System Administration for Beginners

Week 5 Laboratory

October 13, 2008

1 Getting Started

This is a group laboratory, so work with your project members and help each other. You and your group members are getting full access to a virtual server, hosted courtesy of the Open Computing Facility (OCF).

1.1 Submissions

You only need to make one submission per final project group. Each student should have registered for an account using our online submission tool located on the Beginning Sysadmin Decal website. For the submission, include any commands, notes, observations, output, etc, that you feel is relevant and necessary to demonstrate that you successfully completed the laboratory. Be sure to include the names of your group members.

2 Login

You will be using SSH to connect to your private server. The server hostname is `decal.ocf.berkeley.edu`. Please login as root using the following command:

```
ssh -p 3XX22 root@decal.ocf.berkeley.edu
```

where `XX` is your group number. The root password should have been given to all group members in-class. You will want to change the root password after it has been given to you, but be sure all your group members know it.

3 Create User Accounts

As mentioned during lecture, working in root is dangerous; a simple mistake can destroy a system completely. Consequently, system administrators usually create normal user accounts for themselves. Read the man page for the `adduser` command and figure out how to create a user account for each one of your group's members. Test these accounts by attempting to login to them using SSH.

If you ever need to perform something as root while working as a regular user, use the `su` command. `su` is short for switch user and is a UNIX command for temporarily switching to another user account on the system. `su` takes the name of the user you wish to switch to as its parameter, and if none is supplied, it defaults to root. For various technical reasons, you should also specify the `-` (dash) parameter to su. For example, to switch to another user account, you would use the following command:

```
su - account_name
```

And to switch to root, using the fact that `su` defaults to root:

```
su -
```

After entering in the command, you will be prompted for the password of the user to which you are switching. If you login successfully, you will have a new shell as that user; it will be just as if you logged in as that user in the first place. To end your `su` session, type `exit`.

One useful thing to note is that, as root, you will be able to `su` to any user without entering in their password. This is sometimes useful for repairing user accounts that have been damaged in such a way that the user cannot login normally.

4 Working with Apache

4.1 Download and Install Apache

Visit the Apache website (`http://httpd.apache.org`) and download the source code for the latest version of Apache 2.0 to your virtual server (the `wget` command may be useful). Extract the file and change into the directory that is created. Read through the `README` and `INSTALL` files to determine how you can compile and install Apache.

When using `./configure`, please specify a path within your home directory as the `PREFIX`. We're only going to do a test install of Apache this week, so you do not want to actually install Apache such that all users can access it. Thus, using the `--prefix` parameter to `./configure`, change the default installation directory of Apache to some place inside your home directory. Recall that you can use `pwd` to determine the full path to any directory.

TIP: You may use `$HOME` as a shortchut to your home directory; if you specify a prefix of `$HOME/test`, it will refer to the directory `test` under your home directory.

TIP: You will find that you are initially unable to configure apache because you do not have the tools to compile anything. Tools you will need are make, gcc, and other common compilation tools. These are all packaged in the debian build-essential package. You can install this using apt-get: (`apt-get install build-essential`).

4.2 Configuring Apache

At this point, because everyone is on a virtual server on one specific machine, you would need to edit the configuration file of Apache so that it would listen on a different port. Usually the default configurations are good enough for basic service. One thing you will need to change is the port the server is looking on. Point it to 3XX80 where (XX) is your group number. Where in the configuration file would be the appropriate place to edit which port Apache listens on?

Open up the configuration file and try to see what kind of settings you can edit. Note that lines prefixed with the # symbol are comments and ignored by Apache.

4.3 Starting and Testing Apache

Execute the following command to start Apache:

```
$PREFIX/bin/apachectl start
```

where $PREFIX is the directory you used when you ran ./configure. If you get a message stating that the server was started, you are ready to test Apache. If not, double check your configuration file. An easy way to test your configuration file is to run the following command:

```
$PREFIX/bin/apachectl configtest
```

To check if Apache is properly accepting requests, open Firefox or a browser and visit the following URL:

```
http://decal.ocf.berkeley.edu:3XX80
```

where XX is your group number. The latter part of the URL is necessary to tell the browser not to connect to the default HTTP port of 80. If everything works, you should get a page stating that Apache has been successfully configured.

5 Create a Sample Page

Apache can be extended beyond it's default capabilities with Apache modules. These are similar to plugins that are available for software. One useful module is the UserDir module. This module allows all users on a UNIX system to be granted their own webspace through their own home directories. By default, this module is enabled. To use the module, you must add directives to Apache's configuration file. Read through the configuration and online documentation to determine what you need to change.

Create a directory in your home folder which has read and execute permissions for everyone. Any files in this directory with permissions of at least read for other will be accessible to the Internet. Create an index.html file in this directory that lists the names of your group members and their inst account.

To access this directory via the web, type the following URL into your browser:

    http://decal.ocf.berkeley.edu:3XX80/~user/index.html

where again, XX is your group number.