

Windows Server 2012

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About the Tutorial

Windows Server 2012 codenamed Windows Server 8 is the most recent version of the operating system from Microsoft regarding server management, but not the last one which is Windows Server 2016. Officially it was released on August 1, 2012 and is just a commercial version as of now.

Windows Server 2012 has four editions: Foundation, Essentials, Standard and Datacenter. Each one of them has their own limitations except the Datacenter version, which is also the most expensive one.

This is an introductory tutorial that explains all the fundamentals of Windows Server 2012.

Audience

This tutorial has been designed for all those readers who want to learn the features of Windows Server 2012. It is especially going to be useful for all those professionals who are required to install and use this operating system to perform various duties in their respective organizations.

Prerequisites

We assume the readers of this tutorial have a practical experience of handling a Windowsbased Servers. In addition, it is going to help if the readers have a basic knowledge of how to install and use an operating system.

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Windows Server 2012 codenamed Windows Server 8 is the most recent version of the operating system from Microsoft regarding server management. But it is not the last one, as the last one is Windows Server 2016. Officially it was released on August 1st, 2012 and is being sold as a commercial version only.



Improvements in Windows Server 2012

The major Improvements on this version are as follows:

- It is ready to be integrated with cloud systems and it still can maintain the classic features of local datacenters as a result Hyper-V Virtualization has new features Hyper-v replicas, it allows you to create virtual machines replications between clusters and storage systems.
- The **Storage migration** virtual disks can be moved to different physical storages, Virtual machine snapshots, virtual machines can be deleted from the Hyper-v and also from the virtual disks and it can be used directly without the need to shut down the virtual machine.
- The **Core server installation** easily switches to GUI installation without the need of reinstallation.
- The file server and storage service improvement is that it eliminates identical copies in the same volumes as such and saves space.
- The **Storage pools and storage spaces** allows you to group the hard disks to one or more storage pools then it allows to create virtual disks. It can add other disks to the storage pools and make available to the users without impacting them.
- **The iSCSI Target Server** can offer block storage to other servers and applications on the network using the iSCSI standard.
- Active Directory cloning can deploy additional domain controllers by cloning an existing virtual domain controller.

The Windows Server 2012 has four editions: **Foundation, Essentials, Standard and Datacenter**. Each one of them has their own limitation accept the Datacenter version which is also the most expensive one.

The following table	will show what is the	right one for	your business	needs:
---------------------	-----------------------	---------------	---------------	--------

Specifications	Foundation	Essentials	Standard	Datacenter
Distribution	OEM only	Retail, volume	licensing, OEM	Volume licensing and OEM
Licensing model	Per s	erver	Per CPUp	air + CAL
Processor chip limit	1	2	6	4
Memory limit	32 GB	64 GB	4	ТВ
User limit	15	25	Unlir	nited
File sharing limits	1 standalone DFS root	1 standalone DFS root	Unlir	nited
Network Policy and Access Services limits	50 RRAS connections and 10 IAS connections	250 RRAS connections, 50 IAS connections, and 2 IAS Server Groups	Unlimited	
Remote Desktop Services limits	50 Remote Desktop Services connections	Gateway only	Unlir	nited
Virtualization rights	N/A	Either in 1 VM or 1 physical server, but not both at once	2 VMs	Unlimited

Active Directory Certificate Services	Certificate Authorities only	Certificate Authorities only	Yes
Hyper-V	No	No	Yes
Server Core mode	No	No	Yes
Windows Server Update Services	No	No	Yes

For finding out the cost of licensing you can click on the following link:

https://www.microsoft.com/en-us/server-cloud/products/windows-server-2012r2/purchasing.aspx

Pricing and licensing overview

Edition	Ideal for	Feature comparison	Licensing model	Pricing Open NL (US\$)
Datacenter	Highly virtualized private and hybrid doud environments	Full Windows Server functionality with unlimited virtual instances	Processor + CAL*	\$6,155**
Standard	Low density or non-virtualized environments	Full Windows Server functionality with two virtual instances	Processor + CAL*	\$882**
Essentials	Small business environments for servers with up to two processors	Simpler interface, pre-configured connectivity to cloud-based services; one virtual instance of Essentials	Server (25 User Limit)	\$501**
Foundation	Economical general purpose server with a single processor	General purpose Server functionality with no virtualization rights	Server (15 User Limit)	OEM only

In this chapter, we will discuss regarding the requirements and prerequisites of the Windows Server 2012.

System Requirements

Although most of the servers nowadays probably have the necessary requirements for Windows Server 2012. It will certainly be useful to know them in case you want to upgrade from an older system.

The main requirements are:

- CPU socket minimum 1.4 GHz (64-bit processor) or faster for single core and Microsoft recommends is 3.1 GHz (64-bit processor) or faster multi-core.
- RAM memory minimum is 2GB, but Microsoft recommends 8GB.
- 160 GB hard disk with a 60 GB system partition space in your hard disk.

One important thing to note here is that the installation process itself will verify your computer hardware and let you know if it qualifies for a Windows Server 2012 installation. If not, then you will need to upgrade your hardware.

Installation

The following steps are to be adhered for the installation of Windows Server 2012.

Step 1: We can download the evaluation ISO of Windows Server 2012 R2 from the following link:

https://www.microsoft.com/en-us/evalcenter/evaluate-windows-server-2012-r2

But you will need to sign in first with a Microsoft account like Hotmail for example in order to complete the download and the good thing is that the evaluation period will last for 180 days, so you will have enough time to know if it will be the right product for you or not.



At the end, if you decide to buy the license of your Windows server 2012 R2. You can purchase it online via a Microsoft online store found in –

http://www.microsoftstore.com/store/msusa/en_US/list/Windows-Server/categoryID.70676900?icid=BusinessR_Software_80_Windows_Server_112315

For the Enterprise solution, I would recommend to purchase it via a Microsoft partner that is found in your country.



Step 2: After downloading the ISO of Microsoft, create a boot USB driver which can be created with the Microsoft tool called Windows USB/DVD Download Tool and can be downloaded from the following link:

https://www.microsoft.com/en-us/download/windows-usb-dvd-download-tool

After downloading the EXE file, open it and select the ISO file location and then click next like in the following screenshot, and wait up to the end when the Boot USB is created.

Microsoft Store	_ ×
WINDOWS 7 USB/DVD DOWNLOAD TOOL	Terms of use Online help
Step 1 of 4: Choose ISO file	
Source file: C:\Windows_Server_R2.ISO	Browse
	Next

Step 3: After completing the above given steps, plug-in the USB to the server and wait for a while till it loads the files. This will continue for about a couple of minutes as shown in the following screenshot.



Step 4: After the files are loaded, you will see the screen of language settings of installation, keyboard, time and currency format. Generally, all the default ones are also good enough to start with. Click Next.

-	Windows Setup	-o-) 8 💼
	🕂 Windows Serve	r 2012
	Language to install (English (United States)	
	Ime and currency formate English (United States)	
	Exyboard or input method US	<u>.</u>
	Enter your language and other preferences and click	"Next" to continue.
e 2012	Mensort Corporation All rights warned,	Net

Step 5: Click "Install now".

-	Windows Setup	
	Windows Server 20	12
	Install now	
Bepa	ir your computer	

Step 6: Once you have clicked on Install Now, the setup will start and it will load all the files and the screen will look as shown in the following screenshot.



Step 7: Wait until the files are loaded and then you will see the following screen. Let's select Windows Server 2012 DataCenter Evaluation (Server with GUI) and click Next.



Step 8: Click "I accept the license terms" and then click on the Next button as shown in the following screenshot.

🚱 🕫 Windows Serie License terms	-	
MICROSOFT SOFTWARE LICENSE TERMS MICROSOFT WIREOWS SERVER 2012 DATACENTER These loonse terms are an agreement between Microsoft Corporation (or base where you have, which induces the media on which you received it, if a terms also apply to any Microsoft · updates, · updates, · supplements, · latemet-based services, and · support services	fon e, The y, The	
P) googa the known termi	Ned	

Step 9: The following screen will appear. In "Driver Options" you can create a new partition, delete or format the Hard disk. After you have done this process then you can select the partition where the Windows server 2012 R2 will be installed in our case we have one partition. Once all this is done, then click on Next.

20 Erro instanted Space 20 58 49 Bdruch Drive options © Lond Error	Where do you want to install Wi	ndovas? Total use : Tise space : Type
fg Bulnuh Drins options € Lood drive	Cros instrement Space	20 (B
	fa Bdruh O Lood Brice	Drins options

Step 10: Let's wait until this process finishes during this time and then the server will reboot.



Step 11: Once the reboot is done the following screen will appear. Set the password for the server and then click on "Finish".

User name	Administration	unt that you can use to sign in to th	is computer.	
Password				
Reenter password		*		

Step 12: It will take some minutes until the setup finishes completely.



Step 13: Once all this is done, you have completed the installation process and the following screen will appear.

Congratulations!!!



Like the previous version, Windows Server 2012 has the following roles which can be used and in the subsequent chapter, we will see how to install and configure the most important ones.

The following picture shows all the roles. **A small reminder!** – Roles and Features are the tools that you need to install or activate in order to complete your IT Administration duties, without their installation you cannot do anything.

Before You Begin	Select one or more roles to install on the selected server.		
Installation Type	Roles		
Server Selection	Active Directory Costificate Services		
Server Roles	Active Directory Certificate Services		
Features	Active Directory Federation Services		
Confirmation	Active Directory Lightweight Directory Services		
Results	Active Directory Rights Management Services		
	Application Server		
	DHCP Server		
	DNS Server		
	Fax Server		
	File and Storage Services (2 of 12 installed)		
	Hyper-V		
	Network Policy and Access Services		
	Print and Document Services		
	Remote Access (1 of 3 installed)		
	Remote Desktop Services		
	Volume Activation Services		
	Web Server (IIS)		
	Windows Deployment Services		
	Windows Server Essentials Experience		
	Windows Server Update Services		

To add a role in the server we should adhere to the following steps:

Server Manager

Step 1: Click with the mouse on Server Manager which is found in the task bar as shown in the following screenshot.

Step 2: After opening the "Server Manager", click on the second option "Add roles and features".

Server M	anager • Dashbo	bard	• @ 🖡
Dashboard	WELCOME TO SERVER	MANAGER	
Local Server All Servers File and Storage Services		1 Configure this local server	
國 Remote Access	QUICK START	2 Add roles and features3 Add other servers to manage	
	WHAT'S NEW	 4 Create a server group 5 Connect this server to cloud services 	
	LEARN MORE		

Step 3: The following screen will appear, then you can Click on the Next button.

A	Add Roles and Features Wizard		
Before you begin	DESTINATION SERVER		
Before You Begin Installation Type	This wizard helps you install roles, role services, or features. You determine which roles, role services, or features to install based on the computing needs of your organization, such as sharing documents, or hosting a website.		
Server Selection Server Roles	To remove roles, role services, or features: Start the Remove Roles and Features Wizard		
Features Confirmation	Before you continue, verify that the following tasks have been completed: • The Administrator account has a strong password		
Results	 Network settings, such as static IP addresses, are configured The most current security updates from Windows Update are installed 		
	If you must verify that any of the preceding prerequisites have been completed, close the wizard, complete the steps, and then run the wizard again.		
	To continue, click Next.		
	Skip this page by default		
	< Previous Next > Install Cancel		

Step 4: Select the Role-based or feature-based installation and then click on the Next button.

è	Add Roles and Features Wizard		
Select installa	ion type		
Before You Begin	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).		
Installation Type			
Server Selection	Kole-based or feature-based installation Configure a gingle sequer by adding roles, role capies, and features.		
Server Roles	configure a single server by adding roles, role services, and reactires.		
Features	Remote Desktop Services installation		
Confirmation	Install required role services for Virtual Desktop Infrastructure (VDI) to create a virtual machine-based or session-based desktop deployment		
	< <u>Previous</u> <u>Next ></u> Install Cancel		

In the next screen that appears, you will have the following two options:

Option 1: Select a server from the server pool. This option is – if you want to install the services in the physical server like being done in the following screenshot.

b	Add Roles and Features Wizard			
Select destination	ON SERVER			
Before You Begin	Select a server or a virtual hard disk on which to install roles and features.			
Installation Type	Select a server from the server pool			
Server Selection	Select a virtual hard disk			
Server Roles	Server Pool			
Features				
Confirmation	Filter:			
Results	Name IP Address Operating System			
	Microsoft Windows Server 2012 R2 Standard			
	1 Computer(s) found			
This page shows servers that are running Windows Server 2012, 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			

Option 2: Select a virtual Hard disk if you want to install the services in a virtual disk that can be somewhere in the network storage. Take a look at the following screenshot for better understanding.

B	Add	Roles and Features \	Nizard	_ D X
Select destination	n server			DESTINATION SERVER
Before You Begin Installation Type Server Selection	Select a server or a v O Select a server fro Select a virtual h	rirtual hard disk on which om the server pool ard disk	to install roles and	features.
Server Roles Features Confirmation Results	Server Pool Filter:	IP Address	Operating System Microsoft Windo	 Select a server on which to mount the virtual hard disk (VHD). If you select a VHD file from a network share, that share must grant Read and Write permissions to the computer (local system) account of the server that you selected to mount the VHD. User- only account access is not sufficient.
	< 1 Computer(s) found Virtual Hard Disk \\ServerName\Path	III J OfflineVirtualHardDisk.vi	hd Browse	2. Select an offline VHD file on which Windows Server 2012 is already installed, and on which you want to install roles and features.

Step 5: The last step will be to check the service that you want to install, but in the upcoming chapters we will continue this setup for each and every important services.

b	Add Roles and Features Wizard	_ _ X
Select server roles		
Before You Begin	Select one or more roles to install on the selected server.	
Installation Type	Roles	Description
Server Selection		Active Directory Certificate Services
Server Roles	Active Directory Certificate Services	(AD CS) is used to create
Features	Active Directory Ederation Services	certification authorities and related role services that allow you to issue
Confirmation	Active Directory Lightweight Directory Services	and manage certificates used in a
Results	Active Directory Rights Management Services	variety of applications.
	Application Server	=
	DHCP Server	-
	DNS Server	
	Fax Server	
	File and Storage Services (2 of 12 installed)	
	Hyper-V	
	Network Policy and Access Services	
	Print and Document Services	
	Remote Access (1 of 3 installed)	
	Kemote Desktop Services	~
	< Previous N	lext > Install Cancel

Windows PowerShell is a **command-line shell** and **scripting language** designed especially for system administration. It's analogue in Linux is called as Bash Scripting. Built on the .NET Framework, Windows PowerShell helps IT professionals to control and automate the administration of the Windows operating system and applications that run on Windows Server environment.

Windows PowerShell commands, called **cmdlets**, let you manage the computers from the command line. Windows PowerShell providers let you access data stores, such as the Registry and Certificate Store, as easily as you access the file system.

In addition, Windows PowerShell has a rich expression parser and a fully developed scripting language. So in simple words you can complete all the tasks that you do with GUI and much more.

PowerShell Icon can be found in the task bar and in the start menu. Just by clicking on the icon, it will open.



To open it, just click on the icon and then the following screen will open and it means that PowerShell is ready for you to work on.



The latest version of PowerShell is 5.0 and to check what is installed in our server we type the following command – **:\$PSVersionTable** as shown in the following screenshot and from the screen we also know that we have PSVersion 4.0

Jame	Value	
PSVersion VSManStackVersion SerializationVersion CLRVersion BuildVersion PSCompatibleVersions PSRemotingProtocolVersion	4.0 3.0 1.1.0.1 4.0.30319.34209 6.3.9600.17400 {1.0, 2.0, 3.0, 4.0} 2.2	
<pre>PS C:\Users\Administrator> _</pre>	N .	

To update with the latest version where it has more Cmdlets we have to download **Windows Management Framework 5.0** from the following link –

https://www.microsoft.com/en-us/download/details.aspx?id=50395 and install it.

(https://www.microsoft.com/en-us/download/details.aspx?id=50395	× Q Search
And you can download it for free.*	
Get started >	
Windows Management Framework 5.0	
Language: English D	Download
Windows Management Framework 5.0 includes updates to Windows P Windows PowerShell Desired State Configuration (DSC), Windows Ren (WinRM), Windows Management Instrumentation (WMI). Release note http://go.microsoft.com/fwlink/?LinkID=717903	YowerShell, note Management es:

PowerShell ISE

The Windows PowerShell **Integrated Scripting Environment** (ISE) is a host application for Windows PowerShell. In Windows PowerShell ISE, you can run commands and write, test, and debug scripts in a single Windows-based graphic user interface with multiline editing, tab completion, syntax coloring, selective execution, context-sensitive help, and support for right-to-left languages.

You can use menu items and keyboard shortcuts to perform many of the same tasks that you would perform in the Windows PowerShell console. For example, when you debug a script in the Windows PowerShell ISE, to set a line breakpoint in a script, right-click the line of code, and then click **Toggle Breakpoint**.

To open it you just go to Start – Search and then Type – PowerShell as shown in the following screenshot.



Then click on Windows PowerShell ISE. Or click on the downward Arrow as shown in the following screenshot.



It will list all the applications installed on the server and then click on Windows PowerShell ISE.



The following table will be open -



It has three sections, which include – The **PowerShell Console** with number 1, then **Scripting File** number 2 and the third is the **Command Module** where you can find the module.

End of ebook preview

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