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PXE(Pre-eXecution Environment)On Rhel5.x Versions

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A PXE server allows client computers to boot and install a Linux distribution over the network, without the need of burning Linux iso images onto a CD/DVD, boot floppy images, etc. This is handy if your client computers don't have CD or floppy drives, or if you want to set up multiple computers at the same time. e.g. in a large enterprise, or simply because you want to save the money for the CDs/DVDs. In this article I show how to configure rhel5.x server act as a PXE server that allows you to boot a diskless computer via Network.

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Requirements and network orienation for this setup

#PXE Enabled NIC/LAN Card & set as network booting in Client BIOS.
#Configure the network (NFS,FTP,HTTP)Server to export the installation tree.
#Configure DHCP server.
#A TFTP server necessary for PXE booting .

Pacakges required!!
tftp-server-*
tftp-client-* (for testing)
dhcp-*
xinetd-*
system-config-netboot-*

I am going to share my lab setup for same.

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In my lab I have installed rhel5.4 server as following details

/boot <==========>100MB
/ <==========>2000MB
Swap <==========>4000MB double of my system memory
/home<==========>3000MB
/var <==========>5000MB

My server ip address is 192.168.0.254/255.255.255.0
This server acting as NFS,TFTP,DHCP.

Let start with my lab scenario !!

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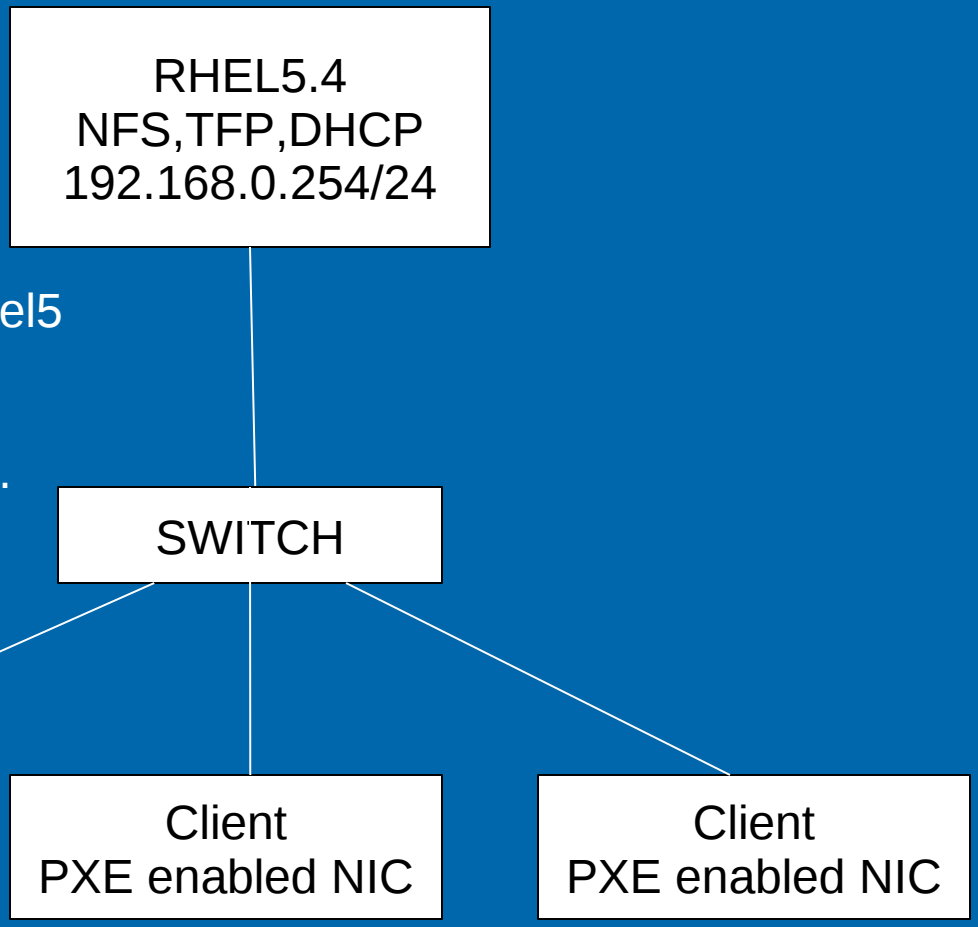
My Lab Layout



NFS setup path /var/ftp/pub/rhel5
Here I have copied RHEL5.4
DVD contents & shared this
Directory through NFS service.

DHCP Range provided by Server to Clients is 192.168.0.1 to 192.168.0.10

First of all I am going to configure TFTP server in my machine

[root@iijt ~]#cd /var/ftp/pub/rhel5
[root@iijt Server]#rpm -ivh /dump/Server/tftp-server-0.49-2.i386.rpm
warning: /dump/Server/tftp-server-0.49-2.i386.rpm: Header V3 DSA signature: NOKEY, key ID 37017186
Preparing... ### [100%]
1:tftp-server ### [100%]

[root@iijt Server]# vim /etc/xinetd.d/tftp

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```
# default: off
# description: The tftp server serves files using the trivial file transfer \
#       protocol.  The tftp protocol is often used to boot diskless \
#       workstations, download configuration files to network-aware printers, \
#       and to start the installation process for some operating systems.
{
        socket_type             = dgram
        protocol                = udp
        wait                    = yes
        user                    = root
        server                  = /usr/sbin/in.tftpd
        server_args             = -s /tftpboot
#       disable                 = yes   # <<=====     Change this option with no
        disable                 = no
        per_source              = 11
        cps                     = 100 2
        flags                   = IPv4
}
"/etc/xinetd.d/tftp" 18L, 510C
```

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```
[root@iijt Server]# service xinetd restart
Stopping xinetd:                                           [  OK  ]
Starting xinetd:                                           [  OK  ]
[root@iijt Server]#chkconfig xinetd on
[root@iijt Server]# chkconfig tftp on
[root@iijt Server]# rpm -ivh dhcp*
warning: dhcp-3.0.5-21.el5.i386.rpm: Header V3 DSA signature: NOKEY, key ID
37017186
Preparing...                ########################################### [100%]
   1:dhcp                   ########################################### [ 25%]
   2:dhcp-devel             ########################################### [ 50%]
```

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```
3:dhcpv6                ########################################################## [ 75%]
4:dhcpv6-client         ########################################################## [100%]
[root@iijt Server]# cp -v /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf
cp: overwrite `/etc/dhcpd.conf'?
 y
`/usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample' -> `/etc/dhcpd.conf'
[root@iijt Server]#  vim /etc/dhcpd.conf
ddns-update-style interim;
ignore client-updates;
subnet 192.168.0.0 netmask 255.255.255.0 {
# --- default gateway
#       option routers                  192.168.0.1;  <===== change with 192.168.0.254
        option routers                  192.168.0.254;
        option subnet-mask              255.255.255.0;
        option nis-domain               "domain.org";
 #       option domain-name             "domain.org";<== I have no DNS server so I
comment this line with # sign
#       option domain-name-servers      192.168.1.1; <== this is also commented with #
```


```
        option time-offset            -18000; # Eastern Standard Time
#       option ntp-servers              192.168.1.1;
#       option netbios-name-servers     192.168.1.1;
# --- Selects point-to-point node (default is hybrid). Don't change this unless
# -- you understand Netbios very well
#       option netbios-node-type 2;
        range dynamic-bootp 192.168.0.1 192.168.0.10; #<== Client IP range
        default-lease-time 21600;
        max-lease-time 43200;
        # we want the nameserver to appear at a fixed address
        host ns {
                next-server marvin.redhat.com;
                hardware ethernet 12:34:56:78:AB:CD;
                fixed-address 207.175.42.254;
        }
}
-- INSERT –
ESC:wq!
```


```
[root@iijt Server]# rpm -ivh system-config-netboot-*
warning: system-config-netboot-0.1.45.1-1.el5.noarch.rpm: Header V3 DSA signature:
NOKEY, key ID 37017186
Preparing...                ########################################### [100%]
   1:system-config-netboot-c########################################### [ 50%]
   2:system-config-netboot  ########################################### [100%]
[root@iijt Server]#
Put these lines in /etc/dhcpd.conf file under Client IP Range under range dynamic-bootp
192.168.0.1 192.168.0.10;
        default-lease-time 21600;
        max-lease-time 43200;
        allow booting;
        allow bootp;
        class "pxeclients" {
        match if substring(option vendor-class-identifier, 0, 9) = "PXEClient";
        Next-server 192.168.0.254;
        filename "linux-install/pxelinux.0";
}
ESC:wq!
```

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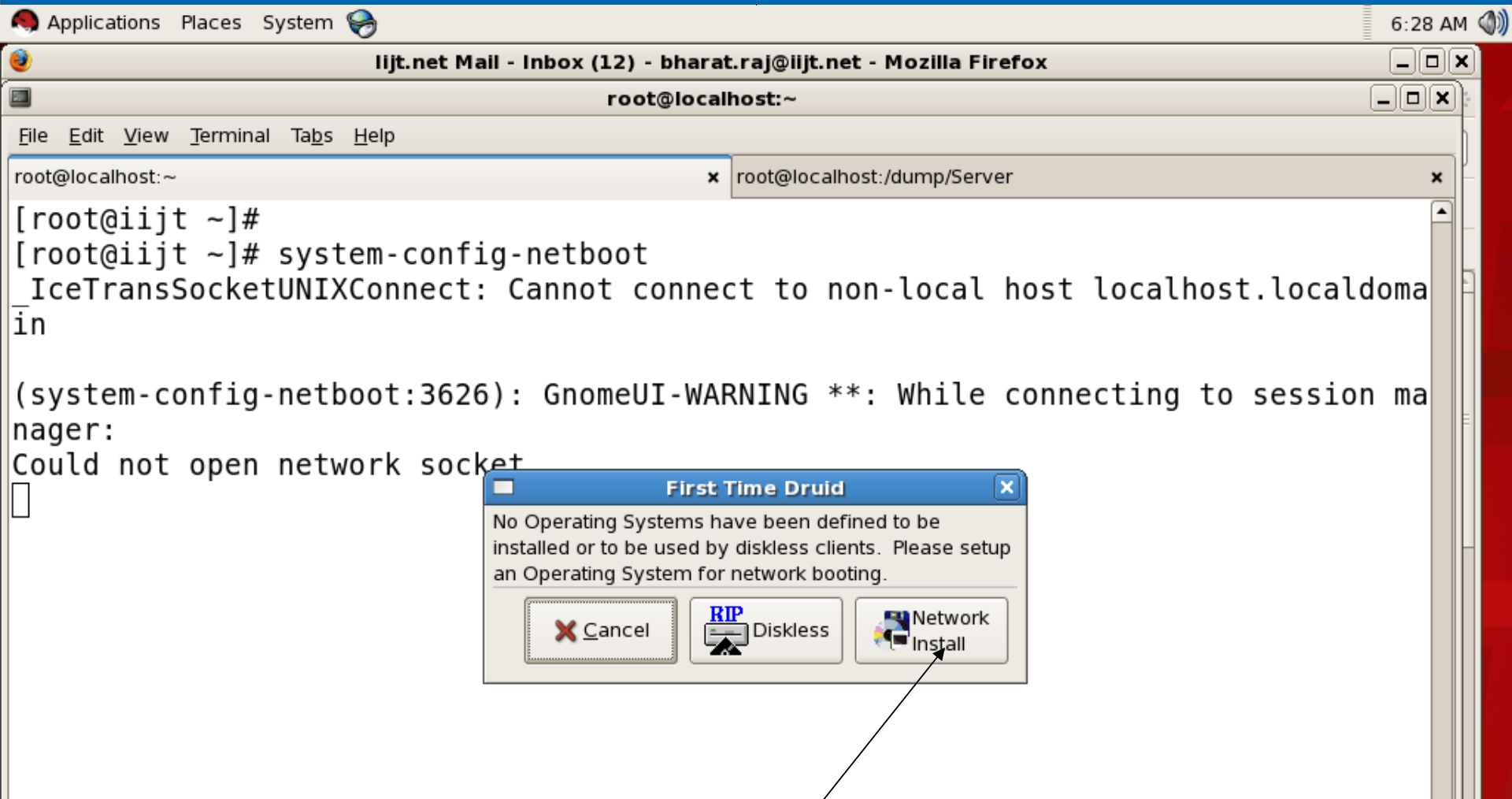
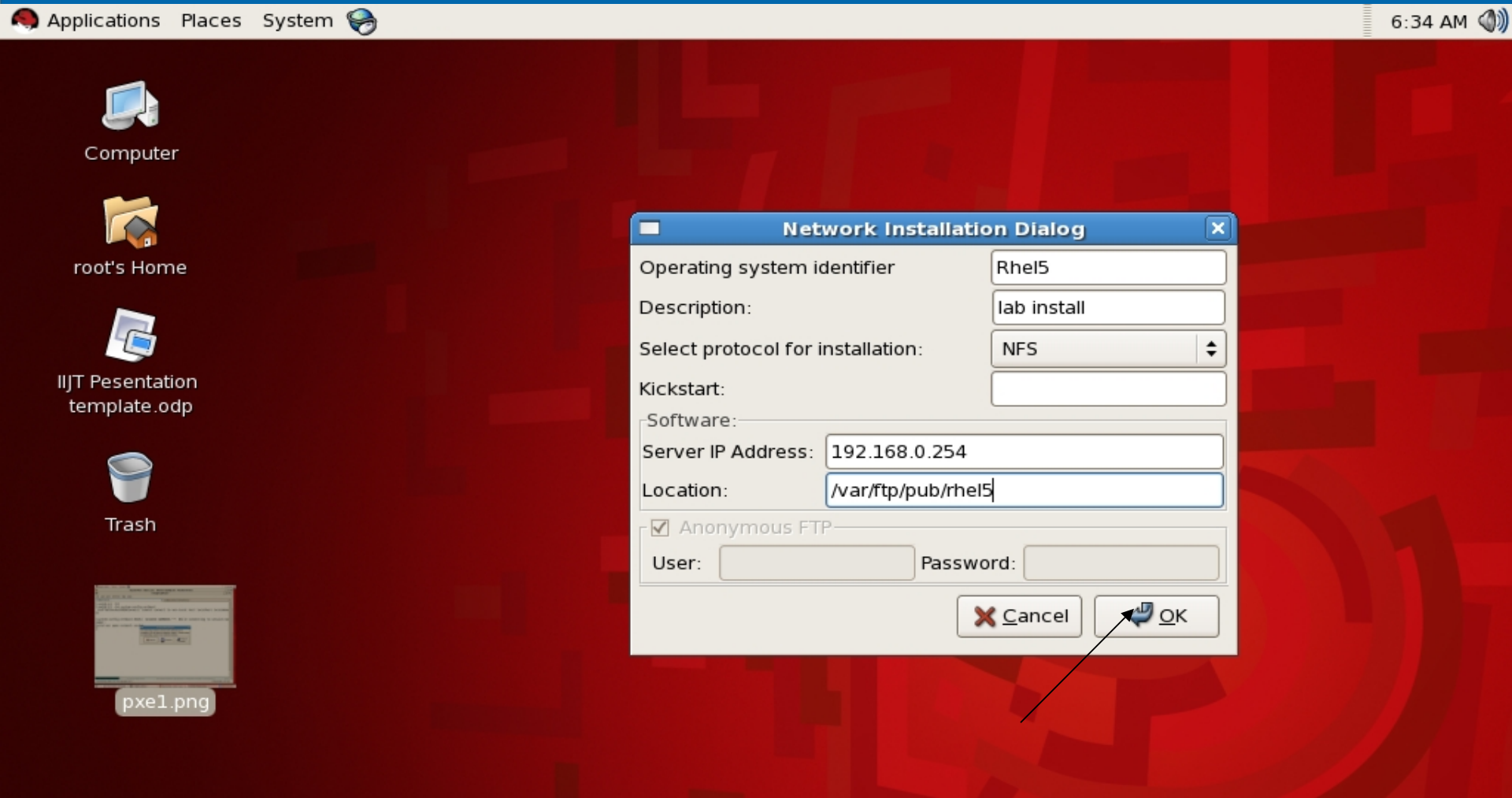
```
[root@iijt Server]# service dhcpd restart
Starting dhcpd:                                            [  OK  ]
[root@iijt Server]# chkconfig dhcpd on
Dont remember to export /var/ftp/pub/rhel5 in /etc/exports file
[root@iijt Server]# vim /etc/exports
/var/ftp/pub/rhel5  192.168.0.0/255.255.255.0(ro,sync)
ESC:wq!
[root@iijt Server]# service nfs restart
Shutting down NFS mountd:                                  [FAILED]
Shutting down NFS daemon:                                   [FAILED]
Shutting down NFS quotas:                                  [FAILED]
Shutting down NFS services:                                [  OK  ]
Starting NFS services:                                    [  OK  ]
Starting NFS quotas:                                      [  OK  ]
Starting NFS daemon:                                       [  OK  ]
Starting NFS mountd:                                      [  OK  ]
[root@iijt Server]# chkconfig nfs on
[root@iijt Server]#
```

[root@iijt Server]# cd
[root@iijt ~]# system-config-netboot



Network installation Dialog configure



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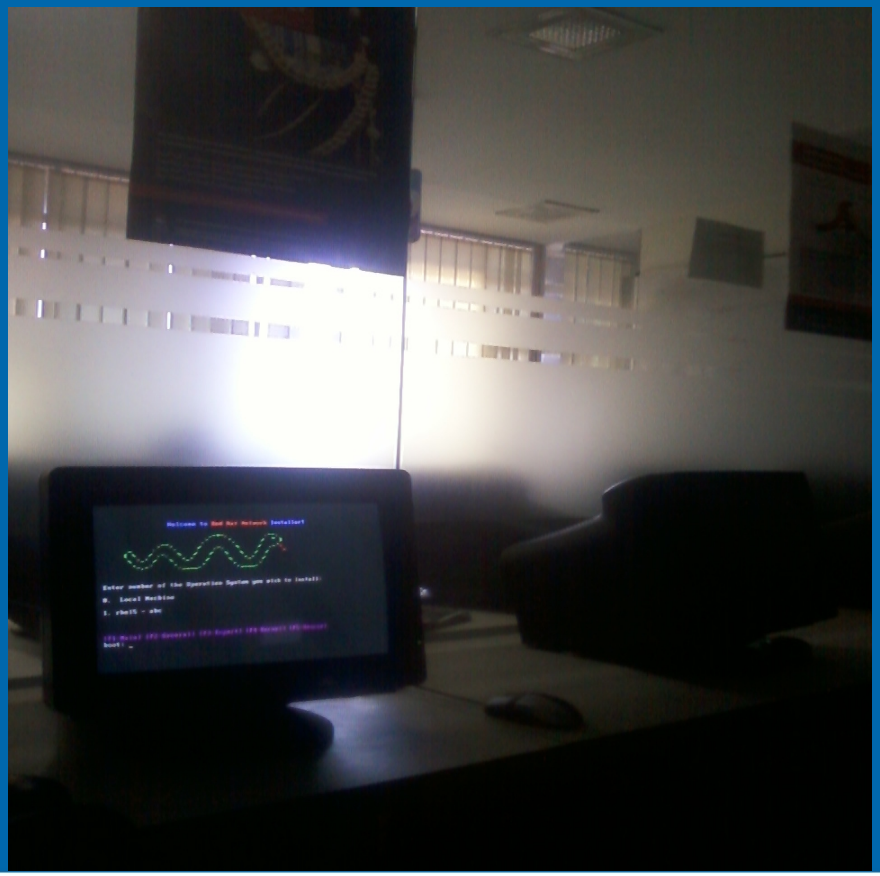
```
[root@iijt ~]# service xinetd restart
Stopping xinetd:                                           [  OK  ]
Starting xinetd:                                           [  OK  ]
[root@iijt ~]# service dhcpd  restart
Shutting down dhcpd:                                       [  OK  ]
Starting dhcpd:                                            [  OK  ]
[root@iijt ~]# service nfs restart  restart
Shutting down NFS mountd:                                  [  OK  ]
Shutting down NFS daemon:                                  [  OK  ]
Shutting down NFS quotas:                                  [  OK  ]
Shutting down NFS services:                                [  OK  ]
Starting NFS services:                                     [  OK  ]
Starting NFS quotas:                                       [  OK  ]
Starting NFS daemon:                                       [  OK  ]
Starting NFS mountd:                                       [  OK  ]
[root@iijt ~]#
```

now go to client machine and boot the system with PXE enabled Lan and see the output !!!!!!!!!! One think is noted i.e firewall should be disable before booting Client.



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Thanks!!!!!!!!!!!!!!!!!!!!
Prepared by
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