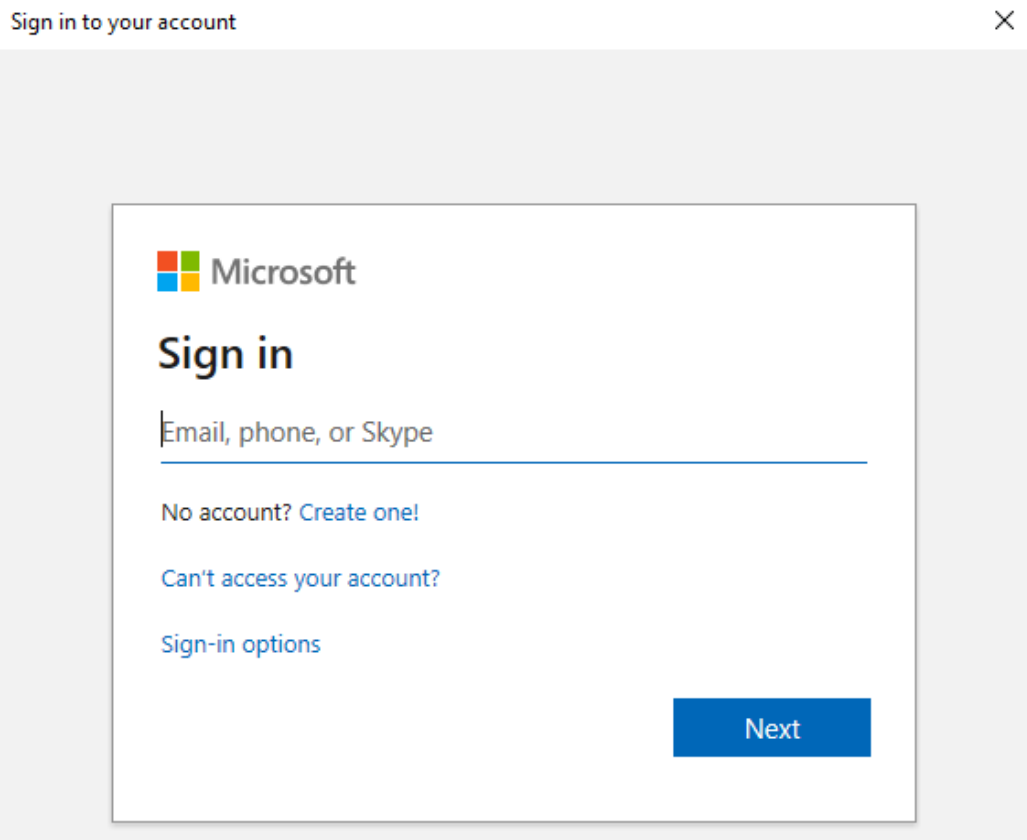
Directory: C:\DSC\Output

Mode                LastWriteTime         Length Name
----                -
-a----            14/05/2020   6:52 AM         47457 DSCFromGPO.ps1
-a----            14/05/2020   6:52 AM        156304 localhost.mof
```

```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
DSCFromGPO.ps1 X
1
2 Configuration DSCFromGPO
3 {
4
5     Import-DSCResource -ModuleName 'PSDesiredStateConfiguration'
6     Import-DSCResource -ModuleName 'AuditPolicyDSC'
7     Import-DSCResource -ModuleName 'SecurityPolicyDSC'
8     # Module Not Found: Import-DSCResource -ModuleName 'PowerShellAccessControl'
9     Node localhost
10    {
11        Registry 'Registry(POL): HKLM:\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\NoDr
12        {
13            ValueName = 'NoDriveTypeAutoRun'
14            ValueType = 'Dword'
15            Key = 'HKLM:\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer'
```

```
Windows PowerShell ISE
File Edit View Tools Debug Add-ons Help
DSCFromGPO.ps1 PacktWebServer-Azure.ps1.ps1 X
52     AutoRenew           = $true
53     FriendlyName       = "SSL Certificate for IIS"
54     KeyType             = "RSA"
55     RequestType        = "CMC"
56 }
57
58 Registry 'Registry(POL): HKLM:\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer\
59 {
60     ValueName = 'NoDriveTypeAutoRun'
61     ValueType = 'Dword'
62     Key = 'HKLM:\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer'
63     ValueData = 255
64 }
65 }
```

```
PS C:\DSC\SecurityBaseline> Connect-AzAccount
```



```
PS C:\DSC> . .\PacktWebServer-Azure.ps1
PS C:\DSC> PacktWebServer -NodeName 'web01','web02','web03' | ForEach-Object { Import-AzAutomationDscNodeConfiguration -
AutomationAccountName PacktDSC -ResourceGroupName PacktCookbook -ConfigurationName PacktWebServer -Path $_.FullName -For
ce }
```

```
ResourceGroupName      : PacktCookbook
AutomationAccountName  : PacktDSC
Name                   : PacktWebServer.web01
CreationTime           : 14/05/2020 7:26:58 AM +00:00
LastModifiedTime       : 14/05/2020 7:26:58 AM +00:00
ConfigurationName      : PacktWebServer
RollupStatus           :
```

## PacktDSC | State configuration (DSC)

Automation Account

Search (Ctrl+/)

+ Add Compose configuration Refresh Reset filters

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

### Configuration Management

- Inventory
- Change tracking
- State configuration (DSC)

### Update management

- Update management

Nodes Configurations Compiled configurations Gallery

### Configuration status



Failed	0	Pending	3
Not compliant	0	In progress	0
Unresponsive	0	Compliant	0

Nodes  Status  Node configuration

Node	Status	Node configuration	Last seen
WEB01	Pending	PacktWebServer.web01	5/14/2020, 4:59 PM
WEB02	Pending	PacktWebServer.web02	5/14/2020, 4:54 PM
WEB03	Pending	PacktWebServer.web03	5/14/2020, 4:56 PM

## Active Directory Users and Computers

File Action View Help

The screenshot shows the Active Directory Users and Computers console. The left pane displays a tree view with folders like 'Saved Queries', 'ad.cookbook.packt.com', 'Builtin', 'Computers', 'Domain Controllers', 'ForeignSecurityPrincipal...', 'Managed Service Account', 'Office Computers', 'Servers', 'Staff', and 'User'. The 'Staff' folder is selected, and a context menu is open over it. The context menu includes options like 'Delegate Control...', 'Move...', 'Find...', 'New', 'All Tasks', 'Cut', and 'Delete'. The 'All Tasks' sub-menu is also open, showing 'Delegate Control...', 'Move...', and 'Find...'.

## Delegation of Control Wizard



### Users or Groups

Select one or more users or groups to whom you want to delegate control.



Selected users and groups:

Angela Ivancic (aivancic@cookbook.packt.com)

## Delegation of Control Wizard



### Tasks to Delegate

You can select common tasks or customize your own.



Delegate the following common tasks:

- Create, delete, and manage user accounts
- Reset user passwords and force password change at next logon
- Read all user information
- Create, delete and manage groups

Windows PowerShell

```
PS C:\Users\mhenderson> Enable-ADOptionalFeature -Identity 'Recycle Bin Feature' -Scope ForestOrConfigurationSet -Target^
'ad.cookbook.packt.com' -Server dc01
WARNING: Enabling 'Recycle Bin Feature' on 'CN=Partitions,CN=Configuration,DC=ad,DC=cookbook,DC=packt,DC=com' is an
irreversible action! You will not be able to disable 'Recycle Bin Feature' on
'CN=Partitions,CN=Configuration,DC=ad,DC=cookbook,DC=packt,DC=com' if you proceed.

Confirm
Are you sure you want to perform this action?
Performing the operation "Enable" on target "Recycle Bin Feature".
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): y
```

The screenshot shows the Active Directory Administrative Center interface. The breadcrumb path is "Active Directory Administrative Center > ad (local)". The left-hand navigation pane shows the hierarchy: "ad (local)" > "Staff\Sales" > "Staff". The main pane displays the "Sales (3)" group with a table of members:

Name	Type	Description
Bob Smith		
Sales Group		
Sally McCo		

A context menu is open over the "Bob Smith" entry, listing the following actions: "Reset password...", "View resultant password settings...", "Add to group...", "Disable", "Delete" (highlighted), "Move...", and "Properties".

The screenshot shows the Active Directory Administrative Center interface. The breadcrumb path is "Active Directory Administrative". The left-hand navigation pane shows the hierarchy: "ad (local)" > "Deleted Objects". The main pane displays the "Deleted Objects (1)" container with a table of deleted objects:

Name	When Deleted
Bob Smith	

A context menu is open over the "Bob Smith" entry, listing the following actions: "Restore" (highlighted), "Restore To...", "Locate Parent", and "Properties".

Sysmon configuration file template with default high-quality event tracing

sysmon threatintel threat-hunting sysinternals windows netsec monitoring logging

149 commits 1 branch 0 packages 0 releases 12 contributors

Branch: master New pull request Create new file Upload files Find file Clone or download

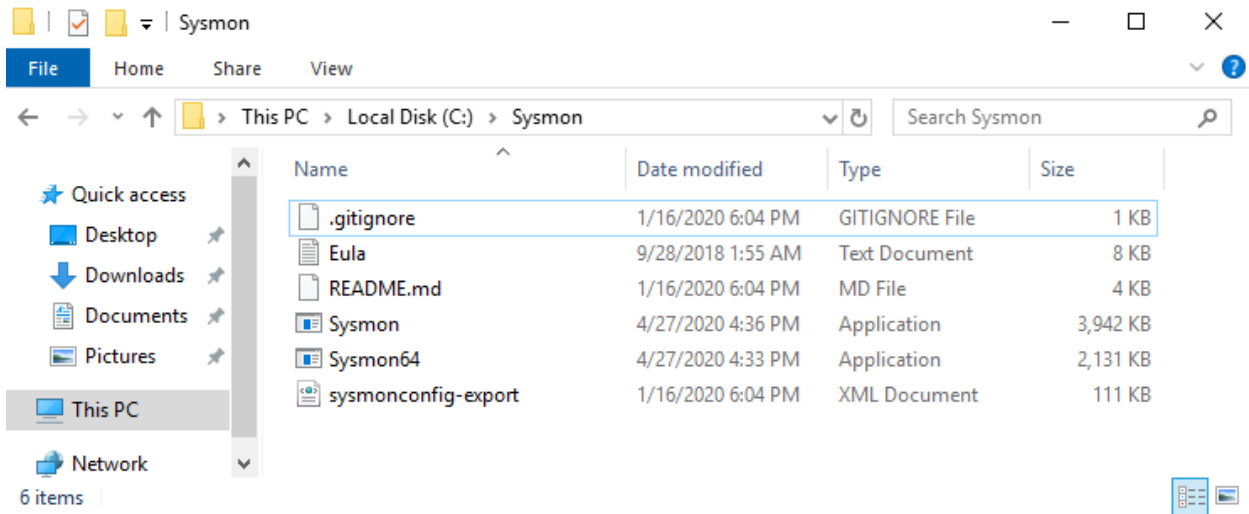
SwiftOnSecurity Delete z-AlphaVersion.xml	
.gitignore	d
README.md	Update README.md
sysmonconfig-export.xml	71 IMPHASH

**Clone with SSH** [Use HTTPS](#)

Use a password protected SSH key.

`git@github.com:SwiftOnSecurity/sysmon-`

[Open in Desktop](#) [Download ZIP](#)





Administrator: Windows PowerShell

```
PS C:\Sysmon> .\sysmon.exe -i sysmonconfig-export.xml
```

```
System Monitor v11.0 - System activity monitor  
Copyright (C) 2014-2020 Mark Russinovich and Thomas Garnier  
Sysinternals - www.sysinternals.com
```

```
Loading configuration file with schema version 4.22  
Sysmon schema version: 4.30  
Configuration file validated.  
Sysmon installed.  
SysmonDrv installed.  
Starting SysmonDrv.  
SysmonDrv started.  
Starting Sysmon..  
Sysmon started.
```

Filter Current Log



**Filter** XML

Logged: Any time

Event level:  Critical  Warning  Verbose  
 Error  Information

By log Event logs: Microsoft-Windows-Sysmon/Operational

By source Event sources:

Includes/Excludes Event IDs: Enter ID numbers and/or ID ranges separated by commas. To exclude criteria, type a minus sign first. For example 1,3,5-99,-76

22

Task category:

Keywords:

User: <All Users>

Computer(s): <All Computers>

Clear

OK Cancel

Operational Number of events: 91


Filtered: Log: Microsoft-Windows-Sysmon/Operational; Source: ; Event ID: 22. Number of events: 19


Level	Date and Time	Source	Event ID	Task Category
Information	5/18/2020 12:23:24 AM	Sysmon	22	Dns query (rule: DnsQue...
Information	5/18/2020 12:23:21 AM	Sysmon	22	Dns query (rule: DnsQue...
Information	5/18/2020 12:23:18 AM	Sysmon	22	Dns query (rule: DnsQue...
Information	5/18/2020 12:11:54 AM	Sysmon	22	Dns query (rule: DnsQue...

Event 22, Sysmon

General Details


```
Dns query:
RuleName: -
UtcTime: 2020-05-18 07:23:17.084
ProcessGuid: {c7bcd00c-37e4-5ec2-8605-000000001f00}
ProcessId: 5348
QueryName: ac-agentservice-prod-1.azure-automation.net
QueryStatus: 0
QueryResults: type: 5 ac-agentservice-prod-arm-1.trafficmanager.net;type: 5 ac-agentservice-prod-1a.cloudapp.net;::ffff:20.36.108.129;
Image: C:\Windows\System32\wbem\WmiPrvSE.exe
```


 Complete WSUS Installation ×

 The locally hosted WSUS Server requires additional steps in order to complete the installation. WSUS post-installation process can run those steps for you. Would you like to run it now?

---


Store updates locally  
Content directory path:

 Windows Server Update Services Configuration Wizard: WSUS ×

 Connect to Upstream Server

Download update information from Microsoft Update

Before You Begin  
Microsoft Update Improvement Program  
Choose Upstream Server  
Specify Proxy Server  
Choose Languages  
Choose Products  
Choose Classifications  
Configure Sync Schedule  
Finished  
What's Next

 To configure Windows Server Update Services on the following screens, we need to apply your upstream server and proxy server settings and synchronize information about available updates.

Information to be downloaded includes:

- Types of updates available
- Products that can be updated
- Available languages

Click Start Connecting to save and download upstream server and proxy server information. This process might take several minutes or longer, depending on your connection speed.



### Choose Classifications

Select the update classifications you want to download

- Before You Begin
- Microsoft Update Improvement Program
- Choose Upstream Server
- Specify Proxy Server
- Choose Languages
- Choose Products
- Choose Classifications**
- Configure Sync Schedule
- Finished
- What's Next



You can specify what classification of updates you want to synchronize.

#### Classifications:

- All Classifications
  - Critical Updates
  - Definition Updates
  - Driver Sets
  - Drivers
  - Feature Packs
  - Security Updates
  - Service Packs
  - Tools
  - Update Rollups
  - Updates
  - Upgrades

All classifications, including classifications that are added in the future.

- < Back
- Next >**
- Finish
- Cancel

Update Services

File Action View Window Help

Update Services > WSUS

### Update Services

Use this snap-in to quickly and reliably deploy the latest updates to your computers. To connect to a remote server, on the Action menu click C...

Servers Administered from This Console

WSUS

WSUS Computer Status		WSUS Update Status	
Computers with errors:	0	Updates with errors:	0
Computers needing updates:	0	Updates needed by computers:	0
Computers installed/not applicable:	0	Updates installed/not applicable:	0

Actions

- Update Services
- Connect to Server...
- View
- New Window from Here
- Refresh
- Help

# Group Policy Management

File Action View Window Help



## Group Policy Management

Forest: ad.cookbook.packt.com

Domains

ad.cookbo

Certific

Default

Direct

IPAM01

IPAM01

IPAM01

## Group Policy Objects in

Contents Delegation

Create a GPO in this domain, and Link it here...

Link an Existing GPO...

Block Inheritance

Group Policy Modeling Wizard...

New Organizational Unit

# Group Policy Management Editor

File Action View Help



- Windows Defender Application
- Windows Defender Exploit Gua
- Windows Defender SmartScre
- Windows Error Reporting
- Windows Game Recording and
- Windows Hello for Business
- Windows Ink Workspace
- Windows Installer
- Windows Logon Options
- Windows Media Digital Rights
- Windows Media Player
- Windows Messenger
- Windows Mobility Center
- Windows PowerShell
- Windows Reliability Analysis
- Windows Remote Management
- Windows Remote Shell
- Windows Security
- Windows Update
  - Windows Update for Busine
  - Work Folders
  - All Settings
- Preferences

## Windows Update

### Specify intranet Microsoft update service location

Edit [policy setting](#).

Requirements:  
At least Windows XP Professional Service Pack 1 or Windows 2000 Service Pack 3, excluding Windows RT

Description:  
Specifies an intranet server to host updates from Microsoft Update. You can then use this update service to automatically update computers on your network.

This setting lets you specify a server on your network to function as an internal update service. The Automatic Updates client will search this service for

## Setting

### Windows Update for Business

- Do not display 'Install Updates and Shut Down' option in Sh... Not con
- Do not adjust default option to 'Install Updates and Shut Do... Not con
- Enabling Windows Update Power Management to automati... Not con
- Turn off auto-restart for updates during active hours Not con
- Specify active hours range for auto-restarts Not con
- Allow updates to be downloaded automatically over metere... Not con
- Always automatically restart at the scheduled time Not con
- Specify deadline before auto-restart for update installation Not con
- Configure auto-restart reminder notifications for updates Not con
- Turn off auto-restart notifications for update installations Not con
- Configure auto-restart required notification for updates Not con
- Configure Automatic Updates Not con
- Specify deadlines for automatic updates and restarts Not con
- Specify intranet Microsoft update service location **Edit**
- Automatic Updates detection frequency Filter On
- Do not allow update deferral policies to cause scan Filter Options...
- Remove access to "Pause updates" feature Re-Apply Filter
- Remove access to use all Windows Update features

Specify intranet Microsoft update service location

Specify intranet Microsoft update service location Previous Setting Next Setting

Not Configured    Comment:   
 Enabled  
 Disabled

Supported on: At least Windows XP Professional Service Pack 1 or Windows 2000 Service Pack 3, excluding Windows RT

Options: Help:

Set the intranet update service for detecting updates:

Set the intranet statistics server:

Set the alternate download server:


Specifies an intranet server to host updates from Microsoft Update. You can then use this update service to automatically update computers on your network.

This setting lets you specify a server on your network to function as an internal update service. The Automatic Updates client will search this service for updates that apply to the computers on your network.

To use this setting, you must set two server name values: the server from which the Automatic Updates client detects and

Filters

Best match

 **Manage BitLocker**  
Control panel

manage bitlocker

## BitLocker Drive Encryption

Control Panel > System and Security > BitLocker Drive Encryption

[Control Panel Home](#)

### BitLocker Drive Encryption

Help protect your files and folders from unauthorized access by protecting your drives with BitLocker.

#### Operating system drive

C: BitLocker off



[Turn on BitLocker](#)

## BitLocker Drive Encryption

Control Panel > System and Security > BitLocker Drive Encryption

Search Control Panel

[Control Panel Home](#)

### BitLocker Drive Encryption

Help protect your files and folders from unauthorized access by protecting your drives with BitLocker.

For your security, some settings are managed by your system administrator.

#### Operating system drive

C: BitLocker Encrypting



[Back up your recovery key](#)

[Turn off BitLocker](#)