

Windows Server 2012 R2

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 Windows Server 2012

 Windows 8

 Windows Azure

 Microsoft®
System Center 2012

What's new in Server Management and Automation

Standards-based

Open Management Infrastructure:

- Network Switch management.
- Physical Server management.

Broader WS-Man adoption:

- WMI.

PowerShell 4.0

Desired State Configuration:

- Declarative, repeatable deployment.
- Defining exact configuration of target nodes.

Declarative syntax extensions.

Schema validation.

16 new modules.

652 new cmdlets.

3603 new parameters.

Server Manager

IPAM with virtual network management.

Web application proxy.

File and storage services:

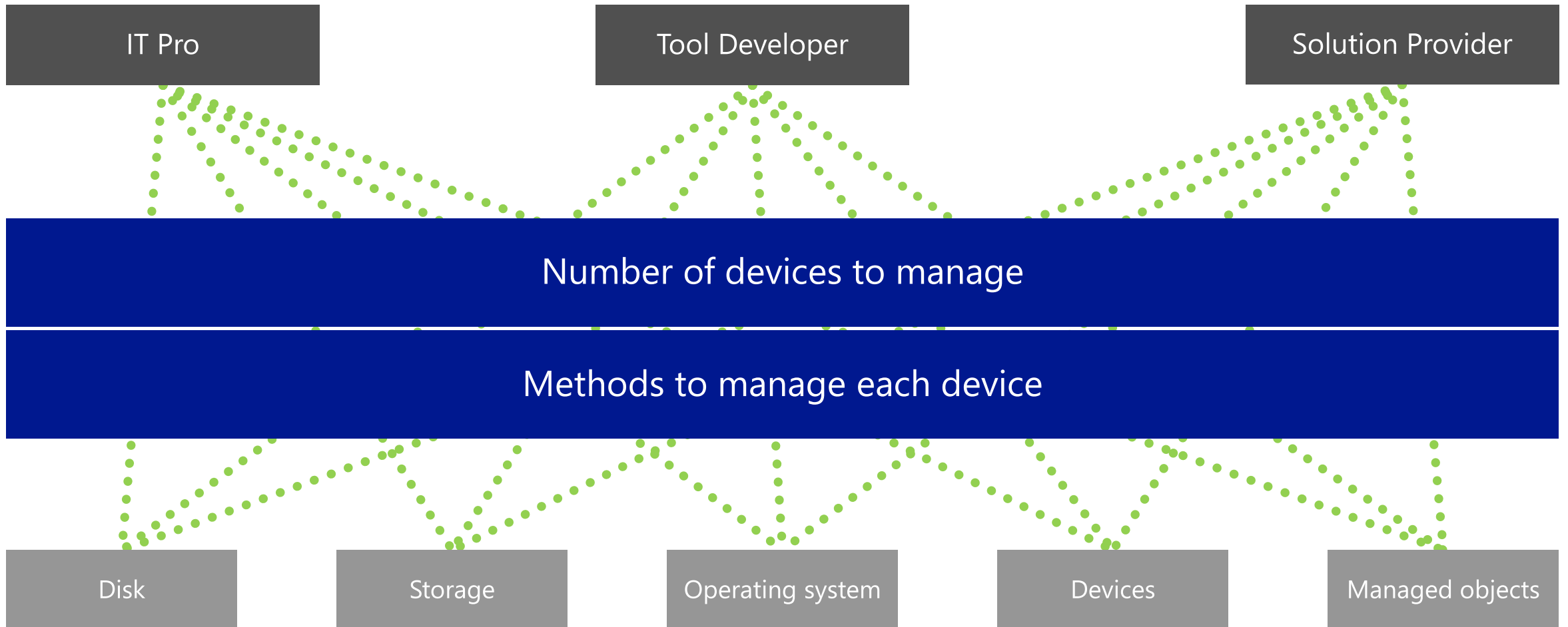
- Work folders.

Essentials experience.

Managing a diverse ecosystem

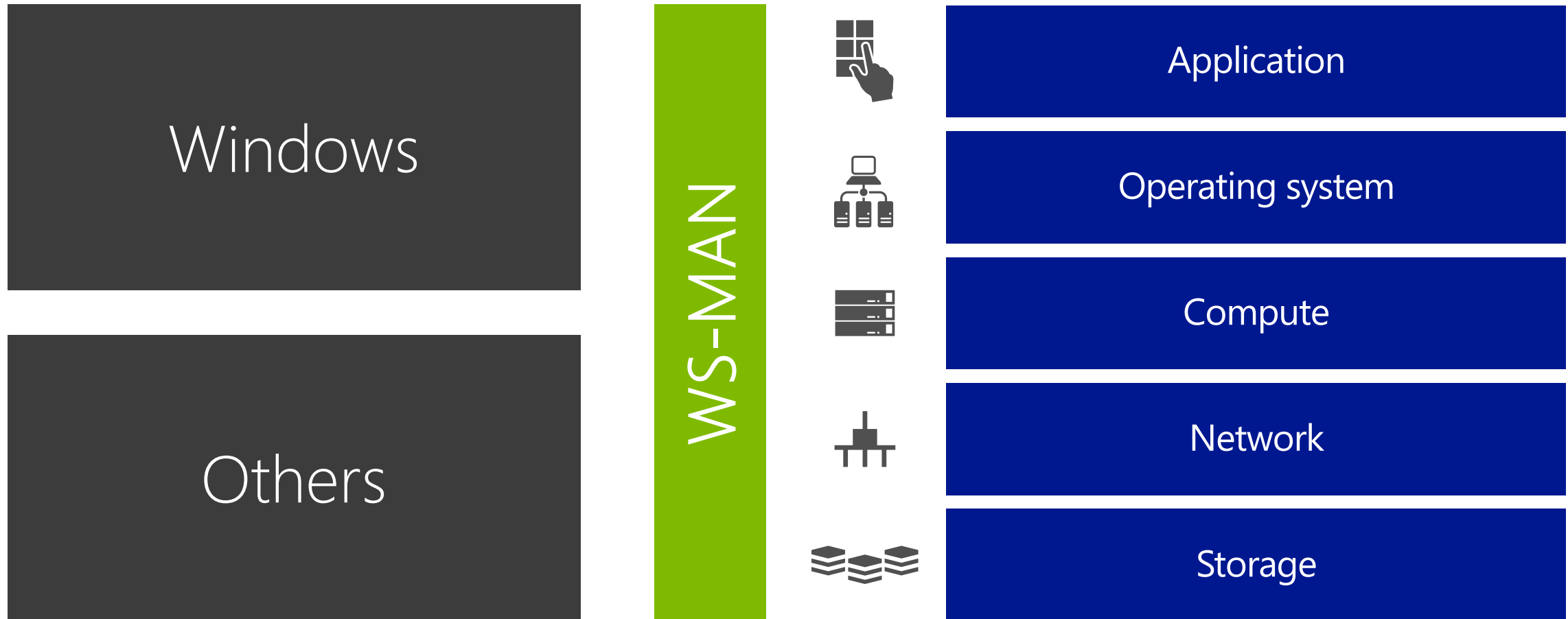
STANDARDS-
BASED
MANAGEMENT

“The NxM Problem”



Eco system in Standards based

ECOSYSTEM
AND
EXTENSIBILITY



Approach for Windows Server 2012 R2



Simplify and lower the cost of:

Instrumenting services and devices for Windows—through Windows Management Infrastructure (WMI) providers.

Developing PowerShell cmdlets in native code, as CIM providers.



Use SMI-S to manage external storage arrays:

Standards-based way to access and manage storage.

SMI-S service in the box for easier storage discovery.



Use OMI to manage network switches:

Standards-based way to access and manage network switch.

OMI in the box for configuring network switch.

Switch management

Standards based automation

Easily deploy and operate network switches in standards approach



- PowerShell scripts for common switch management tasks.
- SCVMM imports and validates port configuration from switch.
- Logo Program: Server Certification for switch vendors implementing CIM Schema.
- Define mechanisms to auto generate PowerShell cmdlets for vendor extensions.

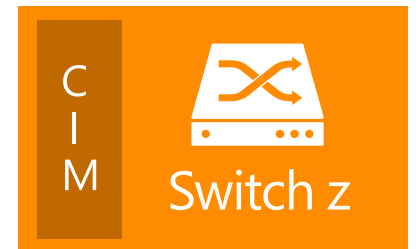
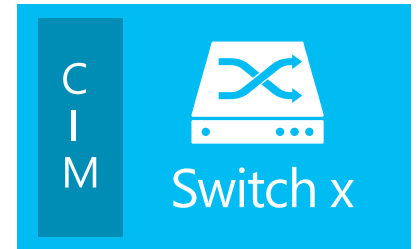


Windows
(PowerShell)

SCVMM

Non-
Windows

WS-Man



SDN partner ecosystem



HUAWEI

Gateway appliances

ARISTA

OMI-based
top-of-rack switch



NEC

5NINE
SOFTWARE



Hyper-V switch
extensions



Chipset
extensions

Windows PowerShell 4.0

SIMPLIFY YOUR
ROUTINE TASK

Key features

Ease of use

- Integrated Scripting Environment: IntelliSense, Code Snippets.
- PowerShell web access.

Extensive coverage

- Rich management through more than 3000+ cmdlets.

Greater resiliency

- Robust session connectivity.
- Job scheduling.
- Windows PowerShell workflow.



Real world scenario

- Domain join.
- System Center integration.

Ease of use

SIMPLIFY YOUR
ROUTINE TASK

IntelliSense



- Run Windows PowerShell ISE to execute commands and write, test, and debug scripts in a single Windows-based graphic user interface with multiline editing, tab completion, syntax coloring, and selective execution.
- Context-sensitive command completion for cmdlet and script names, parameter names and enumerated values, and property and method names.
- Show-Command pane for finding and running cmdlets in a dialog box.

The screenshot shows the Windows PowerShell ISE interface. The main window displays the command `Get-Command -Name *policy*` in a script file named `Untitled1.ps1`. The command has been executed, and the output is displayed in a dark blue console window. The output is a table with three columns: `CommandType`, `Name`, and `ModuleName`. The table lists various cmdlets and their associated modules, such as `Get-DnsClientNrptPolicy` from the `DnsClient` module and `Get-AppLockerPolicy` from the `AppLocker` module. On the right side of the interface, there is a `Commands` pane. This pane shows a search for the `policy` keyword, with a list of matching cmdlets. The list includes `Add-CertificateEnrollmentPolicyServer`, `Get-AppLockerPolicy`, `Get-CertificateAutoEnrollmentPolicy`, and many others. The `Run`, `Insert`, and `Copy` buttons are visible at the bottom of the `Commands` pane.

CommandType	Name	ModuleName
Function	Get-DnsClientNrptPolicy	DnsClient
Function	Get-NCSPolicyConfiguration	NetworkConnectivityStatus
Function	Get-NetPrefixPolicy	NetTCPIP
Function	Get-NetQosPolicy	NetQos
Function	Get-VolumeScrubPolicy	Storage
Function	New-NetQosPolicy	NetQos
Function	Remove-NetQosPolicy	NetQos
Function	Reset-NCSPolicyConfiguration	NetworkConnectivityStatus
Function	Set-NCSPolicyConfiguration	NetworkConnectivityStatus
Function	Set-NetQosPolicy	NetQos
Function	Set-VolumeScrubPolicy	Storage
Function	Add-CertificateEnrollmentPolicyServer	PKI
Cmdlet	Get-AppLockerPolicy	AppLocker
Cmdlet	Get-CertificateAutoEnrollmentPolicy	PKI
Cmdlet	Get-CertificateEnrollmentPolicyServer	PKI
Cmdlet	Get-DAPolicyChange	NetSecurity
Cmdlet	Get-ExecutionPolicy	Microsoft.PowerShell.Security
Cmdlet	Get-SecureBootPolicy	SecureBoot
Cmdlet	Get-WheaMemoryPolicy	Whea
Cmdlet	New-AppLockerPolicy	AppLocker
Cmdlet	Remove-CertificateEnrollmentPolicyServer	PKI
Cmdlet	Set-AppLockerPolicy	AppLocker
Cmdlet	Set-CertificateAutoEnrollmentPolicy	PKI
Cmdlet	Set-ExecutionPolicy	Microsoft.PowerShell.Security
Cmdlet	Set-WheaMemoryPolicy	Whea
Cmdlet	Test-AppLockerPolicy	AppLocker
Application	appidpolicyconverter.exe	

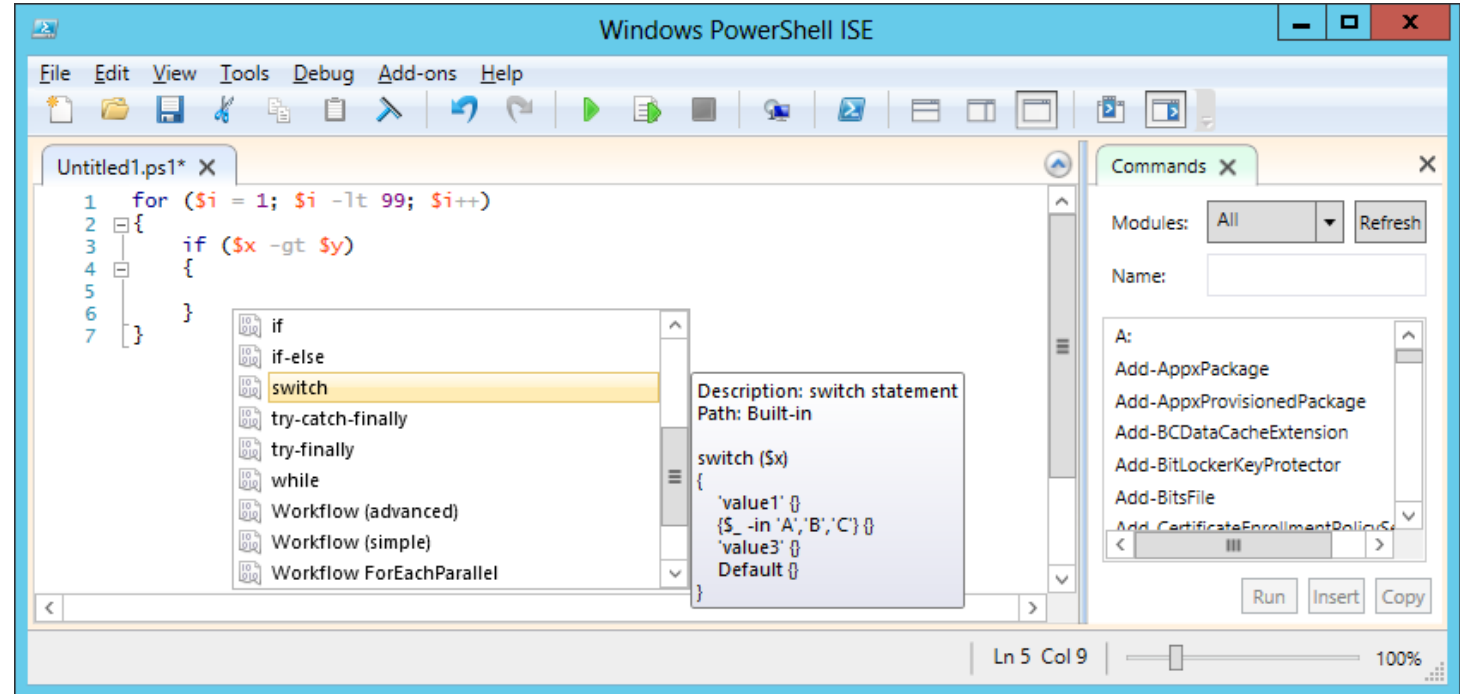
Ease of use

SIMPLIFY YOUR
ROUTINE TASK

Simplified Scripting



- Syntax simplification: Windows PowerShell 4.0 includes simplified, consistent syntax across all cmdlets.
- Simplified scripting through Windows PowerShell ISE:
 - Built-in code snippets include templates for functions, parameters, and statements.
 - Users do not need to remember the syntax.



Snippets add **reusable text** to scripts and commands.

Extensive coverage

SIMPLIFY YOUR
ROUTINE TASK

Windows PowerShell 4.0



- Comprehensive management with more than 3000+ cmdlets in 100+ modules.
- Many new modules that allow the use of Windows PowerShell 4.0 to manage all aspects of the datacenter.

For example

New modules for:

- AppBackgroundTask
- Defender
- NetEventPacketCapture
- PSDesiredStateConfiguration
- SyncShare
- WDS
- WebApplicationProxy
- WindowsSearch
- Others



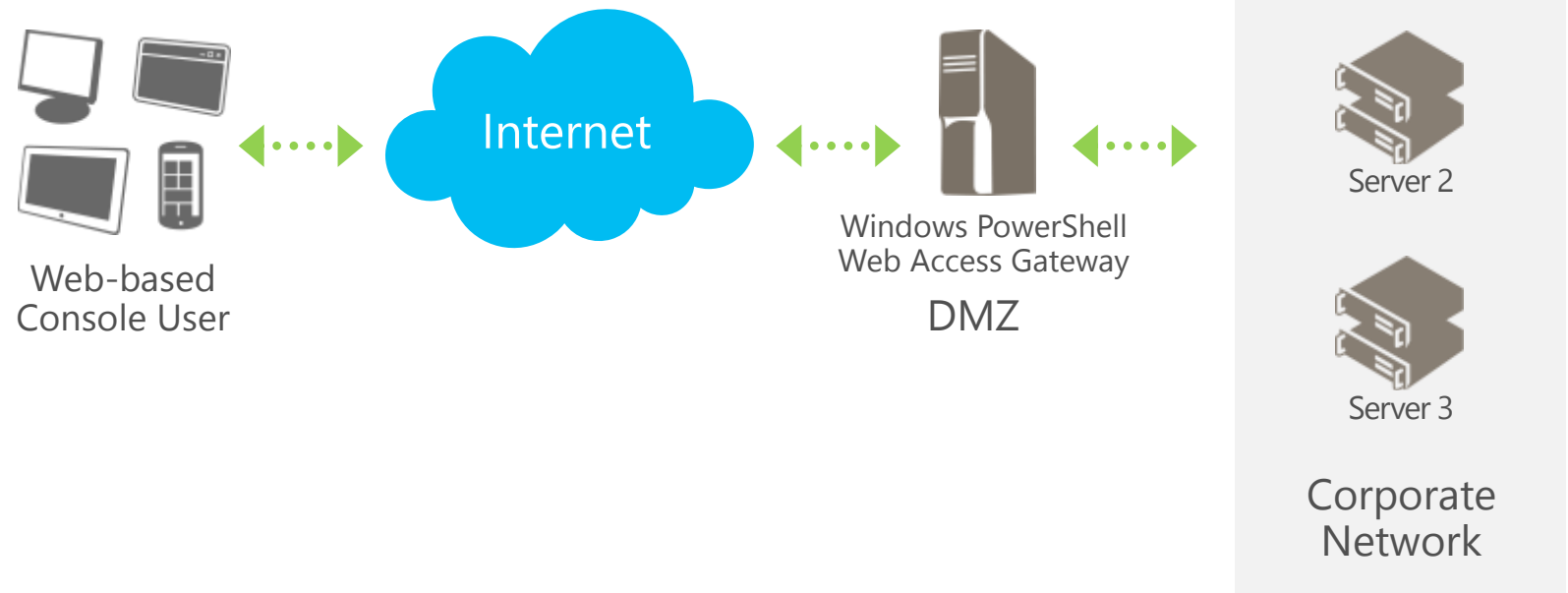
Greater resiliency

SIMPLIFY YOUR
ROUTINE TASK

Windows PowerShell Web Access



- Manage computers running Windows by using Windows PowerShell within a browser.
- Broad support for popular browsers.
- Built for tablets and mobile devices.



Corporate
Network

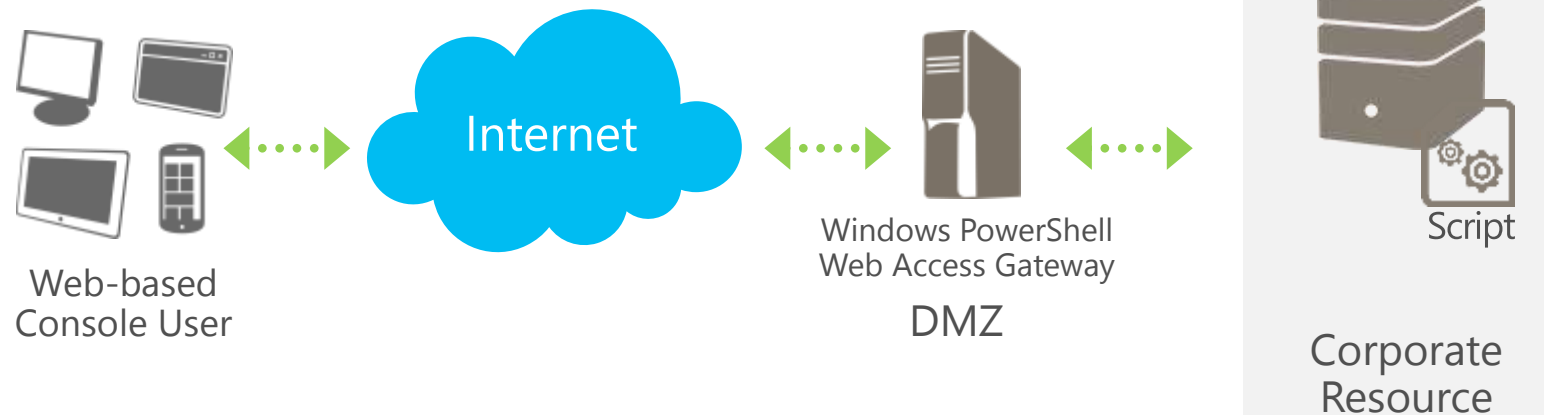
Greater resiliency

SIMPLIFY YOUR
ROUTINE TASK

Robust session connectivity



1. User connects via the browser through the PowerShell Web Access Gateway to run a script on Server 1.
2. User loses connection to the internet.
3. User reconnects to internet at a later point in time and reconnects to the Windows PowerShell session which is still in a connected state and still running.



Greater resiliency

SIMPLIFY YOUR
ROUTINE TASK

Job
scheduling



Improve management automation.

Schedule jobs for execution at a later time, according to a particular schedule.

Greater resiliency

SIMPLIFY YOUR
ROUTINE TASK

Windows
PowerShell
Workflow

A set of long-running activities (in sequence or in parallel) that perform complex management tasks, such as multi-machine application provisioning.

Authored using a Windows PowerShell script or the Visual Studio Workflow Designer (XAML).

Workflows survive system interruptions (reboots, network problems): suspend-job/resume-job, persist state and metadata.

Real world scenarios

SIMPLIFY YOUR
ROUTINE TASK

Join-Domain through Workflow

```
workflow Join-Domain
{
    param(
        [Parameter(Mandatory)]
        [string]$DomainName,
        [Parameter(Mandatory)]
        [PSCredential]$DomainCredential
    )

    Get-CimInstance -ClassName win32_computersystem
    Add-Computer -Credential $DomainCredential -DomainName $DomainName -LocalCredential $PSCredential
    Restart-Computer -Force -Wait
    Get-CimInstance -ClassName win32_computersystem
}

# Usage
Join-Domain -PSComputerName <list of machines> -PSCredential <local admin credential> -DomainName
<domain name> -DomainCredential <credential that can join machine to domain>
```


New Modules in Windows Server 2012 R2

16 new

AppBackgroundTask

Defender

DFSR

NetEventPacketCapture

NetNat

PcsvDevice

PSDesiredStateConfiguration

SoftwareInventoryLogging

StartScreen

SyncShare

TLS

WDS

WebApplicationProxy

WindowsSearch

WssCmdlets

WssSetupCmdlets

New Cmdlets in Windows Server 2012 R2

652 new

223 WssCmdlets	13 NetNat	2 WindowsSearch
60 ADFS	13 VpnClient	2 TrustedPlatformModule
58 IpamServer	10 WebApplicationProxy	2 PrintManagement
42 DFSR	10 SoftwareInventoryLogging	1 SmbWitness
36 RemoteAccess	8 Dism	1 NetWNV
33 WDS	7 SmbShare	1 AdcsAdministration
26 NetEventPacketCapture	5 PcsvDevice	1 Deduplication
18 DhcpServer	5 WssSetupCmdlets	1 NetSecurity
18 Storage	4 TLS	1 FailoverClusters
14 SyncShare	3 StartScreen	1 DnsServer
14 Hyper-V	3 NetTCPIP	
13 PSDesiredStateConfiguration	3 IscsiTarget	

New Parameters in Windows Server 2012 R2

3,603 new

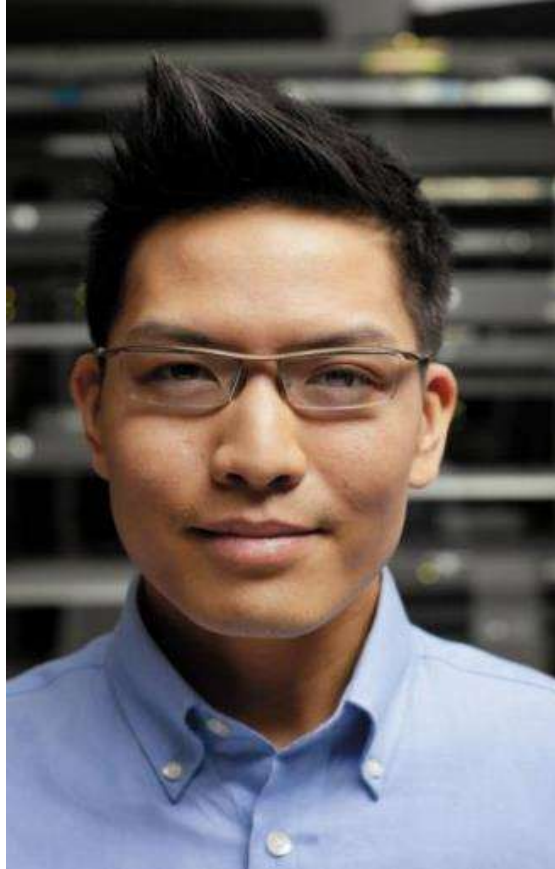
619	IpamServer	67	WebApplicationProxy	6	PSScheduledJob
384	WssCmdlets	42	SoftwareInventoryLogging	5	AppX
351	RemoteAccess	40	NetTcpIP	4	WindowsSearch
315	ADFS	39	SmbShare	3	ClusterAwareUpdating
285	WDS	37	PSDesiredStateConfiguration	2	PowerShellWebAccess
190	DFSR	19	NetWNV	2	AdcsAdministration
170	NetEventPacketCapture	19	IscsiTarget	2	BitsTransfer
166	Hyper-V	15	DnsServer	2	TrustedPlatformModule
157	Storage	14	WssSetupCmdlets	2	Microsoft.PowerShell.Management
124	DhcpServer	13	PrintManagement	2	SmbWitness
117	VpnClient	12	NetSecurity	1	SMISConfig
99	SyncShare	11	FailoverClusters	1	Microsoft.PowerShell.Utility
82	NetNat	11	Deduplication	1	NetQos
79	Dism	10	TLS	1	FileServerResourceManager
74	PcsvDevice	8	StartScreen		

Deployment

Deployment options

Deployment method

Desired state configuration



Server Core
Minishell
Full GUI

Windows Deployment Services
Server Manager

Real world scenario

Deployment

DEPLOYMENT

Deployment options

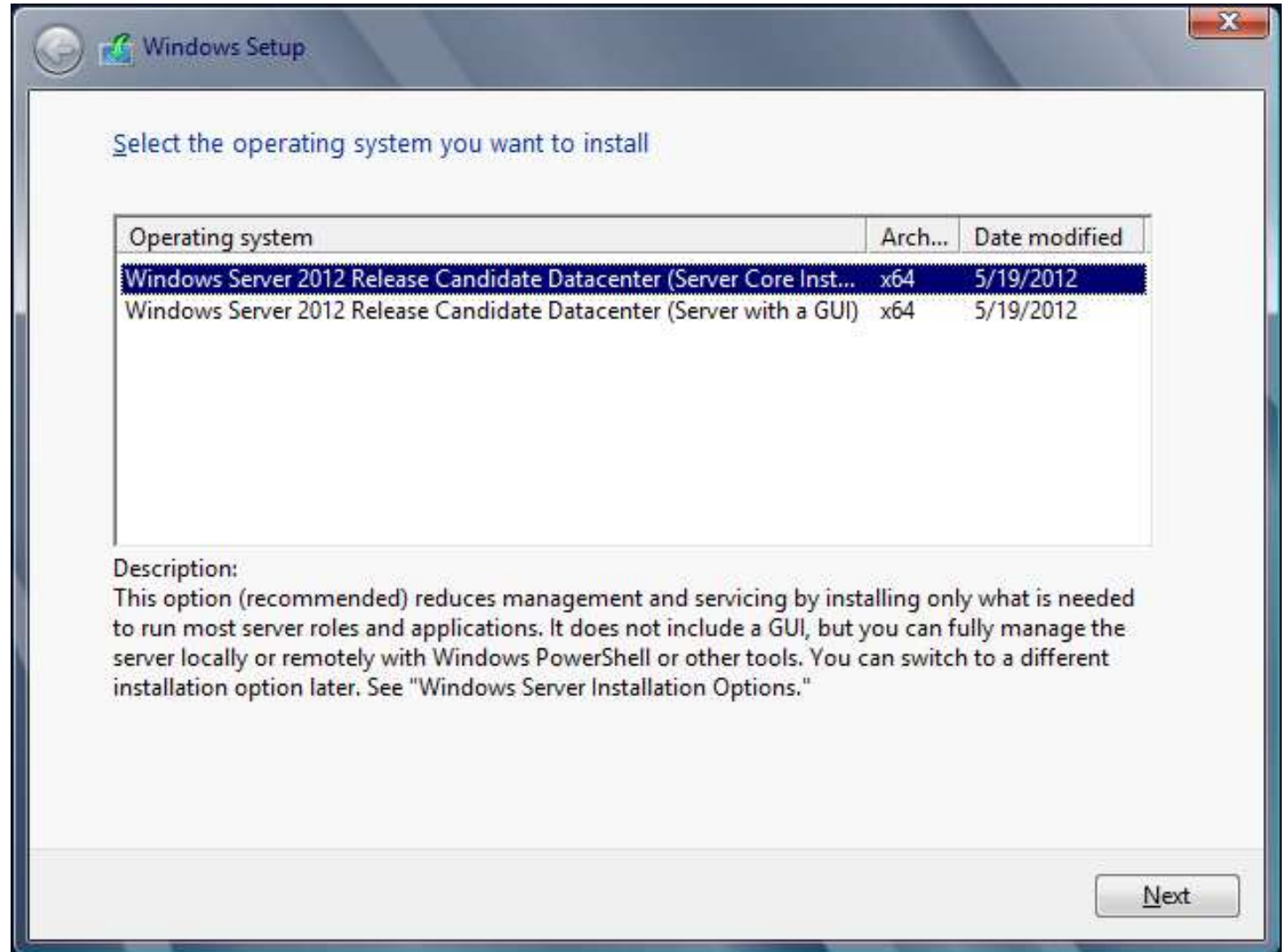


Server Core

- The default deployment option.
- RSAT for remote GUI management.
- PowerShell support achieves critical mass with 3000+ cmdlets.
- More roles and features available.

Server with a GUI

- Equivalent of full Server in Windows Server 2008 R2.
- Provided for backwards compatibility.



Deployment

DEPLOYMENT

Configuration levels



Classic "Full Server"

- Full Metro-style GUI shell.
- Install *Desktop Experience* to run Metro-style apps.

Full Server without Server Graphical Shell

- No Explorer, Internet Explorer or associated files.
- MMC, Server Manager, and a subset of Control Panel applets are still installed.
- Provides many of the benefits of Server Core for those applications or users that haven't yet made the transition.

Server Core

- Can move between Server Core and Full Server by simply installing or uninstalling components.

Server with a GUI

Minimal Server Interface

Server Core



Local Shell Capabilities

	Server Core	Minimal Server Interface	Server with a GUI	Desktop Experience
Command Prompt	✓	✓	✓	✓
PowerShell/.NET	✓	✓	✓	✓
Server Manager	✗	✓	✓	✓
MMC	✗	✓	✓	✓
Control Panel	✗	✗	✓	✓
CPL Applets	✗	Some	✓	✓
Explorer Shell	✗	✗	✓	✓
Taskbar	✗	✗	✓	✓
System Tray	✗	✗	✓	✓
Internet Explorer	✗	✗	✓	✓
Help	✗	✗	✓	✓
Themes	✗	✗	✗	✓
Start screen (Metro)	✗	✗	✓	✓
Metro-style apps	✗	✗	✗	✓
Media Player	✗	✗	✗	✓

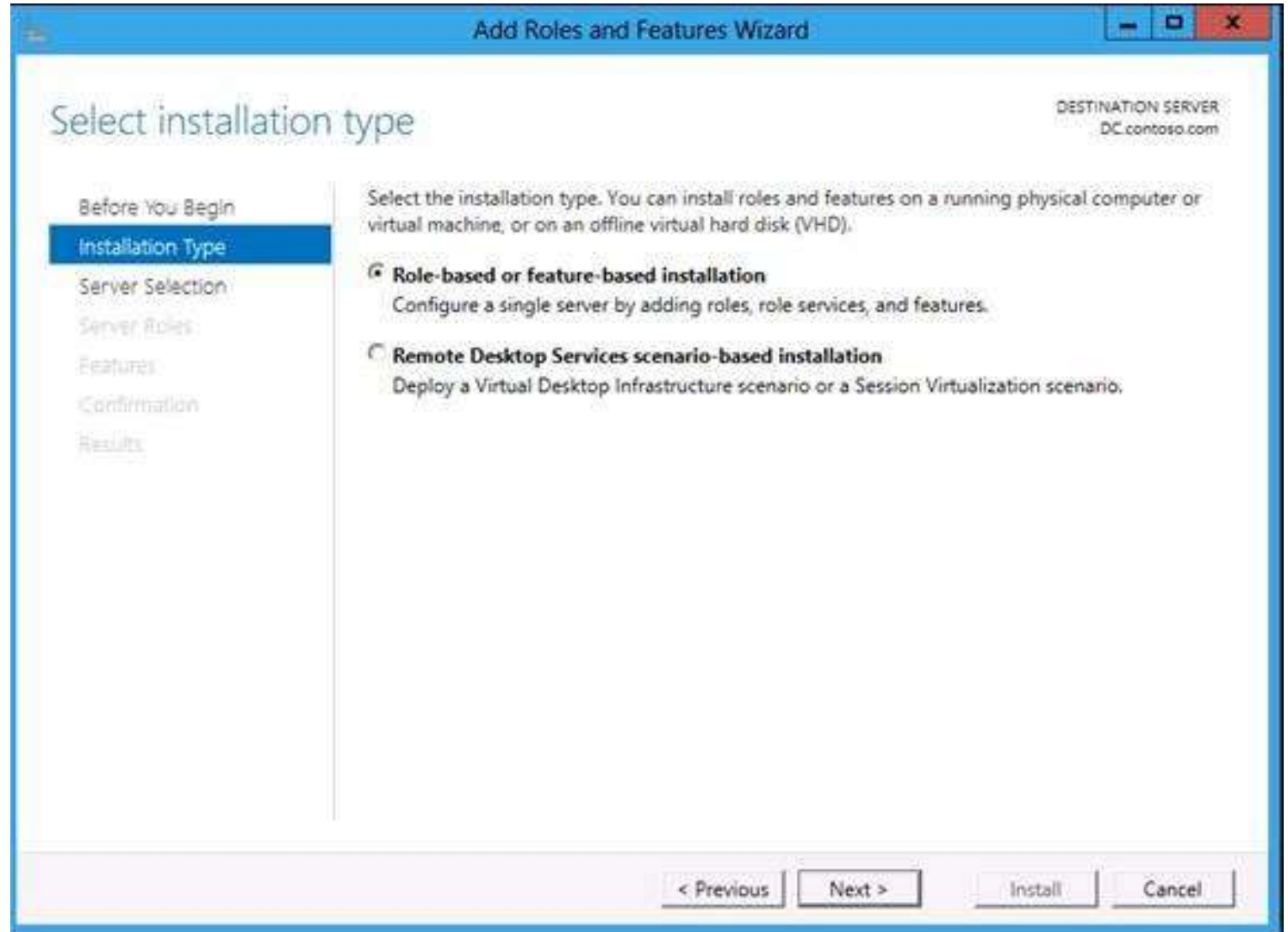
Deploying with Server manager

DEPLOYMENT

Server manager deployment



1. Select installation type: role or feature-based.
2. Select destination server: server pool or VHD.
3. Select server roles.
4. Select features.
5. Confirm selection and install.



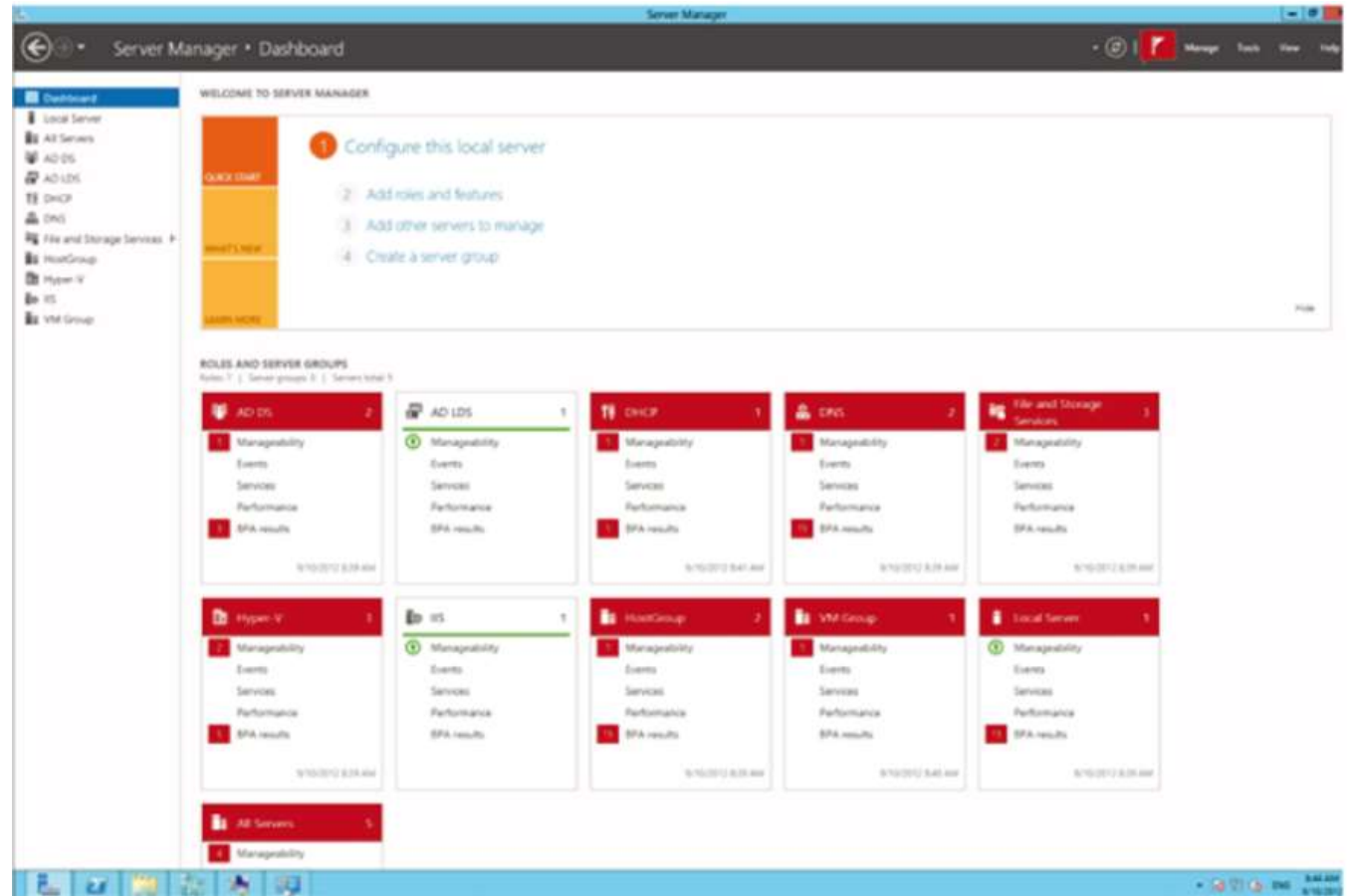
Server Manager

MULTI
SERVER
MANAGEMENT

Glance-able dashboard



- Overall view.
- Quickly see issues.
- Lists Physical and Virtual Machines.



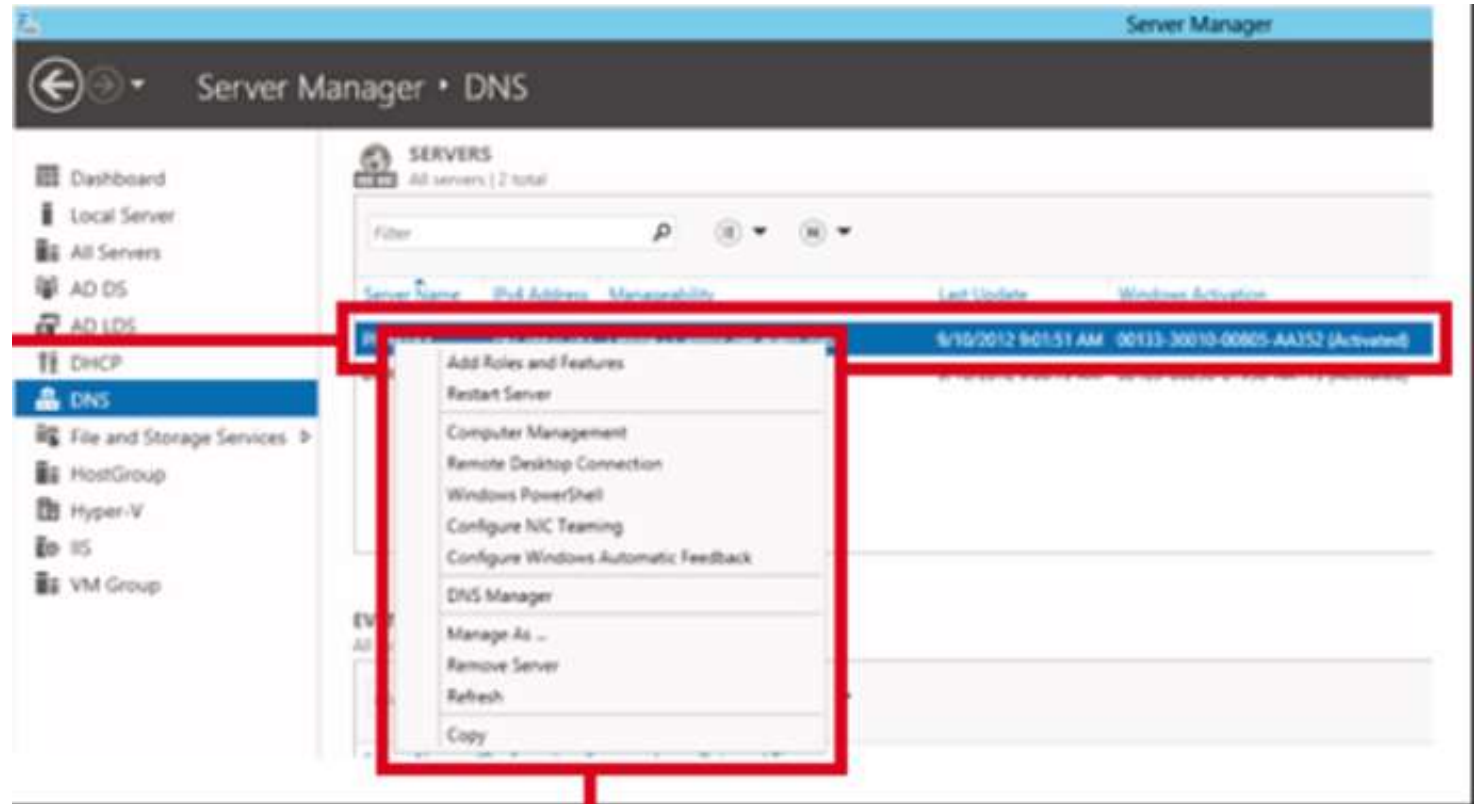
Server Manager

MULTI
SERVER
MANAGEMENT

Actionable functions



- Contextual menu of Server Management functions.
- Fix issues from within Server Manager.
- Ability to stop and start services on one or multiple machines.
- Add roles remotely.
- Add roles to offline VHDs.



Server Manager

MULTI
SERVER
MANAGEMENT

Server groups



- Group servers based on role, location, or other criteria.
- Easy to monitor and manage groups of servers.
- Servers can be added to multiple groups.

The image displays two screenshots of the Server Manager interface, illustrating server groups and events. The left screenshot shows a list of servers with 'Z600MONSTER' highlighted. The right screenshot shows the details for the 'PRIMARY' server, including its role and services.

SERVERS
All servers | 5 total

Server Name	IPv4 Address
HURSTHYPERV2	192.168.0.101,192.168.0.221,192.168.0.6
PRIMARY	192.168.0.41
REPLICA	192.168.0.42
Z600MONSTER	192.168.0.200

EVENTS
All events | 2285 total

Server Name	ID	Severity	Source
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds
Z600MONSTER	10028	Error	Microsoft-Windows-Ds

SERVICES
All services | 170 total

Server Name	Display Name
Z600MONSTER	IP Helper
Z600MONSTER	Windows Store Service (WSService)
Z600MONSTER	Windows Update
Z600MONSTER	Windows Installer
Z600MONSTER	Remote Access Auto Connection Manager
Z600MONSTER	Base Filtering Engine
Z600MONSTER	WinHTTP Web Proxy Auto-Discovery Servi

SERVERS
All servers | 5 total

Server Name	IPv4 Address
PRIMARY	192.168.0.241
VMSEVER1	-
Z600MONSTER	192.168.0.200

EVENTS
All events | 0 total

Server Name	ID	Severity	Source
-------------	----	----------	--------

SERVICES
All services | 137 total

Server Name	Display Name
PRIMARY	Windows Update
PRIMARY	Application Identity
PRIMARY	Special Administration Console Helper
PRIMARY	Encrypting File System (EFS)
PRIMARY	Certificate Propagation
PRIMARY	Remote Access Connection Manager

Desired State Configuration

DSC



- Components of your data center have the correct configuration.
- PowerShell language extensions and providers which enable declarative, repeatable deployment.
- Define the exact configuration of target nodes (computers or devices) and prevent "configuration drift."

```
1 Configuration FourthCoffeeWebsite
2 {
3   Node WebServer1
4   {
5     # Ensures that the IIS role is present
6     windowsFeature IIS
7     {
8       Name="Web-Server"
9       Ensure="Present"
10    }
11
12    windowsFeature ASP
13    {
14      Name="Web-ASP-NET45"
15      Ensure="Present"
16    }
17  }
18 }
19
20
21 FourthCoffeeWebSite
22 Invoke-DscConfiguration -Configur
```

```
1 param
2 {
3   # Computer names where to apply this configuration
4   Parameter (Mandatory)
5   string $NodeName
6 }
7
8 Configuration FourthCoffeeWebsite
9 {
10  Node $NodeName
11  {
12    # Ensures that the IIS role is present
13    windowsFeature IIS
14    {
15      Name="Web-Server"
16      Ensure="Present"
17    }
18
19    windowsFeature ASP
20    {
21      Name="Web-ASP-NET45"
22      Ensure="Present"
23    }
24
25    # Going to use Port80 for "our" website so default must not be running
26    Website DefaultSite
27    {
28      Name="Default Web Site"
29      PhysicalPath="C:\inetpub\wwwroot"
30      Ensure = "Present"
31      State = "Stopped"
32      Requires = "[windowsFeature]IIS"
33    }
34  }
35 }
36
37 FourthCoffeeWebSite
38 Invoke-DscConfiguration -ConfigurationDirectory "C:\Demo\DSC Demo\FourthCoffee"
```

Desired State Configuration

- Enabling or disabling server roles and features
- Managing registry settings
- Managing files and directories
- Starting, stopping, and managing processes and services
- Managing groups and user accounts
- Deploying new software
- Managing environment variables
- Running Windows PowerShell scripts
- Fixing a configuration that has drifted away from the desired state
- Discovering the actual configuration state on a given node

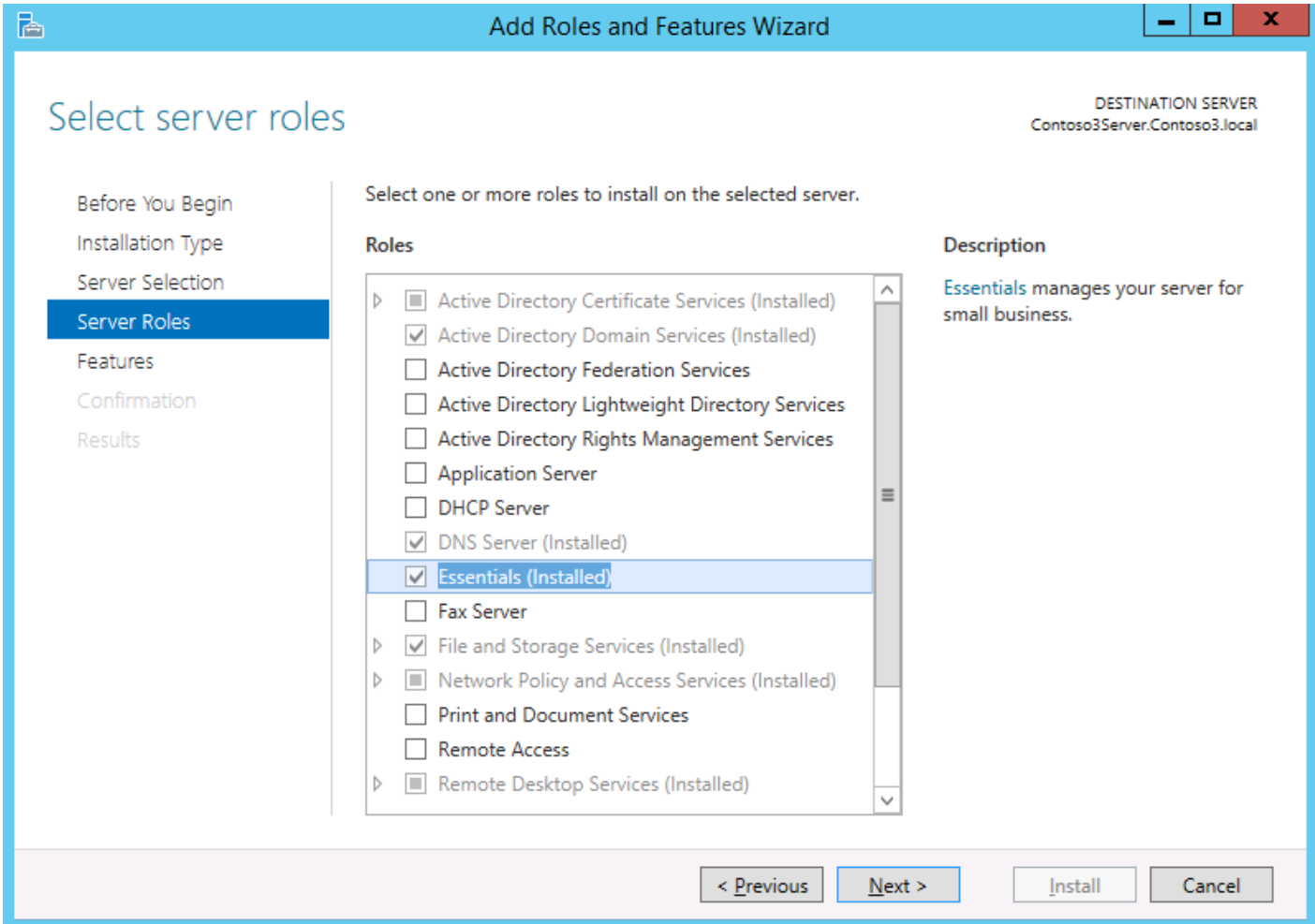
Demo: Desired State Configuration

Windows Server Essentials Experience

Essentials functionalities are enabled via a dedicated server role in Windows Server Standard and Windows Server Datacenter.

Familiar and seamless deployment experience that sets up the most fundamental roles for the primary server.

Optional unattended deployment and configuration using PowerShell.



Windows Server Essentials Experience

- If your server is integrated with Office 365, you can manage your mobile devices by using the Exchange Active Sync functionalities, for example, you can perform a remote wipe of the mobile device.
- The following functionalities are available when Office 365 is integrated with Windows Server 2012 R2 Essentials:
 - SharePoint Libraries management
Manage your Office 365 SharePoint Libraries from the Dashboard.
 - Office 365 distribution groups management
Manage your Office 365 distribution groups from the Dashboard.

Windows Server Essentials Experience

- Windows Server 2012 R2 Essentials includes improved File History.
 - File History backups are configured per user instead of per device.
 - Also, you can automatically restore your data through File History backups on a new computer, if your old computer is no longer functional or is unavailable.
 - The first time you log on to your new computer in the network, you are prompted to restore your files from your File History backups.
- Health Reports is integrated with Windows Server 2012 R2 Essentials, and it no longer needs to be installed as an add-in.

Demo: Windows Server Essentials