Vivekanand Education Society's Institute of Technology
Department of Computer Engineering

Subject: Cloud Computing Lab

Class :- (CMPN) D12 Semester: - VI Div.:- A

Roll No: 56	Name: Meet D. Patel			
Exp No:. 3	Title: Running Virtual Machines on virtual machines on Bare-Metal Hypervisor Xen Server .			
DOP:	29/01/2022		DOS:	04/02/2022
GRADE:		LAB OUTCOMES: LO1	SIGNATURE:	

Meet D. Patel 56

D12A

Cloud Computing Lab

Experiment No. 3

Aim: Creating and running virtual machines on Bare-Metal Hypervisor Xen Server

Theory:

- Cloud Computing is a computing paradigm, where a large pool of systems are connected in private or public networks, to provide dynamically scallable infrastructure for application, data and file storage.
- Cloud Computing ensures quick delivery of on demand IT Services in cost effective way. The cloud computing comprises of following advantages

1. Reduce capital costs: There is no need to spend big money on hardware, software or licensing fees so capital expenditure is very less.
2. Reduce spending on technology infrastructure: Maintain easy access to your information with minimal upfront spending. Pay as you go (weekly, quaterly or yearly) based on demand.
3. Scalability and Speed: Enterprises no longer have to invest time in buying and setting up the hardware, software and other resources necessary for a new application. They can quickly scale up or down their usage of services on the cloud as per demands.
4. Improve accessibility: Get access to services at any time, from anywhere, on any device.
5. Optimal Resource Utilization: Servers, storage and network resources are better utilized as the cloud is shared by multiple users, thus it cut down the waste of resources.

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6. Less personnel training is needed: It takes fewer people to do more work on a cloud, with a minimal learning curve on hardware and software issues.
7. Minimize licensing new software: Stretch and grow without the need to buy expensive software licenses or programs.
8. Flexibility of work practices: Cloud computing allows employees to be more flexible in their work practices. For eg., you have the ability to access data from home, on holiday.

Based on accessibility there are three types of clouds
1. Public Cloud - can be accessed by any subscriber with internet connection and access to the cloud space. Public cloud applications, storage, & other resources are made available to the general public by a service provider.
2. Private Cloud - can be accessed by any subscribers within the premises over a Intranet connection.
3. Community Cloud - is shared among two or more organizations that have similar cloud requirements.
4. Hybrid Cloud - is essentially a combination of atleast two clouds, where the cloud included are a mixture of public, private, or community.

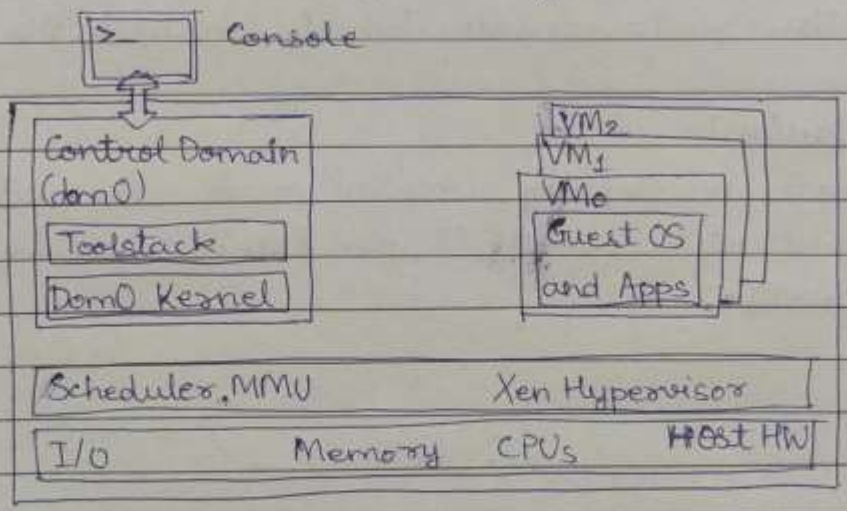
The cloud computing implementation has three Service Models
1) "Infrastructure as a Service (IaaS)" can be defined as the use of servers, storage, and virtualization to enable utility like services for users. The Infrastructure

consists of the facility, communication networks, physical compute nodes, and the pool of virtualized computing resources managed by a service provider.

2) "Platform as a Service (PaaS)" can be defined as a computing platform that allows the creation of web applications quickly & easily and without the complexity of buying and maintaining the software and infrastructure underneath it.

3) "Software as a Service (SaaS)" provides on demand Application delivery using cloud infrastructure to the user without any installation. Software-as-a-Service gives subscribed or pay-per-use user access to software of services that reside in the cloud and not on the user's device.

Architecture of Xen Hypervisor



The Xen Hypervisor is an exceptionally software layer that runs directly on hardware and is responsible for managing CPU, memory, and interrupts.

Steps of creating and running VM on Baremetal Hypervisor Xen server are as follows:

Step 1: Install Xen Server

Step 2: Connect Xen Server to Xen Center

Step 3: Create storage repository and installing VM

For installation of Ubuntu (or any other) server on Xen Server

i) Right click on Xen server icon on xen center and select New VM.

ii) Select an OS to be installed and click next.

iii) Specify instance name (say Ubuntu server).

iv) Select iso file to be installed.

v) Select hardware for V.M. i.e. no. of CPUs and memory.

vi) Select local storage.

vii) Select network and click on finish.

ix) Now go to console tab to install OS.

Conclusion:

We have successfully created and run virtual machine with Ubuntu OS on Bare Metal Hypervisor Xen Server.

Step 1: Install Xen Server

Step i-: Insert Bootable Xen Server CD into CDROM and Make first boot device as a CDROM from BIOS

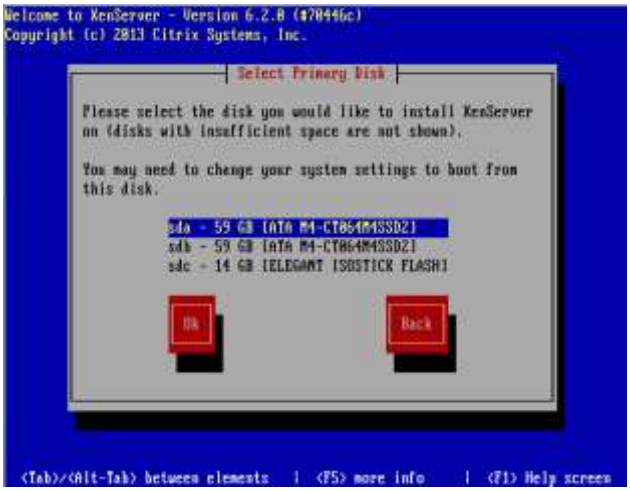
Step ii-: press F2 to see the advanced options, otherwise press Enter to start installation

Step iii -: Select Keyboard Layout

Step iv -:Press Enter to load Device Drivers

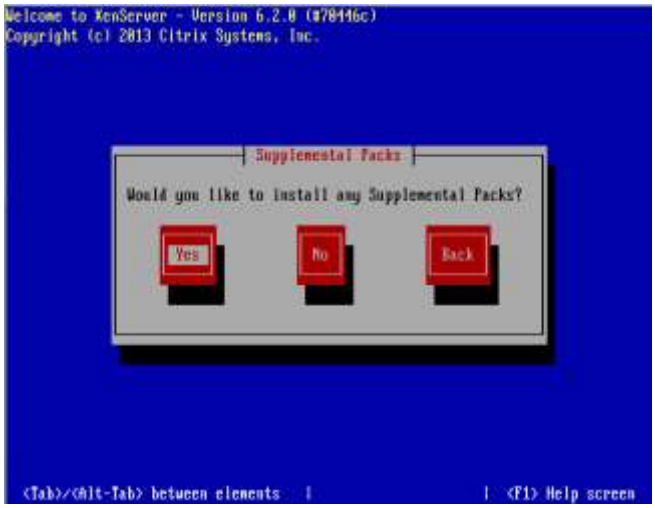
Step v -:Press Enter to Accept End user license Agreement

Step vi -:Select Appropriate disk on which you want to install Xen server



Step vii -:Select Appropriate installation Media

Step viii -:Select Additional Packages for installation



Step ix-: Specify Root password

Step x -: Specify IP Address to a Xen Server

Step xi-:Select Time Zone

Step xii-:Specify NTP Servers address or use manual

time entry then start installation

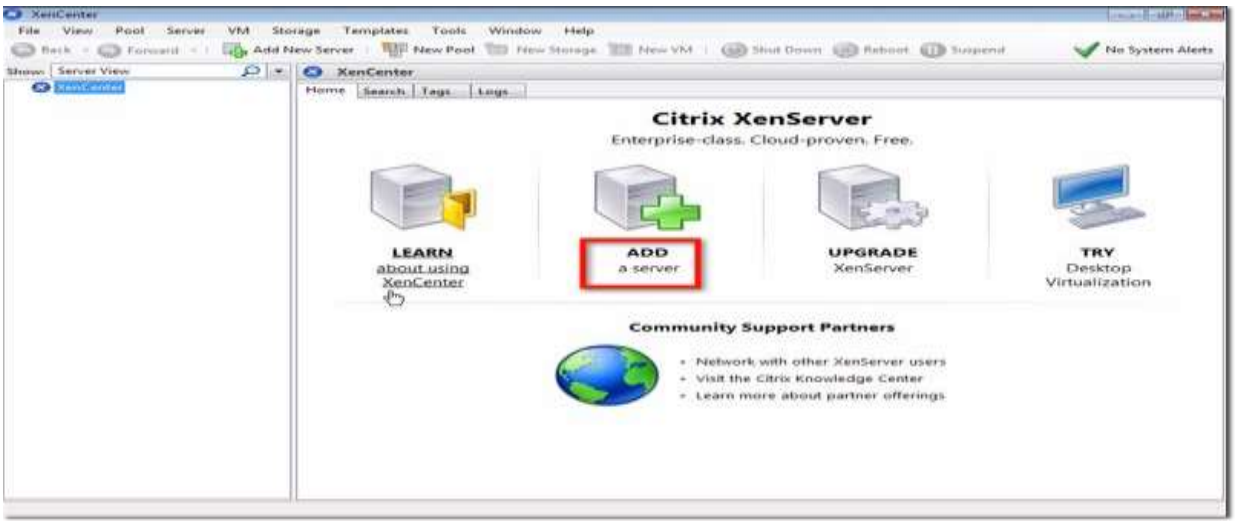
Once installation is done you will see the final screen shown below.

Xen Server Final Screenshot

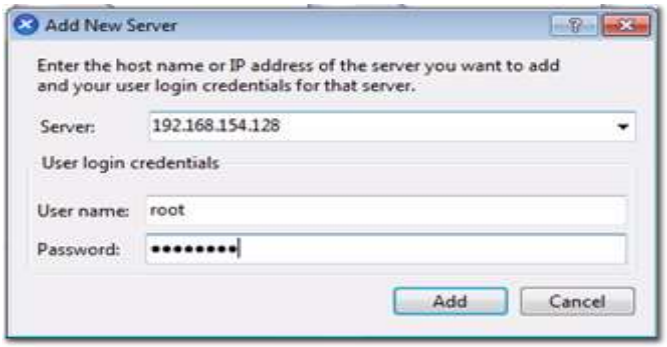
Step 2:Connect Xen Server to Xen Center

Firstly, download the xen center a management utily from xen server by opening the xen severs IP address as a URL on browser. Once Xen center is downloaded, install it.Open Xen center from start menu of Windows.

Here's how XenCenter looks like (see screenshot below) before any hosts, resource pools, and so on, are added to it. To connect to the XenServer host you configured earlier, click Add a server.

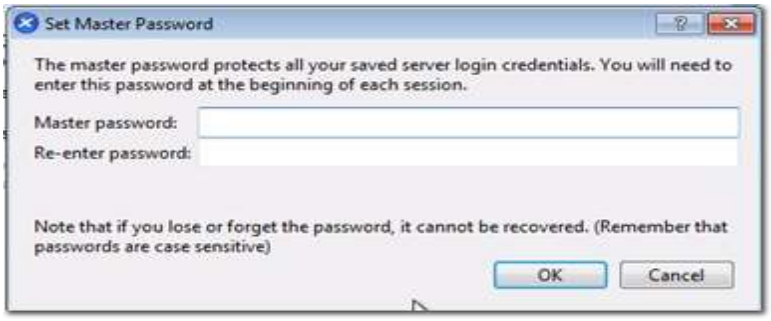


Enter the IP address I asked you to take note of earlier. Also enter the password you assigned for your root account. Click Add.

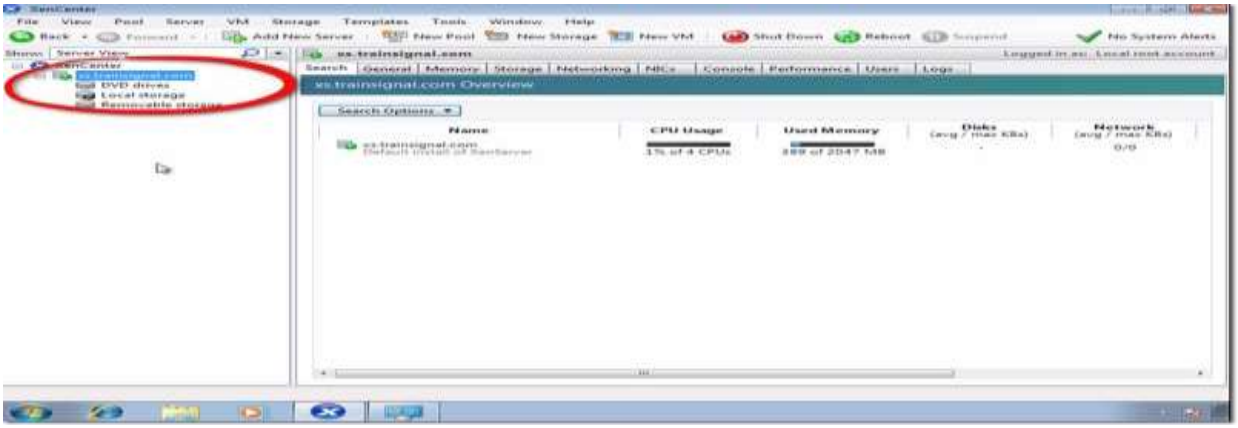


One of the first things you want to make sure as you're adding a new XenServer to XenCenter is to save and restore the server connection state on startup. Check the box that will do just that.

Once you do that, you will be allowed to configure a master password for all the XenServers you'll be associating with this XenCenter. Click the Require a master password checkbox ifthat's what you want to do, and then enter your desired master password in the fields provided.

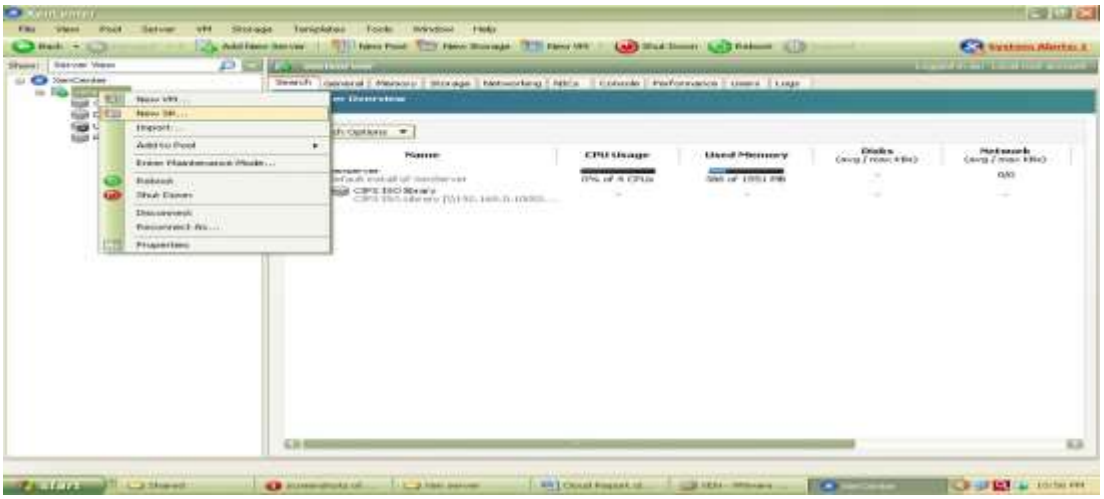


After you click OK, you'll be brought back to the main screen, where you'll see your XenServer already added to XenCenter.

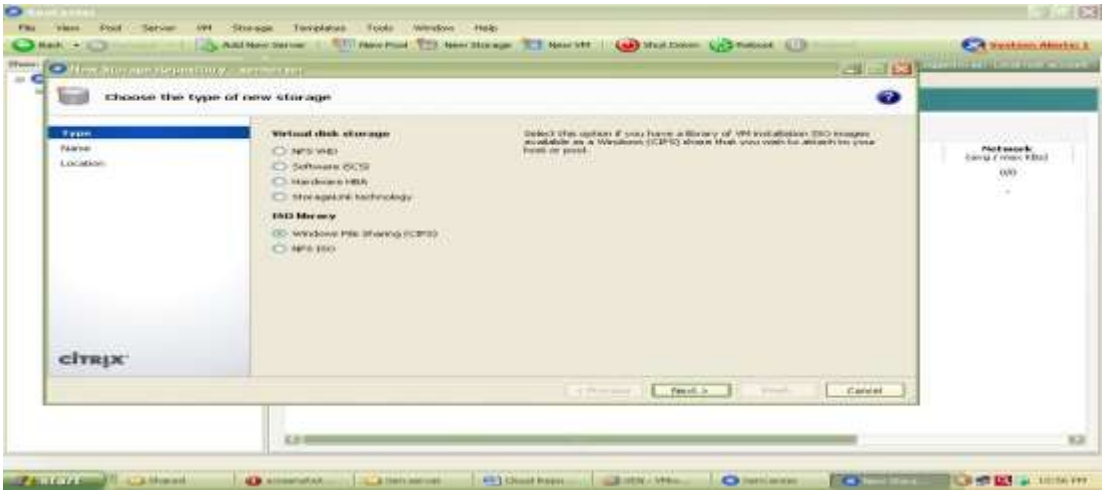


Step-:3 Create Storage Repository and Installing VM

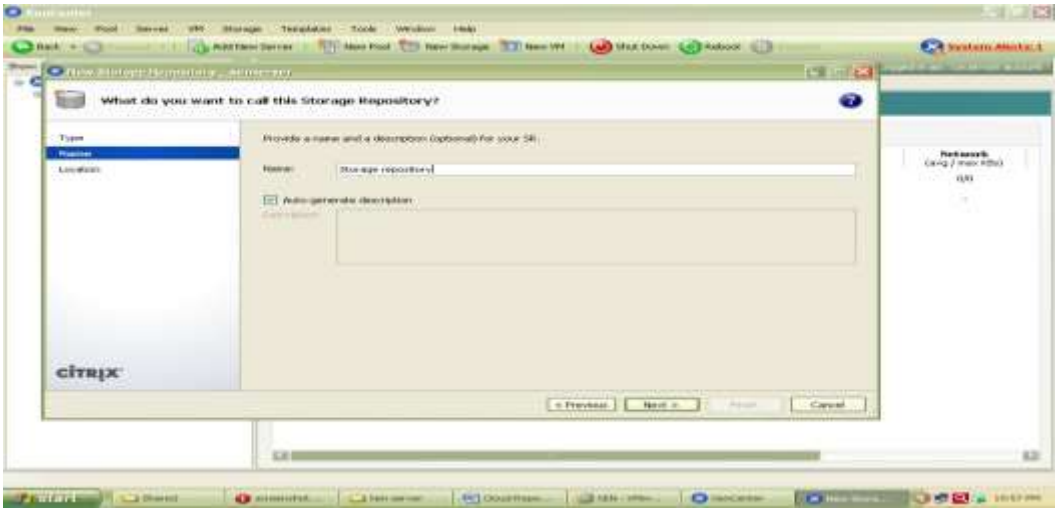
Now Before Creating VM we have to Create Storage Repository first which is nothing but shared directory on Xen Center which holds all iso files and which is required to install Operating system on Xen Server its steps are as follows.Right click on Xenserver icon on xen center and click on New SR



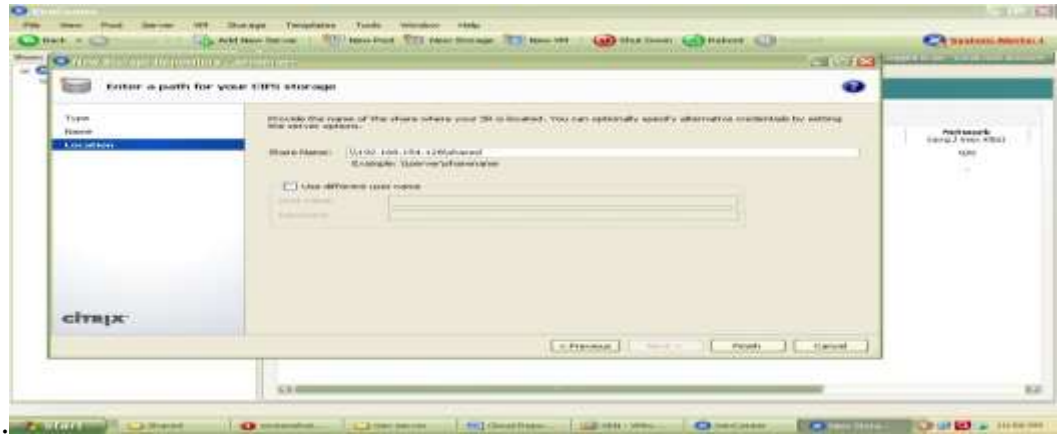
Now Select Windows CIFS library



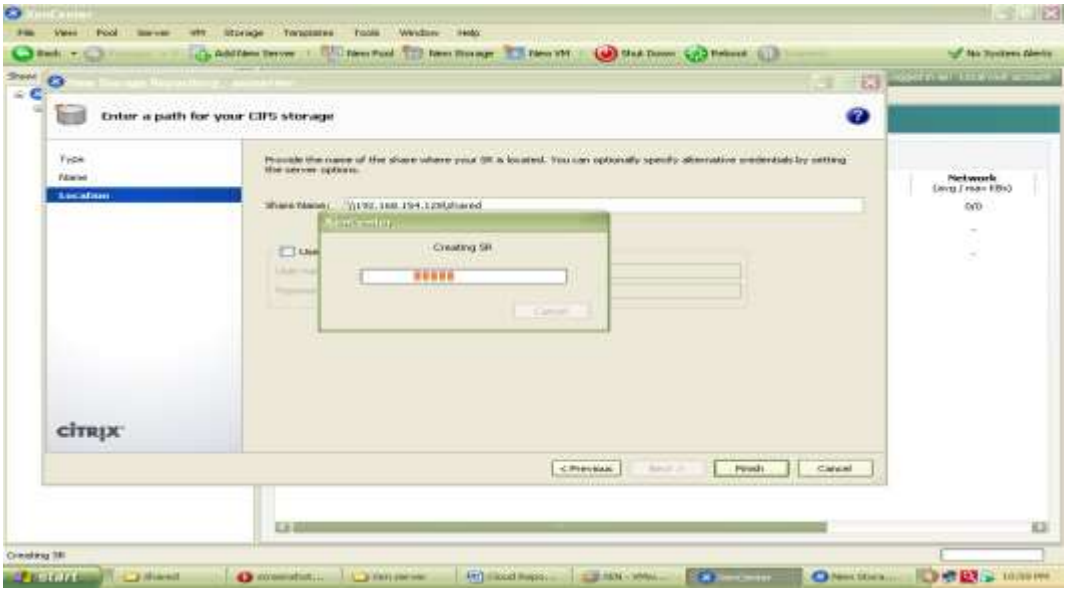
Specify Storage Repository Name



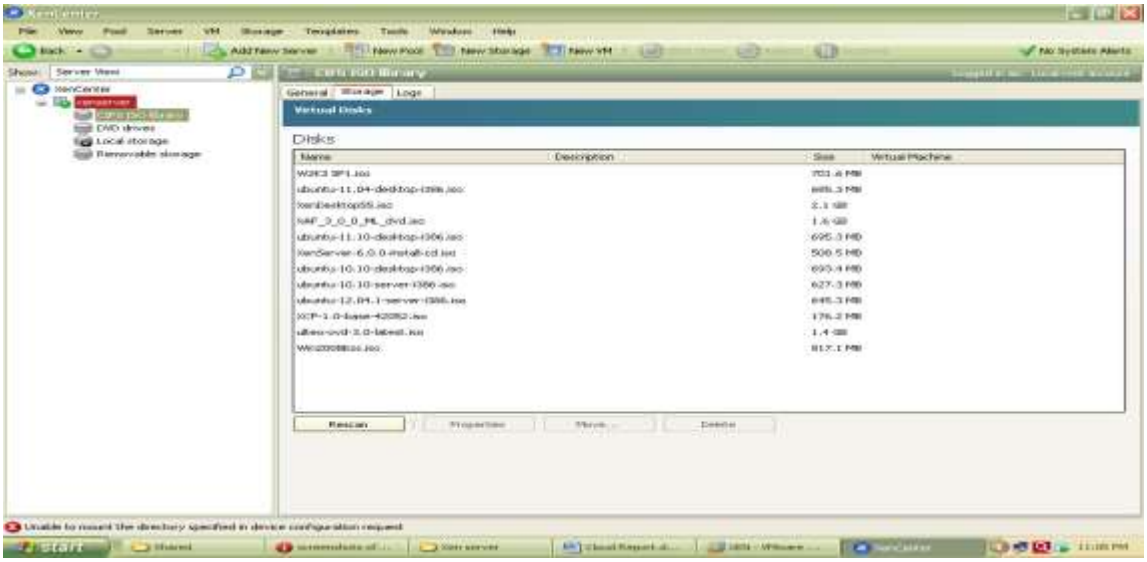
Now specify path of shared folder at client side which holds all iso files of os or VM which we are going to install on Xen Server.



At the end Click on finish to create SR.

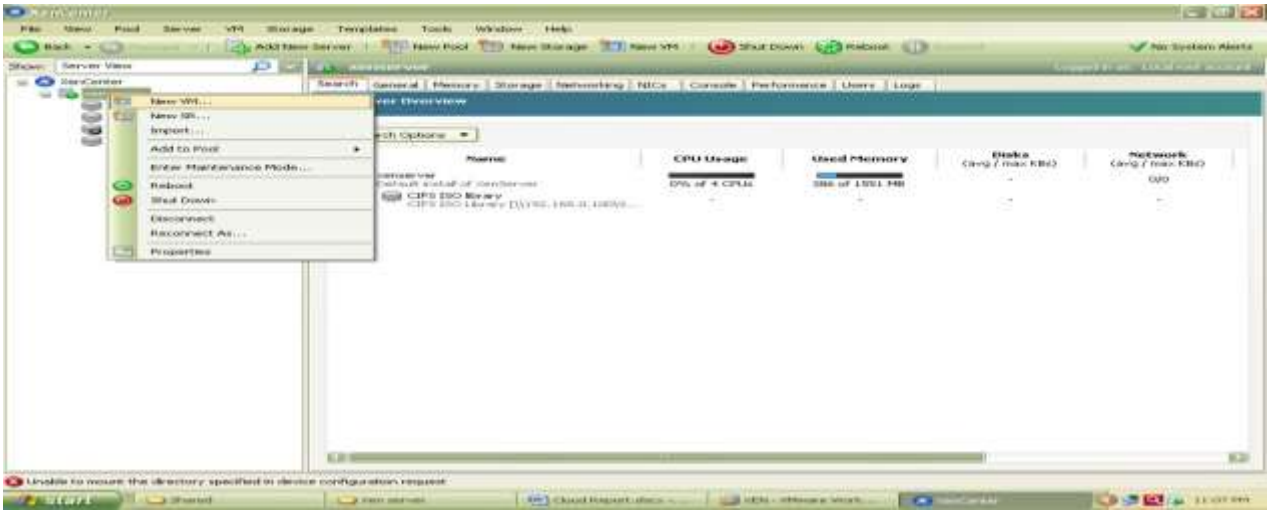


To check all iso files click on CIFS library and select storage this will show you all iso files.

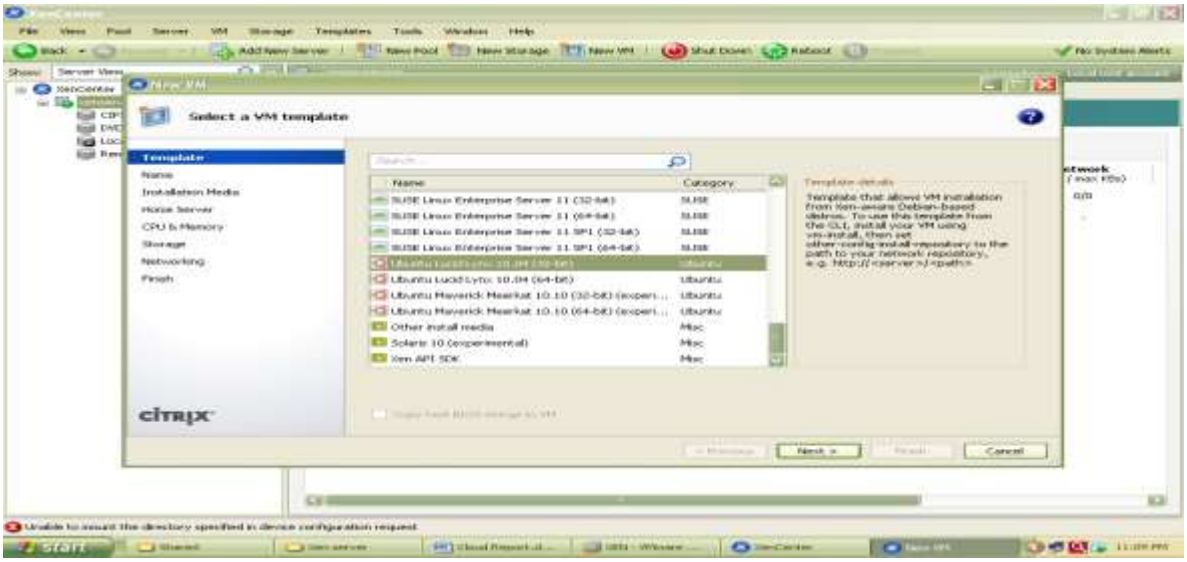


Installation of UBUNTU Server on Xen Server

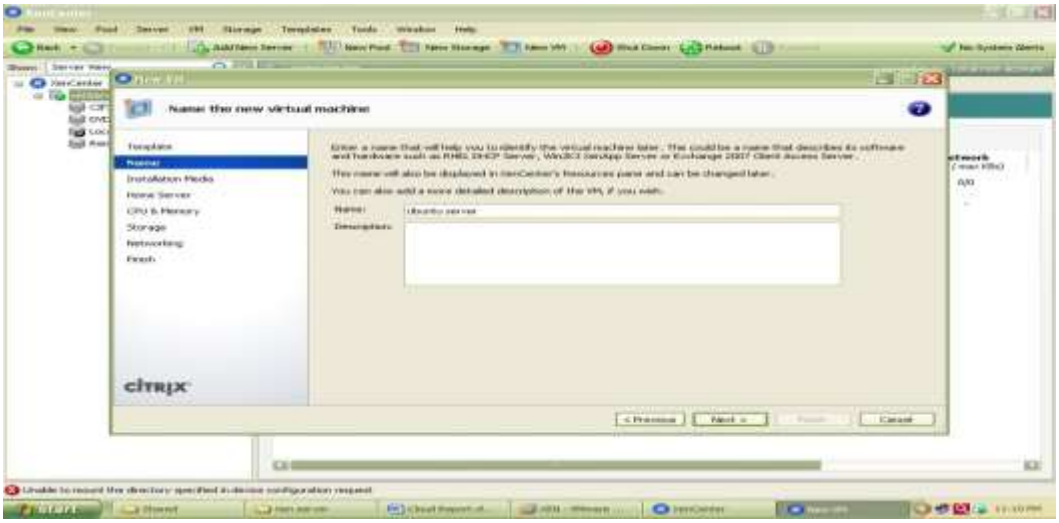
Step 1 -: Right click on Xenserver icon on xen center and select New VM



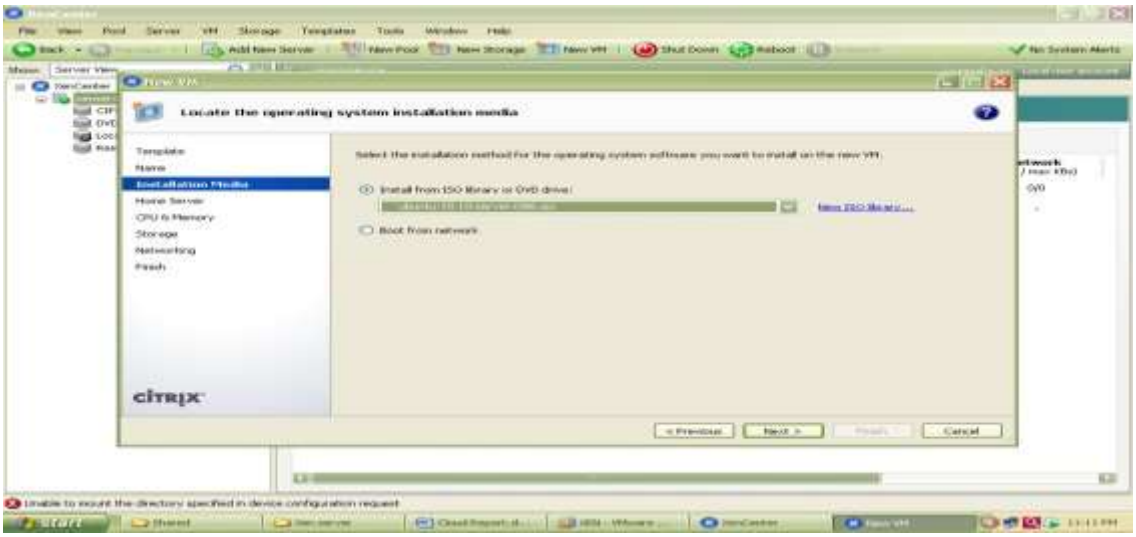
Now select an Operating System to be install here select Ubuntu Lucid Lynx and click on next



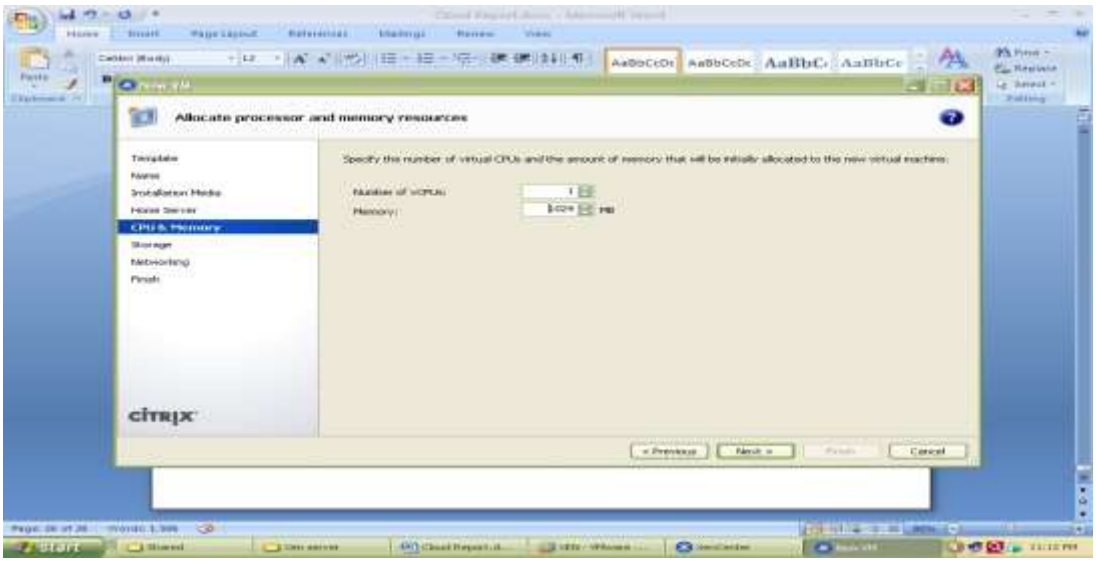
Now specify Instance Name as ubuntu server



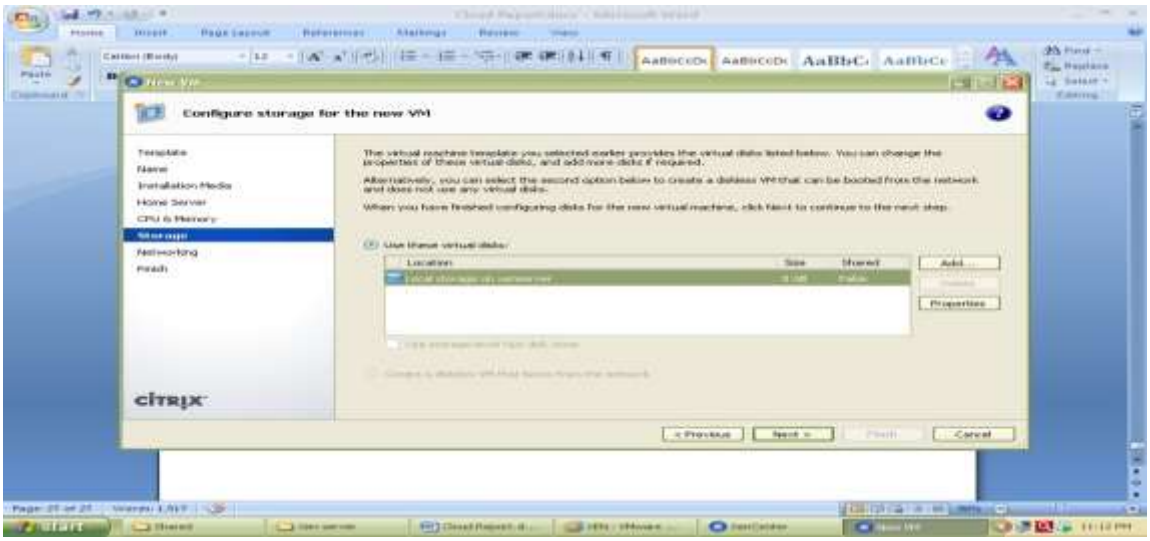
Select iso file of Ubuntu server 10.10 to be install



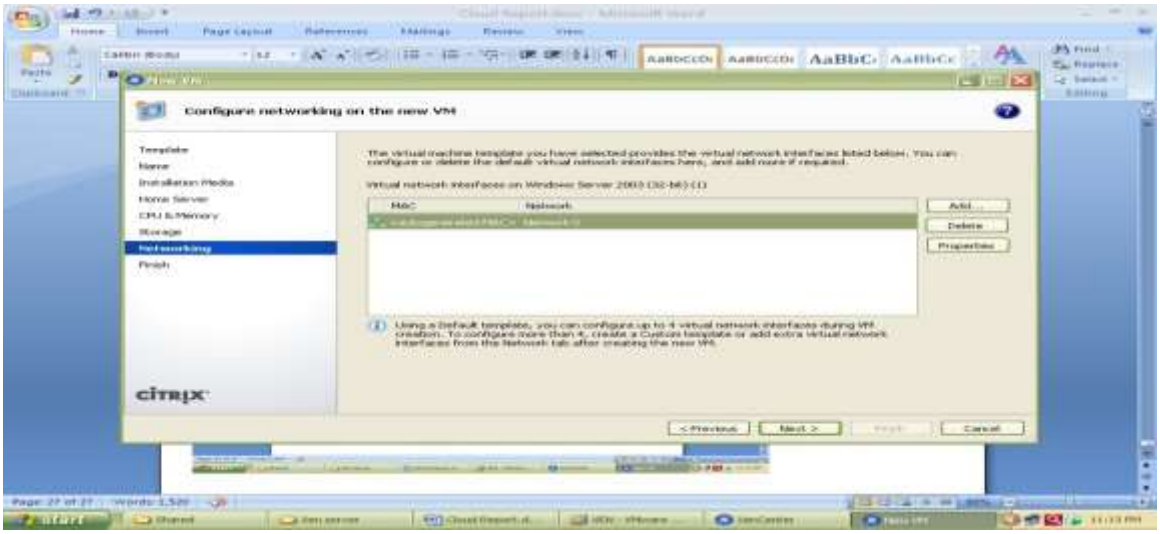
Now select hardware for vm i.e. no. of cpu’s and memory



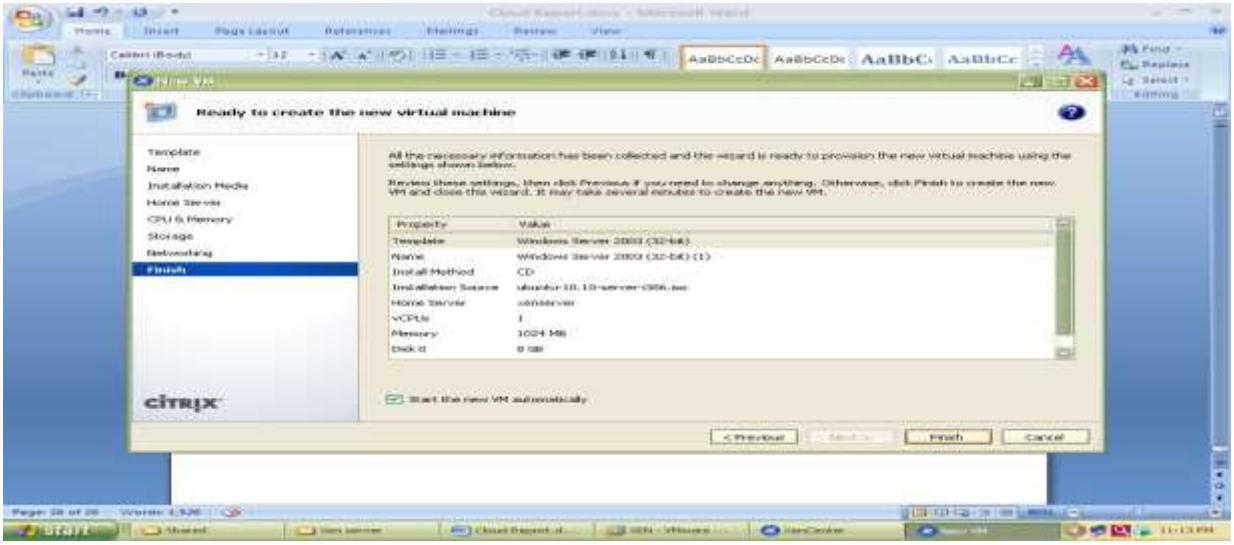
Select local storage



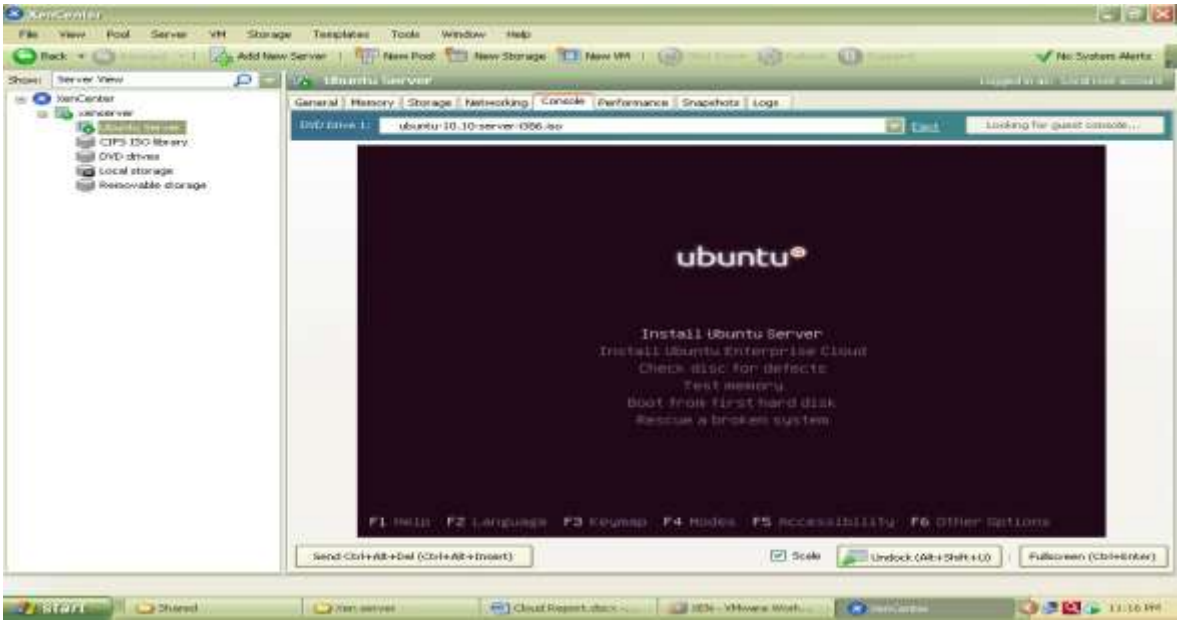
Select network



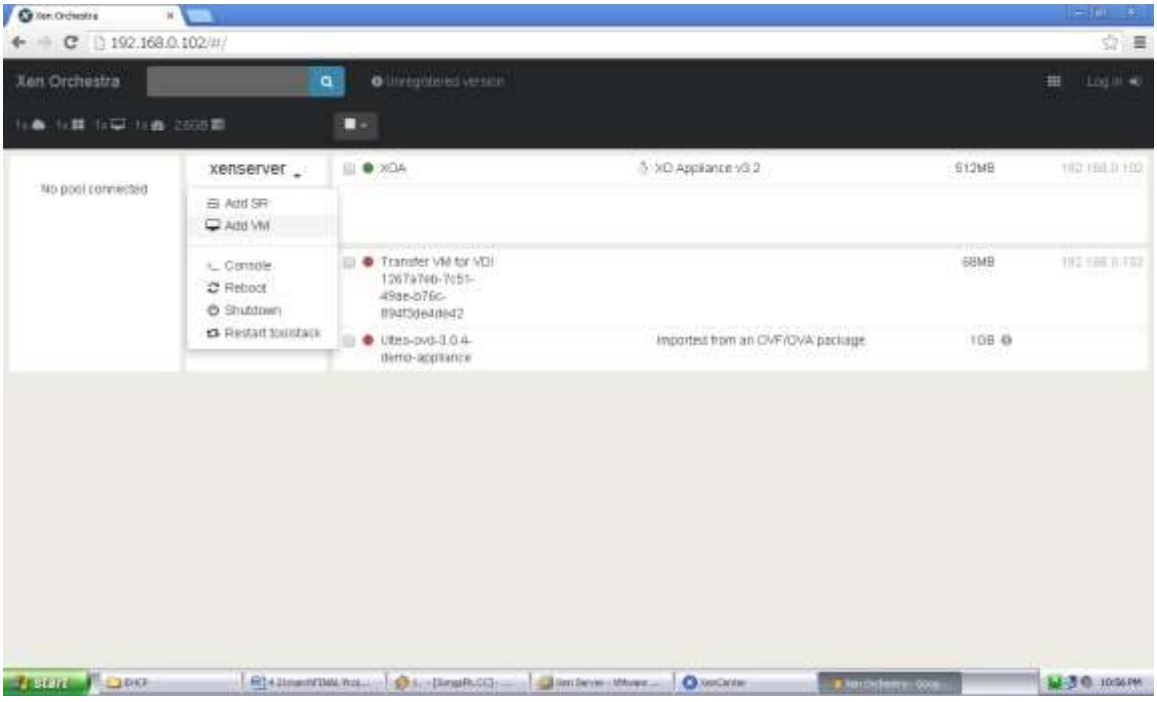
And click on finish



Now go to Console tab to install ubuntu and follow installation Steps.

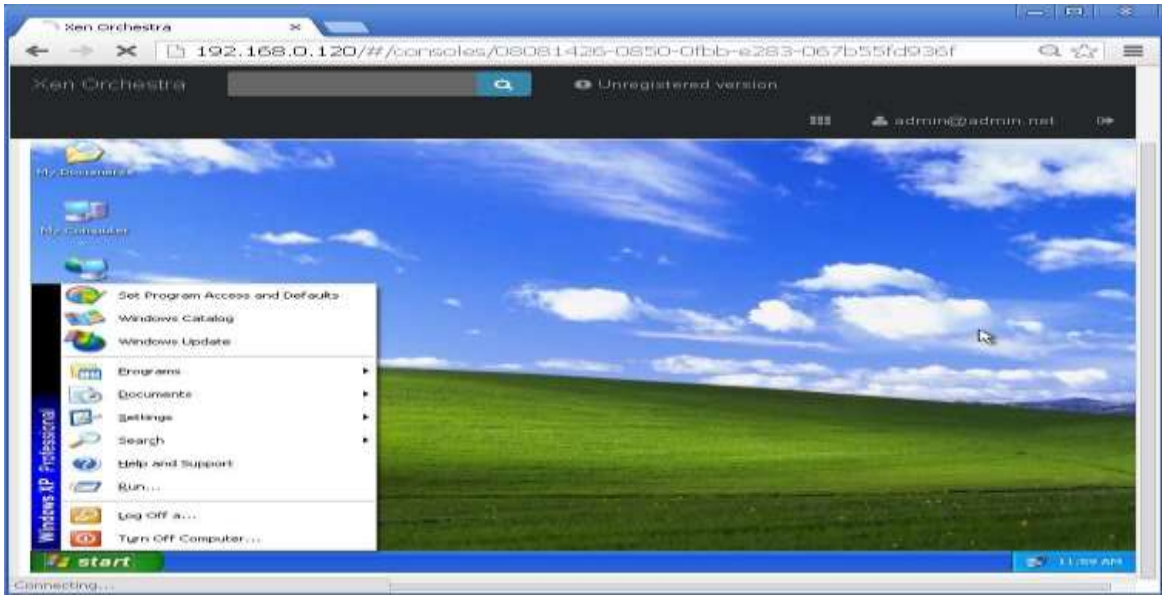


The Xen orchestra provides web based functionality of Xen Center.it provides access to all the VMs with their lifecycle management which are installed over Xen Server shown in figure 5.28



Xen Orchestra (XOA) Portal

The Windows XP image running on Xen Orchestra over Google chrome web browser is shown in following screenshot



Windows XP running on Xen orchestra (XOA)