SYST8111 – Lab 6

Configuration of Deployed Solution

In this lab, you will perform a number of tasks that will complete the creation of our virtualized solution. First by creating a database server using one of industries most popular database engines. Second, by creating a web server that will house an elemental web application. This web application will use the database as a source of data to show a relationship between application server, and database server that can be used to test fail-over strategies and evaluate performance.

Task 1: Create DB Server: Install and configure MySQL

1. Login into the system as administrator, or “root” with the password you assigned.
2. yum -y install net-tools
3. yum -y update
4. reboot the machine with the command init 6
5. Once the reboot is finished, log back into the machine as “root”
6. curl -sSLO <https://dev.mysql.com/get/mysql80-community-release-el7-5.noarch.rpm>
7. rpm -ivh mysql80-community-release-el7-5.noarch.rpm
8. yum -y install mysql-server
9. sudo systemctl start mysqld
10. grep ‘temporary password’ /var/log/mysqld.log, make note of this password as it will be required at a later step.
11. Launch the configuration script: mysql\_secure\_installation and answer yes to the questions asked. Change the password to something you will remember, or write it down.
12. Edit the /etc/my.cnf file, add the lines at the bottom of the file
    1. bind-address = 10.173.???.105
    2. default-authentication-plugin=mysql\_native\_password
    3. authentication-policy=mysql\_native\_password
    4. skip\_ssl
    5. require\_secure\_transport = OFF
13. Restart mysql server with the command sudo systemctl restart mysqld
    1. Type the command sudo systemctl status mysqld to make sure there are no issues.
14. Need to modify the built in firewall to allow external connections to the database server
    1. firewall-cmd –-zone=public –-add-port=3306/tcp –-permanent
    2. firewall-cmd –-reload
15. Add our application database user, and grant them permissions:
    1. Log onto the system as “root”
    2. Connect to mysql database as root with the command mysql -u root -p
       1. Create the application database with the sql command: create database appdb;
       2. Create the application database user ‘webapp’ with the sql command): create user ‘webapp’@’%’ identified with mysql\_native\_password by ‘Secret55!’;
       3. Give the database user ‘webapp’ full authority over the database ‘appdb’ with the sql command: grant all on appdb.\* to ‘webapp’@’%’;
       4. Finally, flush the privileges so that the mysql server process knows that the user table has been updated with the sql command: flush privileges;
       5. exit

Task 2: Create Web Server: Install Apache Web Server

1. Login into the system as administrator, or “root” with the password you assigned.
2. yum -y install net-tools
3. yum -y update
4. reboot the machine with the command init 6
5. Once the reboot is finished, log back into the machine as “root”
6. yum -y install httpd
7. Need to modify the built in firewall with the following commands:
   1. firewall-cmd –-zone=public -–permanent --add-service=http
   2. firewall-cmd –-zone=public –-permanent --add-service=https
   3. firewall-cmd – reload
8. Now that Apache is installed, we are going to add run-time libraries to make the pages beautiful:
   1. yum -y install wget
   2. yum -y install zip
   3. yum -y install unzip
   4. yum -y install mysql-devel
   5. cd /var/www/html
   6. wget <https://github.com/twbs/bootstrap/releases/download/v4.0.0/bootstrap-4.0.0-dist.zip>
   7. unzip bootstrap-4.0.0-dist.zip
   8. yum -y install perl perl-CGI
   9. systemctl restart httpd
9. Now that all the required software is installed, we need to modify security permissions to enable our web application to connect to the database server:
   1. setsebool -P httpd\_can\_network\_connect=1

Task 3: Populate the database server

1. This will work either from the web server, or the database server.
2. Transfer the file appdb.sql from our MS-Teams site to your Web/DB server. You should be able to transfer the file from Teams to your workstation without an issue.
3. Install the mysql client
   1. sudo yum -y install mysql
4. Use PFSTP, or WinSCP to transfer the file from your workstation to the web/database server. From your workstation, you will need to use the IP reference, and transfer to the non root user that you created when you deployed the VM.
5. Once the file is on your web/database server, login to your web/database server as yourself (non-root), and type the following command to populate the database.
   1. mysql -h 10.173.???.105 -u webapp -p appdb < appdb.sql
6. Completed.

Task 4: Install the web application

1. First we need to install PERL package manager.
   1. sudo yum -y install cpan
2. Next, we need to install one additional PERL library module.
   1. sudo cpan (assume all the default answers and press enter for each question)
   2. Once cpan has completed the initial setup, from the cpan prompt type
      1. cpan> install CGI::Lite
3. Type exit when CPAN finishes the install of the CGI::Lite library.
4. Now we need to install some PERL libraries to assist in the database connection.
   1. sudo yum -y install perl-DBD-MySQL
5. Transfer the file “webapp.pl” from the Teams site to your webserver. Use SFTP, or WinSCP to get this completed. Use your non-root account on the web server.
6. Log into your web server as your non-root user, and edit the file webapp.pl, and modify the IP address for your database server. (line 14). Save and exit.
7. Type the following commands:
   1. sudo cp webapp.pl /var/www/cgi-bin/
   2. sudo chmod a+rx /var/www/cgi-bin/webapp.pl