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Assignment 4 - CNT4603, Langley

Setting Up Drupal on CentOS Virtual Machine

The goal of this assignment was to install and configure the content management system, Drupal, on my CentOS virtual machine. This involved some in-depth configuration, especially since the MySQL server was to be installed on the host Debian machine rather than the machine running Drupal. Also, firewall and SELinux issues had to be considered and dealt with appropriately.

This was by far the most involved assignment yet. While it appeared it would be a straightforward project at first, problems and technicalities had their way of sneaking up and complicating things along the way.

To kick things off, I decided to first try to configure the Debian machine as much as possible so afterward I could focus solely on the CentOS machine. I proceeded to install MySQL Server on the Debian machine using Synaptic. This went effortlessly, as did configuring the Debian machine to redirect HTTP requests to the CentOS machine. The redirect was accomplished simply with a web search[1] that resulted in inserting some HTML code in the `<head>` section of the index.html file on the Debian machine (served by nginx):

```
<head>
<meta http-equiv="Refresh" content="0;url=http://192.168.10.121" />
</head>
```

Now this redirect had nowhere to go yet, so the next step was to install Apache HTTP server on the CentOS machine. This was knocked out with “yum”: `yum install httpd` . A quick check on the Debian machine to make sure the HTTP server worked yielded unpleasant results; the first problem to solve. A firewall issue, maybe? I had never configured a firewall on a RedHat-based distro before, but knew it had something to do with `iptables`. A simple

Google search resulted in an article[2] which successfully assisted me to open up port 80 on the CentOS machine, therefore solving the problem. A quick check in the browser confirmed this.

After the install of Apache in the previous step, I noted that I had to manually start `httpd` after the installation. This made me wonder if it had been configured to start up automatically during boot-time. I restarted the CentOS machine and sure enough after executing `service httpd status` I found my assumption was correct. Time to research how to start services at boot-time. This turned out to actually be quite simple as an article[3] I found in a Google search indicated that CentOS includes a utility for just this purpose: `chkconfig`. Running `chkconfig --list httpd` confirmed that `httpd` was not set to start at boot. Executing `chkconfig --level 235 httpd on` told the machine to start the Apache server at runlevels 2, 3, and 5.

Next on the agenda was to install PHP5 on the CentOS machine. This was easily accomplished with `yum` by installing several packages: `php`, `php-gd`, and `php-xml`. These packages were indicated as being required by Drupal in Drupal's Installation Guide[4] . This guide was also used as an outline for the remainder of the project.

Drupal 7.14 was then downloaded and extracted to the document root of the Apache HTTP server on the CentOS machine. Since the MySQL server was on a separate logical machine than the HTTP server, remote access had to be enabled for the CentOS machine to be able to connect to the Debian machine and actually use the MySQL database. After logging into `mysql` as the root user, I created the MySQL user 'drupal'@'%' (the percent sign allowed remote access) and the database 'drupal':

```
CREATE USER 'drupal'@'%' IDENTIFIED BY 'password';
CREATE DATABASE `drupal`;
```

and assigned appropriate privileges to the new user:

```
GRANT SELECT, INSERT, UPDATE, DELETE, CREATE, DROP, INDEX, ALTER,
CREATE TEMPORARY TABLES, LOCK TABLES ON `drupal`.* TO 'drupal'@'%';
```

Now was time to test the ability to remotely connect to the MySQL server on the Debian machine. This was easily accomplished by installing mysql-client on the CentOS machine and using it to connect to the MySQL server:

```
mysql -u drupal -h 192.168.10.120 -p
```

Next up was my first encounter with SELinux-related problems. Per the Drupal Installation Guide, I attempted to point my browser to `install.php` on the CentOS machine. Unfortunately, this resulted in a 404 error. This sounded like a permissions problem to me as accessing a simple .html file worked fine, but running a .php script is indeed a little more intricate. I verified the file permissions on the .php files in the document root. I even tried temporarily changing the permission values to 777 on the .php files to see if would allow access. Still nothing. After about an hour or two of pulling my hair out, the idea of "SELinux" causing my misfortunes popped into my head. Again relying on Google as my savior, I found an article[5] on Drupal's website stating that this was a fairly common issue and how to solve it. I executed:

```
chcon -R -t httpd_sys_content_t /var/www/html
```

And then this to verify success:

```
ls -laZ /var/www/html
```

Now able to view the install.php page, I initiated the Drupal installation. When it came time to connect to the MySQL database, problems arose again. This time I was prepared for SELinux and sure enough after some searching, I found that executing

```
setsebool -P httpd_can_network_connect=1
```

was the solution to instruct SELinux to allow remote database access through the HTTP server.

Success! Drupal is fully configured! I added a bit of content and then created the 'myuser' drupal user as indicated in the assignment instructions.

In conclusion, the most relevant lesson taken away from this assignment was that you should be prepared for the worst. As previously mentioned, I thought this project was going to

be straightforward but I got snagged several times along the way. I was also pleased to be able to further extend my personal Red Hat-based knowledge as I was previously limited to Debian-based configurations.

References

1. http://www.w3schools.com/html/tryit.asp?filename=tryhtml_redirect
2. http://articles.slicehost.com/2010/1/19/barebones-apache-install-for-centos
3. http://www.centos.org/docs/5/html/Deployment_Guide-en-US/s1-services-chkconfig.html
4. http://drupal.org/documentation/install
5. http://drupal.org/node/50280