IEN: - **Batch: -**

Name of the Student: - **Div.: -**

Date of Performance: -

Course Outcome: - CSL 605:

EXPERIMENT NO.: - 03

***Aim:* - To study and Implement Bare-metal Virtualization using Xen Server**

System Software/ Instruments/ Equipment's Requirements: -

Theory/ Working Principle:

bare-metal server

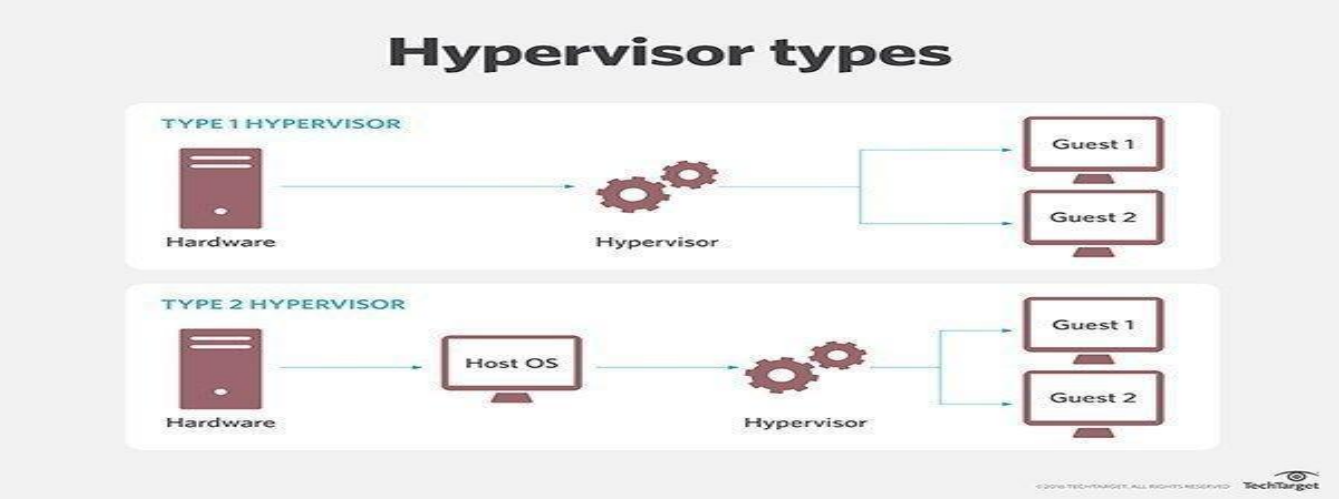
The term bare metal refers to the fact that there is no operating system between the virtualization software and the hardware .The virtualization software resides on the "bare metal " or the harddisk where the os is usually installed.

Examples : Citrix Hypervisor or XenServer, VMware ESXI And Microsoft Hyper-v.

A bare metal server is a physical server dedicated to a single tenant. ... Bare metal servers are also known as single-tenant physical servers or managed dedicated servers. On a bare metal server, the operating system is installed directly on to the server, eliminating layers and delivering better performance.

Advantage of bare-metal servers

Bare metal servers will provide you with an improved application and data performance while maintaining high-level security. When there is no virtualization, there is no overhead for a hypervisor, so the performance benefits. Most virtual environments and cloud solutions come with security risks.



Criteria	Type 1 hypervisor	Type 2 hypervisor
AKA	Bare-metal or Native	Hosted
Definition	Runs directly on the system with VMs running on them	Runs on a conventional Operating System
Virtualization	Hardware Virtualization	OS Virtualization
Operation	Guest OS and applications run on the hypervisor	Runs as an application on the host OS
Scalability	Better Scalability	Not so much, because of its reliance on the underlying OS.
Setup/Installation	Simple, as long as you have the necessary hardware support	Lot simpler setup, as you already have an Operating System.
System Independence	Has direct access to hardware along with virtual machines it hosts	Are not allowed to directly access the host hardware and its resources
Speed	Faster	Slower because of the system's dependency
Performance	Higher-performance as there's no middle layer	Comparatively has reduced performance rate as it runs with extra overhead
Security	More Secure	Less Secure, as any problem in the base operating system affects the entire system including the protected Hypervisor
Examples	• VMware ESXi • Microsoft Hyper-V • Citrix XenServer	• VMware Workstation Player • Microsoft Virtual PC • Sun's VirtualBox

Fresh Installation of XenServer 7

1. https://www.citrix.com/products/xenserver/whats-new.html

XenServer System Requirements

1. XenServer 7 ISO : XenServer-7.0.0-main.iso
2. Server capable of virtualization
3. Hardware Compatibility List is here: http://hcl.xenserver.org/
4. Many systems will work even if not listed but results may vary, use at your own risk.
5. Minimum 2GB ram; 4GB or more recommended to run virtual machines
6. Mimimum 1 64-bit x86 1.5GHz cpu; 2GHz or more and multiple CPUs are suggested
7. Harddrive space of at least 46GB; more required if virtual machines will be saved locally
8. At least a 100mbps network card; multiple gigabit suggested

Single Host Upgrade and Fresh Install of XenServer 7

This first process will walk through a completely new install of XenServer 7. Be sure to check the minimum hardware requirements to ensure that the machine can support XenServer 7.

1. The first step in the installation is to download the XenServer ISO file. Using the link above, the file can easily be downloaded from the Internet using the 'wget' command.

```
webpage http://downloadns.citrix.com.edgesuite.net/11616/XenServer-7.0.0-main.iso
```

https://www.citrix.com/products/xenserver/overview.html

```
# wget -c  http://downloadns.citrix.com.edgesuite.net/11616/XenServer-7.0.0-main.iso
```

Once the ISO has downloaded, copy it to a USB drive with the **'dd'** utility.

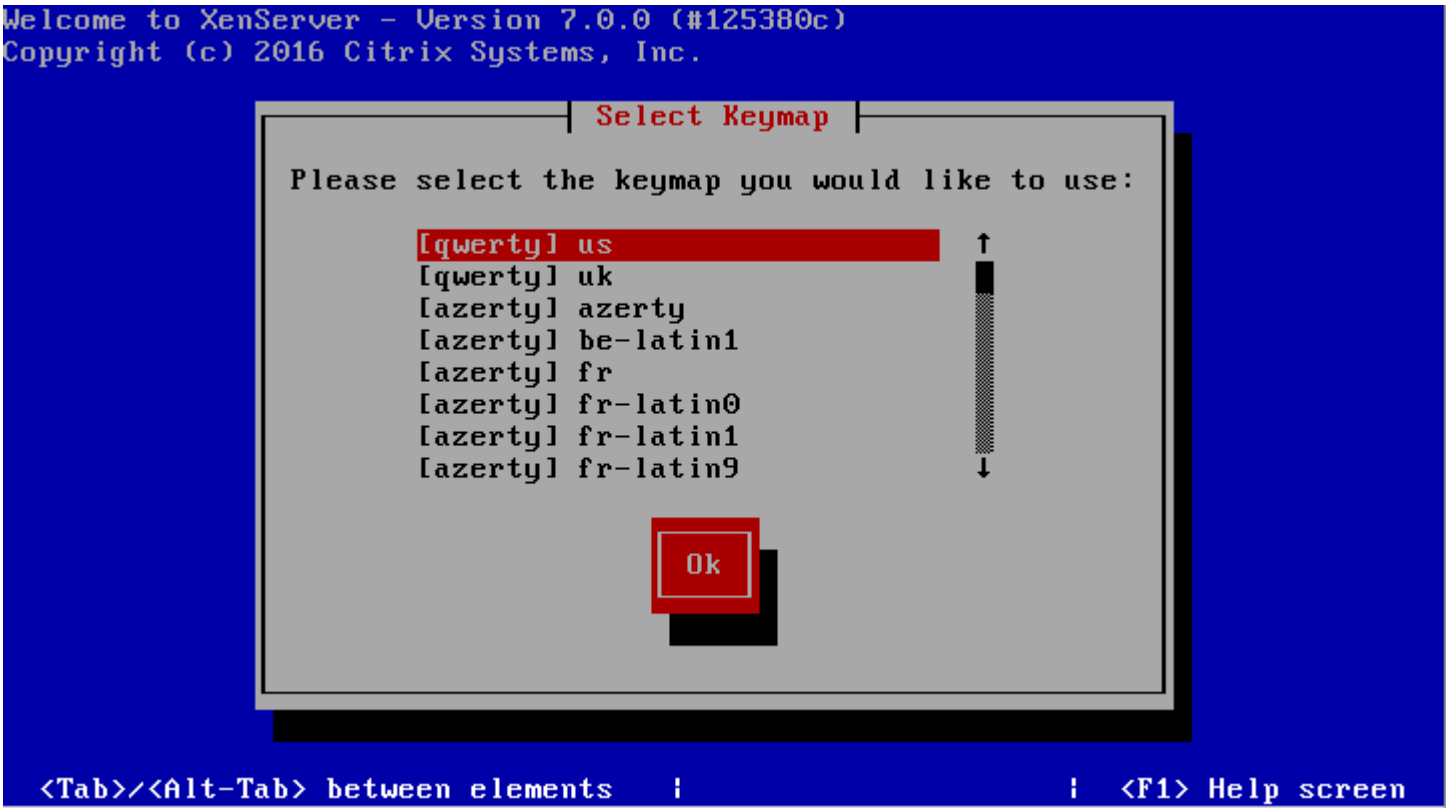
command will replace **EVERYTHING** on the flash drive with the contents of the **XenServer ISO**. This process will also create a bootable USB drive for the installation process.

```
# dd if=XenServer-7.0.0-main.iso of=</path/to/usb/drive>
```

2. Now place the bootable media into the system that XenServer should be installed. If the bootable media creation step was successful, the system should display the XenServer splash screen.

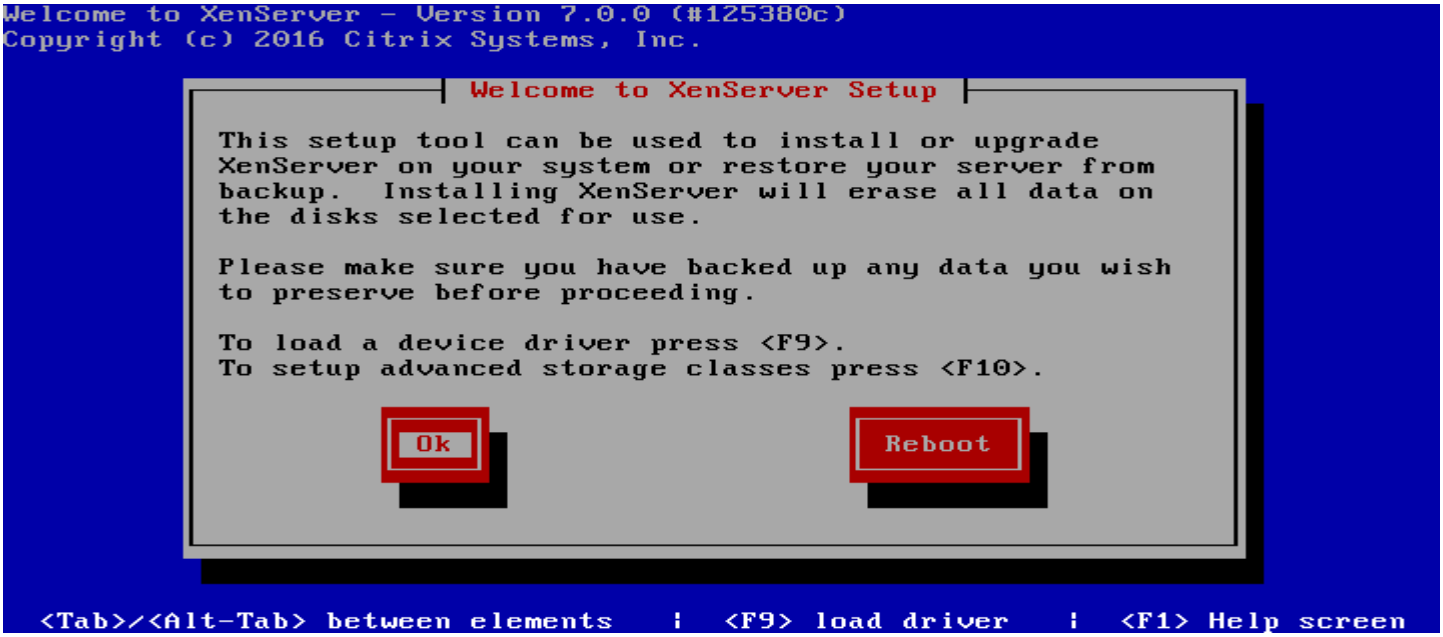
XenServer 7 Boot Screen

3. From this screen, simply hit **enter** to boot into the installer. The first screen, once the installer has started successfully, will ask the user to select their language.



Select XenServer-7 Installation Language

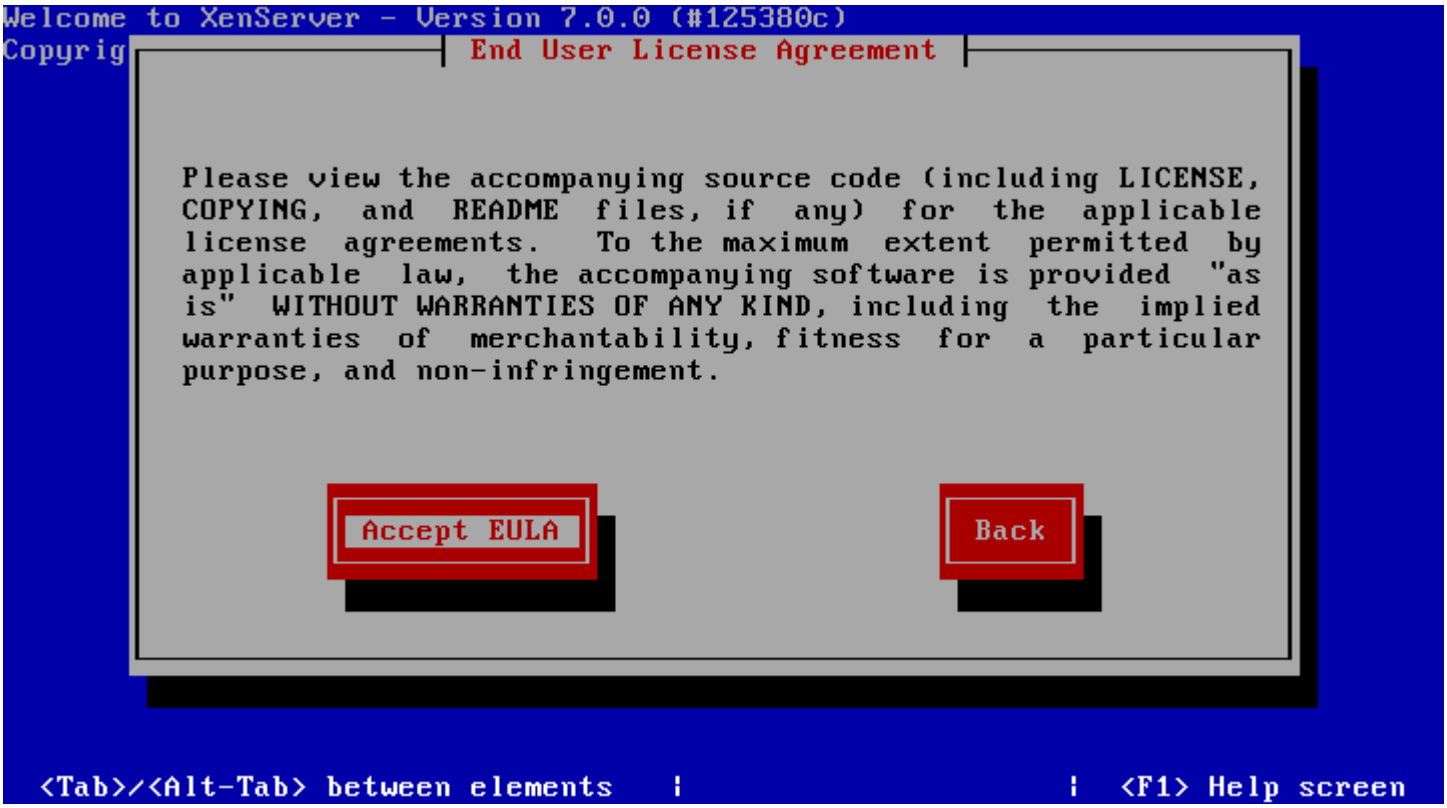
4. The next screen will ask the user to confirm that an upgrade or install should be done as well as ask for any other special drivers that may need to be loaded in order to install XenServer.



XenServer 7 Install or Upgrade Setup

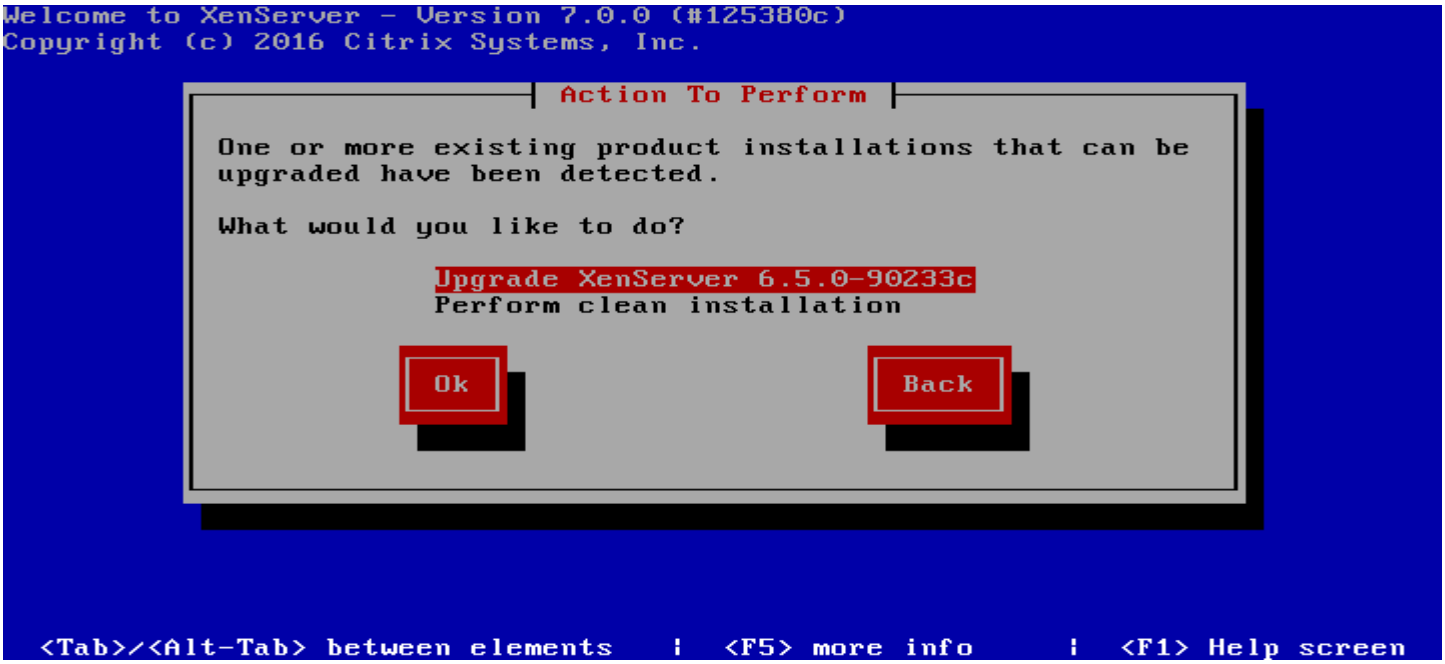
5. The next screen is the obligatory EULA (End User License Agreement). Use the keyboard arrows to move

the cursor to the ‘Accept **EULA**‘ button.



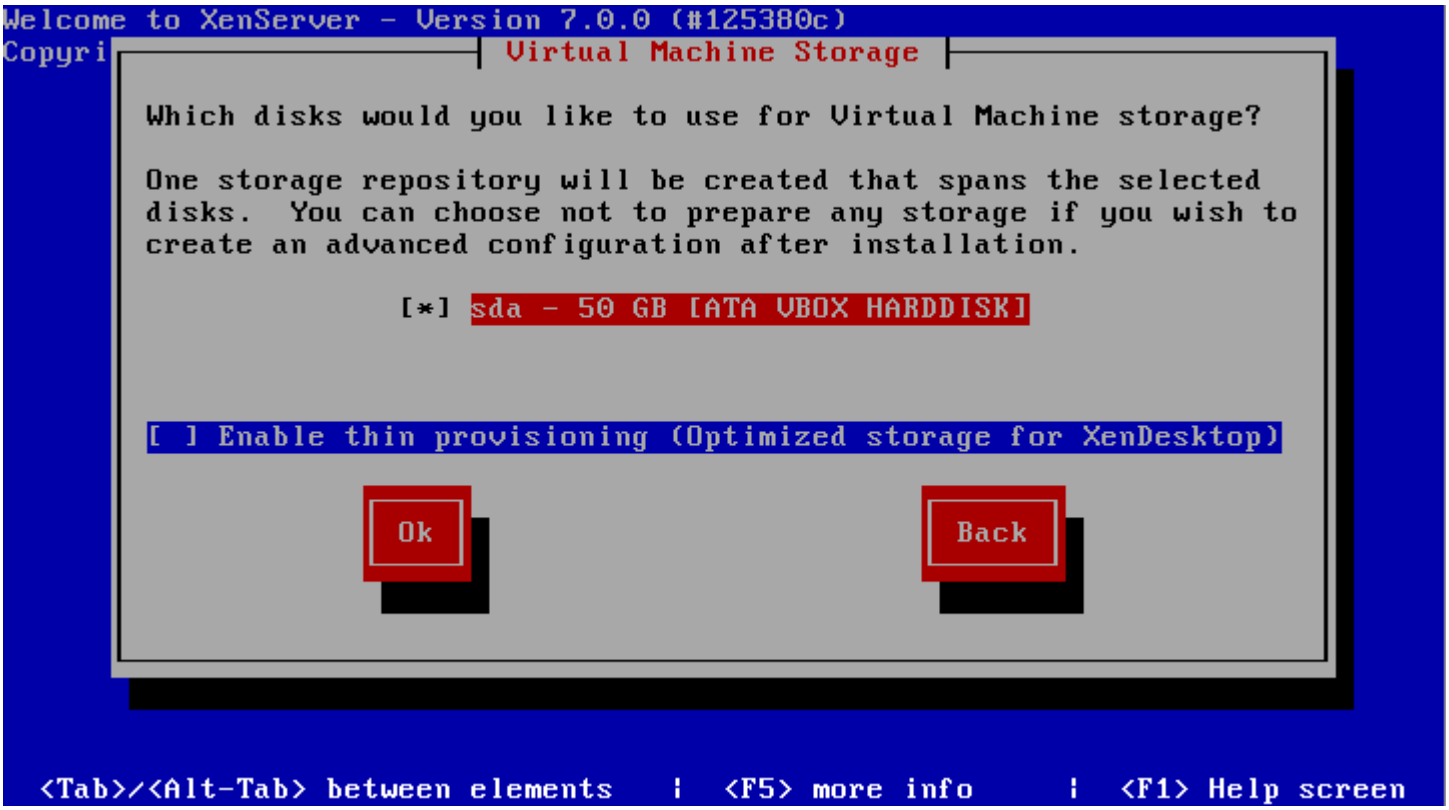
XenServer 7 Accept License

6. This is where the installation can take one of two paths if the installer detects a prior install. The next screen will prompt the user for a clean install or an upgrade to an existing XenServer install. The first set of instructions here will walk through a clean install. If an upgrade is needed skip ahead to step 15.



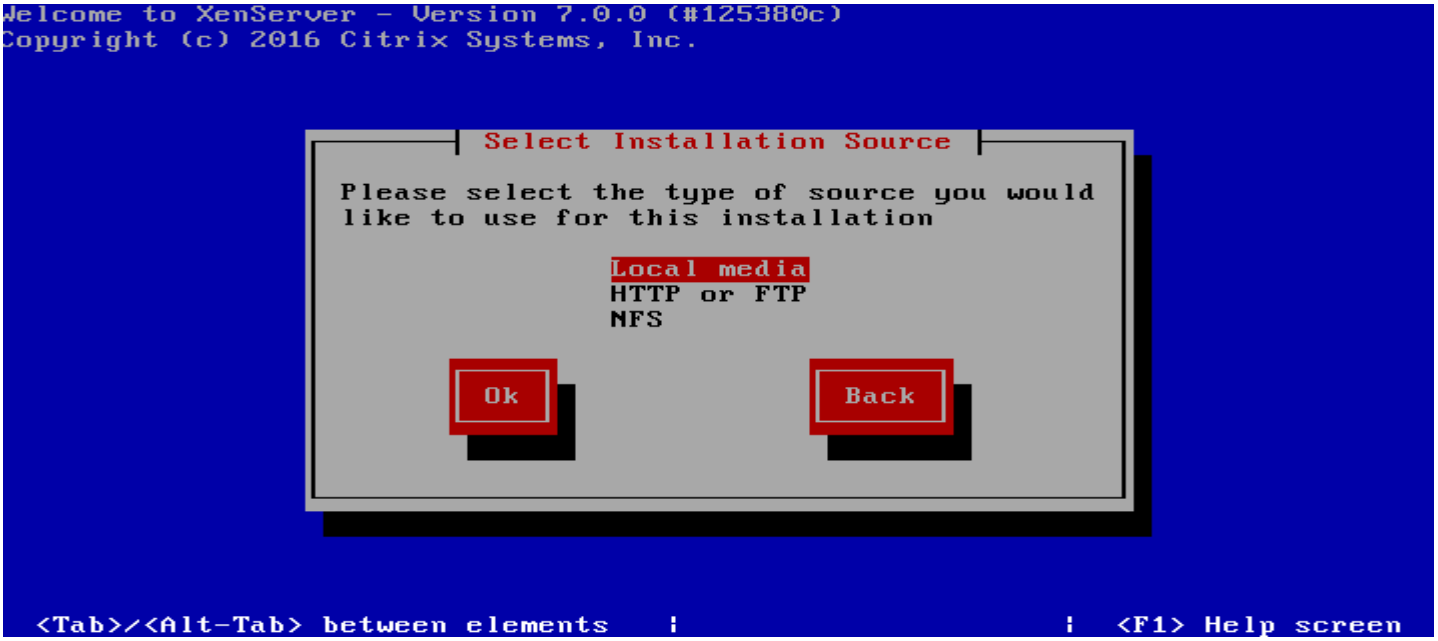
XenServer 7 Install or Upgrade Selection

7. The next screen will prompt for the installation device. In this case it will be **'sda'**.



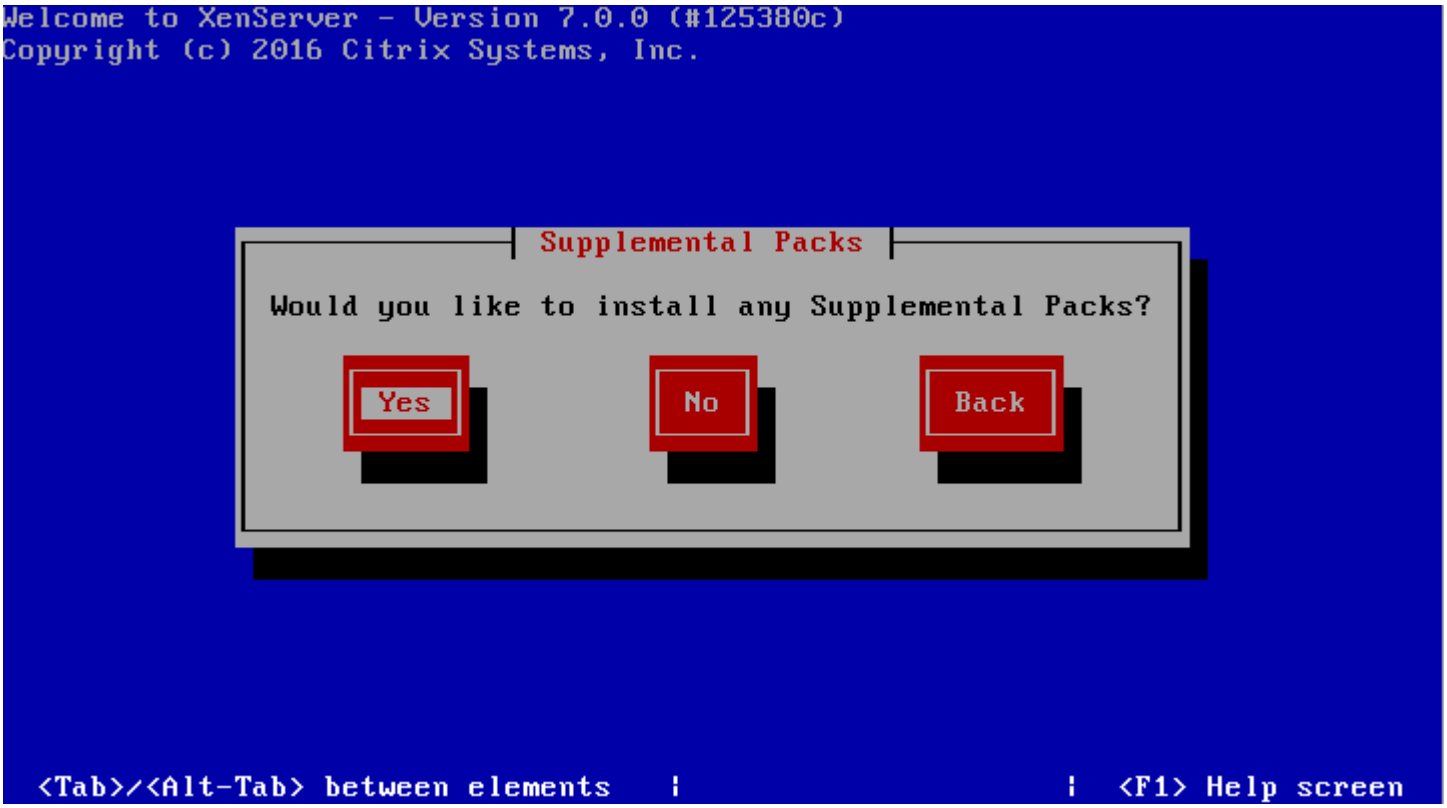
Select XenServer 7 Installation Drive

8. Once the installation path has been chosen, XenServer will need to know where the installation files reside. In this case, the installer was booted from local media and that is the option that should be chosen.



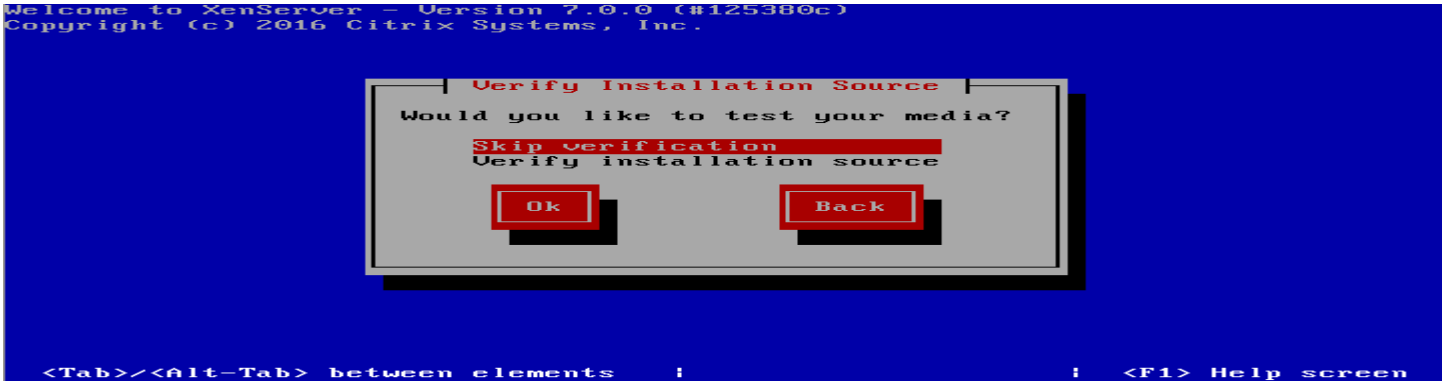
Select XenServer 7 Installation Source

9. The next step will allow the user to install supplemental packs at the same time as this installer. At the time of this writing, there aren't any supplemental packs for **XenServer 7** so **'no'** can be selected here.



Select XenServer 7 Supplemental Packs

10. The next screen will allow the user to confirm the integrity of the source files before installing. Running this test is not required but can help detect installation issues before trying to write files.



Verify XenServer 7 Installation Source

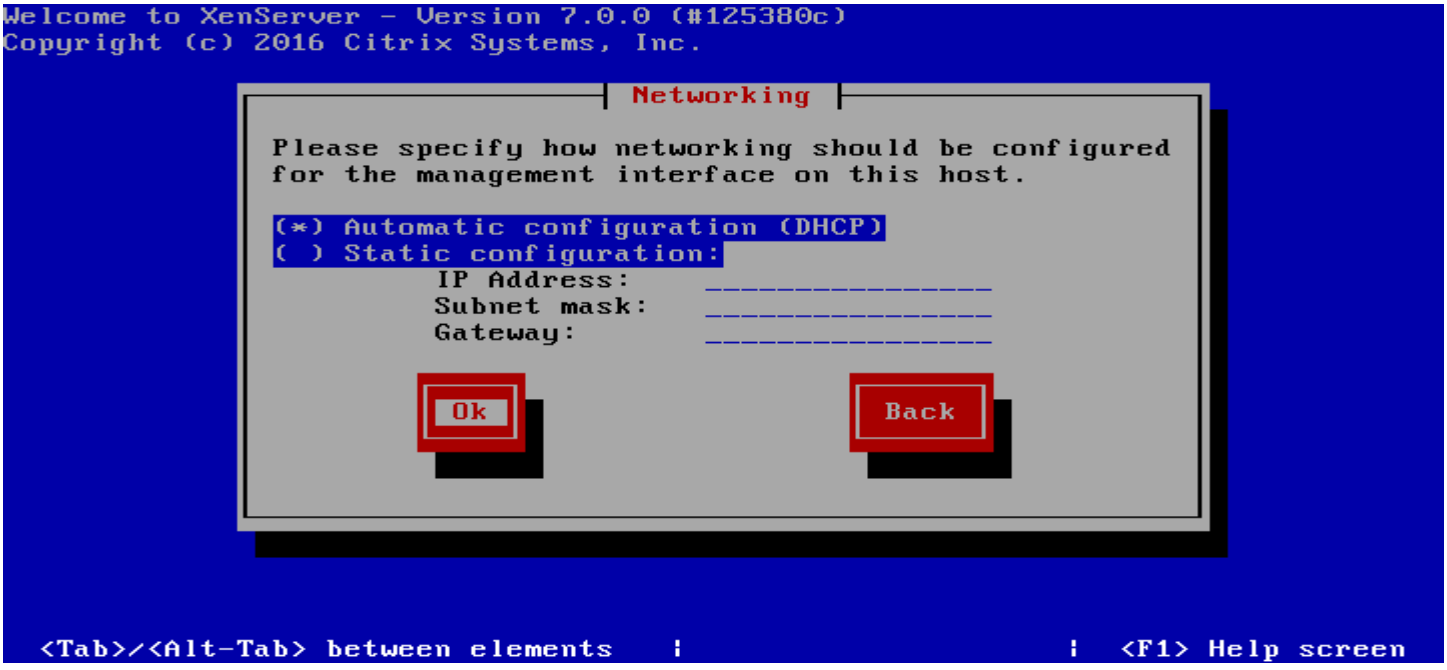
11. Once the verification is completed, if selected during install, the XenServer installer will ask the user to setup some system information.

The first prompt will be to set the root user's password. Now, since XenServer will be the underlying system to potentially several important virtualized servers, it is imperative that the password be secured as well as sufficiently complex!

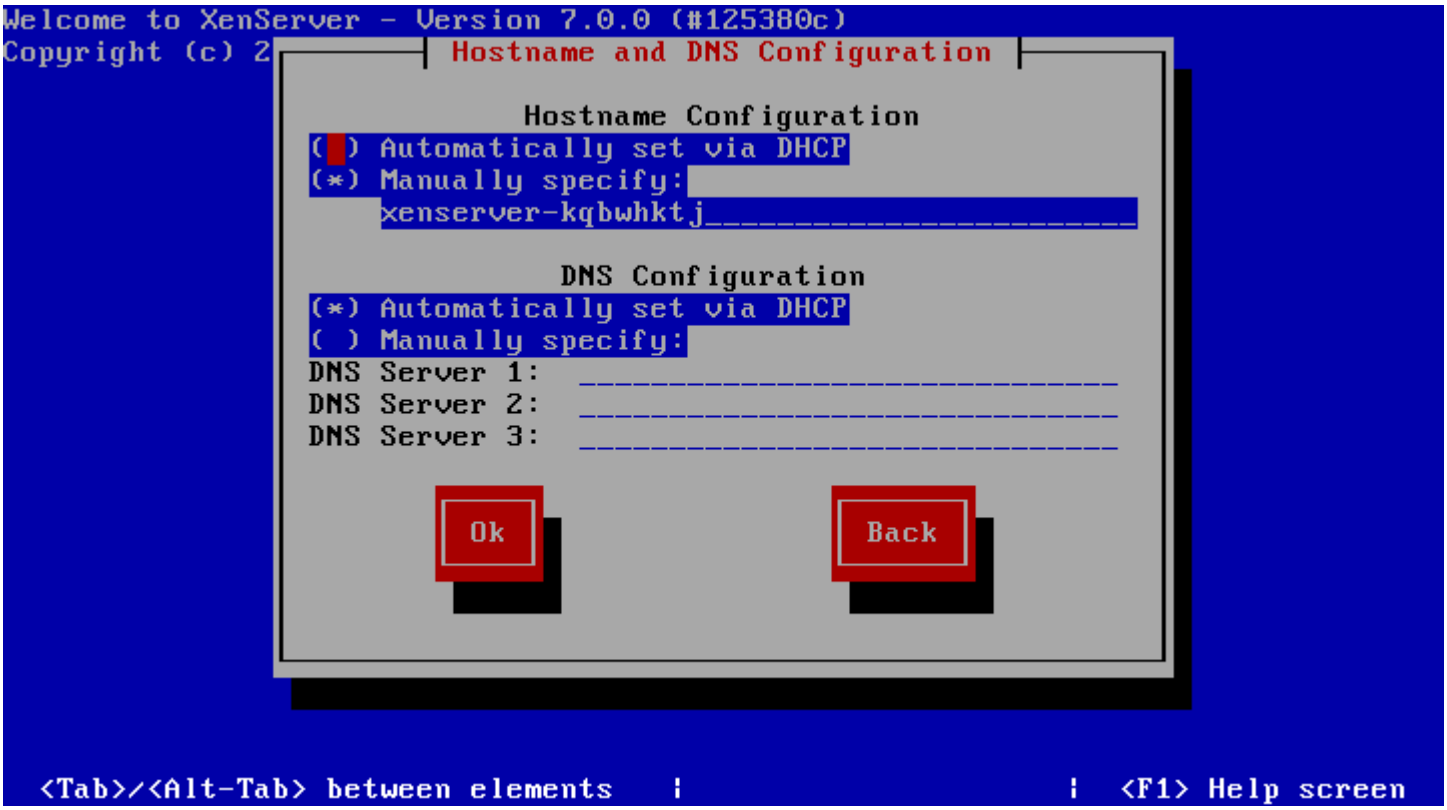
Imp: Do not forget this password either as there will not be any other users on the system once the installer finishes!

Set XenServer 7 Root Password

12. The next couple of steps will ask how the management network interface should be configured (**Static** address or **DHCP**) as well as hostname and DNS information. This will be dependent on the environment.

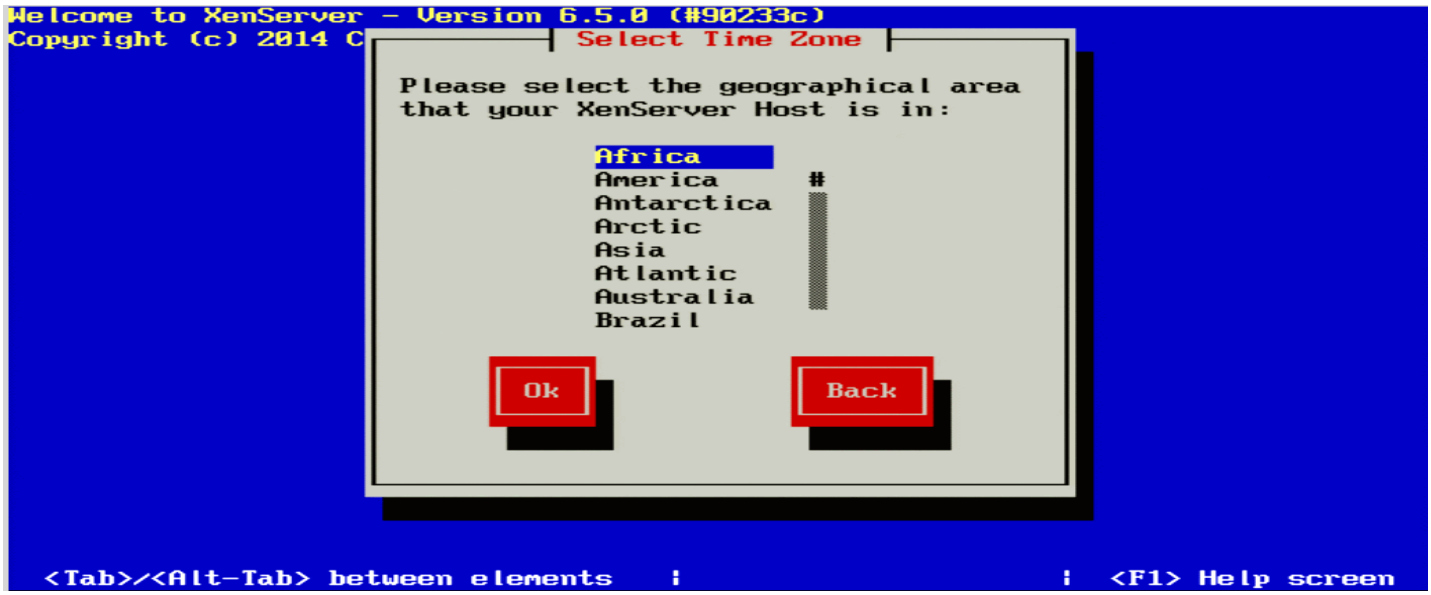


Select XenServer 7 Networking

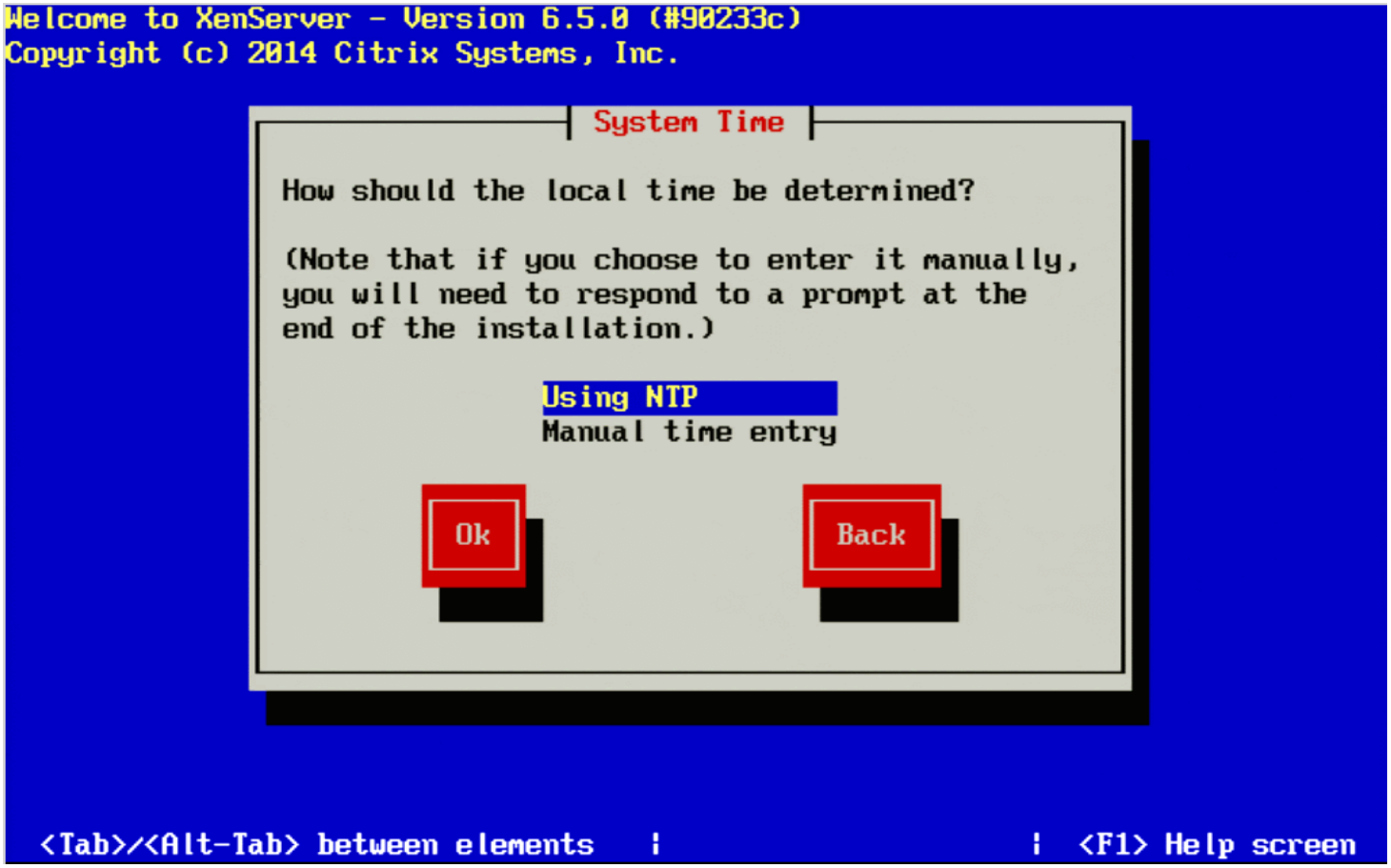


Set XenServer 7 Hostname and DNS

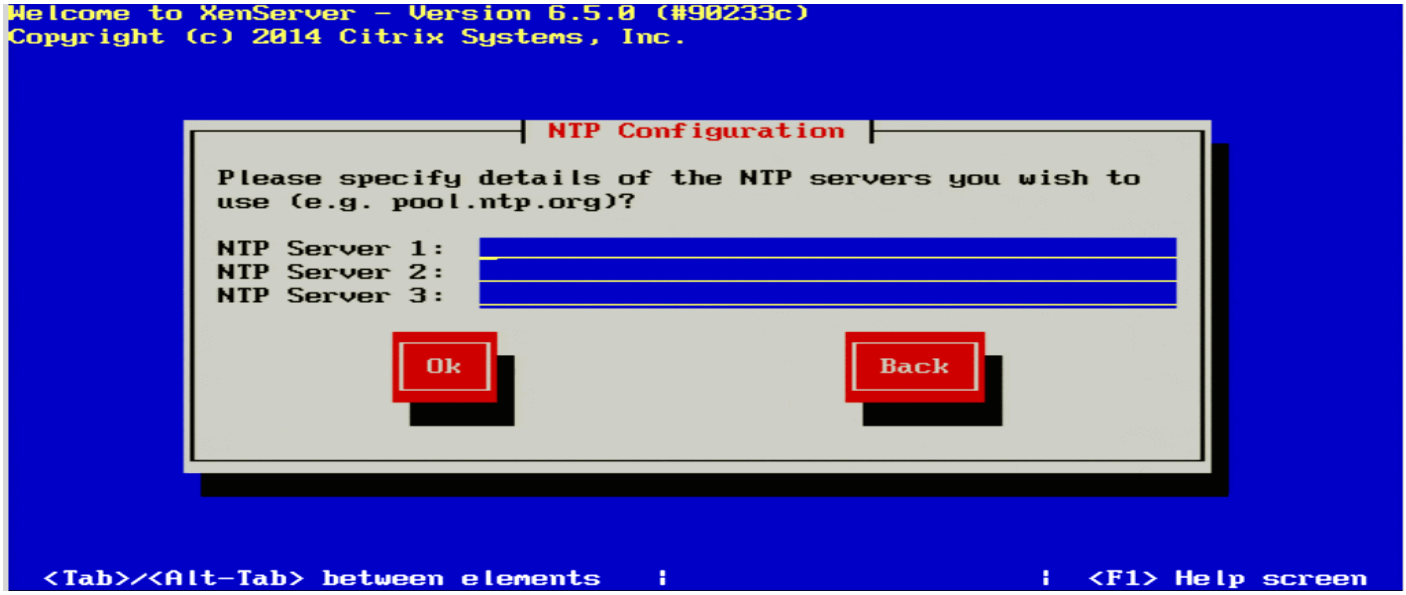
13. This step covers several screens for setting time zone information and **NTP** (Network Time Protocol).


Welcome to XenServer - Version 6.5.0 (#90233c)
Copyright (c) 2014 C
Select Time Zone
Please select the geographical area
that your XenServer Host is in:
Africa
America
Antarctica
Arctic
Asia
Atlantic
Australia
Brazil
Ok
Back
<Tab>/<Alt-Tab> between elements
<F1> Help screen

Select XenServer 7 Timezone



Set XenServer System Time

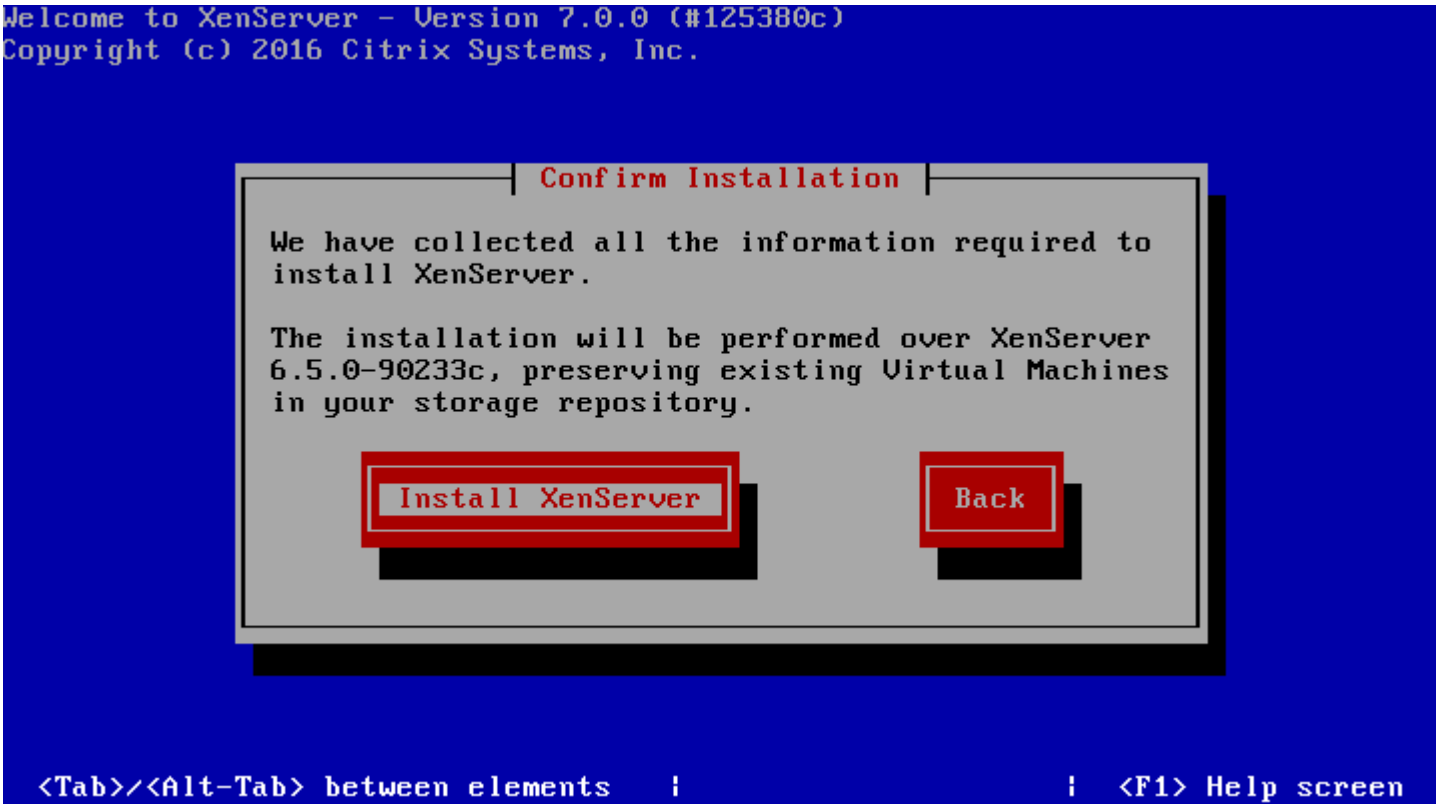


Configure NTP for XenServer 7

14. At this point in the installer, all of the initial configuration information for a clean install has been provided and the installer is ready to install all the necessary files.

WARNING – Continuing at this point **WILL ERASE ALL DATA** on the target disks!

select '**Install XenServer**'.



Confirm XenServer 7 Installation

19. XenServer 7 is that boot times seemed to have been drastically reduced. Most of the XenServer 7 Systems tested so far have booted approximately 40**%** faster than they did when running **XenServer 6.5**. If the installation was successful, the system should boot to the XenServer console.

XenServer 7 Configuration Console

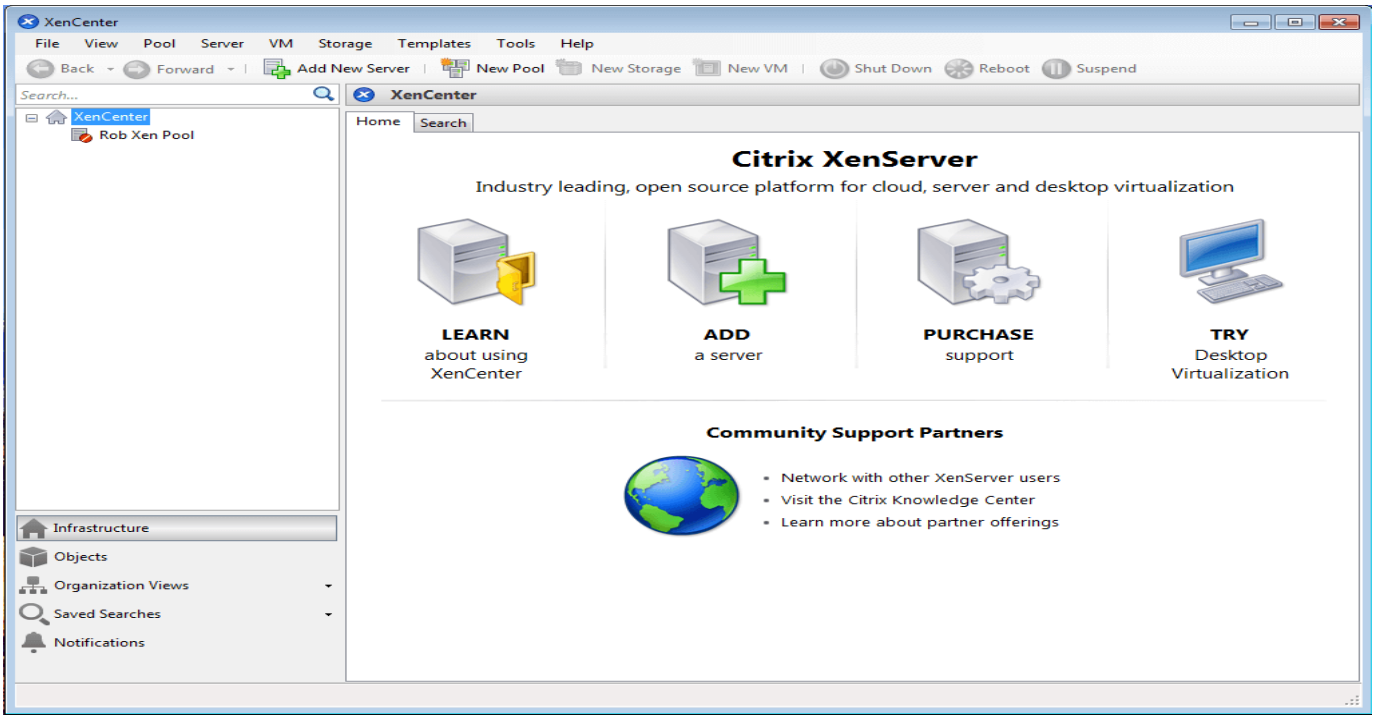
Congratulations, the installation/upgrade of XenServer was successful! Now it is time to create virtual guests, networking, and storage repositories!

Part 2

Installation of XenCenter in Windows

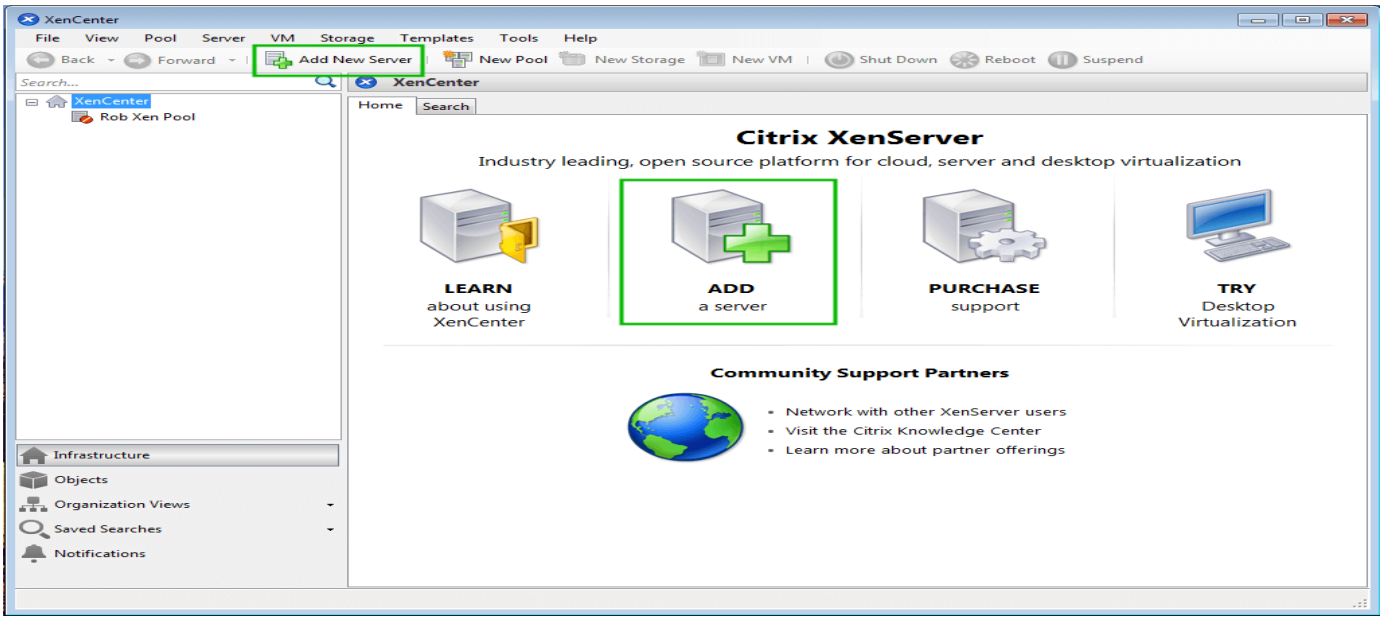
XenCenter Installer

Once the installer has downloaded, it needs to be launched to actually install XenCenter to this particular host. The installation is very straight forward and once the installation is done, the application can be launched by clicking the XenCenter icon on the desktop or by locating the program in the Windows start bar.



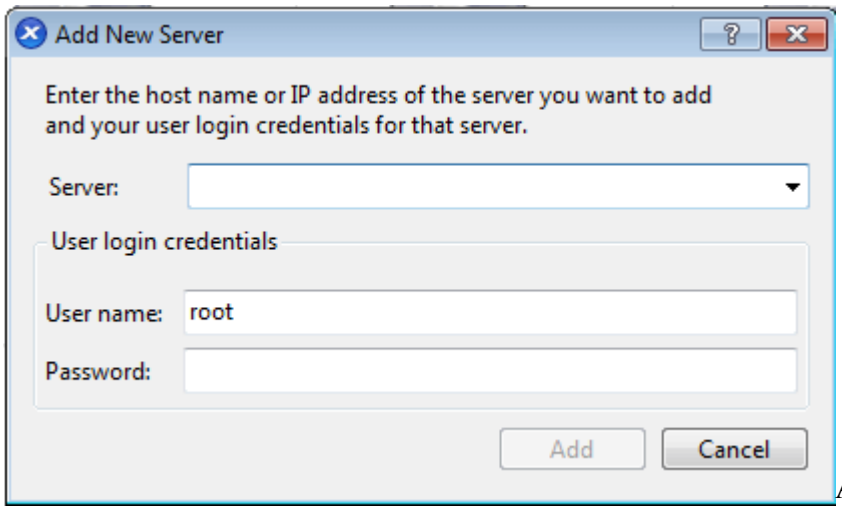
Launch XenCenter

The next step in starting to manage **XenServers** with **XenCenter** is to add them to the panel by clicking '**Add New Server**'.



Add New Server in XenCenter

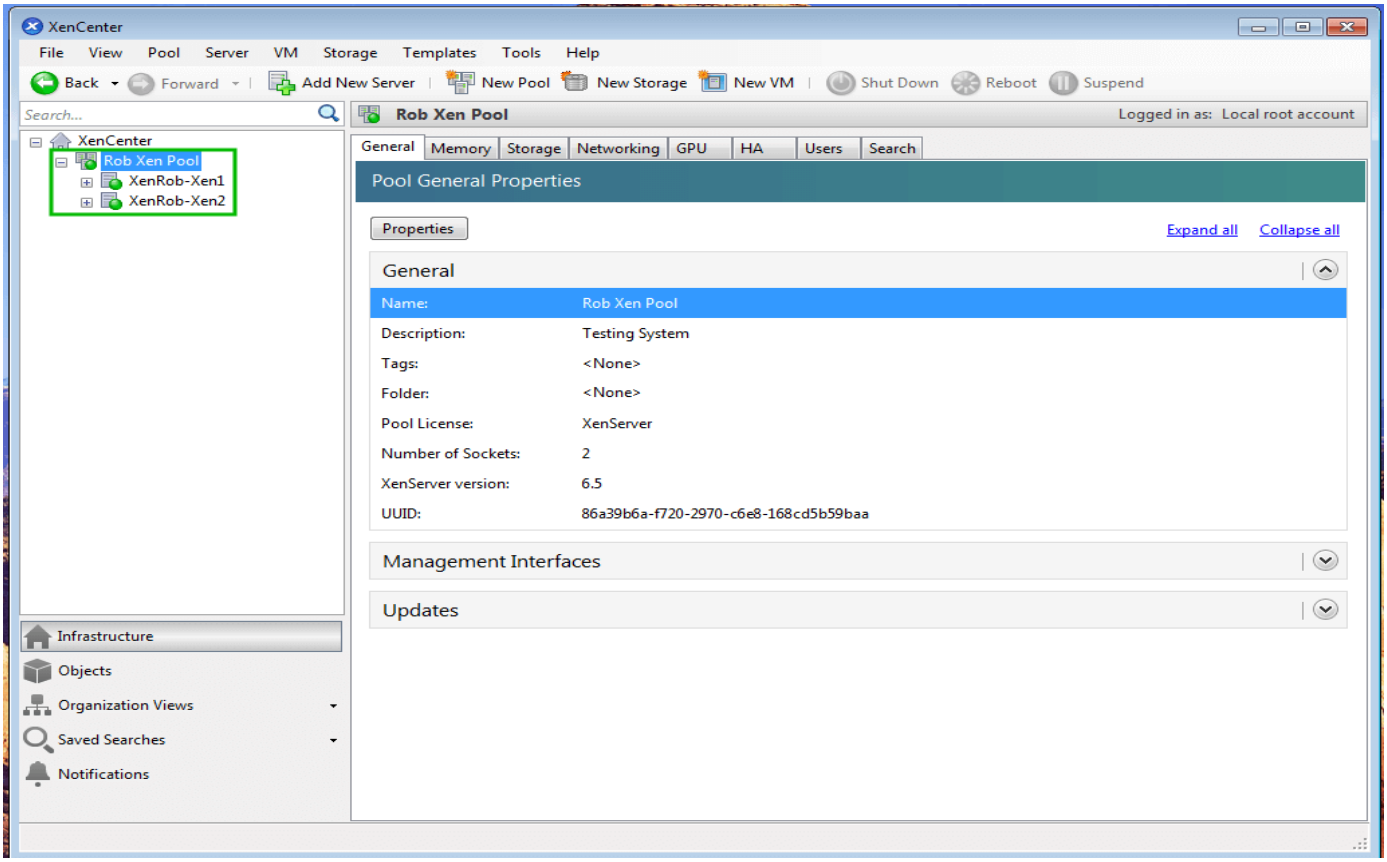
Clicking the '**Add New Server**' button will prompt for the IP address or hostname of the XenServer that should be added to XenCenter. The prompt will also request a username/password combo for a user to log into the host as well.



Add Hostname of XenServer

Upon successful authentication, the Xen server(s) should appear in the left panel of XenCenter showing that proper authentication has occurred and that the systems can now be managed through the interface.

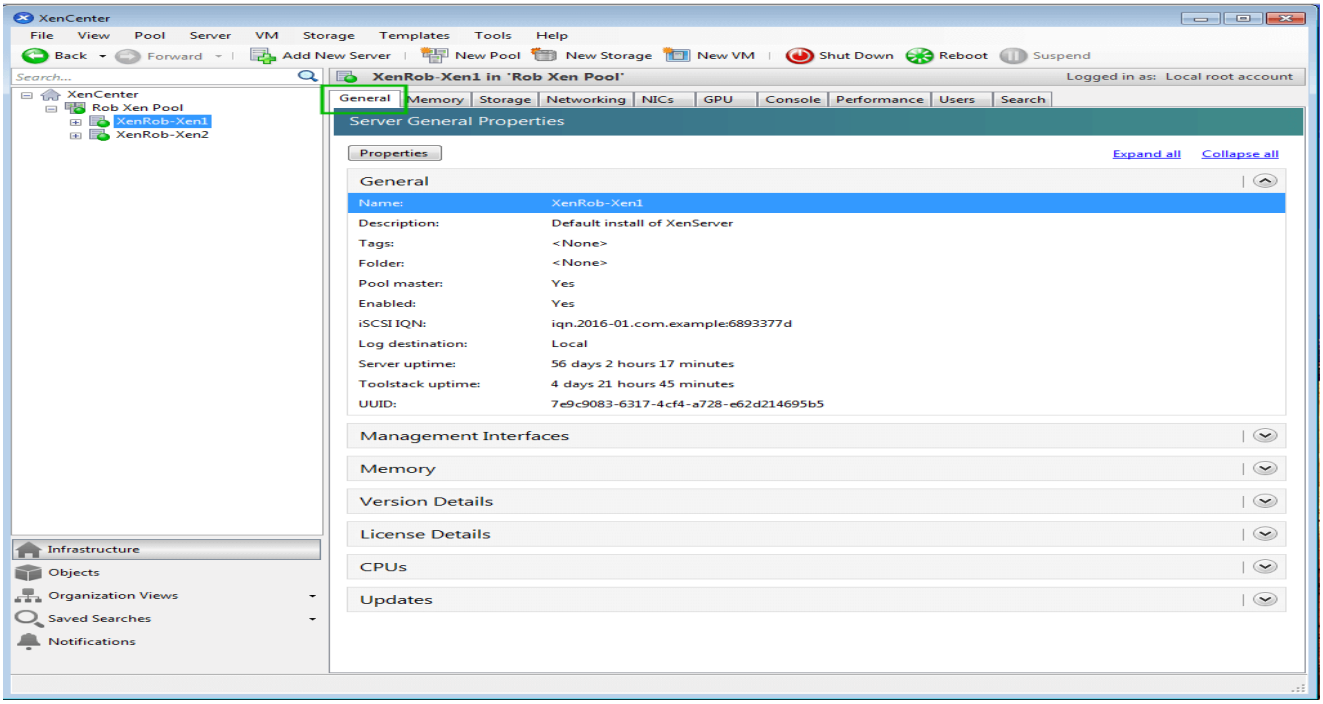
The particular output here shows two Xen hosts as they were pooled together (more on this in future articles).



XenCenter XenServer Management

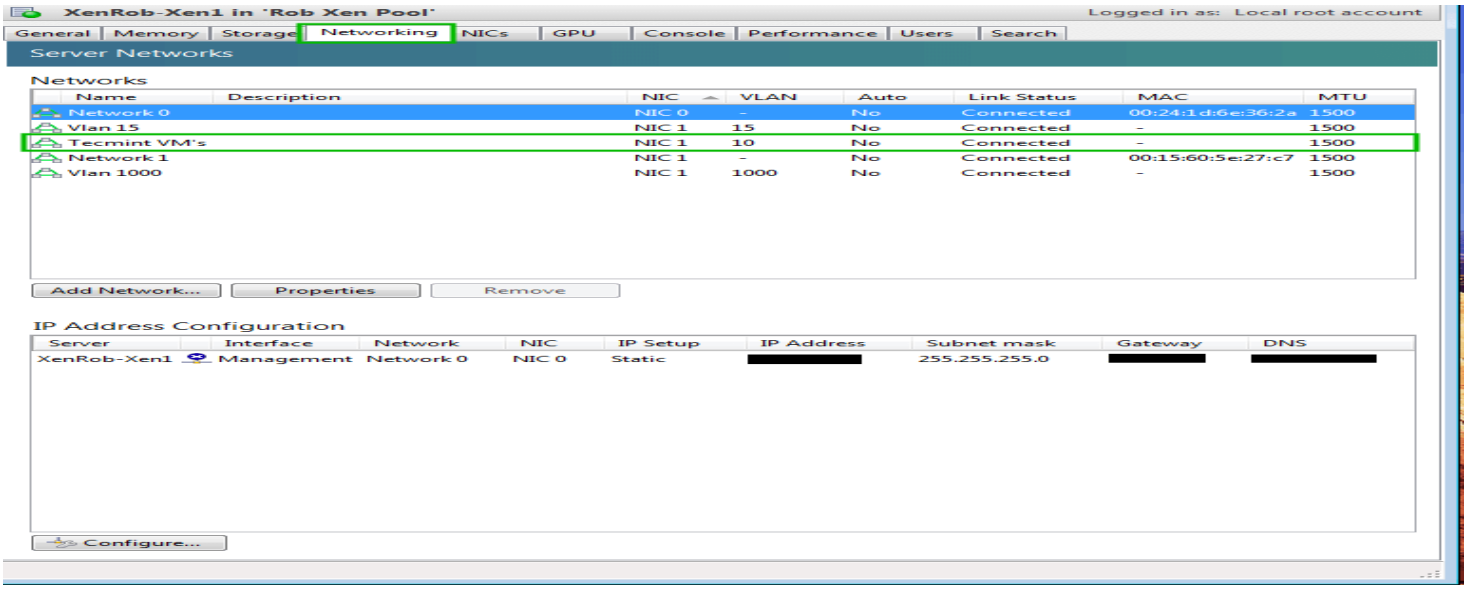
Once a successful connection has been established, configuration of the host(s) can begin. To view the details of a specific host, simply highlight the host by clicking on it and ensuring the '**General**' tab is selected in the center panel.

The '**General**' tab can be used to gain quick insight into the current configuration of this particular host including current status, patches applied, uptime, license information (if applicable), and more.



View XenServer Properties

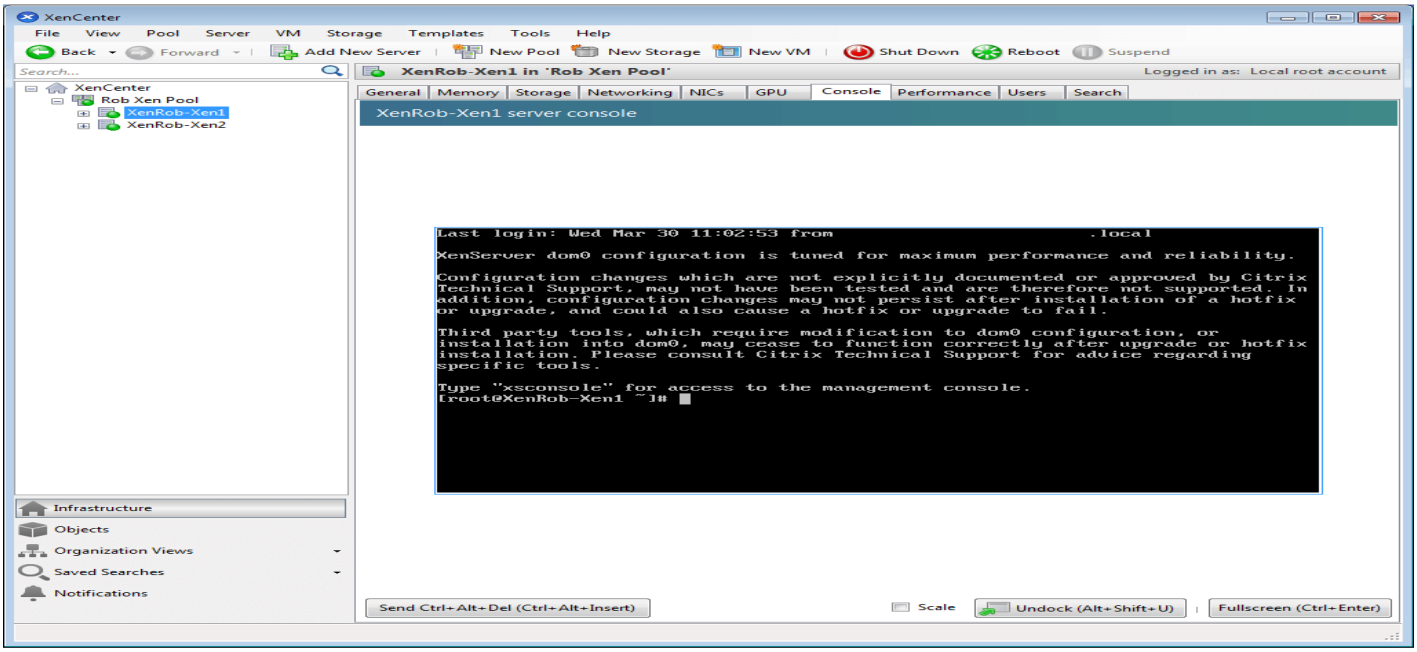
The tab names at the top of the host control panel are very self explanatory as to the purpose of that particular tab. Taking a closer look at some of them, many aspects from this series of articles can be confirmed.



View XenServer Network Configuration

Arguably the most valuable tab within **XenCenter** is the '**Console**' tab. This tab allows the administrator to have console access to the XenServer host's and virtual guest's desktop interface.

This screen can also be used to manage the virtual guest operating system in the event that remote administration techniques are unavailable.



Manage and Access XenServer VM's Console

As can be seen from the interface, the **XenCenter** tool is a very versatile tool but does have the major drawback of only being available for administrators who use Windows or have a Windows virtual machine running somewhere.

For those who chose **XenServer** for its open source nature, it is frustrating that Windows is required in order to manage the system however there are still options.

Conclusion:

Experiment Rubric:

Evaluation Criteria	Marks	Signature of Instructor with Date
Lab Performance		
Topic Knowledge		
Task Conclusion		
Attainment Level (Out of 3)		