Video Demonstration - Managing Cisco IOS Images (9 min)

How to manage Cisco IOS images and upgrade your router to the latest IOS image. In this video, we're going to establish a connection to a Cisco 1941 router. I have a PC that I'm working from, and I've got a console connection to the router, and I also have an ethernet cable connected to the routers gigabit 0/0 interface. In this tutorial, what we're going to do is first, set up the IP addressing on both the PC and the router so that they can communicate with each other over ethernet. Then, we'll need to make sure that we have a TFTP server running on the PC and the IOS image that we wish to upgrade to. Next, we'll upload the new IOS image to the router, using our TFTP server and then use boot system commands to boot the router to the new IOS image.

Let's start by configuring the IP address on the router and then we'll move to the PC. I have my console connection to the router using Tera Term. I'll press Enter on the keyboard, go to Privileged User mode and then to Global Config mode. I'll specify interface gigabit 0/0... Enter in the IP address, 192.168.1.1, the subnet mask and then use the No Shutdown command to enable the interface. You can see that the interface changed state to down and then to up.

Now let's look at the network interface for our PC. I'll open the Local Area Connection Property window, highlight Internet Protocol Version four TCPIP Version Four, open Properties and you can see that I have already set the IP address for my PC to 192.168.1.3 and I've set the gateway to 192.168.1.1, the address of the router interface. So we should have a connection to the router now.

From the router, I'll type Exit and Exit again and then I'll try to ping the PC. You can see that I'm receiving an echo reply from the PC at 192.168.1.3. Now that the router and the PC are able to communicate with each other, let's go ahead and launch our TFTP server. There are a number of freeware TFTP servers available that can be downloaded from the internet. I'm using TFTPD32.exe. I'll launch the server and let's make note of a few settings that are of importance. First of all, right here, under Current Directory, this is our TFTP folder where we'll be uploading and downloading files to and from the TFTP server. It's currently set to the C drive in a directory called TFTP-Folder, which I created. If you need to set your TFTP folder, just click the Browse button and create a folder to be the TFTP root folder. Next, the server interface. You can see that the TFTP server has correctly identified the IP address of the server as 192.168.1.3. Let's look into our TFTP folder. You can see that I've already placed an IOS image for the 1941 router inside of it. IOS images can be downloaded from the Cisco.com website with proper credentials. This is the IOS BIN file, or IOS image, that we're going to want to upload to our router.

I'll open Tera Term once again and, before we do anything, let's do a Show Flash and look in the flash memory to identify the current IOS image. You can see here, this is the flash memory. Item number one in the directory shows C1900-UniversalK9 and you can see it says, "152-4." This is IOS version 15.2, revision four. You can see it's a BIN file. We're going to upgrade this router to the latest version of the IOS, 15.3 version two. To do this, I'll use the Copy TFTP Flash command and this will copy from the TFTP server to the router's flash memory. I'll press Enter and it asks for the IP address, the IP address of the remote host or TFTP server. I'll put in the PC IP address and press Enter.

The source file name is the file name of the IOS image that we wish to upload. I'll go back to the folder, where the IOS image is located, highlight the name, do a Control C on my keyboard and then paste it into Tera Term. You can see, there's the full name of the new image. I'll press Enter and accept that this is indeed the destination file name. You can see it here, in between the brackets, and you can see the file transfer has started. The TFTPD32 TFTP server should let you know right away that a transfer is taking place and you should be able to follow the progress in the TFTP server window. You can see here, the exclamation points, indicating successful transfer of data. At the end, it verifies the bytes that have been copied.

Let's issue a Show Flash command and you can see that item eight in the directory of the flash memory is our C1900 Universal K9. You can see 153-2. So we now have IOS version 15.3 uploaded into flash memory. Modern Cisco routers have plenty of flash memory to accommodate storing multiple IOS image files. However, if you have an older router, with barely enough flash memory for one IOS image file, then you will have to backup the current IOS image to a TFTP server and delete the current image file before uploading the new IOS image file. This process is not covered in this video.

To make the router boot to the new IOS image, we'll need to go to Global Config mode, type No Boot System and then use Boot System Flash colon and then we'll want to put in the name of the new IOS image file. I'll

highlight the name, do an Edit, Copy and then right-click to paste it and press Enter. If necessary, I can change the Boot System command to boot back to the previous IOS image version. We've now told the system that, when it boots, to boot from flash memory using the C1900, version 15.3, as opposed to the previous version, 15.2. I'll exit out of Global Config, save my configuration... And reload the router to see if the new IOS image loads.

Proceed with reload? I'll press Enter to confirm and the router should reload and boot to the new IOS image. You can see, right here, as the router boots up, that the new IOS has been recognized. We can identify it right here. Version 15.3, version two, which is the IOS that we intended to upgrade to. The router has rebooted. I'll type EN to get to Privileged User mode and issue a Show Version command... And you can see that the new IOS image, System Image File, is Flash C1900 Universal K9, and you can see right here, 153-2, IOS 1.3 Version two. We have successfully upgraded to the new updated IOS.