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# Analysis

**Project Proposal**

Group Name: Cygnet Inc. Server Administrators

Scenario: Cygnet Inc. is a company that cares about keeping track of their employees. The Server Administrator department consisting of Melanie, Addis, Jim, Tom and Ethelyn have been tasked with creating a database of Cygnet’s employees that is distributed via web server within Cygnet’s LAN and so can be accessed via web browser by employees with the proper security credentials. They need to set up the company’s Domain Controller including users and groups and the required permissions so they can manage the computers on Cygnet’s Domain cygnet.swan. They also need to connect Linux servers with the domain controller.

Group Members and roles

Melanie Konar: Team Leader, Samba server

Tom Black : Programmer, database backup, Assistant Team Leader

Jim Thomas: Security Administrator, Apache Server, server backup scheme

Addis Hikssa : System Administrator, Domain Controller/Active Directory

Ethelyn Rivera: Documentarian, FTP server, Associate System Administrator

Machines

Windows server with a Domain Controller using Active Directory

Fedora Apache web server

Fedora SQL Database server

Fedora FTP server using vsftpd

Fedora Client - Linux Backup

Windows Backup Server

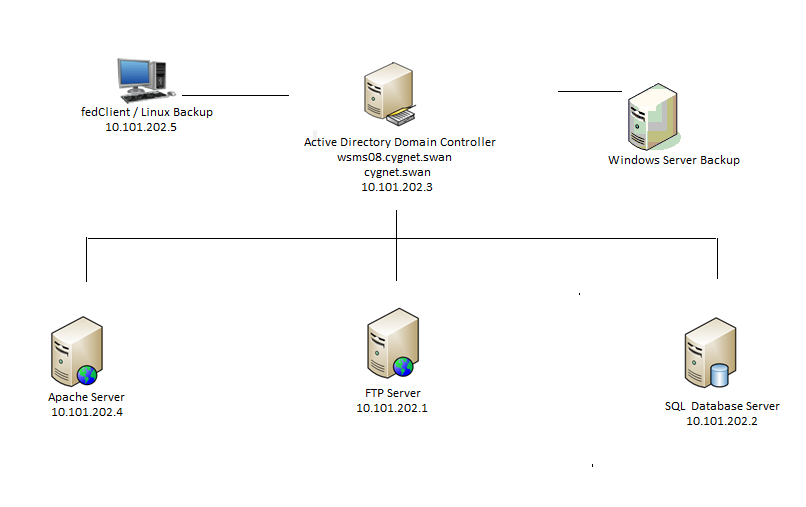
**Propose Database Design**

Database Design: (each column will be a separate table in the database PK indicated primary key and FK indicates Foreign Key)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Employees | Education | Group | Address | Phone |
| First name | Education ID PK | Group ID PK | Mail Stop | Work |
| Last name | Degree | Group Name | Address ID PK | Cell |
| Employee ID PK |  |  |  | Home |
| Group ID FK |  |  |  | Phone ID PK |
| Email |  |  |  |  |
| hire date |  |  |  |  |
| salary |  |  |  |  |
| Education ID FK |  |  |  |  |
| SSN |  |  |  |  |
| Phone ID FK |  |  |  |  |
| Address ID FK |  |  |  |  |

**Topology**

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**Configuration**

|  |  |
| --- | --- |
| **Cygnet FTP Server (Fedora)** | |
| Hostname | cygnetftp |
| IP Address | 10.101.202.1 |
| Netmask | 255.255.0.0 |
| Default Gateway | 10.101.1.1 |
| DNS | 10.101.202.3 |
| Username | erivera |

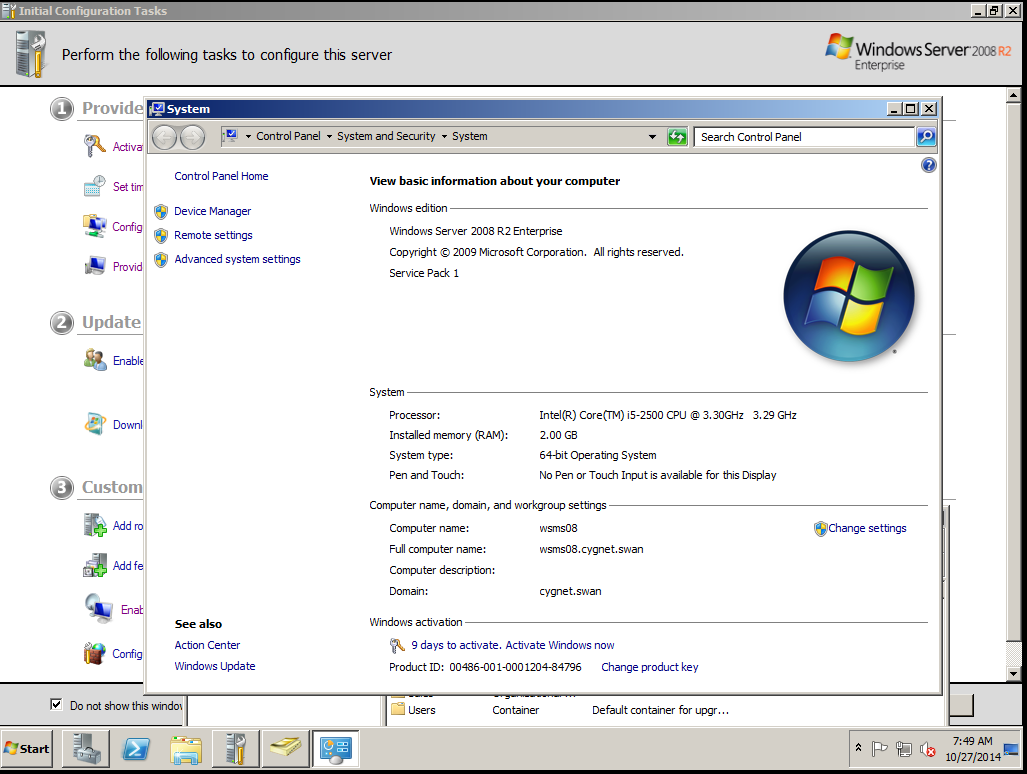
|  |  |
| --- | --- |
| **Fedora Client** | |
| Hostname | fedclient |
| IP | 10.101.202.5 |
| Netmask | 255.255.0.0 |
| Default Gateway | 10.101.1.1 |
| DNS | 10.101.202.3 |
| Username | mkonar |

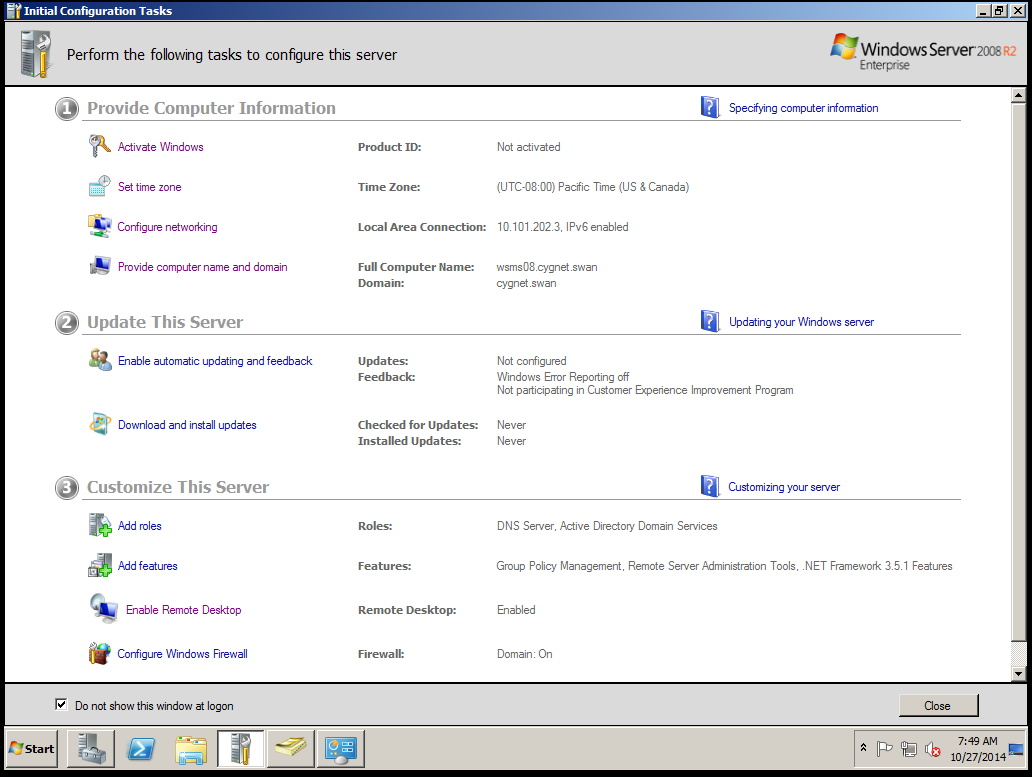
|  |  |
| --- | --- |
| **Database Server (Fedora)** | |
| Name of the DB | cygemp1 |
| Hostname | database |
| IP Address | 10.101.202.2 |
| Netmask | 255.255.0.0 |
| Default Gateway | 10.101.1.1 |
| DNS | 10.101.202.3 |
| Username | tblack |

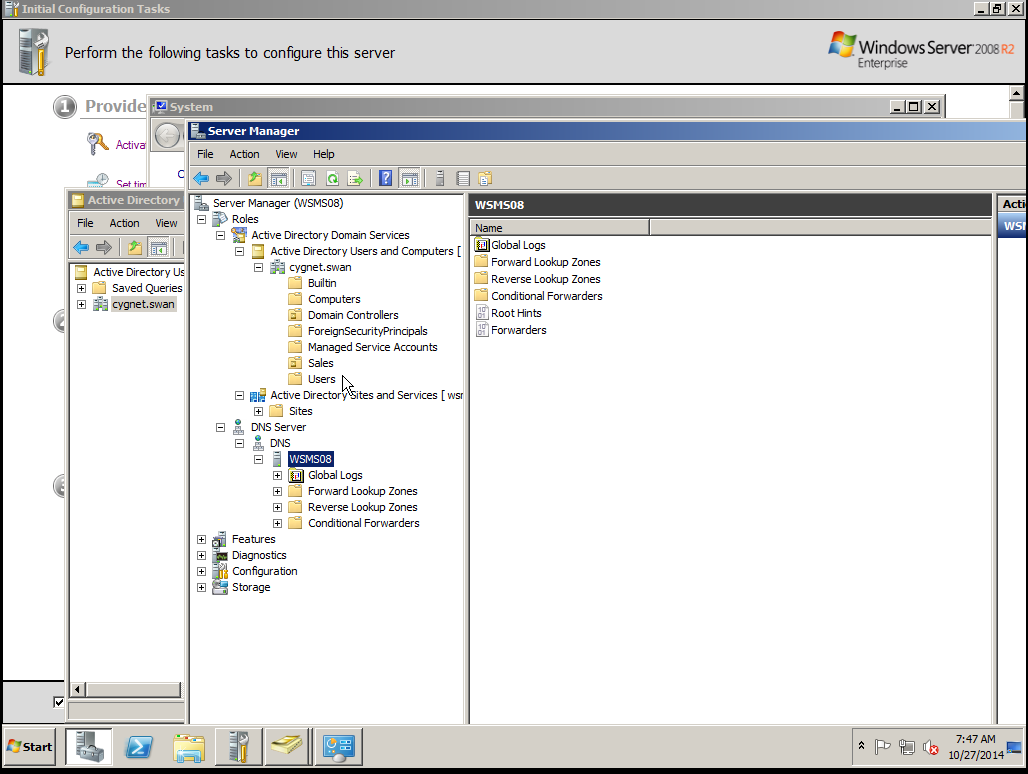
|  |  |
| --- | --- |
| **Apache Server (Fedora)** | |
| Hostname | Pod2Apache |
| IP Address | 10.101.202.4 |
| Netmask | 255.255.0.0 |
| Default Gateway | 10.101.1.1 |
| DNS | 10.101.202.3 |
| Username | Jthomas |

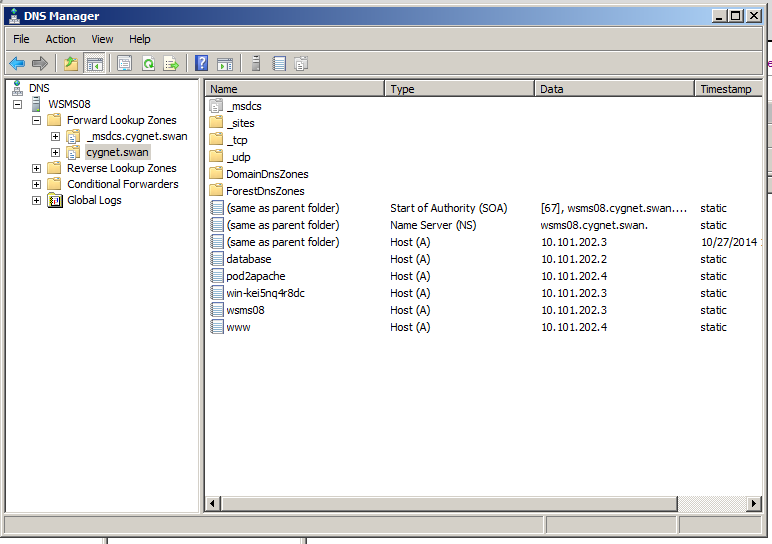
|  |  |
| --- | --- |
| **Domain Controller AD (Windows)** | |
| Domain name | cygnet.swan / wsms08.cygnet.swan |
| Hostname | wsms08 |
| IP Address | 10.101.202.3 |
| Netmask | 255.255.0.0 |
| Default Gateway | 10.101.1.1 |
| DNS | 127.0.0.1 |
| Username | ahikssa |
|  |  |

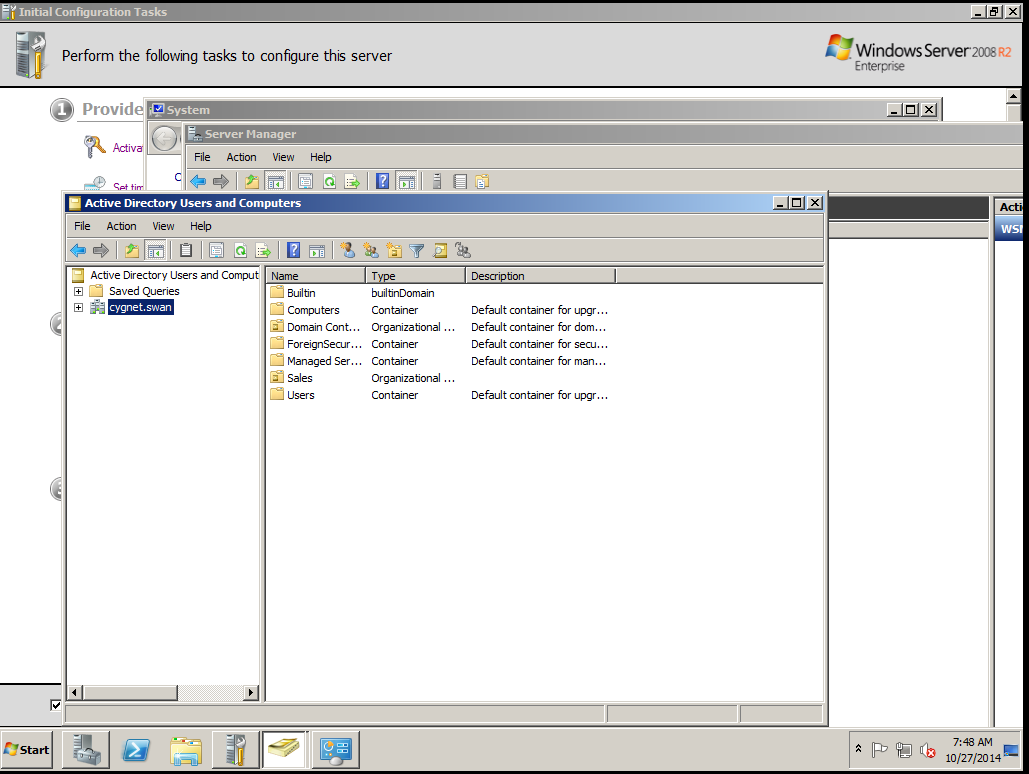
**Active Directory Domain Controller**

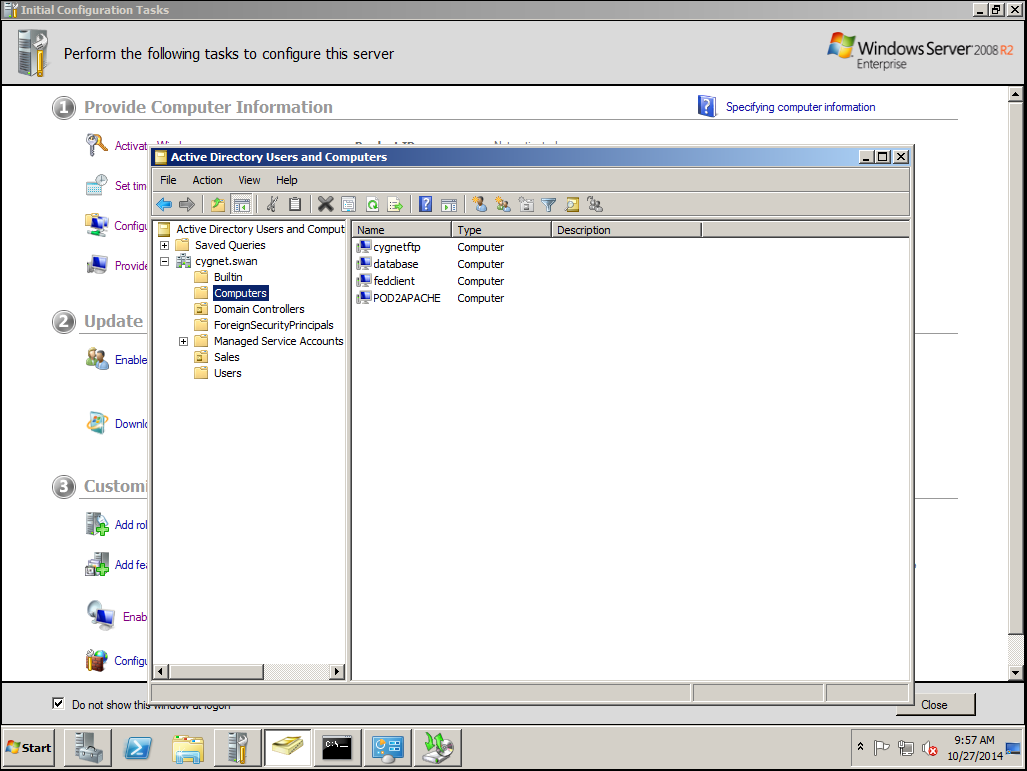


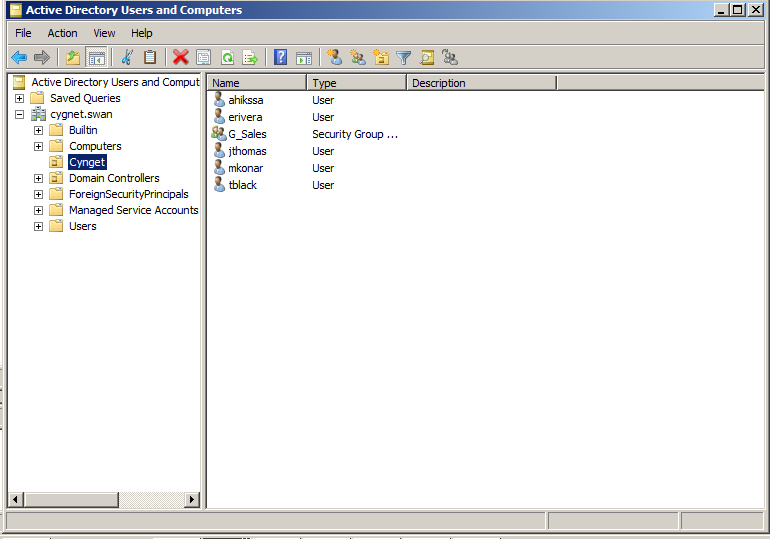












**DATABASE Server**

Installed Fedora 20

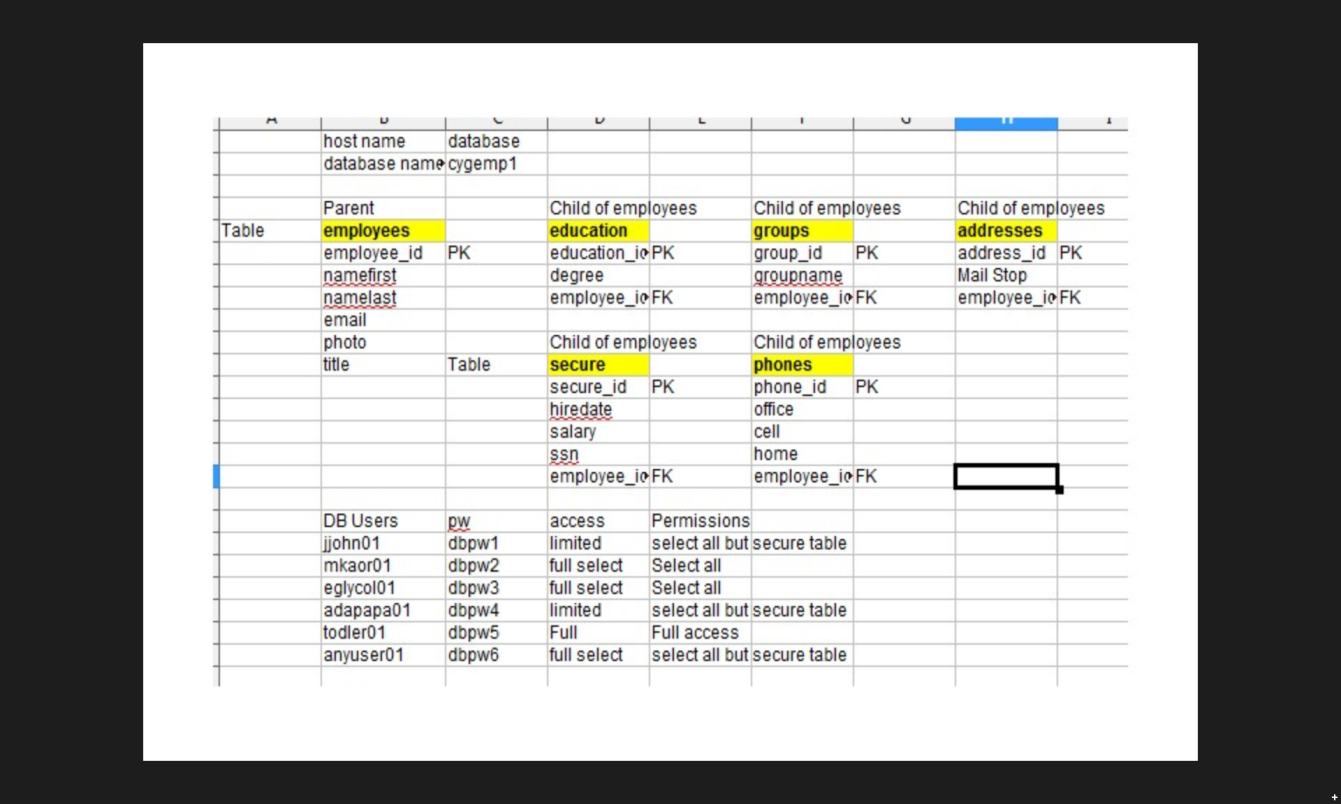
Installed LAMP (Linux, Appache httpd server, MySQL RDBMS and PHP programming language) MySQL has been forked into mariaDB which we are using. The only operational difference seems to be the cursor states "mariaDB" rather than "mysql".

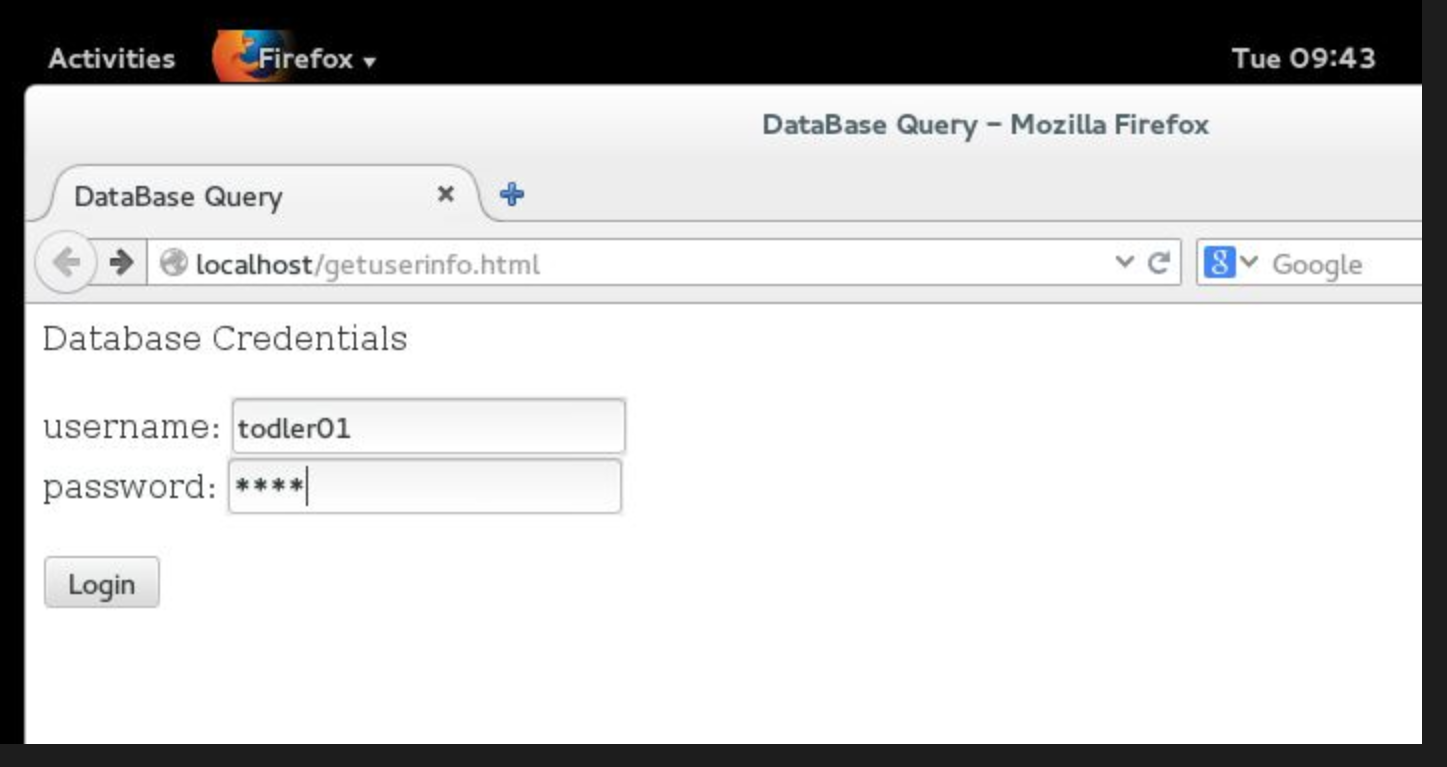
Created the database of the company employees. A "secure" table was created to hold private information, such as SSN's, salaries, etc.

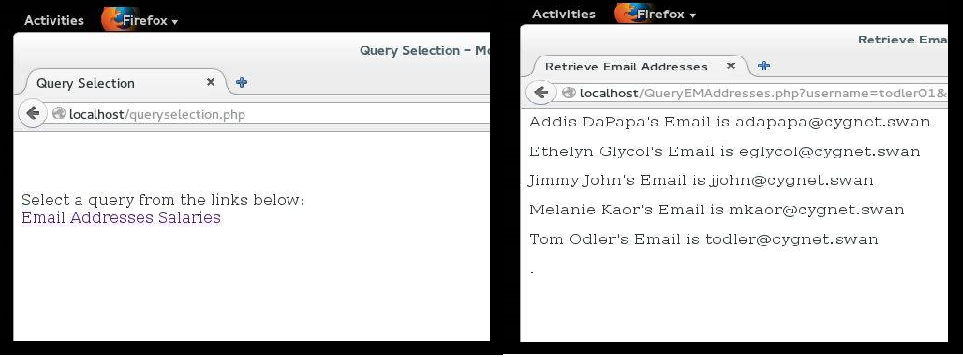
Database users were created and "granted" permissions so that some users had access to the secure data while others did not.

A combination of html/PHP pages was created to access the database via predefined queries, such as EMail addresses, Salaries, etc. Database user ID's and PW's were collected via an HTML form, passed to php and used to access the database when a query link was selected.

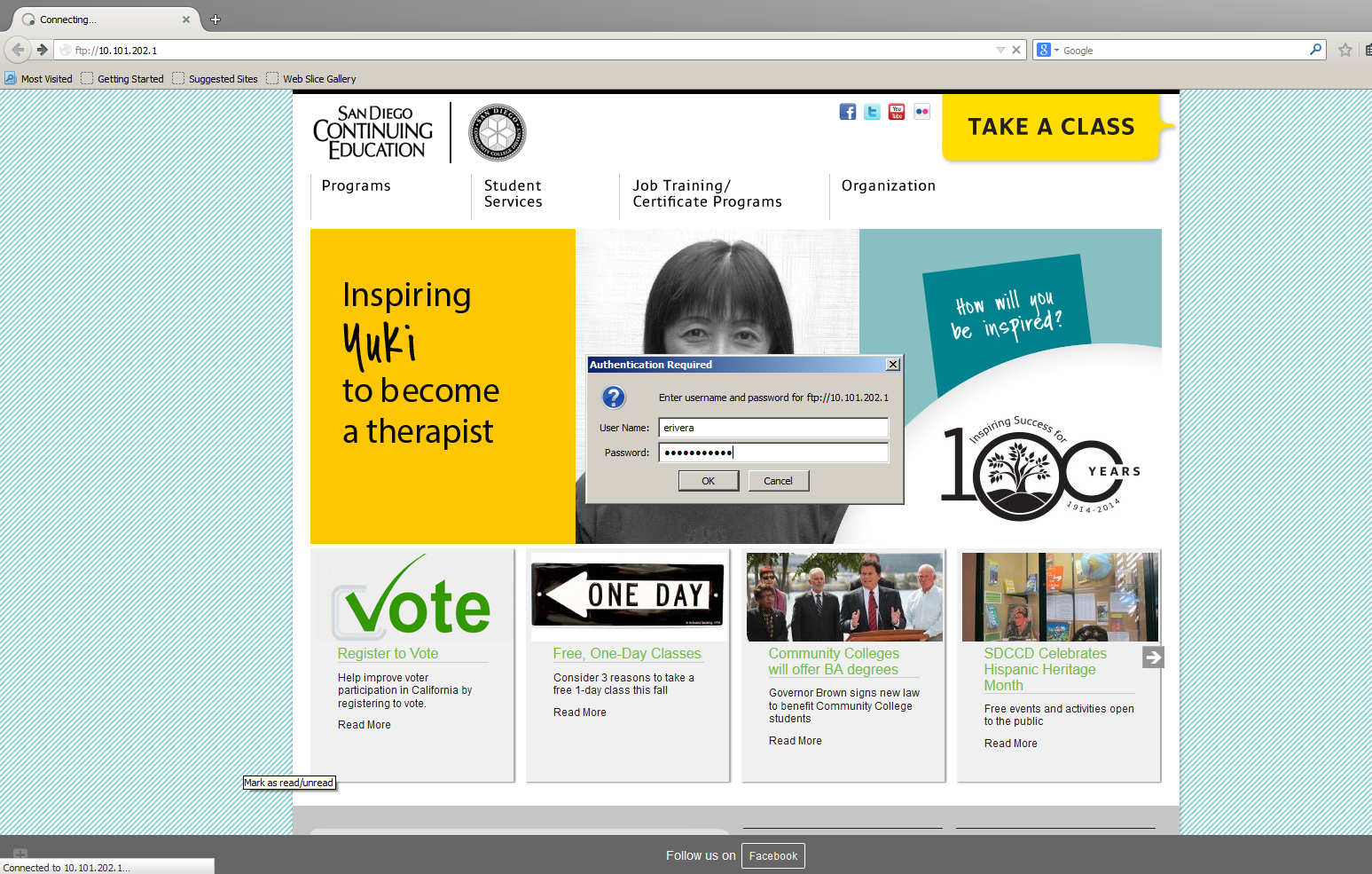
Access to the DB was obtained from external clients.

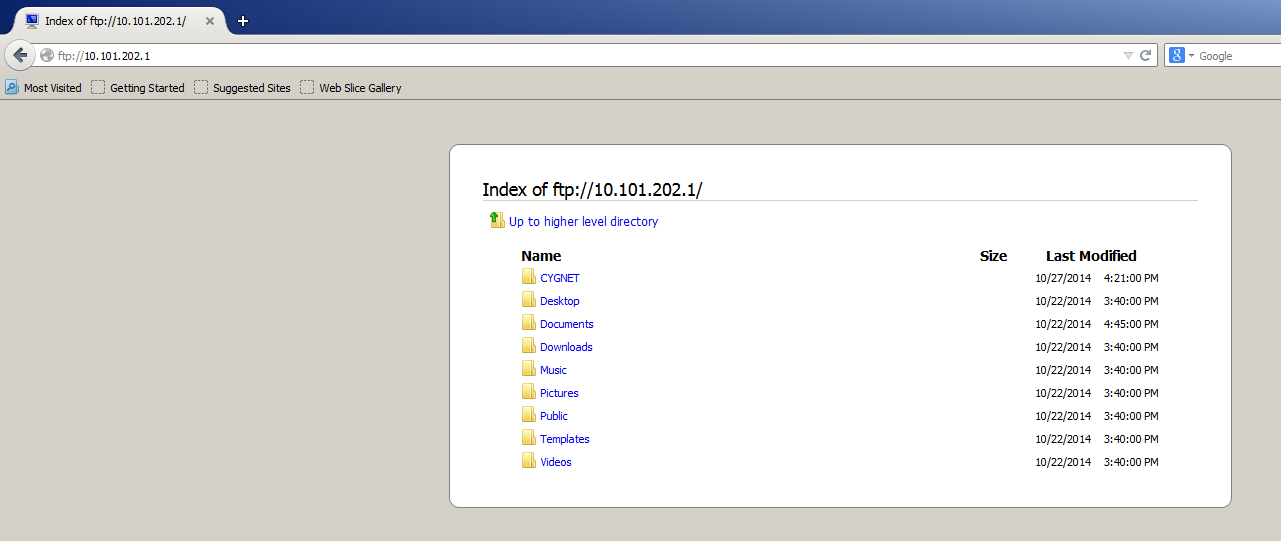


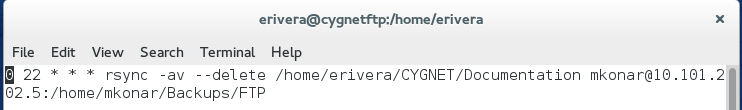


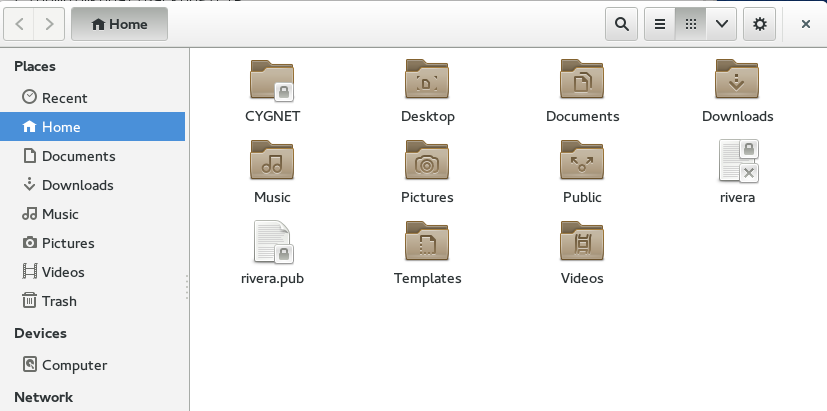


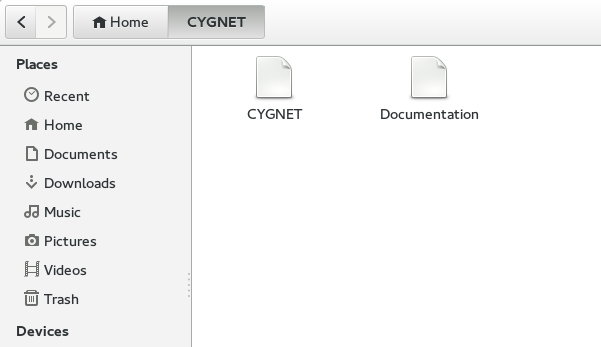
**FTP Server using VSFTPD**

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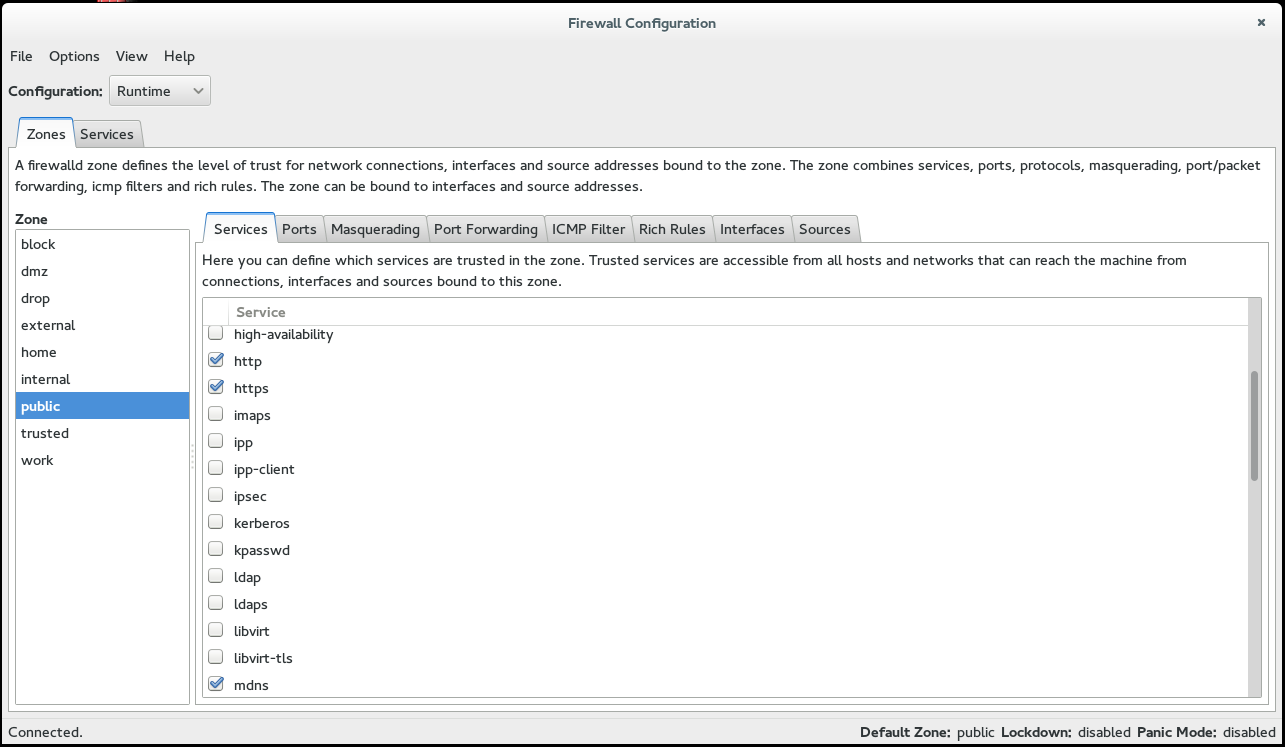
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**Apache Server**

* Make sure to check the firewall configuration **http** and **https** should be checked. Set the configuration to **Permanent**. It will let other server to go to the website.



**Security**

* SSH - Backups
* SSL – Webserver & Database
* CHROOT - FTP
* Firewall
* Shutdown unnecessary services
* Keep the OS up to date
* Set permission on sensitive files
* Group Policy – Domain Controller
* Disabling root login - Webserver

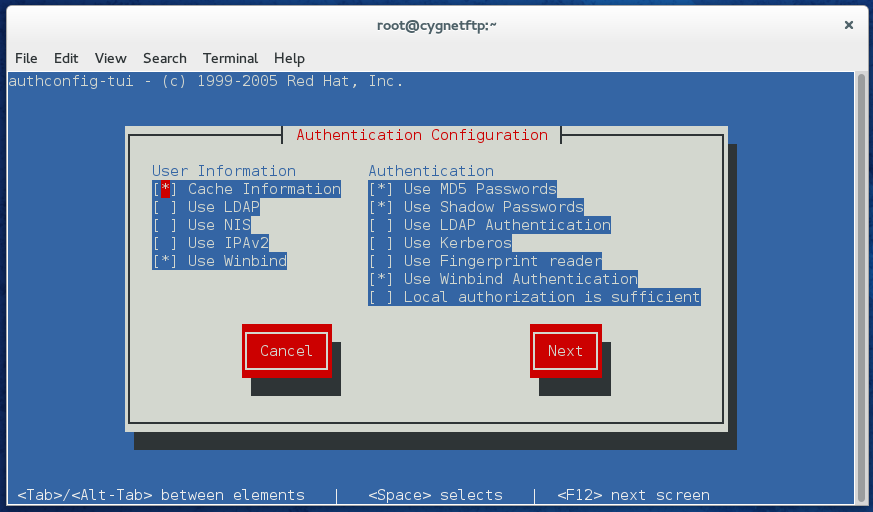
**Connecting Fedora Server to Active Directory Domain Controller**

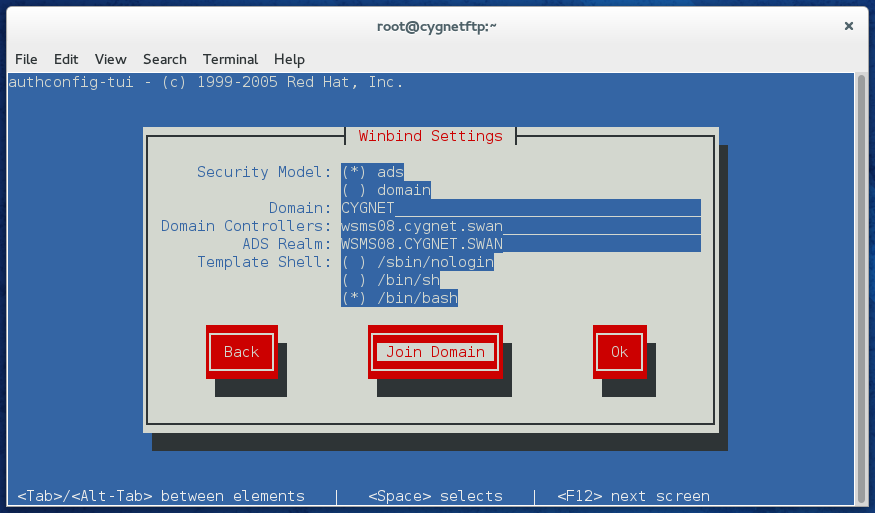
* Make sure to install updates before doing the steps below.

**# yum install updates**

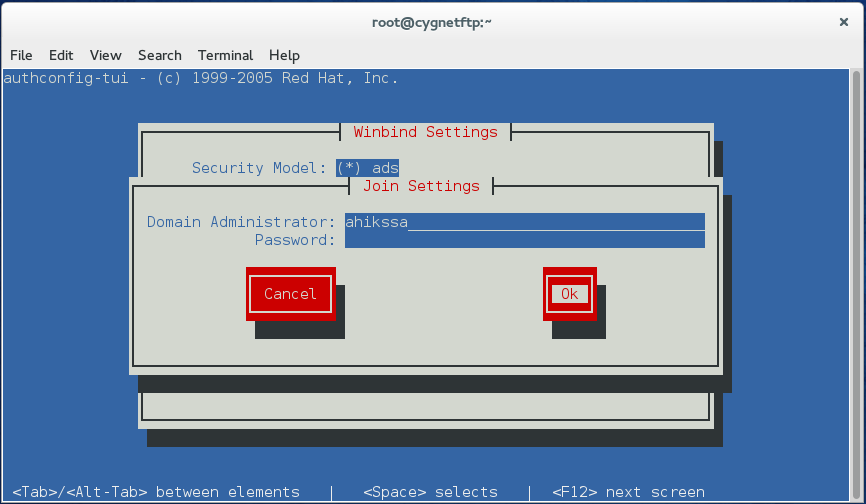
* **# yum install nscd.x86\_64 pam\_krb5.x86\_64 samba-winbind.86\_64**
* **# authconfig-tui**

Copy the configuration exactly.





Domain Administrator = **ahikssa** Password = **P@ssw0rd303**



You should be able to connect to your domain. Have your Domain Controller Administrator take a look if your server is connected to Active Directory.

**Linux Backup**

Install ssh using root

1. # yum install mod\_ssl openssl
2. # yum list installed | grep ssh
3. # systemctl enable sshd.service
4. # systemctl start sshd.service
5. # systemctl status sshd.service
6. # ssh-keygen

Press Enter on the file name and press Enter for Passwords (don’t put any info)

1. # ssh-copy-id mkonar@10.101.202.5
2. # ssh [mkonar@10.101.202.5](mailto:mkonar@10.101.202.5) (You should be able to connect to mkonar) And if you try to connect again it shouldn’t ask for password.

# rsync – av - - delete /Directory1/ /Directory2/

1. # rsync -av - -delete /home/erivera/CYGNET/Documentation [mkonar@10.101.202.5:/home/mkonar/Backups/FTP](mailto:mkonar@10.101.202.5:/home/mkonar/Backups/FTP)

Jim will put /Web

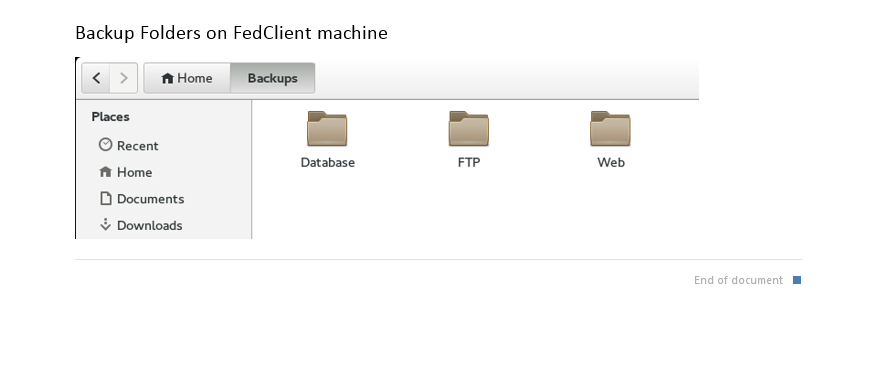
Tom will put /Database

1. # crontab –e

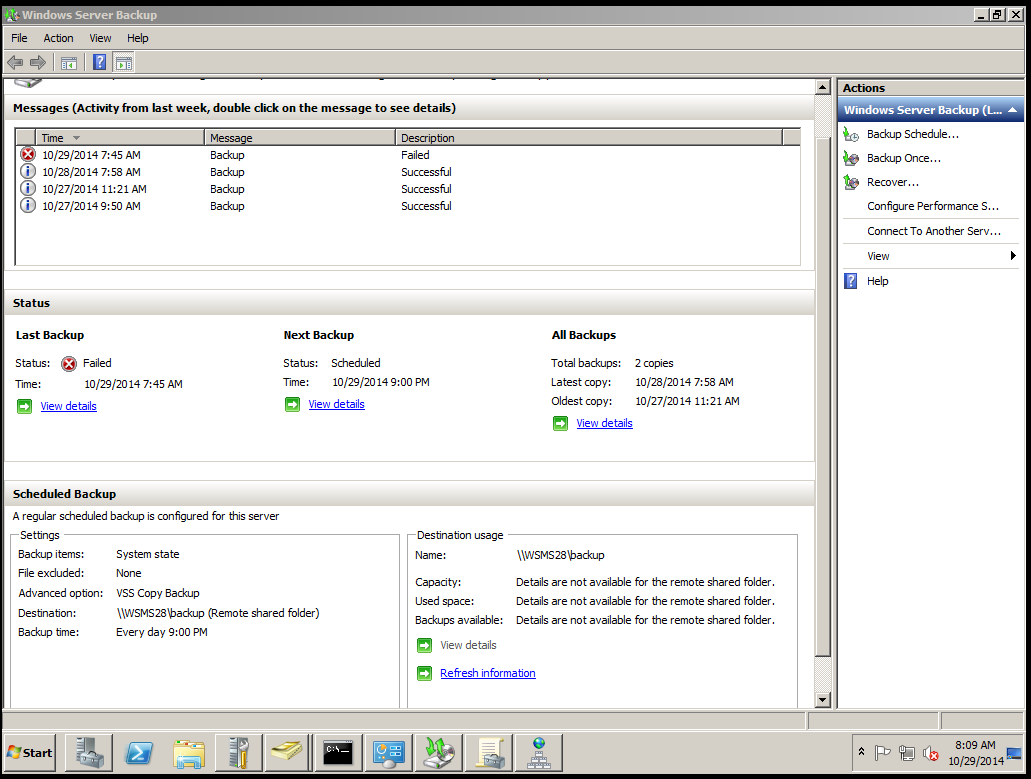
0 22 \* \* \* rsync –av - - delete /home/erivera/CYGNET/Documentation mkonar@10.101.202.5:/home/mkonar/Backups/FTP

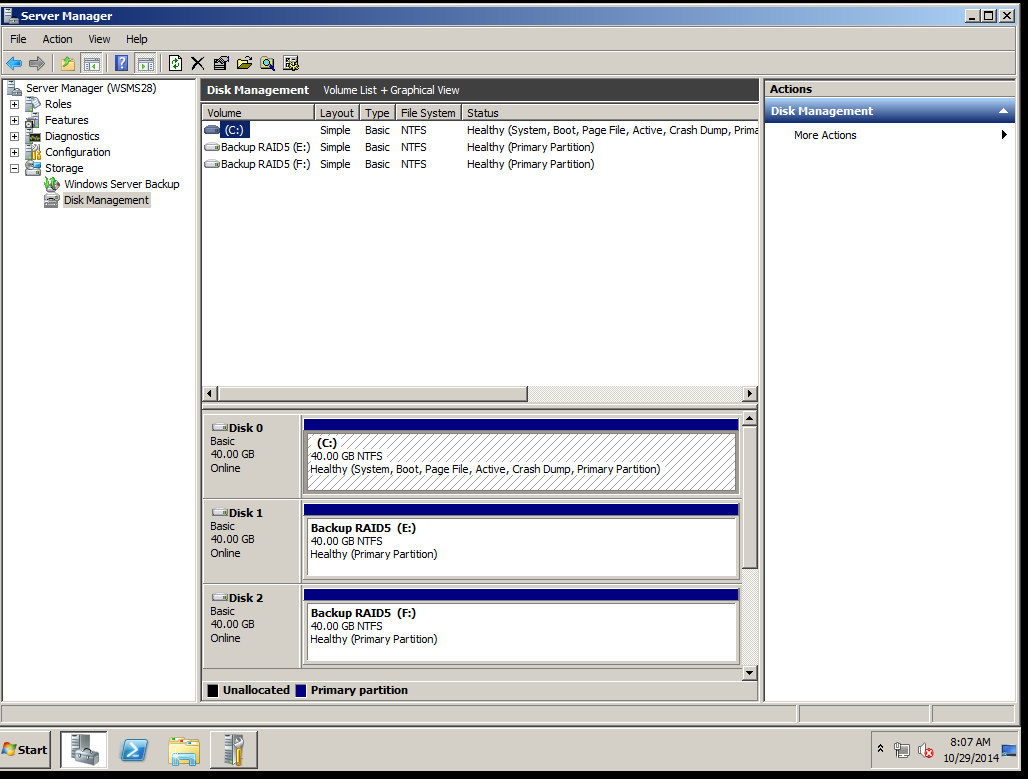
**Backups**

Linux Backups

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Windows Backup





**Analysis: Things to improve given more time**

**Security**

* use Bastille
* Have database be on separate server from web server
* More uniform security standards
* Stronger passwords

**Website**

* Be able to log out of the database website
* More aesthetically pleasing websites

**Leadership**

* Clearer deadlines for specific tasks
* Clearer directions regarding security