

Web Server Deployment Guide

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December 12, 2018

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1 Executive Summary

This document intends to describe our application for Dutchess CAP and step by step instructions that anyone could comprehend and complete. This minimizes potential issues and will act as the server's disaster recovery plan, protecting our IT infrastructure in the event of a disaster. Using the deployment plan a user can fully restore the current infrastructure and get the survey application running. This plan includes how a user will install and setup the operating system, network connectivity, the database, security and how to download the code. This also includes sections on how to perform maintenance and reboots for instances when the server goes down or restarts.

2 Login and Password Sheet

VMWare ESXi (10.10.9.190)

Username: root
Password: @lgozzine

Dutchess CAP CentOS (<http://dutchesscap.capping.ecrl.marist.edu:8888//home> or 10.10.9.205:8888)

Username: root
Password: @lgozzine
Port: 8888

Database (Super Admin)

Username: enterprisedb
Password: @lgozzine
Port: 5432

Dashboard (Super Admin)

Username: Liz
Password: 77cannon84

Firespring Account (Dutchess CAP Website)

<https://accounts.firespring.com/login>

Account : 005794
Username: Liz
Password: 77cannon84

Dashboard (Linda) - NEW

Username: Liz
Password: 77cannon84

Enterprise DB Download Page Login

Username: stnb2
Password: @lgozzine

Dutchess CAP PowerEdge Server (<https://appserver.dccap.dutchesscap.org:8888> or 10.1.1.52:8888)

Username: root
Password: @lgozzine1
Port: 8888

Note: All passwords on the computer that were @lgozzine are @lgozzine1.

3 System Specifications at Dutches CAP

4x - PowerEdge R710 Technical Specifications (2009)

Height: 2 Rack Units in Size (3.5 inches)

Processor: Various Processors:

Memory: DDR3 RAM up to 288GB between 800-1333MHz (18 DIMM slots)

<https://www.overleaf.com/7717391851rsyvrkqvrxkqvrxpx>

Storage: Up to 18TB of Storage

Operating System: Anything past Windows Server 2008 SP2 or R2

2x - PowerEdge R210 Technical Specifications (2011)

Height: 2 Rack Units in Size (3.5 inches)

Processor: Can have up to two Quad-Core or Six-Core Intel Xeon Processors of either the 5500/5600 series. **Memory:** DDR3 RAM up to 16GB 1066MHz or 1333MHz (4 U-DIMM slots)

Storage: Up to 2TB of Storage (SATA or SSD)

Operating System: Anything past Windows Server 2008 SP2 or R2

PowerEdge 2970 - Dutches CAP Survey Application Server

Height: 2 Rack Units in Size (2.5 inches)

Processor: 2x 1.90 GHz Quad-Core Processors w/ 2MB Cache **Memory:** 8GB DDR2 RAM @ 667 MHz *can go up to 64GB of DDR2 Memory*

Storage: 2x 70GB HD 4x RAID 5 Enabled

Operating System: CentOS 7

Notes: Server is unable to run a virtual machine under its own power.

4 Spinning Up a Virtual Machine on VMWare

Step 1:

Logging into the VMWare ESXi (10.10.9.190)

Enter ‘root’ as your username, and (@lgozzine) as the password.



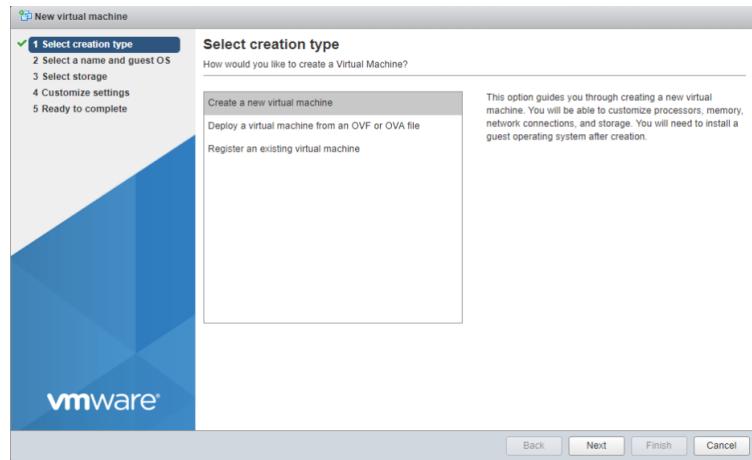
Step 2:

In the dashboard, you will want to click on ‘Create or Register a Virtual Machine.’

A screenshot of the VMware ESXi host dashboard. The title bar shows 'algozzinecapping.esxi.ecrl.marist.edu'. The main content area displays the host's hardware information: Manufacturer (IBM), Model (System x3690 X5 -7147AC1), CPU (16 CPUs x Intel(R) Xeon(R) CPU E7-2830 @ 2.13GHz), Memory (255.98 GB), and Networking (Hostname: algozzinecapping.esxi.ecrl.marist.edu, IP addresses: 1. vmk0: 10.10.9.190, 2. vmk0: fe80::6eae:8bff:fe4c:9e50, 3. vmk0: 2620:91:0:46:6eae:8bff:fe4c:9e50, DNS servers: 1. 10.12.1.11). To the right, there are sections for Configuration (Image profile: ESXi-6.5-0-U1, vSphere HA state: Normal, vMotion: Enabled) and System Information (Date/time on host: Thu Jul 10 10:45:00 2014, Install date: Mon Jun 16 2014, Asset tag: Ur, Service tag: Ur, BIOS version: -1.1, BIOS release date: Fri Jul 10 2015). A sidebar on the left shows icons for Host, Network, Storage, and Power.

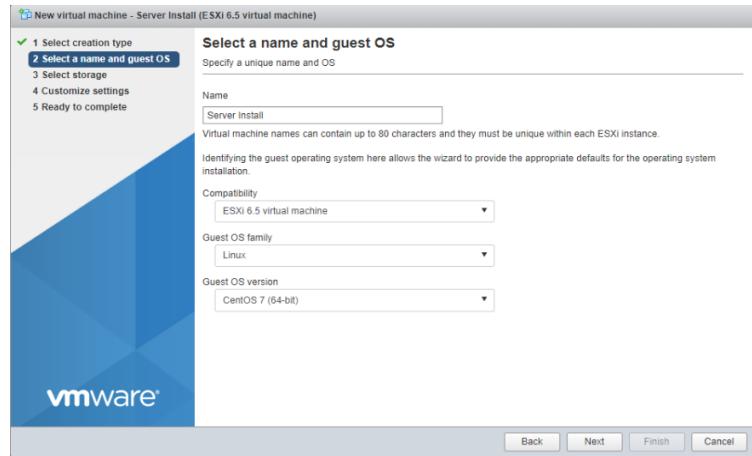
Step 3:

Select ‘Create a new virtual machine’ and press ‘Next’



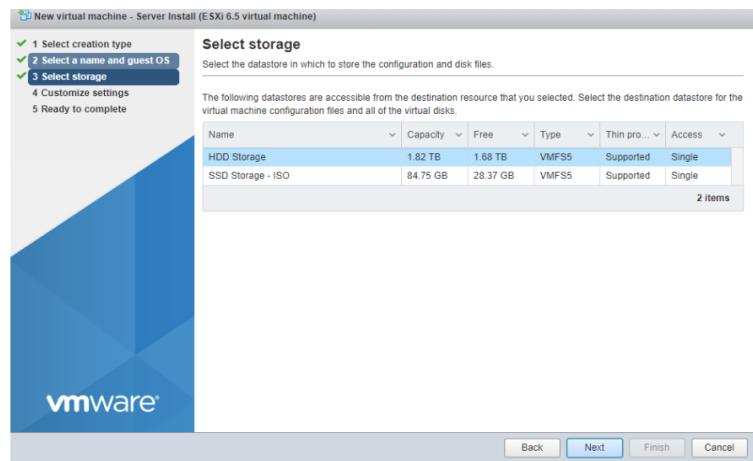
Step 4:

Choose the name of the Server and identify the Operating Systems (OS). For this project, we used ‘CentOS 7’.



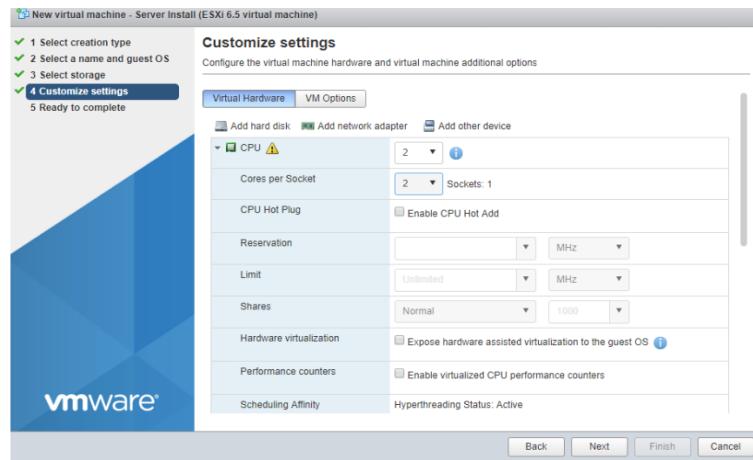
Step 5:

Choose the storage drive you wish to have the virtual machine stored on.
*For this instance, we will have it stored on the ‘**Hard Disk Drive**’.*



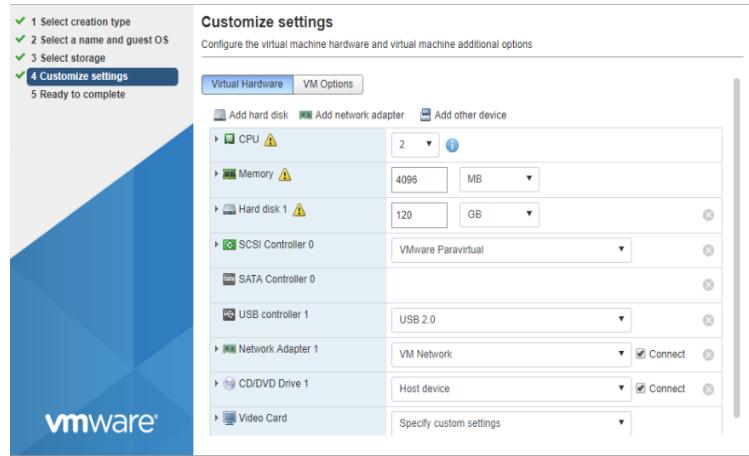
Step 6:

When configuring the CPU choose these settings displayed below in the reference.
Dual Core with Two Cores Per Socket is sufficient enough for running Linux.



Step 7:

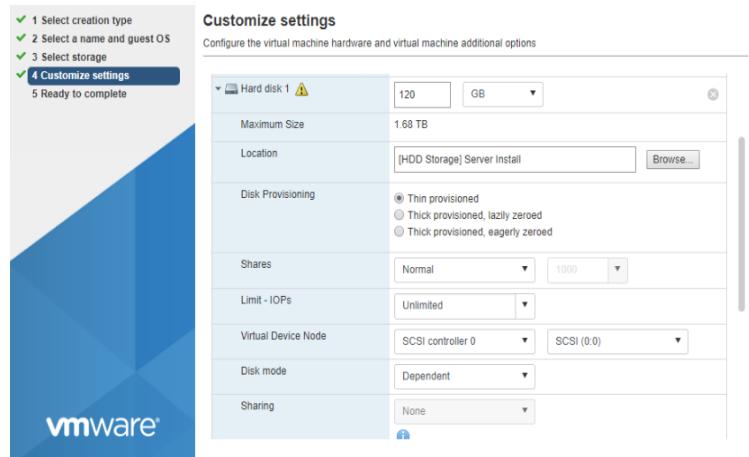
Memory/RAM is to be set to **8144 MB (or 8GB)**.



Step 8:

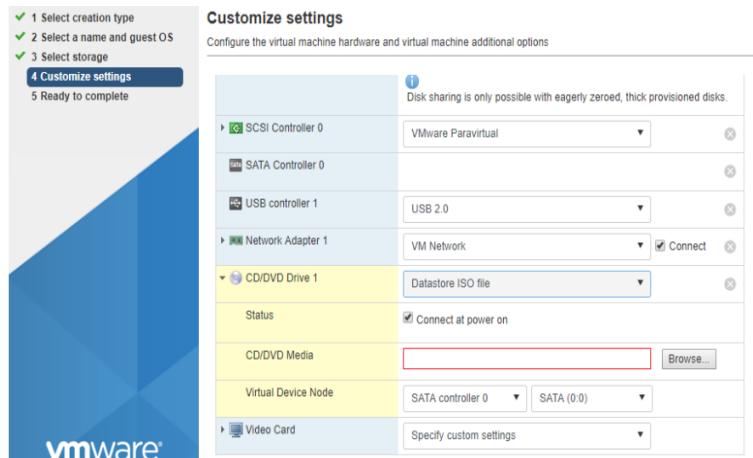
When configuring the hard drive click on the arrow to display more settings define the '**Disk Provisioning**' as '**'Thin Provisioned'**'.

This is to save storage on the server itself and mitigate unused storage.



Step 9:

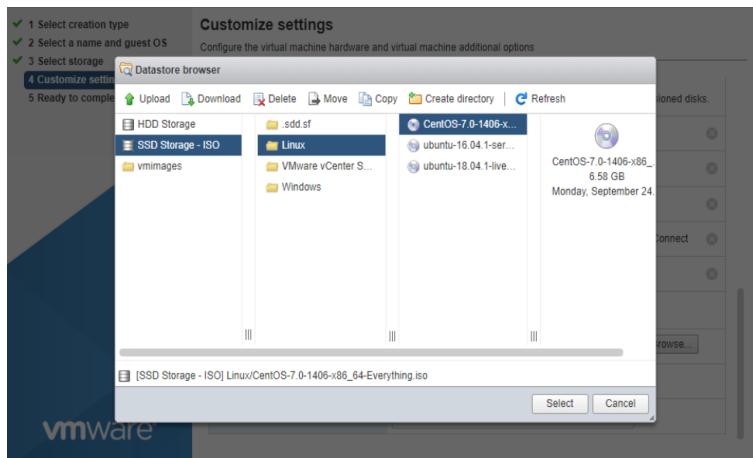
For CD/DVD Drive select ‘Datastore ISO File’ from the drop-down box.



Step 10:

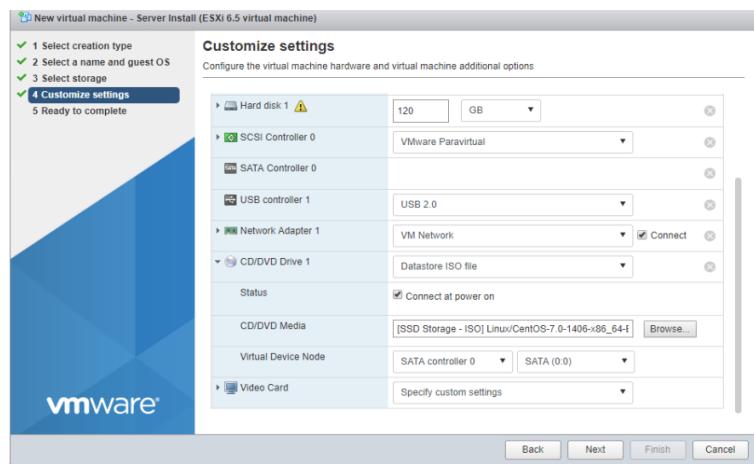
A window will pop up and install the OS click on the following directory's:

- ‘SSD Storage – ISO’
- Select the ‘Linux’ folder.
- ‘CentOS 7.iso’ file
- ‘Press ‘Select’ to finish selection.’



Step 11:

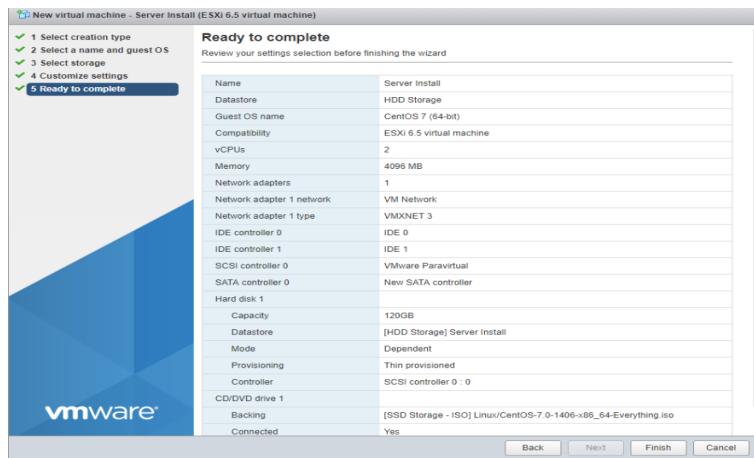
Once done press ‘Next’ in the bottom right corner.



Step 12:

Once done the final step is to review the settings and preferences that were chosen in the previous steps. Following this press ‘Finish’ in the bottom right corner.

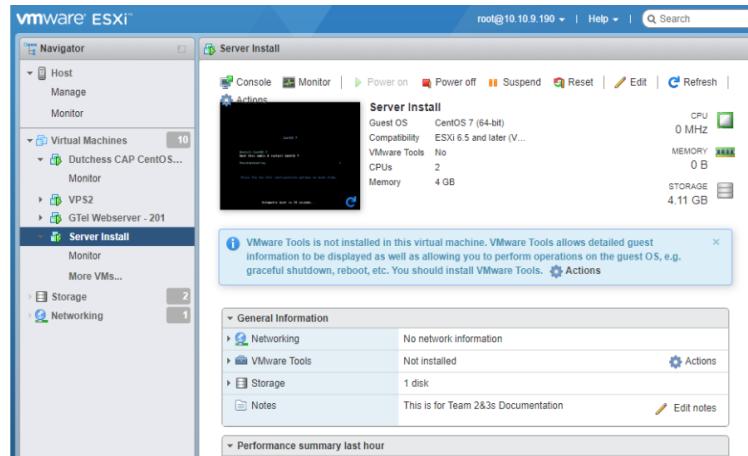
After this the Virtual Machine will spin up for the first time. After this, you can configure CentOS.



5 Setting Up CentOS

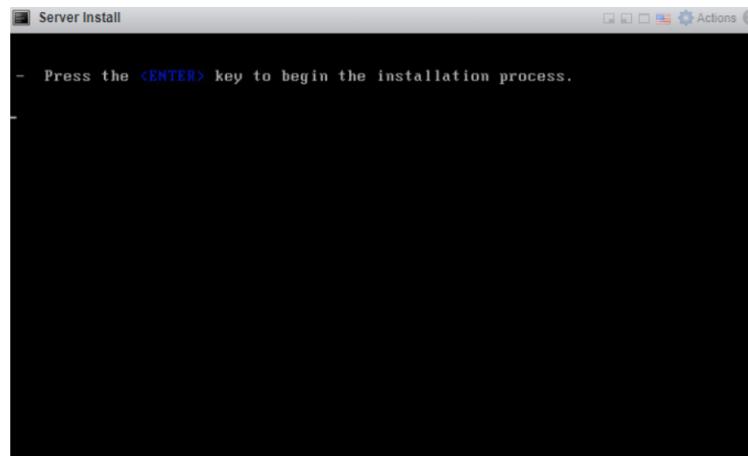
Step 1:

Log into the VMWare ESXi (10.10.9.190) Select ‘Virtual Machines’ followed. Then select the virtual machine you just spun up before. In this case ‘Server Install’.



Step 2:

Since its the first time booting you will be prompted to install the Operating System. Press ‘Enter’ to continue.



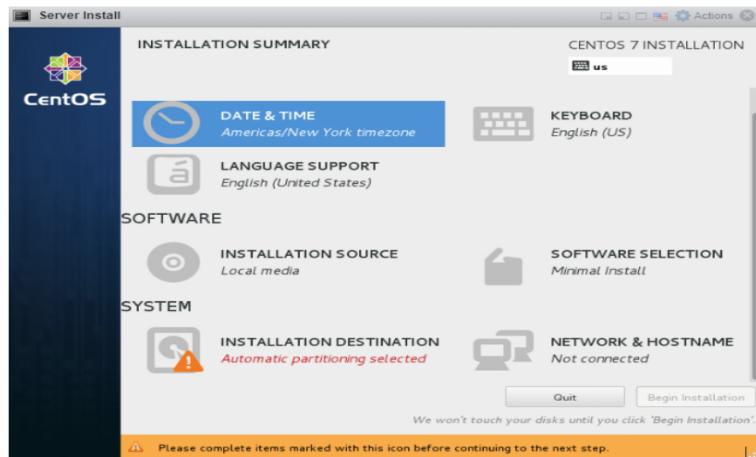
Step 3:

The CentOS Installation program will start up. To navigate use the ‘arrow keys’ on your keyboard to navigate the commands, ‘Tab’ to move to another section, and ‘Enter’ to input commands. Start with selecting a language and press ‘Continue’.



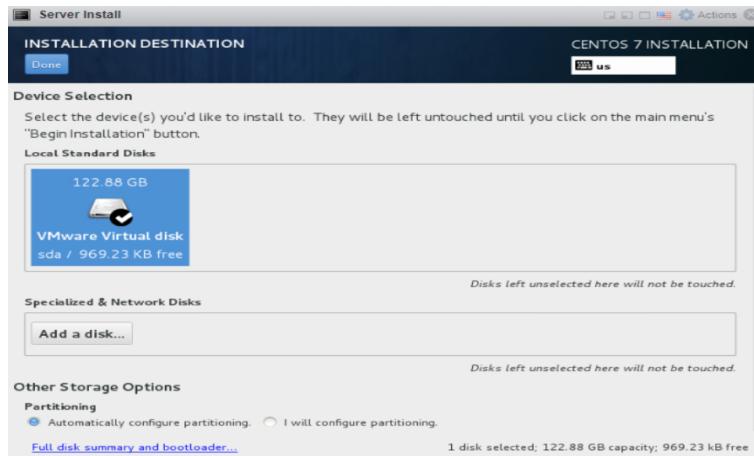
Step 4:

Afterward, there will be an installation summary page. Navigate to the Installation Destination and press ‘Enter.’



Step 5:

A partition will already be selected in the menu, but if you have another separate partition setup for OS installation select it with the arrow keys and press ‘Enter’.



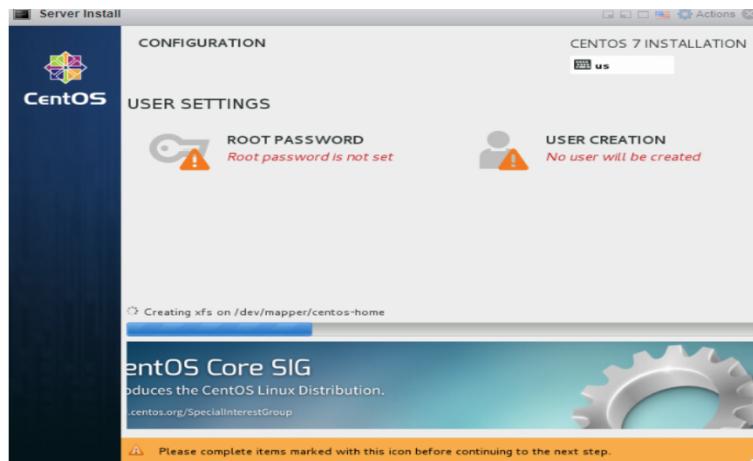
Step 6:

Make any other configuration changes if necessary, select ‘Begin Installation’ and press ‘Enter’.



Step 7:

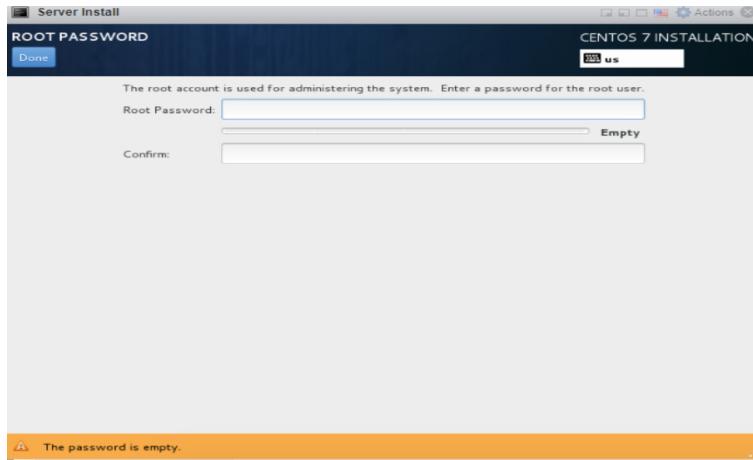
CentOS will begin installing. Enter in the information such as the password for the ‘root’ account and add any other users to the machine if necessary.



Step 8:

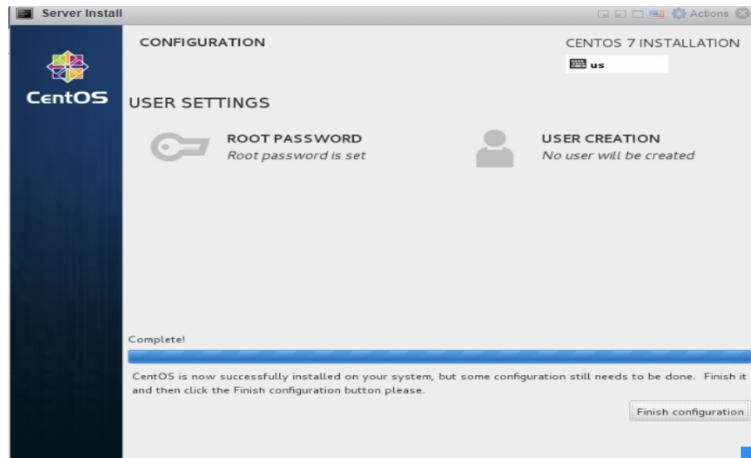
Enter the password you would want to use for the ‘root’ account.

For this, we will use the same password as the ESXi (@lgozzine).



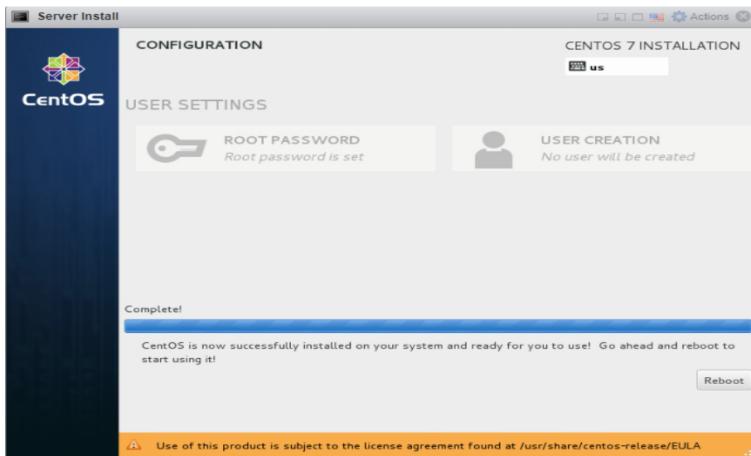
Step 9:

Once completed navigate with the ‘Tab’ key to finish configuration and press “Enter”.



Step 10:

After the configuration is completed you are now done installing CentOS. ‘Reboot’ the system to login to the CLI and begin setting up CentOS.



6 Network Setup Method 1 - Using the Network Manager Command

This instruction includes a detailed config information for a web-server in a *CentOS Linux (core) Kernel 3.10.0.-862.14.4.e17.X86_64 environment*.

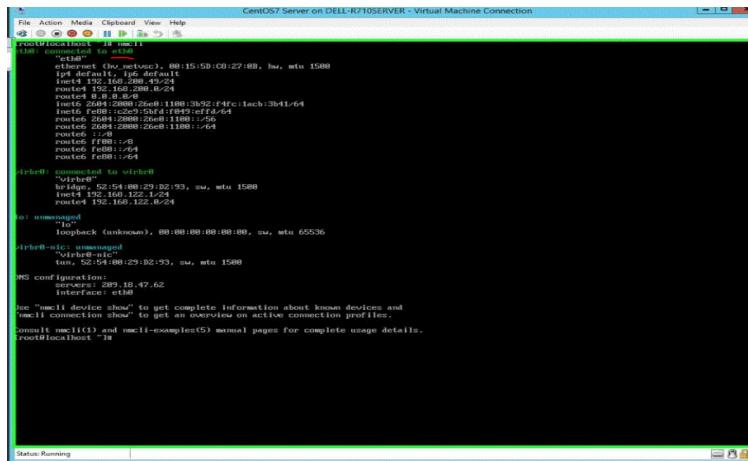
This documentation has only been tested on **Linux CentOS/RHEL 7 Platform**.

The first step after installing a fresh copy of CentOS/RHEL 7. Make sure you have network connectivity.

Step 1:

Use the network manager command ‘nmcli’ to verify the name of the Network-Interface-Card (NIC) before configuring Static IP address for the server. Enter the following command.

```
# nmcli
```



The screenshot shows a terminal window titled "CentOS7 Server on DELL-R710SERVER - Virtual Machine Connection". The window contains the following text output from the 'nmcli' command:

```
[root@localhost ~]# nmcli
[...]
eth0: connected to virbr0
  brd:16:00:29:02:03:03, mtu:1500
  link: 192.168.122.1/24
  routes: 192.168.122.0/24
  routes6: fe80::26e:1ff:fe00:1/64
  routes6: fe00::/8
  routes6: 2604:2800:26e1:1100::/64
  routes6: fe00::/8
  routes6: fe80::/64
  routes6: ff00::/8
  routes6: 2604:2800:26e1:1100::/64
  routes6: fe00::/8
  routes6: fe80::/64

virbr0: connected to virbr0
  brd:16:00:29:02:03:03, mtu:1500
  link: 192.168.122.1/24
  routes: 192.168.122.0/24

pi unmanaged
  "lo"
    loopback (unknown), 00:00:00:00:00:00, mtu:65536
  interface=loopback
    "virbr0-nic"
      ton, 52:54:00:29:02:33, mtu:1500
      NS configuration
        server: 239.18.47.62
        interface: eth0

See "nmcli device show" to get complete information about known devices and
see "nmcli connection show" to get an overview on active connection profiles.
Consult nmcli(1) and nmcli-examples(5) manpage for complete usage details.

[root@localhost ~]
```

Step 2:

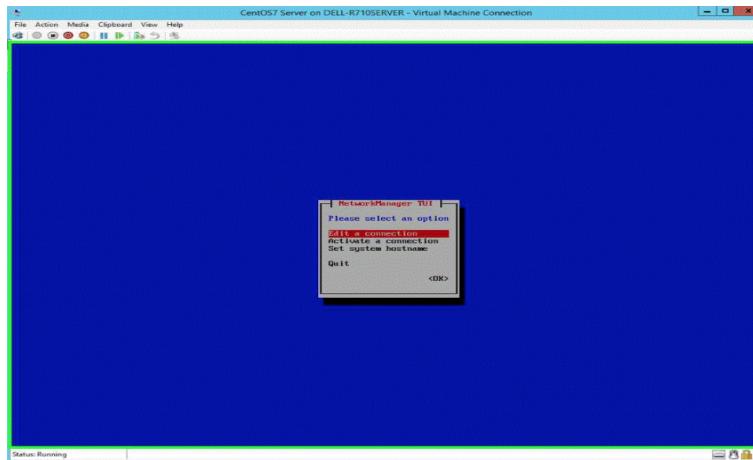
After verifying the name of your NIC Enter the following command to access the network manager configurator to set up static IP:

Enter the following command:

```
# nmtui
```

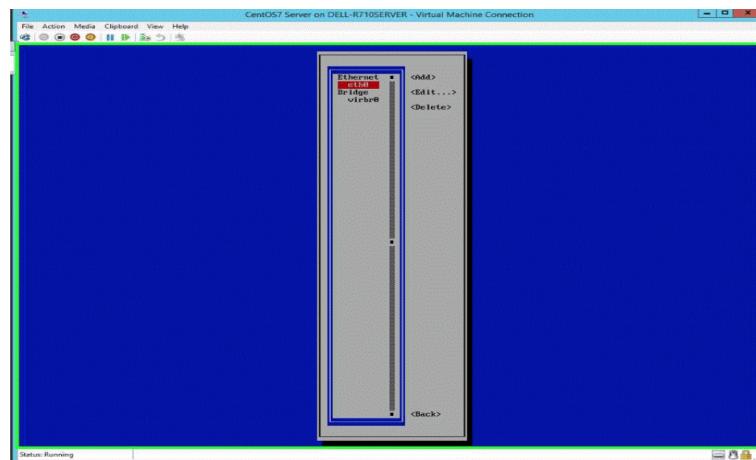
Step 3:

Select 'Edit a connection' option then press 'Enter' to advance to the NIC settings.



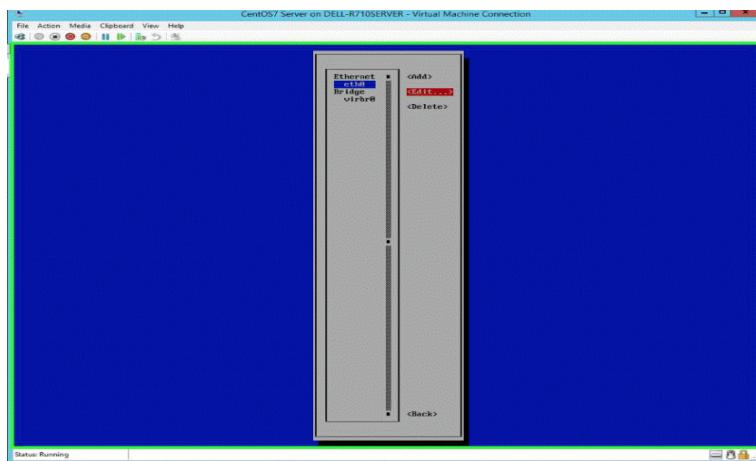
Step 4:

Select the name of the NIC adapter under the Ethernet option the name of the NIC for this instance is “**eth0**”. The option my depending on your machine and your preference.



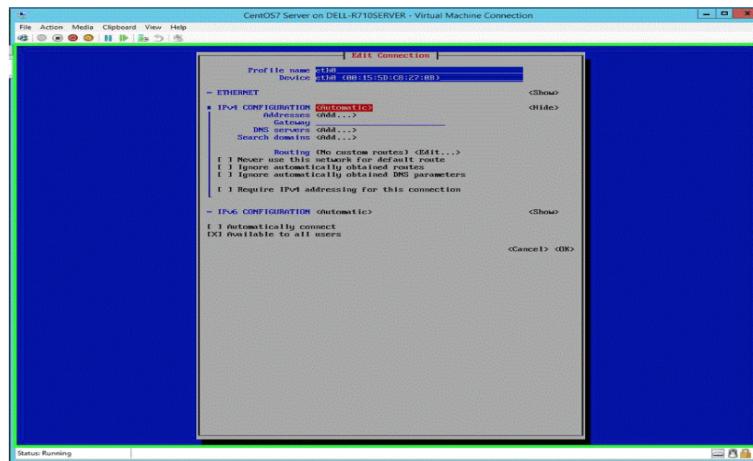
Step 5:

Select the 'Edit' option to the right and press the 'enter' key.



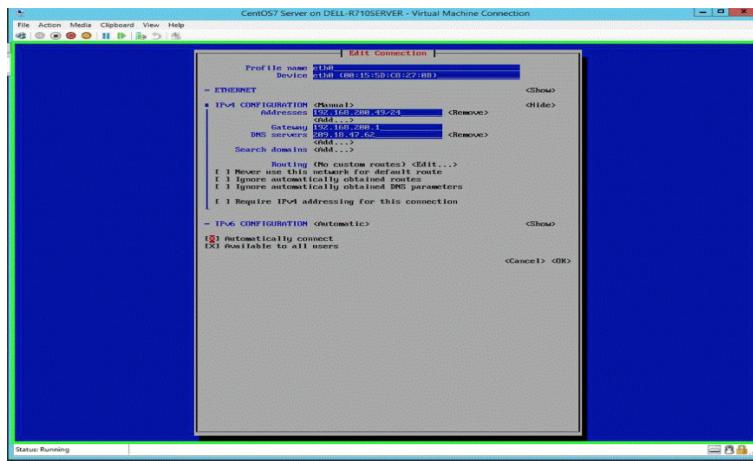
Step 6:

Use the arrow keys to select the IPv4 Configuration option and select ‘Manual’ instead of ‘Automatic’. This will enable Static IP configuration.



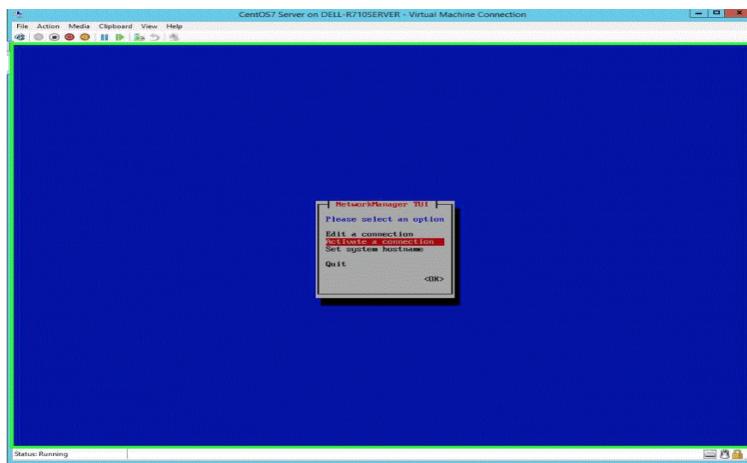
Step 7:

Using the ‘arrow keys’ to navigate. Add static IP address, subnet mask, gateway, and DNS.



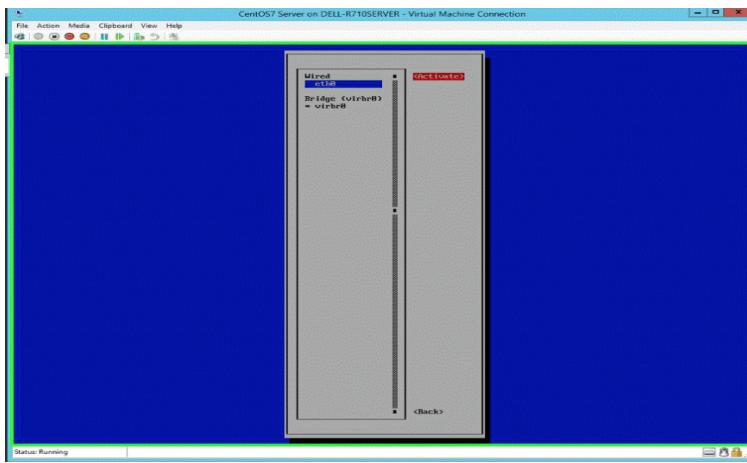
Step 8:

Select the ‘OK’ options at the bottom of the screen to exit back to the Network Manager TUI option and select ‘Activate a Connection’ and press ‘Enter’.



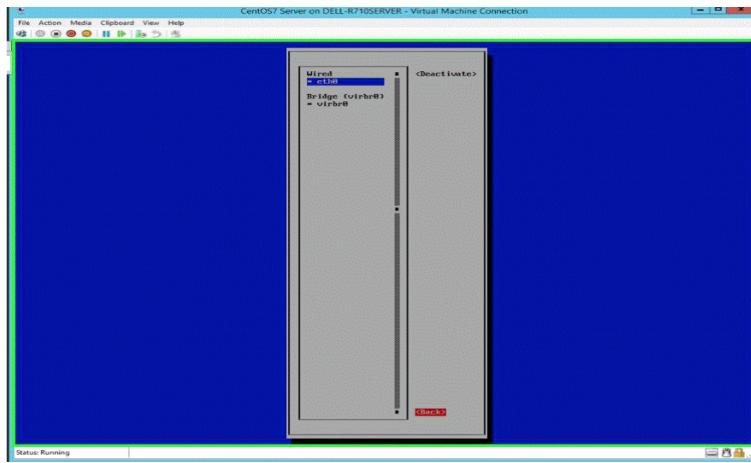
Step 9:

Then select ‘Activate’ to enable NIC. Then click ‘ok’ to go back and exit.



Step 10:

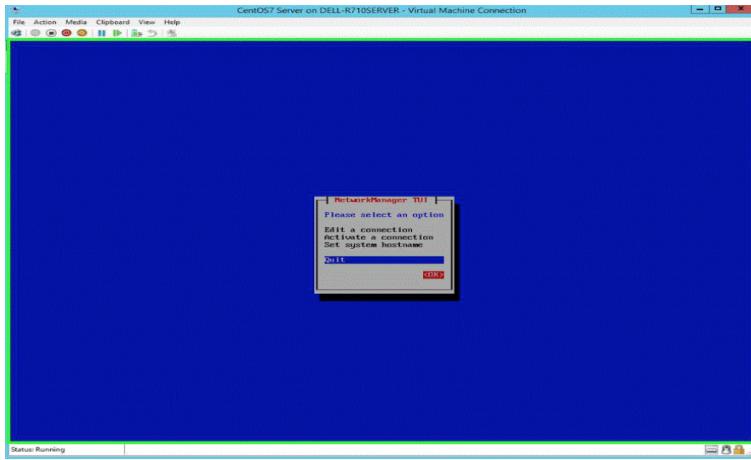
Back to the network manager to save setting and exit.



Step 11:

Use the '**arrow keys**' to navigate to select '**OK**' to save and exit.

Do Not Select 'Quit'!



Step 12:

After exiting Network Manager Utility use the ‘ping’ command below to check for network connectivity. This will show that the following steps were completed successfully.

```
# Ping 8.8.8.8
```

```
[root@localhost ~]# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 64(48) bytes of data:
64 bytes from 8.8.8.8: icmp_seq=1 ttl=121 time=21.5 ms
```

If you have successfully pinged Google’s DNS server the CLI display should display the following:

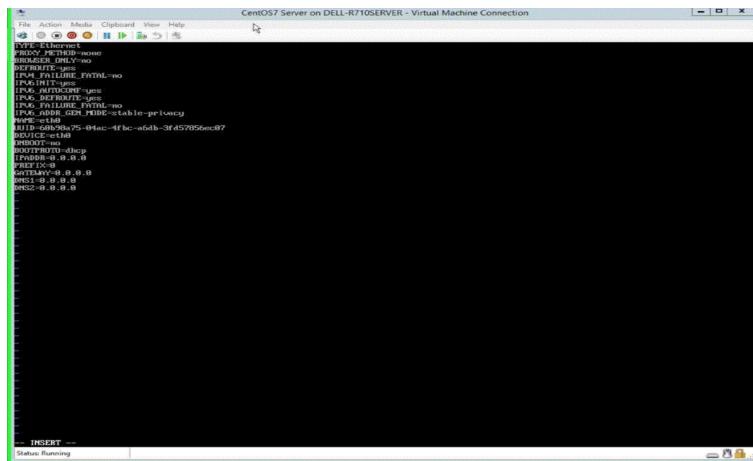
```
64 bytes from 8.8.8.8: icmp_seq=1 ttl=121 time=21.5ms
```

7 Network Setup Method 2 - Using VIM to Configure Static IP

Step 1:

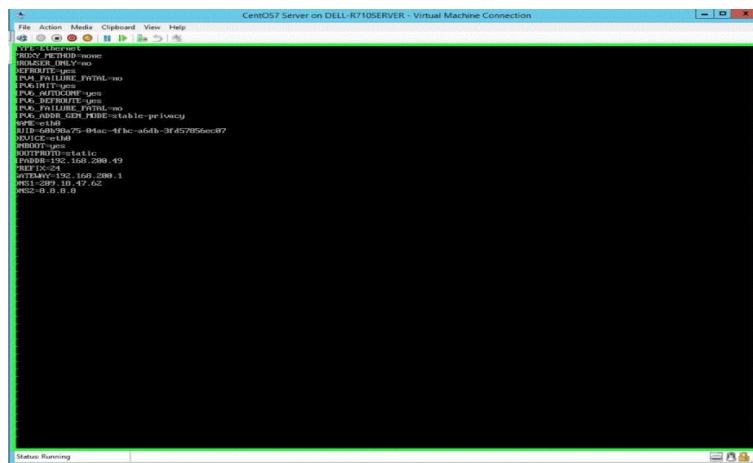
Enter the following command into the command prompt:

```
# vi /etc/sysconfig/network-scripts/ifcfg-eth0/
```



Step 2:

Press ‘i’ key to enable insert mode on vi. This will allow you to edit the file.

**Step 3:**

Then save the file by pressing the ‘Esc’ key. Then press the ‘Shift+’: keys and type in the following command to write and save file.

```
:wq
```

Step 4:

Then restart the service by issuing the service network command.

```
# network service restart
```

Step 5:

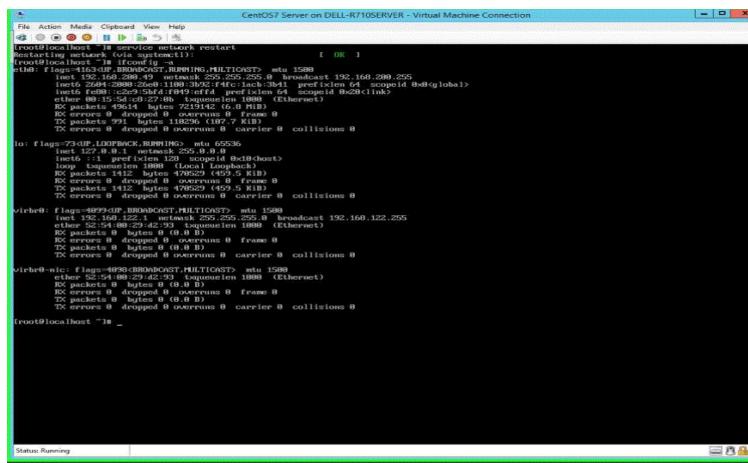
Press the ‘Esc’ key to enable view mode on VIM editor.

Step 6:

Then Press the ‘Shift+’ key and type the command below to write and quit.

```
:wq
```

This will update network configuration.



The screenshot shows a terminal window titled "CentOS7 Server on DELL-R710SERVER - Virtual Machine Connection". The window displays the output of several netstat commands. The first command, "netstat -i", shows interface statistics for interfaces like ens3, ens3f0, and loop0. The second command, "netstat -e", shows detailed Ethernet statistics for the same interfaces. The third command, "netstat -b", shows broadcast statistics. The fourth command, "netstat -n", shows a numerical version of the network statistics. The fifth command, "netstat -g", shows gateway information. The terminal prompt at the bottom is "root@localhost ~#".

```
root@localhost ~# netstat -i
[root@localhost ~]# netstat -e
[root@localhost ~]# netstat -b
[root@localhost ~]# netstat -n
[root@localhost ~]# netstat -g
```

Step 7:

Use the ping command below to check for network connectivity.

```
# Ping 8.8.8.8
```

The screenshot shows a terminal window titled "CentOS7 Server on DELL-R710SERVER - Virtual Machine Connection". The window displays network statistics for several interfaces (eth0, eth0:1, loop, eth0:2, eth0:3, eth0:4) and then executes a ping command to 8.8.8.8. The ping output shows four successful packets sent to Google's DNS server with round-trip times ranging from 19.4ms to 21.7ms.

```
root@localhost ~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 64 bytes from 8.8.8.8: icmp_seq=1 ttl=121 time=21.5ms
root@localhost ~#
```

If you have successfully pinged Google's DNS server the CLI display should display the following:

```
64 bytes from 8.8.8.8: icmp_seq=1 ttl=121 time=21.5ms
```

Step 8:

Then press ‘**Ctrl + Z**’ to stop the ping command and move on to the next step.

Step 9: Use the update command to update CentOS to the latest support and security packages from the CentOS/RHEL 7 repository:

```
# yum update
```

When the update is completed, move on to the next step.

8 Installing Graphical User Interface Git

Step 1:

Install GUI interface for the desktop to startup desktop.

```
# yum groups install "GNOME desktop" -y
```

Then to finish up install input the following command to finish up the install. This initializes the installation.

```
# echo "exec gnome-session" >> ~/.xinitrc
```

Step 2: (Optional)

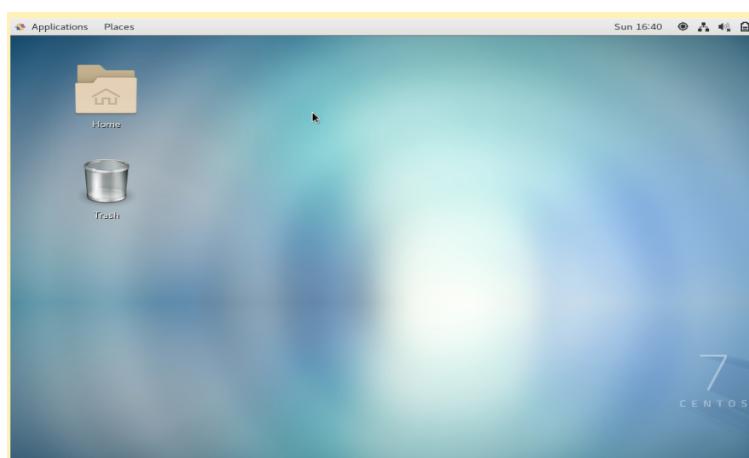
After the installation is completed, reboot the Linux machine then by using the reboot command and log in using root user account.

```
# reboot
```

Step 3:

Type the 'startx' command. The start command is used to initialize the GUI desktop for the CentOS.

```
# startx
```

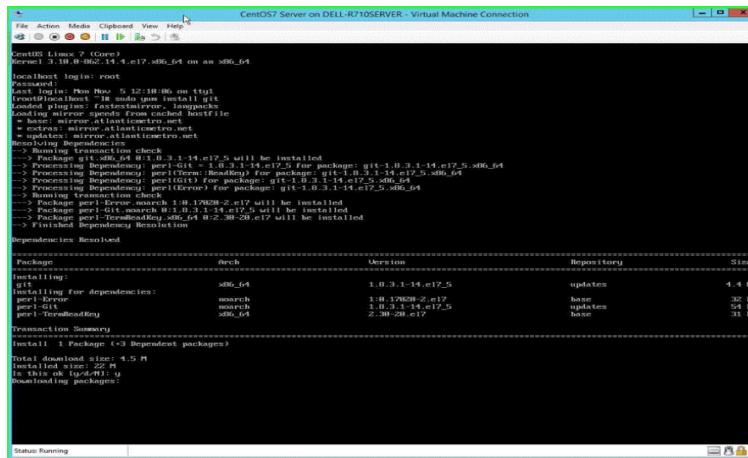


9 Installing Git

Step 1:

Type in the following command login as the root user:

```
# sudo yum install -y git
```



```
CentOS Linux 7 (Core)
Kernel: 3.10.0-693.11.1.el7.x86_64 on an x86_64
localhost login: root
Password: 
[root@localhost ~]# sudo yum install git
[root@localhost ~]# sudo yum install git
Loading mirror speeds from cached hostfile
 * baseurl: mirror.attlanternic.net
 * baseurl: mirror.attlanternic.net
 * updates: mirror.attlanternic.net
 * updates: mirror.attlanternic.net
Resolving Dependencies
> Running transaction check
> Package git-1.8.3.1-14.el7.5 will be installed
> Processing Dependency: perl-GIT = 1.0.3-1.14.el7.5 for package: git-1.8.3.1-14.el7.5.x86_64
> Processing Dependency: perl(GIT) for package: git-1.8.3.1-14.el7.5.x86_64
> Running transaction check
> Package perl-GIT = 1.0.3-1.14.el7.5 will be installed
> Package perl-Git-search = 0.1.0.3.1-14.el7.5 will be installed
> Package perl-Git-search = 0.1.0.3.1-14.el7.5.x86_64 will be installed
> Finished Dependency Resolution
Dependencies Resolved
-----  
Package          Arch    Version        Repository      Size  
git              x86_64  1.8.3.1-14.el7.5   updates       4.1 M  
Installing for dependencies:  
perl-GIT          search   1.0.3-1.14.el7.5   base         32 k  
perl-GIT          search   1.0.3-1-14.el7.5   updates       54 k  
perl-Git-search   x86_64  0.1.0.3-14.el7.5.x86_64  updates       33 k  
Transaction Summary  
-----  
Total download size: 4.5 M  
Installed size: 22 M  
Is this ok [y/d/N]: y  
Handling packages
```

After installation is completed you can use the following commands:

```
# git push
# git pull
# git clone
```

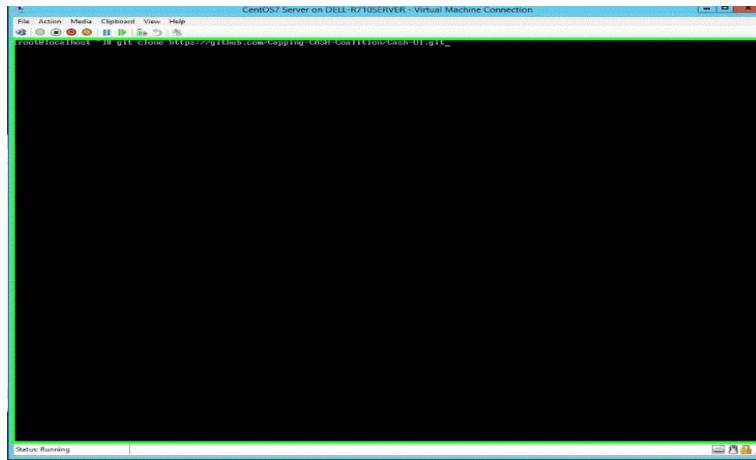
10 Download Files Using Git

The file that is needed for the deployment is the dump file for the database. The file is available from the Dutchess Cap repo on github and the link to clone file from the repo is below.

<https://github.com/Capping-CASH-Coalition/Cash-DB.git>

Step 1:

Go to the terminal and type in the the following command below:



11 Install EnterpriseDB Postgres Admin 4

Step 1:

Go to the EnterpriseDB website at the following link and download Postgres EnterpriseDB 10.6, 64-bit:

<https://www.enterprisedb.com/downloads/postgres-postgresql-downloads>.

Login with these credentials:

Username: stnb2

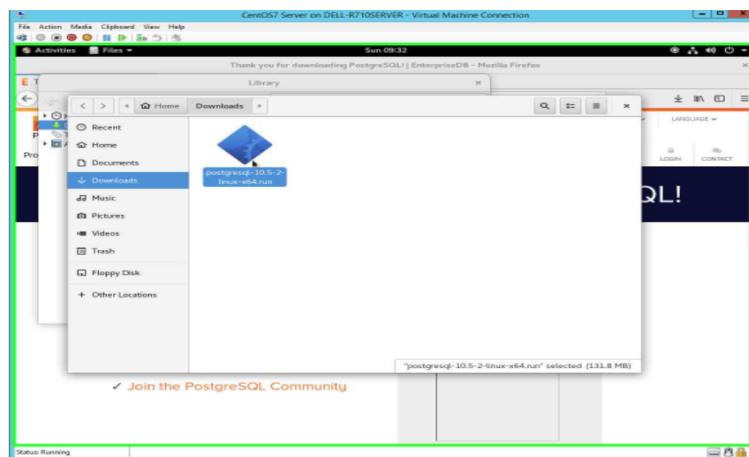
Password: @lgazzine

The screenshot shows the EnterpriseDB PostgreSQL Download page. At the top, there's a navigation bar with links for Products, Cloud, Customers, Services, Training, Resources, and a search bar. Below the navigation is a large title "PostgreSQL Download". Underneath the title is a table titled "PostgreSQL Version" with columns for "Linux x86-64", "Linux x86-32", "Mac OS X", "Windows x86-64", and "Windows x86-32". The table lists PostgreSQL versions from 11.0 down to 9.3.24, with "Download" links provided for most platforms except where "N/A" is indicated. At the bottom of the page, there are links to the "PostgreSQL 11.0 Installation Guide" and the "PostgreSQL 11.0 Language Pack Guide".

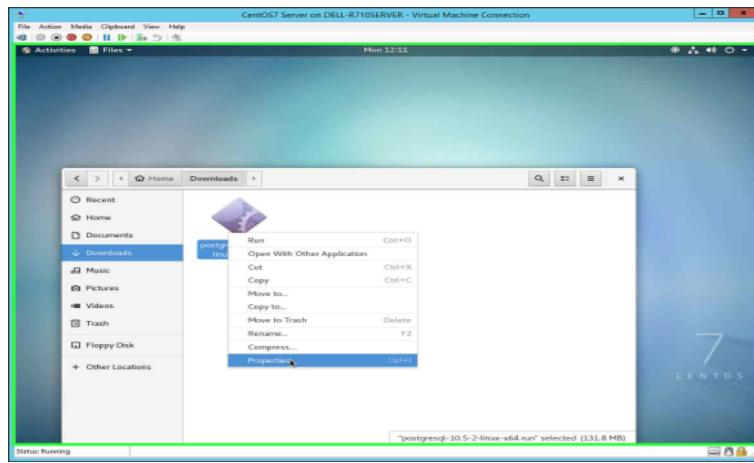
PostgreSQL Version	Linux x86-64	Linux x86-32	Mac OS X	Windows x86-64	Windows x86-32
11.0	N/A	N/A	Download	Download	N/A
10.5	Download	Download	Download	Download	Download
9.6.10	Download	Download	Download	Download	Download
9.5.14	Download	Download	Download	Download	Download
9.4.19	Download	Download	Download	Download	Download
9.3.24	Download	Download	Download	Download	Download

Step 2:

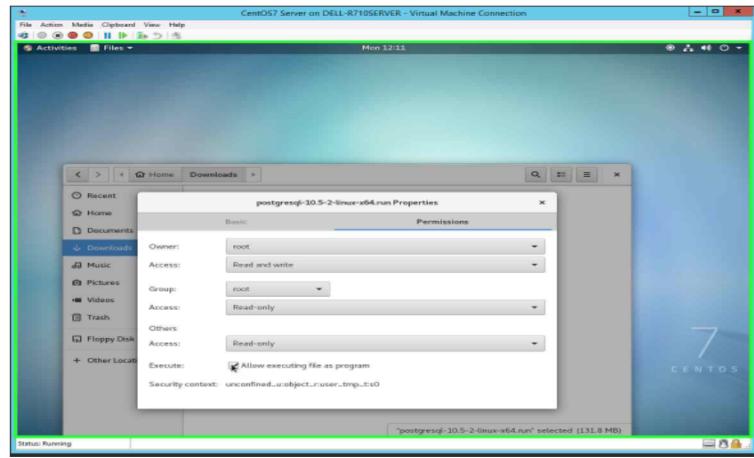
Locate download folder in the directory on your Linux machine and right click 'PostgreSQL10.5 Linux-x64run'.



Step 3:
Choose 'Properties'.

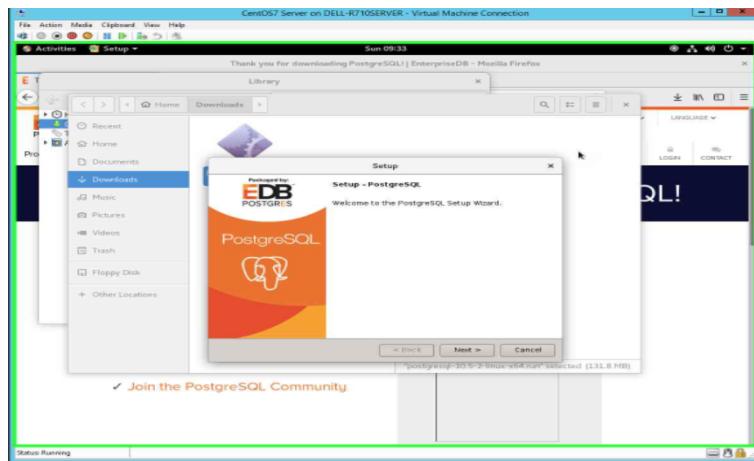


Step 4:
After choosing properties, select '**Permission**' tab and check the box '**Allow executing file as program**'. Then exit and proceed to run the install setup for EDBPostgres.



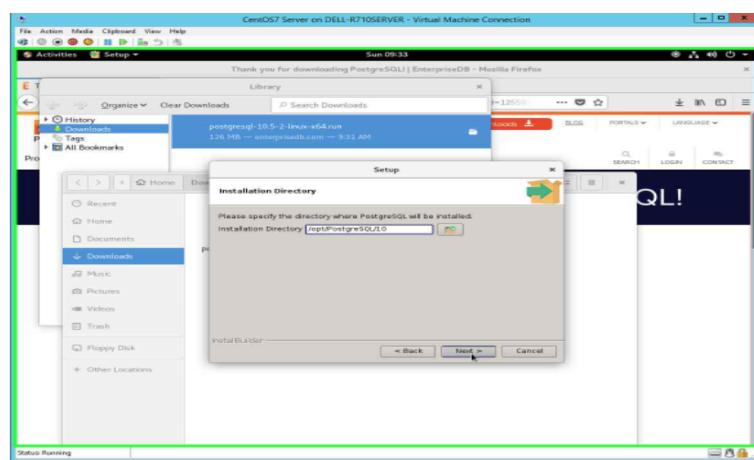
Step 5:

Click the 'Next' button.



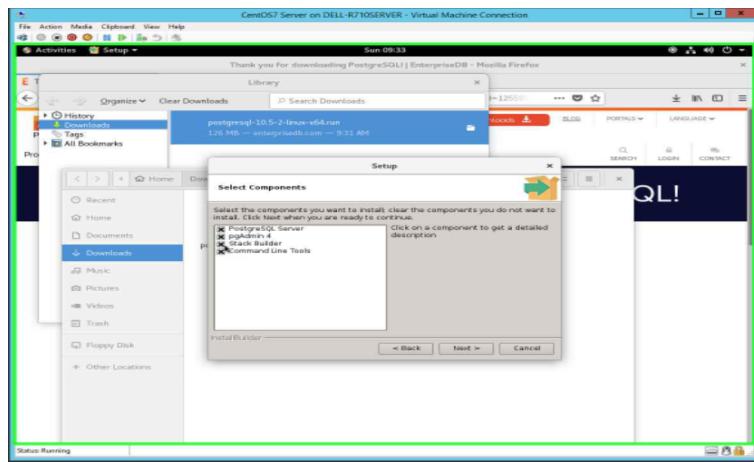
Step 6:

Click the 'Next' button.



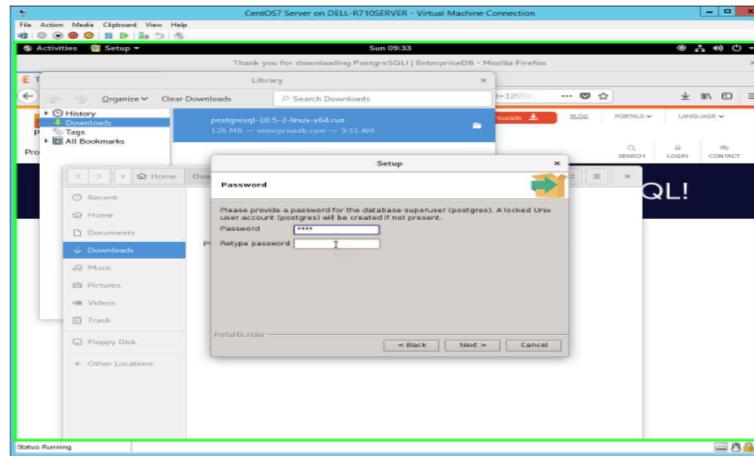
Step 7:

Click all of the checkboxes, including PostgreSQL Server, pgAdmin4, StackBuilder, and Command Line tools. Then click 'Next'.



Step 8:

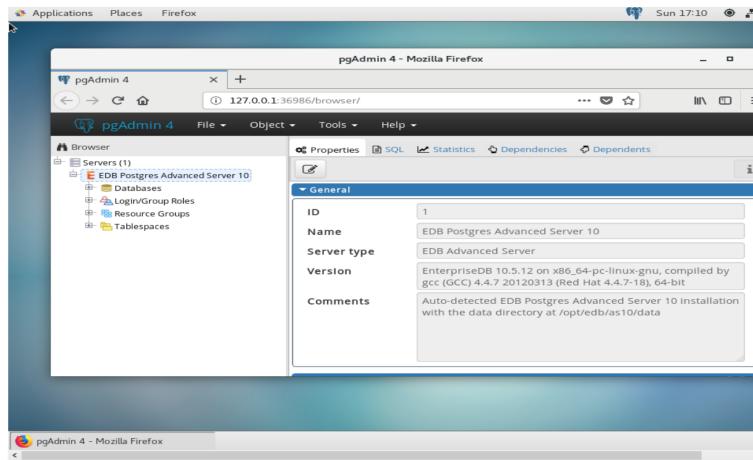
Create a password for the database superuser. The password is '@lgozzine'. Then click 'Next'.



12 Setting Up the Database

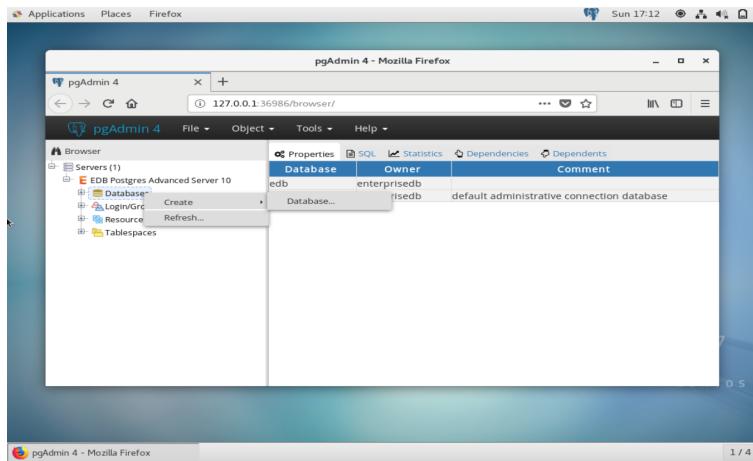
Step 1:

Open the 'pgAdmin' application.



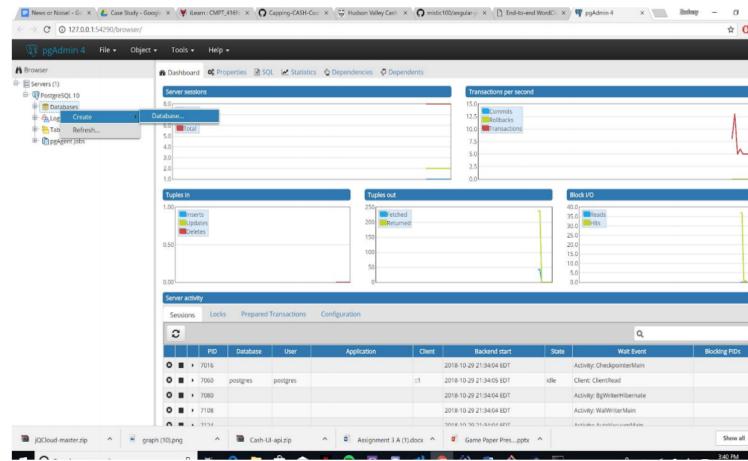
Step 2:

Open up 'Servers' tab, Select 'PostgreSQL 10 Databases'. Once you find databases, 'Right Click' on 'Databases'.



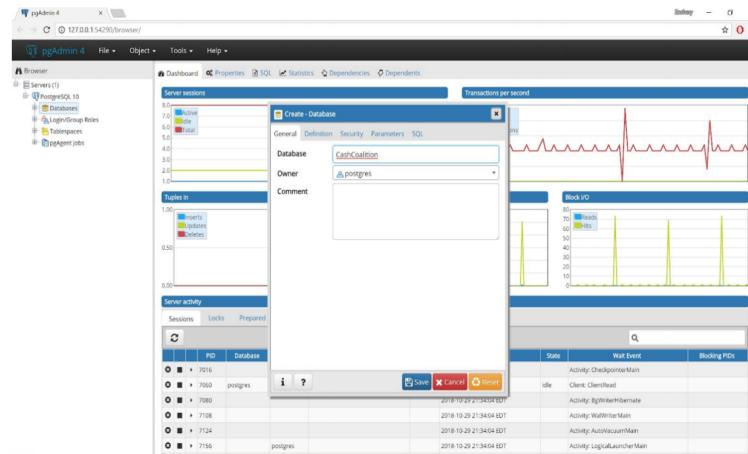
Step 3:

Scroll to option 'Create' and click the 'Database' option.



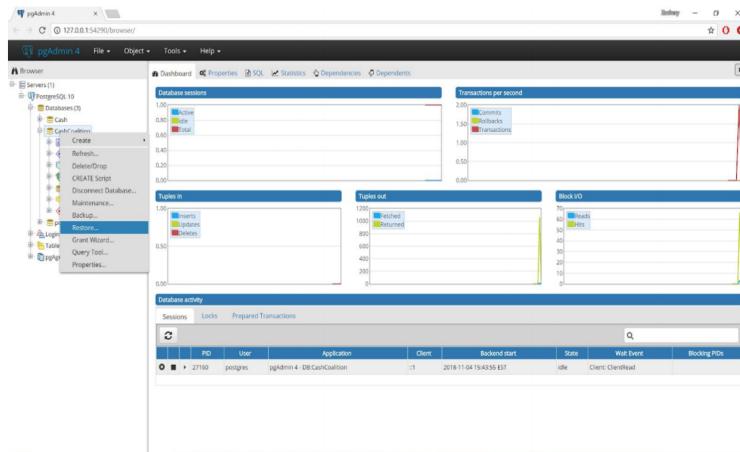
Step 4:

Type in the name of the database (**in this case CashCoalition**) that you wish to create and press the 'Save' button.



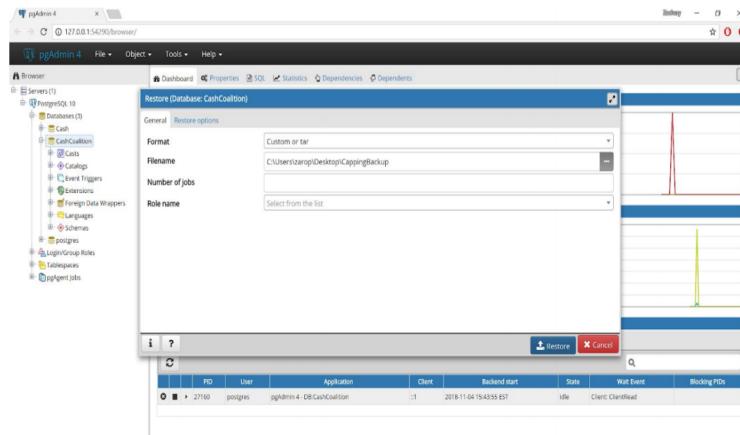
Step 5:

Now find **CashCoalition** under databases. Right click on CashCoalition, and click 'restore' option from the pop-up.



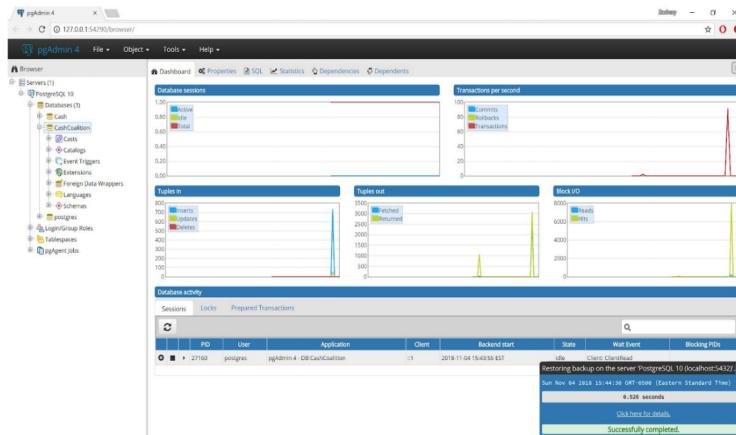
Step 6:

Locate Dump file into the directory where bump file for data is located for the database. Now find the backup file in your computer and click 'Restore'.



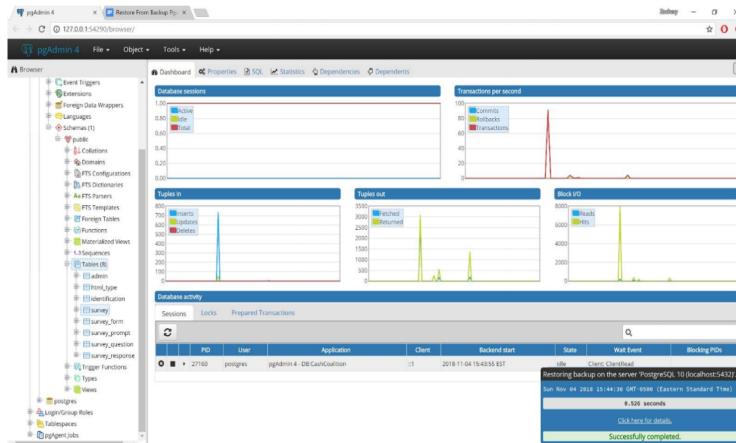
Step 7:

Make sure your restore finished successfully (bottom right).



Step 8:

Now you can see your database tables under **CashCoalition/Schemas/public/tables.-su.**

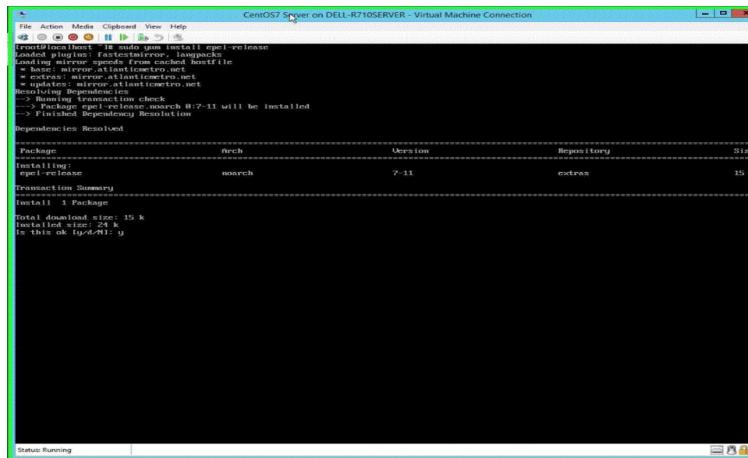


13 Installing node.js on CentOS 7

Step 1:

Run this command:

```
# sudo yum install epel-release
```



The screenshot shows a terminal window titled "CentOS7 Server on DELL-R710SERVER - Virtual Machine Connection". The command "# sudo yum install epel-release" has been run. The output shows the package being downloaded from a mirror, dependencies being resolved, and the transaction summary indicating the installation of the epel-release package. The transaction summary table includes columns for Package, Arch, Version, Repository, and Size.

Package	Arch	Version	Repository	Size
epel-release	x86_64	7-11	epel	15 k

Transaction Summary
install 1 Package
total download size: 15 k
installed size: 24 k
Is this ok [y/n]: y

Step 2:

Run this command:

```
# sudo yum install nodejs
```

Step 3:

Run this command:

```
# node --version
```

Node.js installation is completed.

14 Importing Survey System Files

First, clone this repository using the following command in your terminal.]

```
# git clone https://github.com/Capping-CASH-Coalition/DutchessCAP-Survey-App.git
```

This will create a new directory called DutchessCAP-Survey-App.

14.1 Angular Development

To develop the Angular functionality, enter the following commands in the terminal.

```
# cd DutchessCAP-Survey-App/AngularDevFolder/  
# ng serve
```

This will run the Angular application on localhost:8888

While in this development server, saved changes to Angular code will be automatically seen in the development server which can be seen by going to localhost:8888//

When you are finished testing your code and are ready to see how it performs with Node.js, run the following command.

```
# cd DutchessCAP-Survey-App/AngularDevFolder/  
# ng build -env=prod
```

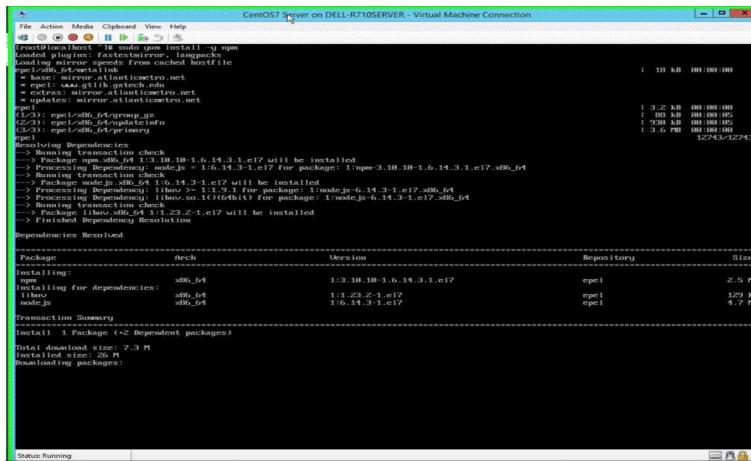
This will bundle the Angular code into 1 compact folder named dist within DutchessCAP-Survey-App/client/. You can also run **bash ng build -env prod -watch** to automatically build the distribution folder on each save which speeds up the process of having to build the application, then manually have to start the server.

15 How to Install NPM on CentOS

Step 1:

Run the following command:

```
# sudo yum install npm
```



```
Loaded plugins: fastestmirror, langpacks
Resolving Dependencies
--> Running Transaction Check
--> Package nodejs.x86_64 1:0.10.16-14.3-1.el7 will be installed
--> Processing Dependency: nodejs = 1:0.10.16-14.3-1.el7 for package: 1:nodejs-3.10.16-14.3-1.el7-x86_64
--> Package nodejs.x86_64 1:0.10.16-14.3-1.el7 will be installed
--> Processing Dependency: libuv.so.1(<60k)> for package: 1:nodejs-3.10.16-14.3-1.el7-x86_64
--> Processing Dependency: libuv.so.1.1.23-2.1.el7 for package: 1:nodejs-3.10.16-14.3-1.el7-x86_64
--> Finished Dependency Resolution
Dependencies Resolved
-----
Total download size: 7.3 M
Transaction Summary
Install 1 Package (+2 Dependent packages)
Total download size: 7.3 M
Is this ok [y/N]:
```

Step 2:

Run the following command:

```
# npm list-remote
```

NPM installation is completed.

Step 3:

After installing, test the version of Node.js using the command below.

```
# node -v
```

The version should be v8.9.1 or higher.

Step 4:

Run this command:

```
# npm start
```

Step 5:

When you install Node.js, npm is automatically installed. However, npm gets updated more frequently than Node.js, so be sure that you have the latest version.

To check the version of npm test use this command:

```
# npm -v
```

To be sure that this matches the latest version, scroll to the bottom of the window.

If the version you see does not match the latest version, run:

```
# npm install npm@latest -g
```

This will install the latest official, tested version of npm:

```
...  
148-100-165-27:~ drewburns22$ ssh root@10.10.9.205  
root@10.10.9.205's password:  
Last login: Wed Oct 24 16:46:02 2018 from 148.100.165.57  
[root@localhost ~]# node -v  
v8.12.0  
[root@localhost ~]# npm -v  
6.4.1  
[root@localhost ~]# █
```

16 Install Helmet Security

Step 1:

Install the Express module by running:

```
# npm install express --save
```

Step 2:

Install the Helmet by running:

```
# npm install helmet --save
```

```
[root@localhost ~]# npm install helmet --save
npm WARN saveError ENOENT: no such file or directory, open '/root/package.json'
npm notice created a lockfile as package-lock.json. You should commit this file.
npm WARN enoent ENOENT: no such file or directory, open '/root/package.json'
npm WARN root No description
npm WARN root No repository field.
npm WARN root No README data
npm WARN root No license field.

+ helmet@3.14.0
added 19 packages from 9 contributors and audited 19 packages in 2.579s
found 0 vulnerabilities

[root@localhost ~]# npm install express --save
npm WARN saveError ENOENT: no such file or directory, open '/root/package.json'
npm WARN enoent ENOENT: no such file or directory, open '/root/package.json'
npm WARN root No description
npm WARN root No repository field.
npm WARN root No README data
npm WARN root No license field.

+ express@4.16.4
added 48 packages from 36 contributors and audited 162 packages in 4.655s
found 0 vulnerabilities

[root@localhost ~]#
```

17 Enabling the Firewall

To open up the ports that it uses in the appropriate zone(s). This is as easy as specifying the port or port range, and the associated protocol for the ports you need to open.

Step 1:

Install and Enable Your Firewall to Start at Boot: 'Firewalld' is installed by default on some Linux distributions, including many images of CentOS 7. However, it may be necessary for you to install firewalld yourself:

```
# sudo yum install firewalld
```

Step 2:

After you install firewalld, you can enable the service and reboot your server. Keep in mind that enabling firewalld will cause the service to startup at boot.

```
# sudo systemctl enable firewalld  
# sudo reboot
```

Step 3:

Our application runs on port **5432**, **3000**, and **80** and uses TCP, we could add this to the '**public**' zone for this session using the **--add-port=** parameter. Protocols can be either tcp or udp:

(a) Postgres port command

```
# sudo firewall-cmd --zone=public --add-port=5432/tcp
```

(b) Node port command

```
# sudo firewall-cmd --zone=public --add-port=3000/tcp
```

(c) Https port command

```
# sudo firewall-cmd --zone=public --add-port=80/tcp
```

Then type in IP address: port in the URL to check web page.

18 Changes in Node.js

After cloning the repository there are some changes that must be made in the Node web server configuration file and the API connection routes between node.js and Angular.

Changing Configuration File in Node

To access the Node server configuration file with the commands below.

```
# cd DutchessCAP-Survey-App/  
# vim app.js
```

From there make any changes necessary such as changing hostname and enabling the Cross-Origin Resource Sharing policy.

Changing Routing Address for EnterpriseDB

To access the EnterpriseDB login information enter the follow commands below.

```
# cd DutchessCAP-Survey-App/server/routes/  
# vim index.js
```

From there make any changes necessary for the database to connection as described in the comments.

Changing Routing Address for DNS

To change routing addresses for the pages enter the follow commands below.

```
# cd DutchessCAP-Survey-App/AngularDevFolder/src/app/services/  
# vim survey.service.ts
```

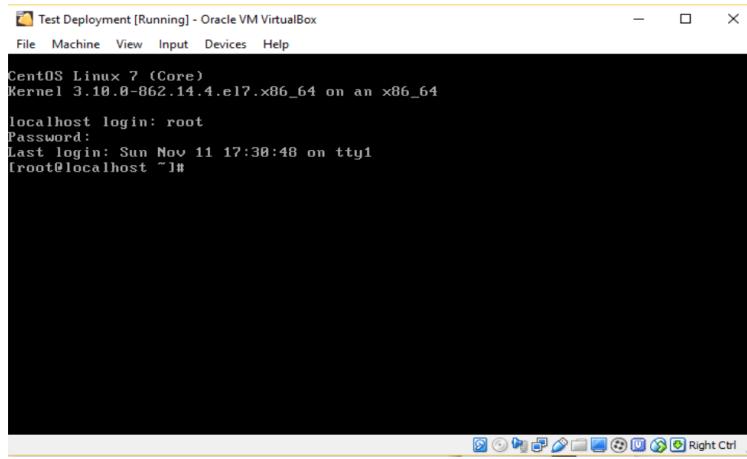
From there make any changes necessary such as changing https://localhost:8888 to the address of you choice.

19 Maintenance and Reboots

For instances when the server goes down or restarts.

Step 1:

Log into CentOS using the root account.



Step 2:

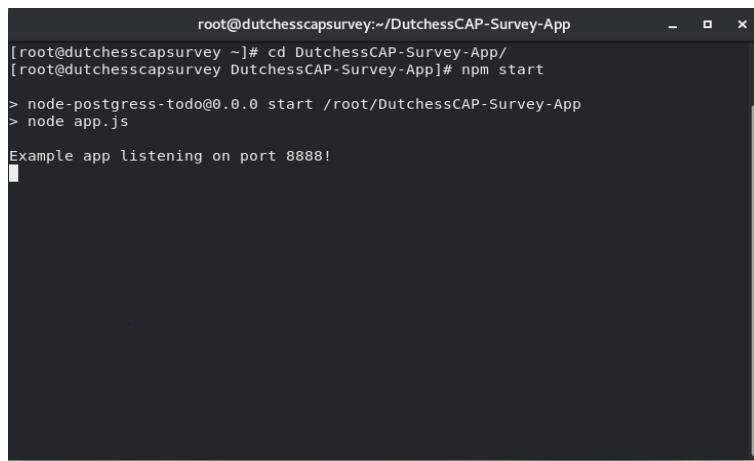
Boot up the Graphical User Interface (GUI) with the command below.

```
# startx
```

Step 3:

Open the CLI and enter the following command:

```
# cd DutchessCAP-Survey-App/
```



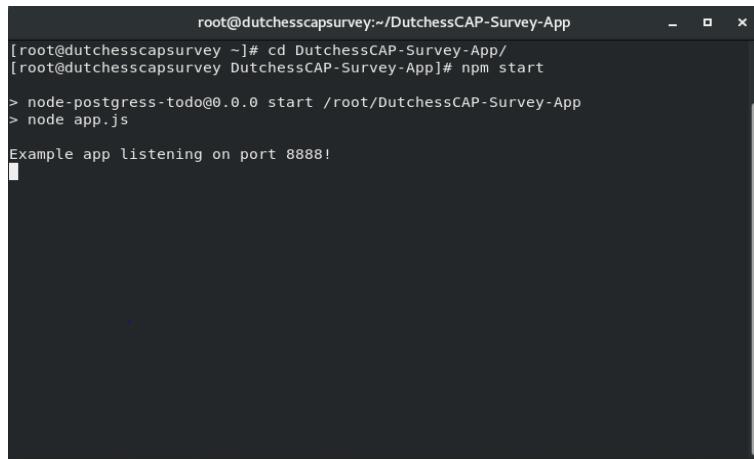
A terminal window titled "root@dutchesscapsurvey:~/DutchessCAP-Survey-App". The command "cd DutchessCAP-Survey-App/" is entered, followed by "npm start". The output shows two lines of Node.js code: "node-postgres-todo@0.0.0 start /root/DutchessCAP-Survey-App" and "node app.js". Below this, the message "Example app listening on port 8888!" is displayed.

```
root@dutchesscapsurvey:~/DutchessCAP-Survey-App
[root@dutchesscapsurvey ~]# cd DutchessCAP-Survey-App/
[root@dutchesscapsurvey DutchessCAP-Survey-App]# npm start
> node-postgres-todo@0.0.0 start /root/DutchessCAP-Survey-App
> node app.js
Example app listening on port 8888!
```

Step 4:

Enter the following command:

```
# npm start
```



A terminal window titled "root@dutchesscapsurvey:~/DutchessCAP-Survey-App". The command "npm start" is entered. The output shows the same two lines of Node.js code as in the previous step, followed by the message "Example app listening on port 8888!".

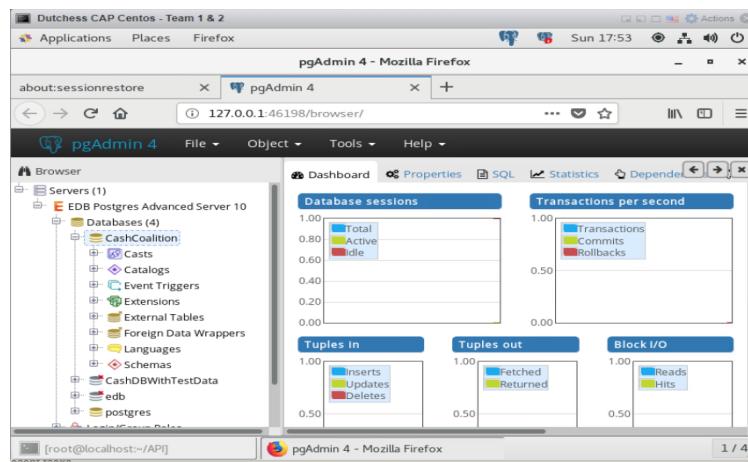
```
root@dutchesscapsurvey:~/DutchessCAP-Survey-App
[root@dutchesscapsurvey ~]# cd DutchessCAP-Survey-App/
[root@dutchesscapsurvey DutchessCAP-Survey-App]# npm start
> node-postgres-todo@0.0.0 start /root/DutchessCAP-Survey-App
> node app.js
Example app listening on port 8888!
```

Step 5:

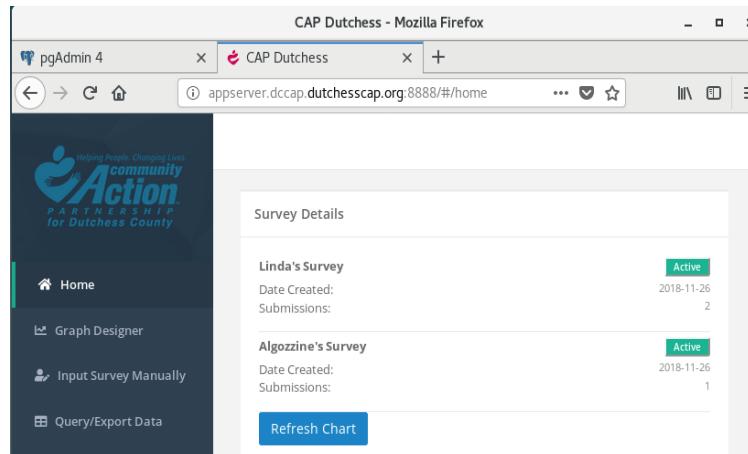
Minimize the CLI. Any other changes must be made in a new CLI.

Step 6:

Start up pgAdmin4.

**Step 7:**

Open a browser and enter 'https://appserver.dccap.dutchesscap.org:8888' in the search bar. The website will launch and you web server is up and running again.



20 How to Restart the Server

If you need to restart the server open the CLI running the server follow the following instructions. Press ‘Ctrl + Z’ and type the following command in the terminal.

```
# lsof -i :8888
```

This will list all PIDs and connections to the database still active which is important for the next command. To kill any processes type the following command.

```
# kill -9 PID
```

After this you can make any changes to the web application afterwards return the main Dutchess CAP Survey App folder and type

```
# npm start
```

21 Deployment Schedule

Below is our Deployment Schedule that kept track of our progress and deployment the web server application at Dutchess CAP.

Deployment Plan Schedule			
Date	Item	Description	Additional
Oct - Nov	Deploying at CAP Dutches	Deploy our systems at CAP Dutches for our client.	
10/29	Contact Jason Fisch About Deployment	Get in Contact with Jason about deployment of a prototype.	Make sure we do it on Monday during the Capping session as it's the only time we all can meet.
11/5	Client Check-In & Attempt Team 1 Deployment	We will showcase to Linda and deploy the system with Jason	Take notes on deployment and make changes to the deploy guide if necessary.
11/5 - 11/11	Contact Jason Fisch About Deployment	Get in Contact Again with Jason about deployment of a prototype.	Communication has been stagnate with Jason, have more contact with Jason through email.
11/5 - 11/11	Research & Look into Cloud Hosting for Deployment	Contact Microsoft Azure, Amazon Web Services, Google Cloud, and others.	Google is offering it for \$570 a year, with a \$300 credit for the first year. Rest of the services are similar.
11/12	Client Check-In & Attempt Team 2 Deployment	Team 2 will attempt to deploy if Jason is there and showcase their work.	If Jason is there for Team 2's deployment and Team 1 gets some insight about deployment at CAP Dutches.
11/12-11/18	Contact Linda Eddy About Deployment	Get in Contact Linda about deployment by getting passwords for the servers as a work around.	
11/22	Deploying at CAP Dutches	LaFrance and Stephen Stone will attempt to deploy with Jason Fisch at CAP Dutches.	
11/26 - 12/3	Contact Jason Fisch About Networkin or Other Issues	Contact Jason about any issues we maybe having such as ports or about the DNS	LaFrance has been having direct contact with Jason throughout this process.
11/26	Deployment #2 at CAP Dutches	Attempt to install the rest of the system on the server.	Note any changes necessary to the deployment plan.
11/27	Deployment #3 at CAP Dutches	Attempt to install TeamViewer and other addons.	Note any changes necessary to the deployment plan.
Dec	Showcase Systems	Showcase the System	
11/30 - 12/15	Bug Fixing/Updates	Test and update systems as necessary.	Fix all major severities and bugs. Note any cosmetic that may need to be changed as needed.
12/3	Final Showcase	Showcasing the final tentative system to the client, Professor Alogzine and other student	Final presentation although after this work on documentation as well as debugging.