2.1 Installation

As you study this section, answer the following questions:

* Which editions of Windows Server 2012 support a Server Core installation?
* What is the system volume free space requirement for Windows Server 2012?
* If you are currently running Windows Web Server 2008 R2, what is your upgrade path?
* How many virtual instances are allowed on each Windows Server 2012 edition?
* What is the difference between a full installation of Windows Server 2012 and a Server Core installation?
* How does a Server Core installation in Windows Server 2012 differ from a Server Core installation in previous versions of Windows Server?
* Can a full installation of Windows Server 2012 be converted to a Server Core installation?

After finishing this section, you should be able to complete the following tasks:

* Plan a Windows Server 2012 installation.
* Install Windows Server 2012.

This section covers the following Windows Server Pro: Install and Configure exam objective:

* 1.0 Configure Windows Servers.

This section covers the following 70-410 exam objective:

* 101 Install servers.

This objective may include but is not limited to:

Plan for a server installation or a server upgrade

2.1.1 Server Installation and Upgrade

**Server Installation and Upgrade**

0:04-0:14

Let's talk about Windows Server 2012 installation and upgrades. Back in Windows Server 2008 and 2008 R2, they really streamlined the installation process, so that you didn't have to answer very many questions before you actually got into the operating system.

**Use of Product Key**

0:15-1:10

One of the first differences we're going to see on the installation here is that you will have to put in a product key before the server will install. It used to be, you could install without a product key, and add the product key later. Here, we really can't do that. There are eval versions that you can get, and those can be converted into retail versions after the fact, but if you're installing a production server, the best thing is to have the serial code--the correct serial code--and go through the installation providing that code. That will install the appropriate version. Beginning in Windows Server 2008, all the versions of Windows Server should be on the same DVD. Windows knows which version to install based on the product key that you use. Once the installation is complete, then you'll go into the operating system and configure it the way you need it to be configured. First, we're going to go over the editions of Windows Server 2012. Then, we'll talk about the minimum requirements and some of the upgrade paths if you are working with servers that need to be upgraded.

**Versions of Windows Server 2012.**

1:11-1:12

Let's look at our different editions.

**Foundation**

1:13-2:02

Let's start by talking about foundation. This is a scaled down version of the operating system. It supports just one CPU socket and 32 GB of RAM. It might seem like a lot to you if you're used to dealing with client workstations, but for a server that might not actually be that much RAM. Certainly you can put some RAM in there. Here's one of the biggest limitations: only up to 15 simultaneous LAN connections. So this would be a very small environment, indeed. It supports up to 50 RRAS connections, up to 20 simultaneous remote desktop connections, if you're using remote desktop. But it doesn't give us our Server Core installation. It does not support Hyper-V and does not support server clustering. This is a very limited version of Windows Server 2012. It would be for small companies that don't have a lot of budget. Adequate for a small server that's going to be a file server or something like that, but again, a very small company.

**Essentials**

2:03-2:36

You could also get Essentials. This is a little bit better, you've got two CPU sockets, 64 GB of RAM, 25 simultaneous LAN connections. It is still a very small network. They have much more people coming in over RRAS and Remote Desktop, but again, no Server Core, no Server Clustering. This one's a little bit different. It can be installed into a Hyper-V guest operating system. You can run it as a virtual machine, but it cannot be hosting Hyper-V virtual machines. Again, this is a limited version of the operating system. These would be for small companies.

**Standard**

2:37-3:48

Most companies are going to have either Standard or Datacenter. Here, you can kind of see what I was talking about-- 1 CPU socket and 32 GB of RAM being kind of small.

Even with Standard, we get a potentially 64 CPU sockets, 4 TB of RAM. I would love to have a computer with 4 TB of RAM, unlimited connections, Server Core. Now, here's the cool thing, you can have up to 2 Hyper-V guest operating systems using the same license key as the host, assuming the host is only running Hyper-V. If you purchased 2012 Standard, you're really buying two Windows Server operating systems. Assuming that you install this on the host as Hyper-V, it only runs Hyper-V. Then, you create your server as guest operating system. Of course, it certainly can be installed in the Hyper-V as a guest, and it supports server clustering with up to 64 nodes per cluster. I don't want to do a whole section on clustering, but essentially clustering in a nutshell is allowing multiple servers to act as if they were one server. There's probably not one server that does Yahoo.com; it might be a cluster.

Here we can up to 64 nodes, which is a big improvement over previous versions of the operating system that limited it to more like 16. This is a huge difference coming into 2012.

**Datacenter**

3:49-4:24

Datacenter would be much more expensive and has much more capability. We still have our 64 CPU sockets and 4 TB, unlimited connections, supporting Server Core. Here we get unlimited Hyper-V guest operating systems using the same license key as the host, the same 64 clustering. If you purchase Datacenter, conceivably you can install an unlimited number of Hyper-V guest operating systems. The key is that they'd have to be all on one box. You're going to have to buy a very expensive hardware in order to really make use of Datacenter. Most companies with a decent size number of clients are probably going to be purchasing Standard.

**Minimum Requirements**

4:25-5:18

The minimum requirements for all four versions are very simple. Your CPU has to be at least 1.4 GHz. It's got to be a 64-bit CPU. They dropped support for 32-bit server operating systems in server 2008 R2. I really like this; your minimum RAM is 512 MB. Now, in reality, you're probably not going to install a server with just 512 MB RAM. This makes it great for testing. If you want to go through and build a test server, play around with some of the technology, you actually don't need a huge amount of RAM. You could even get a little netbook with a gig and a half of RAM, and run one virtual machine, and play with server. You need at least 32 GB of free space on the hard drive for the system volume. That's for the operating system alone. Certainly, you want to leave a lot more space than that, because over the course of time, there's going to be patches, there's going to be upgrades, and then it's probably going to do more than just hang out and be a server.

**Upgrade Paths**

5:19-6:21

If you have an existing Windows Server operating system, there are certain upgrade paths. There used to be different editions of Windows Server 2008 or 2008 R2. If you have Standard or Enterprise with SP2, you can upgrade to 2012 Standard or Datacenter. There's no more Enterprise version with 2012. If you've got Datacenter, you've got to go up to Datacenter. There used to be a web version that only did web stuff. That is not being supported anymore with 2012, so you would go to 2012 Standard. Then, pretty much the same thing with Server 2008 R2. A good rule of thumb with upgrades is, you can go to your edition, or better when you're upgrading. That's kind of a generic Microsoft rule. The only exception I see here is that, technically, it looks like it's possible to go from Enterprise to Standard. I can't image anybody that bought Enterprise is going to go to Standard. You're probably going to go to Datacenter. If you're looking for something easy to memorize for a test for the rest of your Microsoft career, generically, you can go to an equivalent edition or better, usually from the most recent operating system.

**Test Tips**

6:22-6:47

Make sure for the test, you notice, this is 2008 with Service Pack 2. If it's 2008 R2, it's Service Pack 1. In Microsoft tests, sometimes they try to be tricky. They'll say, 'Oh, you have Windows Server 2008.' What they might be looking for you to say in the answer is, well, I need to upgrade that to SP2 in order to do the upgrade. Just make sure that you're aware of those things, so that you can't just, well, they tossed on an SP there, that might be relevant for a test question.

**Installation Options**

6:48-7:27

Finally, when you go through the install, the last thing you're sort of going to choose is to do a Full Server install with a Graphical User Interface. OK, GUI means Graphical User Interface, or just a Server Core install. We are going to cover those in separate modules so you understand exactly what that is. The really cool thing about Server 2012 is, we can switch between them.

If you feel like you can't make a decision, no worries, you can change your mind after the fact. That is the information that you need to keep in mind when you're installing Server 2012, or if you're upgrading. Make sure you have an understanding of your upgrade paths and you know your minimum requirements. Once we got the server installed, we'll be able to jump in and play with some of the cool stuff that comes with it.

2.1.2 Installing Windows Server 2012

**Installing Windows Server 2012**

0:00-0:03

This is a demonstration on how to install Windows Server 2012.

**Windows Setup Screen**

0:04-0:16

We have a hard drive with nothing on it. Put the DVD in, and boot up. The first thing it's going to do is come into the Windows Setup screen. We'll go ahead and click Next. The next thing we're going to click is Install Now.

**Repair Your Computer Link**

0:17-0:30

I do want to call your attention to this Repair your computer link in the initial setup. If you do have a failed server, and you need to restore from a backup, this is the way you would boot into the Windows recovery environment. **Install Now**

0:31-0:35

We're just going to click Install Now.

The first thing we need to do is put in our product key.

**Product Key**

0:36-0:49

Whichever product key you put in is going to govern which version of Windows gets installed. Once you get your product key in, you click Next.

**Installation Options**

0:50-1:28

Now, we have our installation options. We can go through and install this with a Server Core installation, which is highlighted by default. That's just going to give me the command prompt with no GUI, where we're actually going to go ahead and install a server with a GUI. Click Next. Of course you have to "Accept the License Terms".

This is a neat screen because both Upgrade and Custom Install are activated, but this is a blank hard drive. There's nothing to upgrade. If I click this, nothing is going to happen. This would be used for...if I'm going to run the DVD and upgrade an earlier version of Windows. Something is already running on this computer.

**Custom: Install Windows Only (Advanced)**

1:29-1:36

For a clean install, you always go to Custom: Install Windows only (advanced). We're going to click on that. We choose where to install it.

**Choose Where to Install It**

1:37-1:44

This particular computer just has one hard drive, so we're going to install it on the Unallocated Space.

**Load Driver**

1:45-2:02

If for some reason your hard drive does not show up in here, it's usually because there's no driver. You would click the Load Driver link and load the driver. If it's some kind of SATA or RAID card, put the driver on a USB or CD and click Load Driver, and then you'll be able to see the hard drive.

**Partition the Hard Drive**

2:03-2:30

If you did want to partition the hard drive, we can go to Drive options (advanced), and we have the option to make a New partition. If any partitions already existed, we could Delete them, Format them, Extend them; whatever we need to do to work with the hard drive. I just want to install it on the unallocated space, so I'm going to click Next. It's got several things it goes through. It tells you, right here, it might restart a couple of times. Then, once it's done that, we will be ready to set the administrative password and get into Windows.

**Administrator Password**

2:31-2:54

Once it's gone through the setup, you really don't have to be involved with it after you've identified where on the hard drive to install it, until it comes up and it asks you for the administrator password. By default, this should be a complex password. You don't type something it doesn't like, it'd certainly tell you. Once you've got your password typed in, click Finish. It's going to finalize your settings. The next thing that we should see is Server Manager.

**Sign In**

2:55-3:07

Actually, we're going to hit Control, Alt, Delete, in order to sign in. There's Server Manager, which opens up automatically when we log in for the first time.

**Local Server**

3:08-3:51

What you should do after installation is make sure you come in to Local Server, and because it didn't ask us any questions during installation, it's going to have a randomly generated computer name. Certainly, it's part of a WORKGROUP. The Time zone is usually set to Pacific Time, because that's where Microsoft is. If nothing else, you should at least make sure you configure the Computer name and the Time zone. You need to set up the network settings. You can do that from in here.

The big one people forget to do is the Computer name, because once you join the domain, it becomes a little more difficult to change the name. It's best to do that right off the bat. Get the Computer name and the Time done. Then, you're in good shape. That's how you install Windows Server 2012.

2.1.3 Server Installation Facts

Windows Server 2012 is the latest release of the Windows Server product. With a Metro user interface similar to that of Windows 8, the installation of Windows Server 2012 differs from previous versions of Windows Servers in the following ways:

* Editions of Windows Server 2012 support only 64-bit processors.
* You must enter the product key when you are installing the product.
* There are four editions of Windows Server 2012.
* All editions are on the same installation DVD. The product key determines which edition is installed.

When choosing an edition of Windows Server 2012, make sure that you are aware of the features that it supports and select the edition that meets the needs of your organization. The following table lists the Windows Server 2012 editions.

|  |  |
| --- | --- |
| **Edition** | **Features** |
|  | The Foundation edition is a scaled down version of the server operating system, used for small businesses and supports most server roles. Foundation supports:   * One CPU socket and up to 32 GB of RAM * Up to 15 simultaneous LAN connections * Up to 50 Routing and Remote Access (RRAS) connections * Up to 20 simultaneous Remote Desktop (RD) connections Foundation does *not* support: * Server Core installation * Hyper-V virtualization services * Server clustering |
| Foundation |
|  | The Essentials edition provides additional hardware support and role support above what is provided by the Foundation edition. Essentials supports:   * Two CPU sockets and up to 64 GB of RAM * Up to 25 simultaneous LAN connections * Up to 250 Routing and Remote Access (RRAS) connections * Up to 250 simultaneous Remote Desktop (RD) connections Essentials does *not* support: * Server Core installation. * Full Hyper-V virtualization services. The Hyper-V host can be installed into Hyper-V as a guest. * Server clustering. |
| Essentials Edition |

|  |  |
| --- | --- |
|  | The Standard edition is available for medium and large businesses. Standard edition supports:   * Up to 64 CPU sockets and 4 TB of RAM * Unlimited LAN connections * Unlimited simultaneous Routing and Remote Access (RRAS) connections * Unlimited simultaneous Remote Desktop (RD) connections * Server Core installation * Hyper-V: two Hyper-V guest OS sessions using the same license key as the host (provided the host is *only* running Hyper-V) * Server clustering with up to 64 nodes per cluster |
| Standard Edition |
|  | The Datacenter edition provides much more capability than the other Windows Server 2012 editions.   * Up to 64 CPU sockets and 4 TB of RAM * Unlimited LAN connections * Unlimited simultaneous Routing and Remote Access (RRAS) connections * Unlimited simultaneous Remote Desktop (RD) connections * Server Core installation * Hyper-V: Unlimited Hyper-V guest OS sessions using the same license key as the host * Server clustering with up to 64 nodes per cluster |
| Datacenter Edition |

The following table identifies the minimum requirements for all editions of Windows Server 2012.

|  |  |
| --- | --- |
| **Component** | **Minimum** |
|  | 1.4GHz (x64) |
| CPU |
|  | 512 MB |
| RAM |
|  | 32 GB |
| Free space for System Volume |

The following table identifies Windows Server 2012 Upgrade paths.

|  |  |
| --- | --- |
| **If you are running these editions** | **You can upgrade to these editions** |

31

|  |  |
| --- | --- |
| Windows Server 2008 Standard with SP2 or  Windows Server 2008 Enterprise with SP2 | Windows Server 2012 Standard or  Windows Server 2012 Datacenter |
| Windows Server 2008 Datacenter with SP2 | Windows Server 2012 Datacenter |
| Windows Web Server 2008 | Windows Server 2012 Standard |
| Windows Server 2008 R2 Standard with SP1 or  Windows Server 2008 R2 Enterprise with SP1 | Windows Server 2012 Standard or  Windows Server 2012 Datacenter |
| Windows Server 2008 R2 Datacenter with SP1 | Windows Server 2012 Datacenter |
| Windows Web Server 2008 R2 | Windows Server 2012 Standard |

In addition to the various server editions, you can install Windows Server 2012 as a Server Core installation. Server Core is a minimal server installation option which does not provide a graphical user interface. Unlike previous versions of Windows Server, you can switch between a Server Core installation and a full installation.

Once the software has installed, Server Manager opens when you log in for the first time. Using Server Manager:

* Provide a computer name
* Set the time zone
* Configure network settings