10.4.2 CUPS Installation and Configuration

Click one of the buttons to take you to that part of the video.

CUPS Installation and Configuration 0:00-0:28

In this lesson, we're going review how to configure CUPS printing on Linux. Be aware that most Linux distributions will actually install CUPS and all of its supporting packages by default when you initially install the system.

But, if for some reason your Linux distribution did not install CUPS, then you can use yum, Zypper, or apt-get, whatever is appropriate for your particular distribution to install the CUPS package, along with all of its dependent packages.

How to Manually Start CUPS 0:29-1:15

After the CUPS package has been installed, the cupsd executable that provides the CUP service is located in the path shown here, /usr/sbin, and because it's a daemon it does have to be started. On most distributions, it'll probably be configured to start automatically. If not, you'll have to start it manually.

If you are using an older Linux distribution that's based on the init daemon, then you'll use the CUPS init script located in /etc/init.d or /etc/rc.d/init.d. Or, if your distribution is based on systemd, which all the newer distributions are, then the CUPS service is started and stopped using the CUPS service file and you use the 'systemctl' command here to start the CUPS daemon.

/etc/cups/cupsd.conf 1:16-2:06

Once the CUPS packages have been installed on your system and the daemon's been enabled, then you're ready to configure the service itself. The CUPS daemon is configured using several text files within the /etc/cups directory on your system.

One of the key files that you're going to want to be concerned with is this one shown right here, cupsd.conf. This configuration file is used to configure the cupsd daemon itself. Be aware the cupsd.conf file is actually very long and is composed mainly of server specific directives which specify how the cupsd daemon is going to operate. We don't have the time or space here to cover all of the configuration options that are available in cupsd.

Instead, we're going to focus on some of the most important ones. If you need more information, then you should look at the man page for cupsd.conf.

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cupsd.conf Directives 2:07-6:28

Some of the more important directives within cupsd.conf that you probably should be familiar with are listed here. First, we have ServerName. This specifies the server name that is announced on the network to CUPS clients. We also have ServerAdmin, which specifies the email address that users can use to contact the CUPS administrator.

We also have the LogLevel directive, which specifies the level of detail stored in the CUPS log files. You can set this directive to one of the levels shown here. None specifies that you don't log anything. Error specifies that you log only errors. Warn specifies that you log both errors and warnings. Info provides a lot more detail. It specifies that you log errors, warnings and also all print requests. This, by the way, is the default logging level.

A lot of system administrators actually change this because it does log quite a bit of information and they may switch it down to warn. What you choose will be up to you.

We also have debug, which logs just about everything. And debug2 is even more verbose. It logs tons of information. You would use these two options only if you're trying to fix a problem. And you'd probably use these log levels temporarily until you get the problem fixed. Otherwise, you're going to have ginormous log files for your CUPS daemon.

The MaxCopies directive sets a limit on the number of copies for a single print job. I believe the default is 100. Depending upon how printing is used in the organization, you may need to either increase or decrease this.

There's also the MaxJobsPerUser parameter which limits the number of active print jobs per user. This prevents one user from hogging the printer and not letting anybody else print.

User specifies the Linux system user account that cupsd is going to run as. By default, I believe cupsd runs as the lp user. Group specifies the cupsd group that the cupsd daemon is going to run as and I believe it's also named lp.

We also have MaxClients. This directive sets a limit on the number of concurrent client connections. I believe by default it is set to 100. You can change that if you need to.

Next is Browsing. This one's actually really important because this specifies whether or not the cupsd daemon's going to announce its printers using broadcast on the network. In other words, this parameter determines whether or not CUPS clients on the networks will be able to see the printer serviced by this CUPS daemon. On some distributions, this is set to no by default. So if you can't see your CUPS printers on a particular system, this could be why. If it's set to no, it will not announce the printers that it has available.

In addition, you can set the BrowseAddress. This specifies the broadcast address that cupsd should use to announce its printers. This should be set to the broadcast address of your network segment, such as 192.168.1.255, or whatever the appropriate broadcast address is for your network segment.

It's important to note that with most distributions, cupsd will not actually announce its printers until this particular parameter and this particular parameter are both enabled. If your CUPS clients can't see your CUPS printers, these two are most likely the culprits.

Next, we have the BrowseAllow and BrowseDeny directives, which allow us to specify where incoming printer information packets will be accepted or denied from. Basically, this allows us to set up a form of access control for the printer. We can specify that everyone can print to the printer or nobody can print to the printer. We could specify that only clients that have a particular domain name are allowed to print to the printer. We could specify only client systems that have a particular IP address range are allowed to print to the printer, and so on.

And then finally, we have the BrowseInterval parameter, which specifies the interval between announcements that are sent out on the network segment by the cupsd printer. I think the default is 30 seconds. So every 30 seconds by default, the cupsd daemon is going to say, "Hey, I've got these printers available if you wanna use 'em."

CUPS Printer Configuration 6:29-8:19

Your next task is to configure a CUPS printer and a CUPS printer queue.

All CUPS printers are defined in the file that you see here, /etc/cups/printers.conf. If you want to, you can manually edit this file in a text editor and define your printers that way. I don't, because it's rather difficult and takes a while to do.

Instead, what you really should do is use the CUPS web-based administration utility instead. Why? Because configuring a CUP printer with the web-based interface is really easy. Using this interface, you can do two different things.

You can configure the CUPS daemon to, first of all, service a locally attached printer like through a USB port or maybe an older parallel port. And if you want to, you can make that printer available on the network for other users to access and send print jobs to. Or, alternatively, you could also configure your local CUPS daemon to connect to a printer serviced by a CUPS daemon on a different system somewhere else on the network.

To configure a CUPS printer, you open up a web browser on your Linux system and you navigate to this URL you see here, http://localhost:631. This will connect you to the web-based interface for the local CUPS daemon instance.

Then, you click on the Administration button right here. Then, down here under Printers, you select Add Printer. Then you have to specify all the different parameters that will be used to define the printer.

We have to specify its type, whether it's a locally attached printer or whether it's somewhere else in the network. We define a printer name. We define a description for the printer. We specify where it's located. We specify what kind of connection it's using, whether we're going to share it.

CUPS Printer Management 8:20-10:07

We have to specify the manufacturer who made the printer, along with the model. And then we also can configure our default printing options.

Then, from within the web-based administration interface on the printer status page, you can manage your new CUPS printer. You can send a test page. You can stop the printer. You can start the printer. You can manage print jobs, change the printer configuration, or whatever it is you need to do.

So at this point, the printer's functional. You can start sending print jobs to that printer. For example, if you're running a graphical word-processing application on the Linux system, all you have to do is click file and then print. Then select the printer you just defined and then

click OK.

Now, the cool thing about it is that you can also configure other Linux systems on the network to send their print jobs to the CUPS printer that you just defined. All you have to do is configure a new printer on the remote Linux system and then specify that it listen for CUPS announcements.

The CUPS printer that you configured on the local system should be displayed on the remote system within about 30 seconds. Because remember, the default browse interval is 30 seconds. Every 30 seconds, the CUPS daemon sends out an announcement saying, "Hey, I've got a printer." After you select it, the print job on the remote system will be sent to the printer on your local system over the network connection.

In addition, if you've installed the Samba service on your Linux system, then the CUPS printers that you define will automatically be shared using the SMB protocol.

Why is this cool? Because the SMB protocol allows you to connect to this printer from Windows workstations and send print jobs from them as well. So basically, you can set up a print server for all your Linux systems and all of your Windows systems. That's pretty cool.

Summary 10:08-10:17

That's it for this lesson. In this lesson, we discussed how to configure CUPS. We talked about how to install the CUPS daemon. We talked about how to configure the CUPS daemon and then we also discussed how to configure a CUPS printer.
