Week #11 – Large Scale SysAdmin

Overview of the week's objectives

Week #11 will cover Automatic Installation, Module O2L10, CFEngin, Module O4L7, and Puppet Module O4L8.

One task administrators do frequently is install software. Since software installation is routine and follows a predictable pattern, software developers have created various methods to automate installs so that the process requires less human interaction.

In this lesson, you will consider different installation environments and various software tools and utilities available for each situation. You will determine which automated install method is applicable for specific environments, and you will learn how to create a Kickstart install and a Partimage install. You will also demonstrate your ability to backup and restore an system configuration with each of these automated tools.

This lesson is important to learn because it explores tools that administrators use to make installs easier, while decreasing the amount of time spent on user input. These time savings translate into decreases in company expenses.

System administrators are constantly challenged when managing large enterprise computer systems using Linux-based operating systems. These challenges may lead to inefficient operations and additional financial burdens. Administrators are required to know a variety of command line differentiations, dependency variations, support options and a host of other challenges.

CFengine was developed to help administrators manage large enterprise systems without the heavy reliance on shell-scripting. CFengine offers a free, reliable, platform independent option for remote enterprise management.

This lesson will introduce you to the CFengine administrative tool and will provide a basic overview of its use and configuration. Lab activities, assignments, and forum discussions have been designed to introduce you to the CFengine application and increase your familiarity with this reliable tool.

System administrators are constantly challenged when managing large enterprise systems using Linux-based operating systems. Administrators need to know a variety of command line differentiations, dependency variations, and support options to support the

various computers systems in use. Puppet offers a free, reliable and cross flavor option for remote enterprise computer management.

This lesson will introduce you to the Puppet Administrative tool and provide you with a basic overview on how to use Puppet. Lab activities will provide you with hands-on experience with the Puppet application and assignments and discussion activities will increase your learning on this subject.

Understanding Puppet is important because of its ability to manage enterprise systems. Students hoping to become Linux Administrators must gain mastery of enterprise management tools like Puppet to improve efficiency and productivity.

Please refer to all "PREVIOUS WEEK's OVERVIEWS" for details / advice relating to, or concerning, each of the tasks detailed in the remainder of this overview. You are responsible for recommendations or instructions noted in them!

TODO List

Please refer to all previous "Week's Overview PDFs" for details / advice about each of the tasks detailed in the remainder of this overview. While we focus on instructions specific to this week's material herein, previous instructions still apply.

Learning Activity			**Time in hours**		**Points**
			Expected	**Spent**	
Reading Assignments	O2L10 O2L7 O2L8	Online Module Guides &Videos	3		
Practice Assignments	O2L10-PQ O2L7-PQ O2L8-PQ	Taking Practice Quizzes	2		
		Working on PAs & Participating to PA forums	6		
Graded Assignments	W11-GQ	Taking Graded Quiz	1		2
		Participating to Discussion forums			1
			12		**3**

Task #1 – Reading Assignments

You will find one "online module guide" document in this week's folder per module.

Refer to all previous "Week's Overview PDFs" for detailed instructions on how to use online module guides, practice quizzes and our support forum while working on this task.

Task #2 – Practice Assignments

Refer to "ALL PREVIOUS WEEK's Overview PDF" files for detailed instructions applying to all Practice Assignments.

These activities were designed to help you think critically about the topics covered in this lesson and to assess whether your knowledge and application of the content meets the stated objectives. You will need to research each topic and complete the assignment as instructed. Do not rely only on the contents of this lesson or on Wikipedia to complete these assignments.

PA #1 : Lab – Build a Debian Kernel (C2L10LAB1)

Using an RPM-based system, create a Kickstart file for a basic desktop user using the GNOME desktop. When finished, go into the discussion forum *Gnome Desktop Kickstart* and paste the contents of your Kickstart file as a post.

Include a list of all the software you used. Identify the distribution and version of OS you used.

PA #2 : Lab – Build a RPM Kernel (C2L10LAB2)

Perform a Partimage backup of your Linux system. Restore to a second partition. Create a screen capture of the **df –h** command in a terminal window of the first system and then do the same on the second system. Paste both screen-prints into a Microsoft Word or Open Office file and upload to the drop box.

Be sure to add your name and lab assignment number as in (*Anita_Baker_C2L10LAB2*) to the uploaded documents.

PA #3 : Lab – Build a Manual Kernel (C2L10LAB3)

Create a Kickstart install for a Java developer. Upload the contents of your Kickstart file to the *Java Developer Kickstart* discussion forum. Include a note describing the distribution, any special files, and version of distribution.

PA #4 : Lab – Install and Test CFEngine (C4L7A1)

In this lab activity, you will need to download, install, and test CFengine on a fresh Debian installation.
The following videos will prove helpful:

- First Run
- Hello World Script Explanation

Create screen grabs of your installation process that shows CFengine installed on a Debian system. Upload using the dropbox for this activity.

PA #5 : Lab – Code Analysis and Explanation (C4L7A2)

Analyze the following code and send a line by line summary to your instructor on what each line does. The CFengine should be used as a reference to determine what each line of code does. This project lab will help you understand the "code" formatting and introduce you to script development:

This file instructs CFengine to make a failsafe backup of itself. Thus, even if CFengine becomes damaged there is still hope of automatic recovery.

```
1 bundle agent cfbackup {
2
3 vars:
4
5 "failsafe" string => "/var/cf-failsafe";
6
7 files:
8
9 "${failsafe}/bin/cf-agent"
10 perms => system("0700","root","root"),
11 copy_from => mycopy("${g.workdir}/bin/cf-agent", "localhost");
12
13 "${failsafe}/bin/cf-failsafe.sh"
14 perms => system("0700","root","root"),
15 copy_from => mycopy("${g.workdir}/bin/cf-failsafe.sh", "localhost");
16
17 "${failsafe}/ppkeys"
18 perms => system("0600","root","root"),
19 copy_from => mycopy("${g.workdir}/ppkeys", "localhost"),
20 depth_search => recurse("inf");
21
22 "${failsafe}/inputs/failsafe.cf"
23 perms => system("0600","root","root"),
24 copy_from => mycopy("${g.workdir}/inputs/failsafe.cf", "localhost");
25
26 "${failsafe}/inputs/update.cf"
27 perms => system("0700","root","root"),
```

```
28 copy_from => mycopy("${g.workdir}/inputs/update.cf", "localhost");
29
30 }  .
```

PA #6 : Lab – Install Puppet Client (C4L8A2)

Install Puppet client on the working Debian Virtual Machine you created in the previous assignment, Assignment PA #14 (C4L8A1). For the username, make sure you use the normal Linux suggested format: (John Doe would be user ID jdoe).

Send a snap shot of the Debian desktop to your instructor. Also include a snap shot of the dependency list displayed in Synaptic for the Puppet installation.

You will find these videos helpful
Install Puppet Client
Install Puppet Master.
.

Task #3 – Use the "Support forum

Refer to all previous "Week's Overview PDFs" for detailed instructions applying to all discussion forums assignments.

PA #7 : Forum – Benefits of Using CFEngine (C4L7F1)

You are a new system administrator working for XYZNetworking, Inc. The IT department is thinking of implementing a CFengine configuration to maintain and configure over 10,000 remote clients it has located around the world.

Discuss with your group members how much could be saved in resources (not necessarily just money, although it can be calculated). Hint…You may want to review the case studies on the CFengine website for additional information.

This video from www.cfengine.com may help:
http://cfengine.com/pages/demos?view=why_cios_say_yes

Be sure to respond to at least two other comments.

PA #8 : Forum – Scalability of Puppet (C4L8F3)

The potential new client is still questioning your intentions on using Puppet to manage a large infrastructure. He indicates his company has more than 1000 work stations that will need to be managed. He wants a list of five companies using Puppet in the manner you suggested, and he wants to know the number of client stations those companies use. He also wants to know if you have web based content to support your claims (web sites, case studies, forums, etc)

Place your responses in the forum and be sure to comment on or respond to at least two other submissions from other students.

Task #4 – Graded quizzes

Refer to all previous "Week's Overview PDFs" and "ALL PREVIOUS WEEK's Overview PDF" for detailed instructions applying to all graded quizzes.