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to build COPPER boot server for new PrPMC

1. **Install SL5 for server**

   With GNOME desktop environment

   Optional packages

   On a boot server, do not use firewall, otherwise COPPER can not download pxelinux.0 and so on from the boot server via tftp.
   [system]-[admin]-[securitylevel & firewall] -> disable firewall and SElinux

```
yum groupinstall 'system tools' 'administration tools' 'server configuration tools'
yum intall dhcp busybox-anaconda tftp
```

   confirm `rpm -q -a 'system-config-netboot*'` shows `system-config-netboot` and `system-config-netboot-cmd`

   confirm the existence of `/tftpboot/linux-install/msgs`, `pxelinux.0`, `pxelinux.cfg`

   These files and directories belong to `system-config-netboot-cmd`. If you have deleted some of them by mistake, re-install the rpm. Otherwise, diskless client setup will fail always.

2. **Install SL5 for diskless client**

   prepare the directory for diskless client

```
mkdir -p /tftpboot/copper/root
cd /tftpboot/copper/root
mkdir dev etc sys
mount --bind /sys /tftpboot/copper/root/sys
cd /tftpboot/copper/root/dev
cp /dev/MAKEDEV .
./MAKEDEV generic
cp /etc/fstab /tftpboot/copper/root/etc
```

   install base system for diskless client

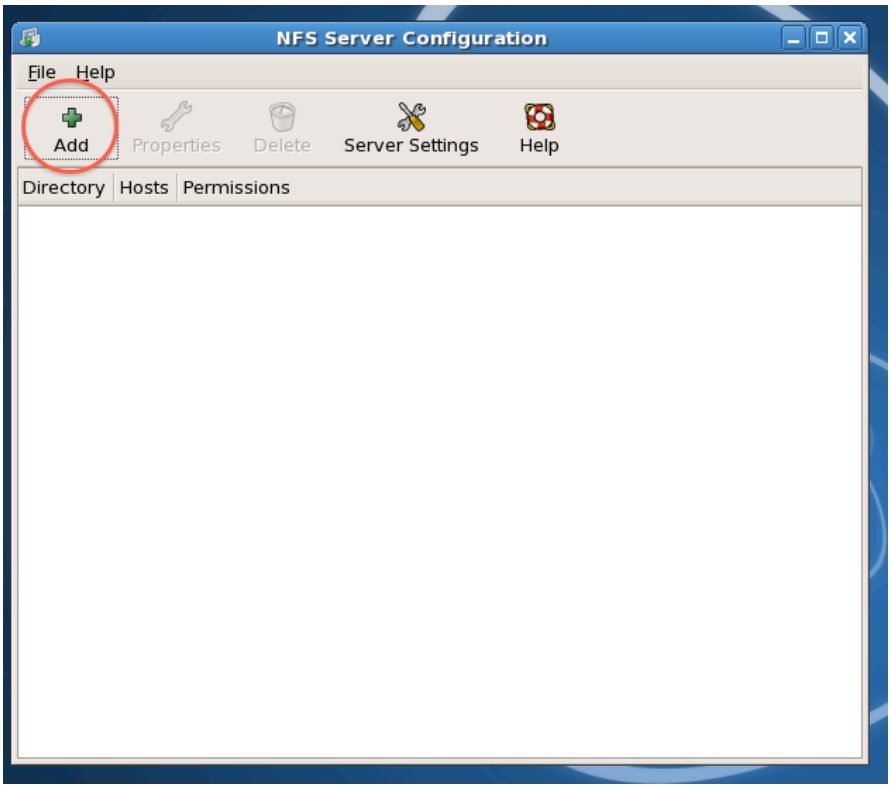
```
yum --installroot=/tftpboot/copper/root groupinstall Base
```

3. **Assign NIC as boot server**

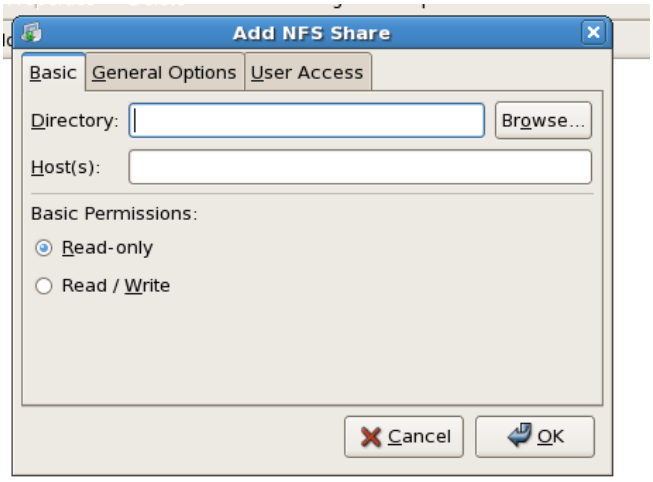
   for example, we will use 192.168.10.1 and netmask 255.255.255.0

4. **Configure NFS export**

   you will see



   push Add



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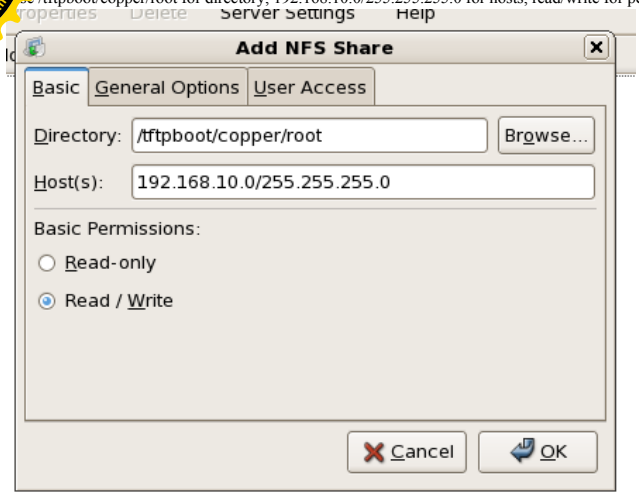
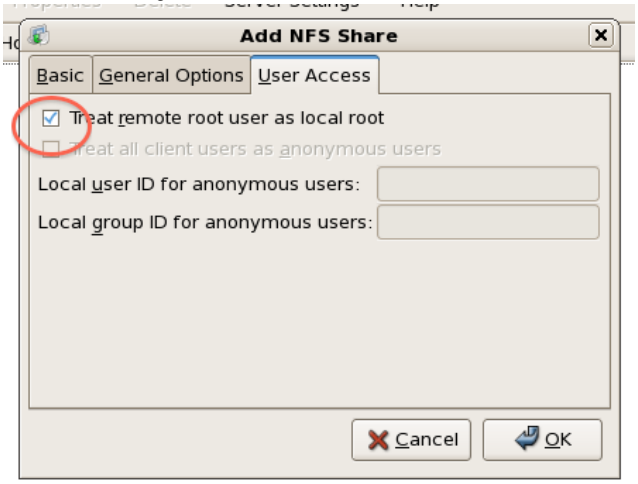
How to ld COPPER boot server for new PrPMC

Ce /tftpboot/copper/root for directory, 192.168.10.0/255.255.255.0 for hosts, read/write for permission

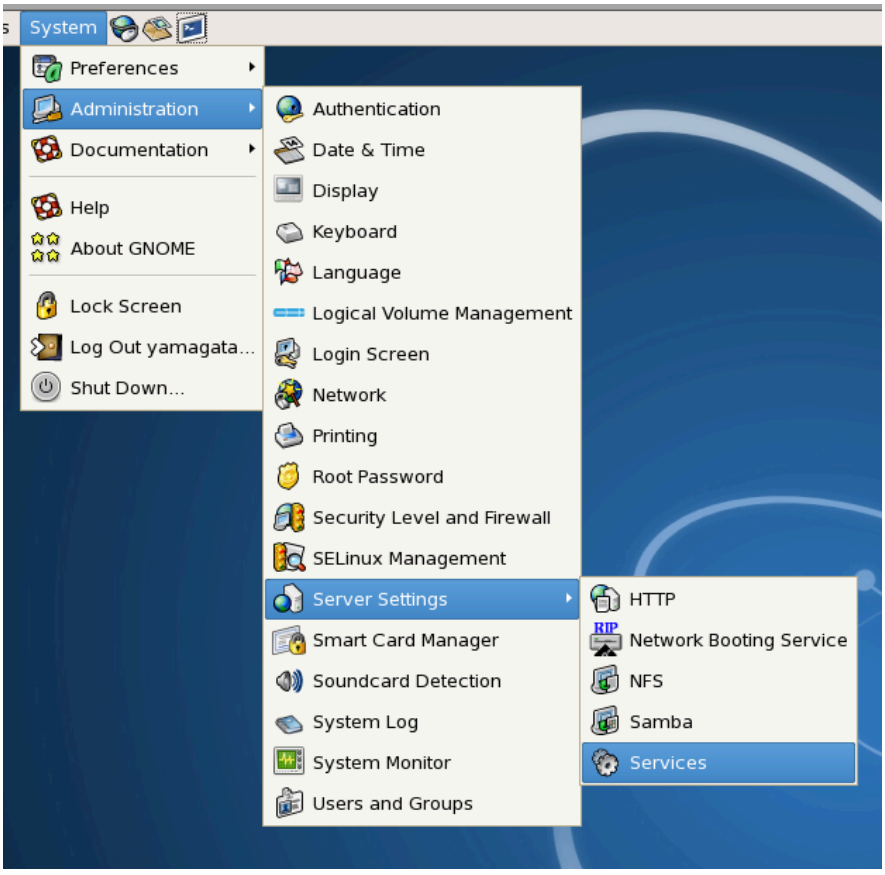


User Access must be changed.

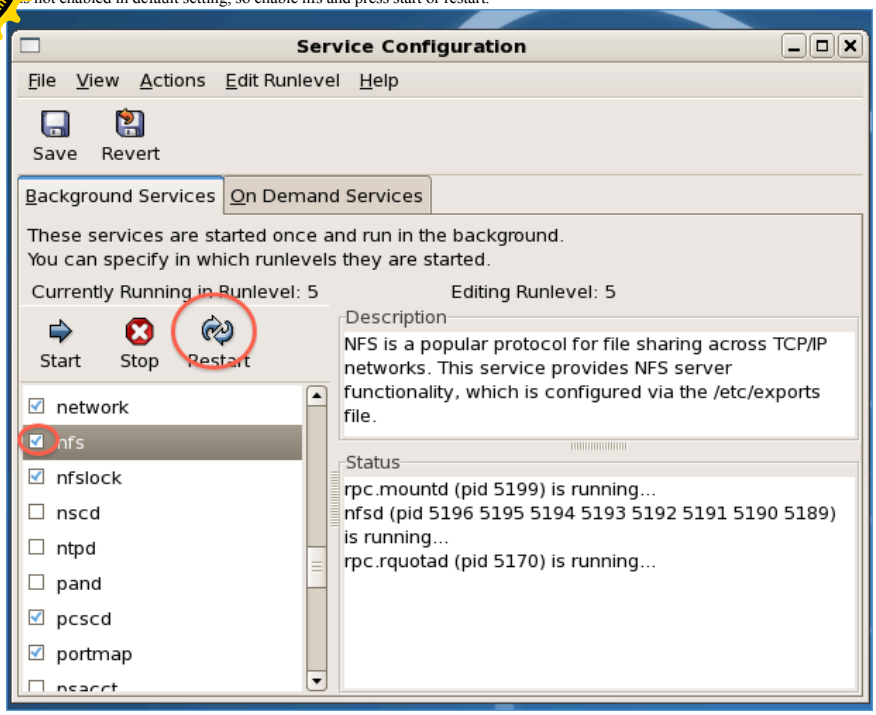


Press OK

restart NFS service



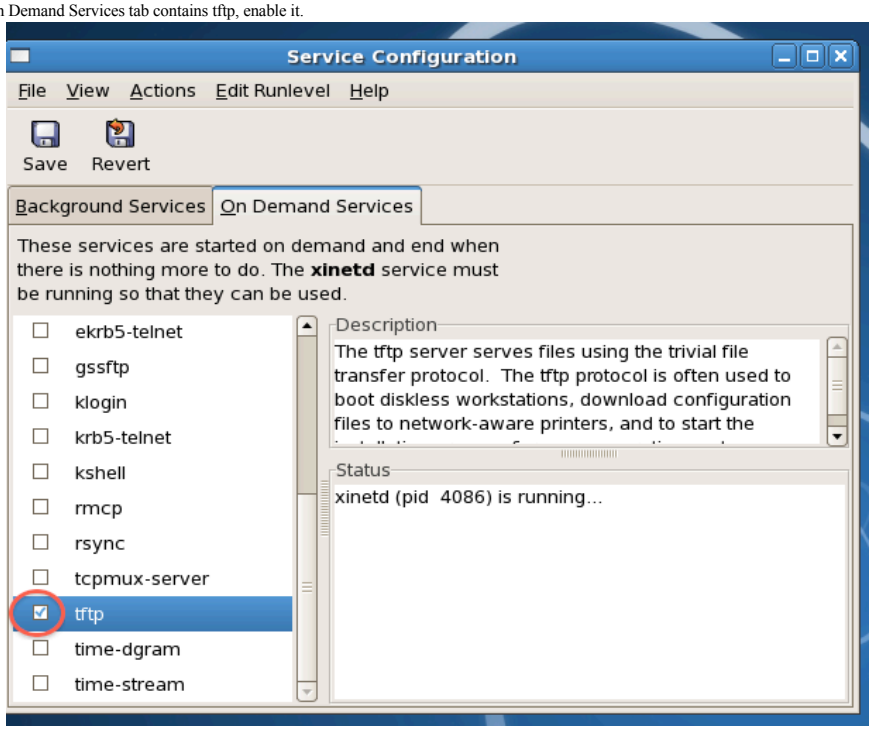
N ... not enabled in default setting, so enable nfs and press start or restart.



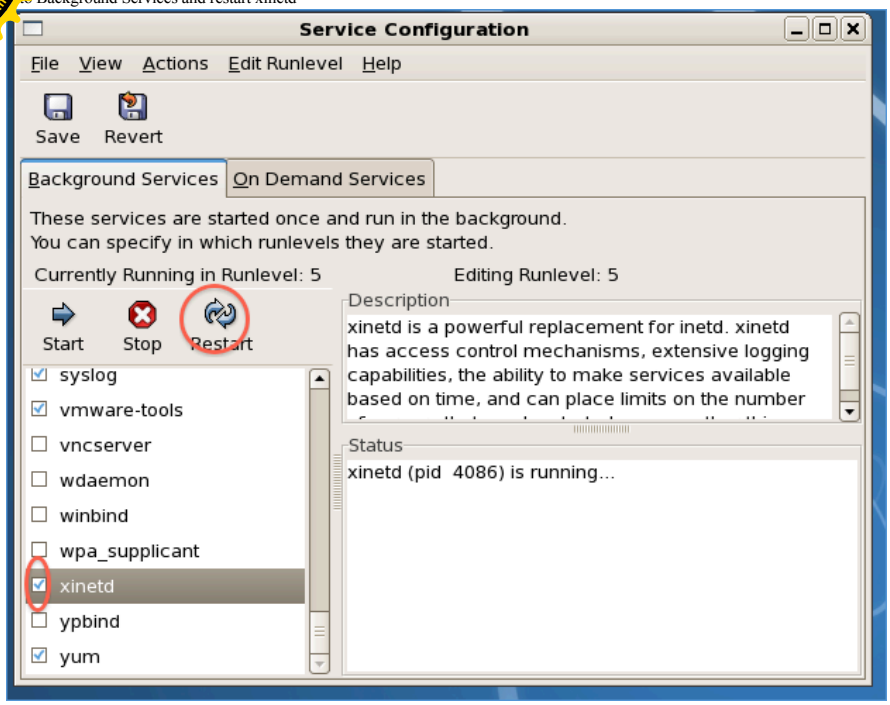
You have to confirm NFS is really working by "`mount -o ro 192.168.10.1:/tftpboot/copper/root /mnt`". If succeeded, unmount it.

5. **Enable tftpd**

On Demand Services tab contains tftp, enable it.

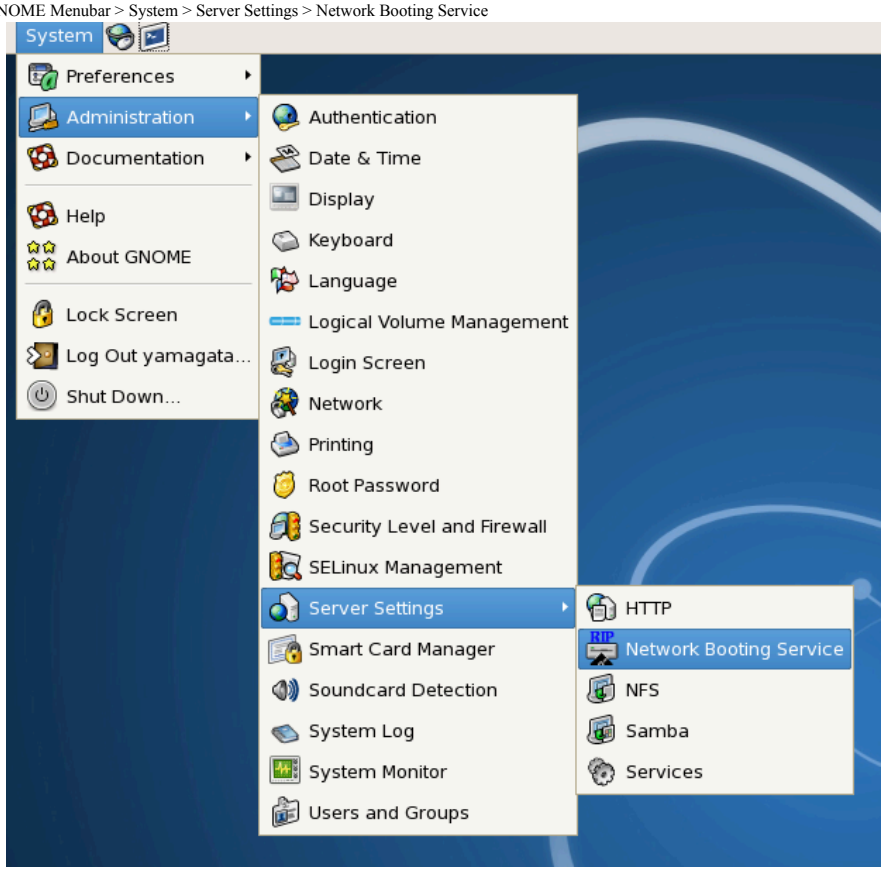


b... Background Services and restart xinetd



6. **Configure pxelinux**

GNOME Menubar > System > Server Settings > Network Booting Service



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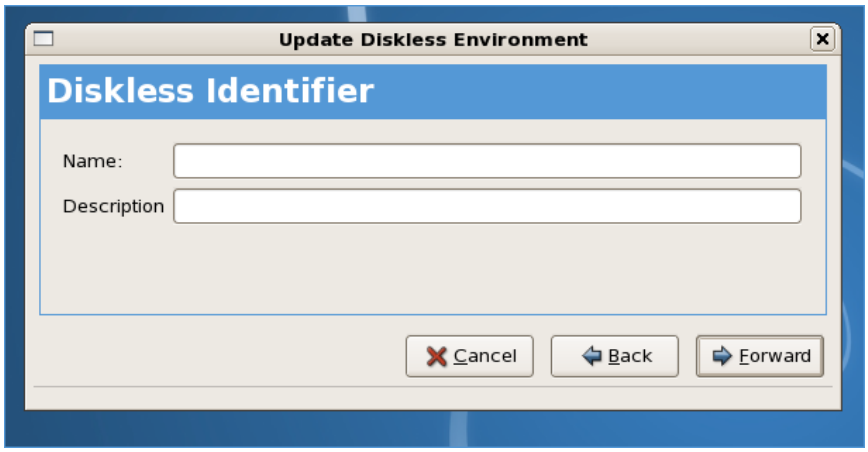
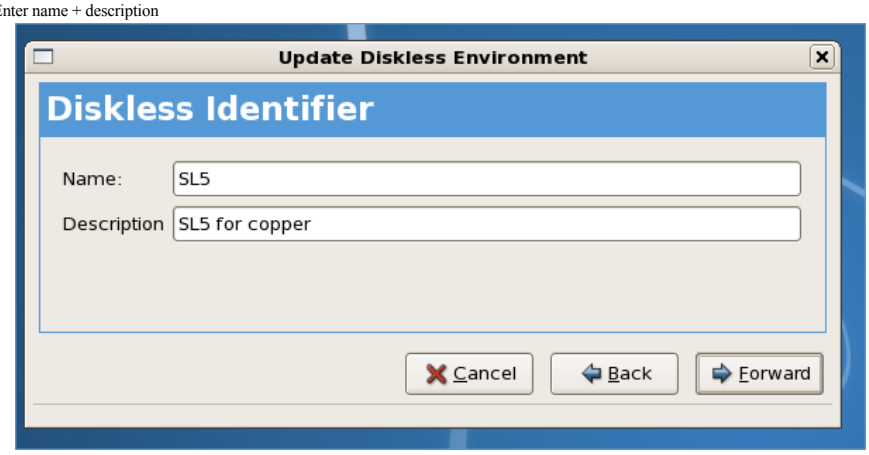
...u will see ...

Press diskless

Press Forward



Enter name + description



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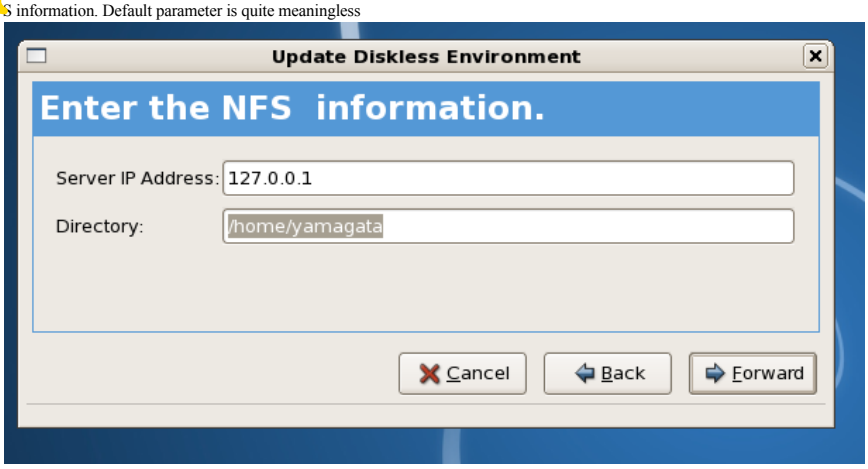
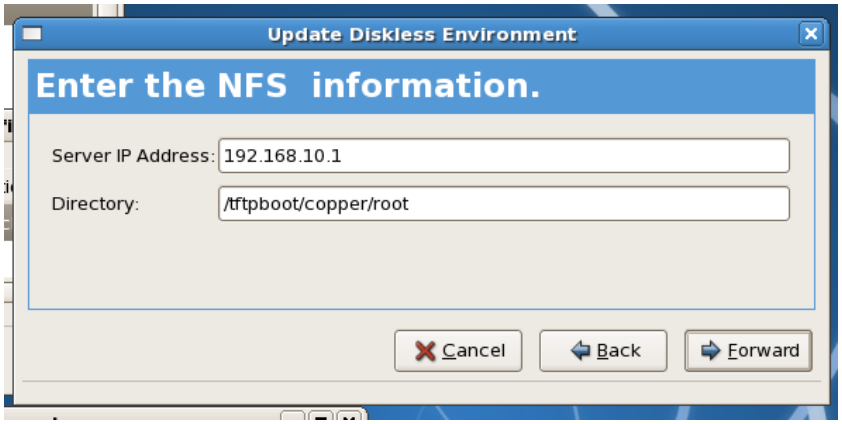
S information. Default parameter is quite meaningless



like this



choose kernel

confirm

you will see a window like 1 or 2

```
% cp /sbin/busybox.anaconda
/tftpboot/copper/root/sbin/
may be needed.
```

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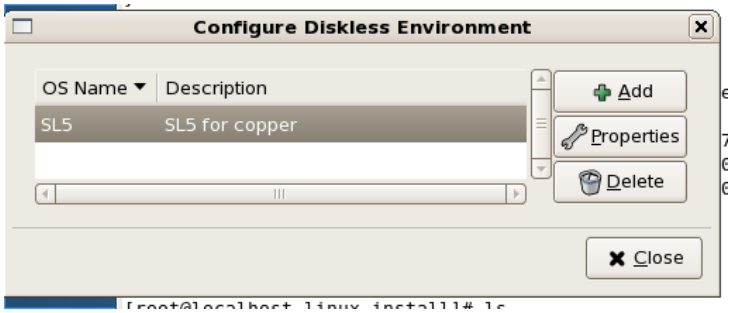
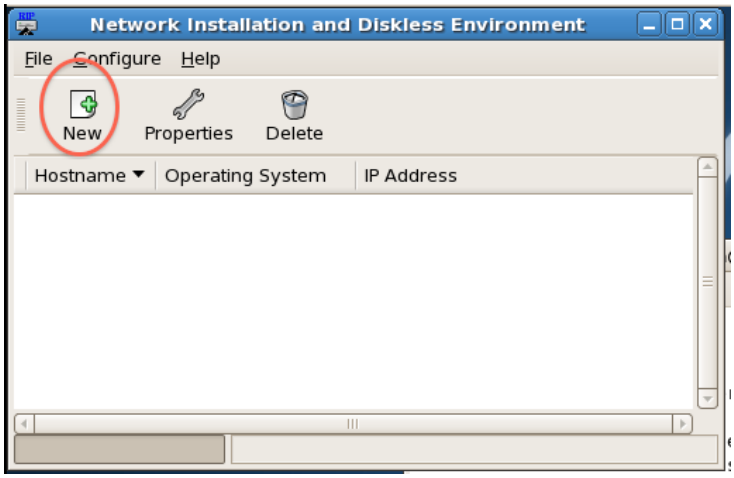
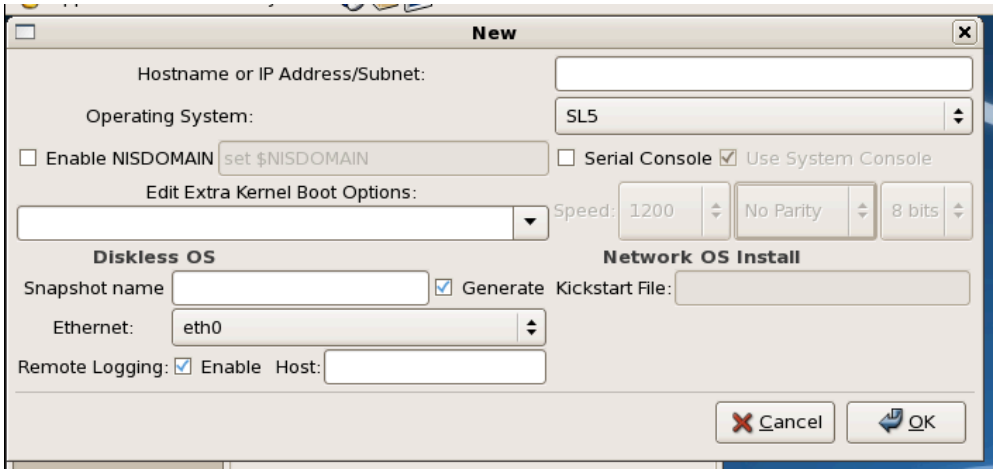


If you will see this, something problematic may have occurred. Only you can do "close". In this case, the OS choice column will be empty after re-launch of system-config-netboot.
In my case, the problem was that files in /tftpboot/linux-install/ are deleted.

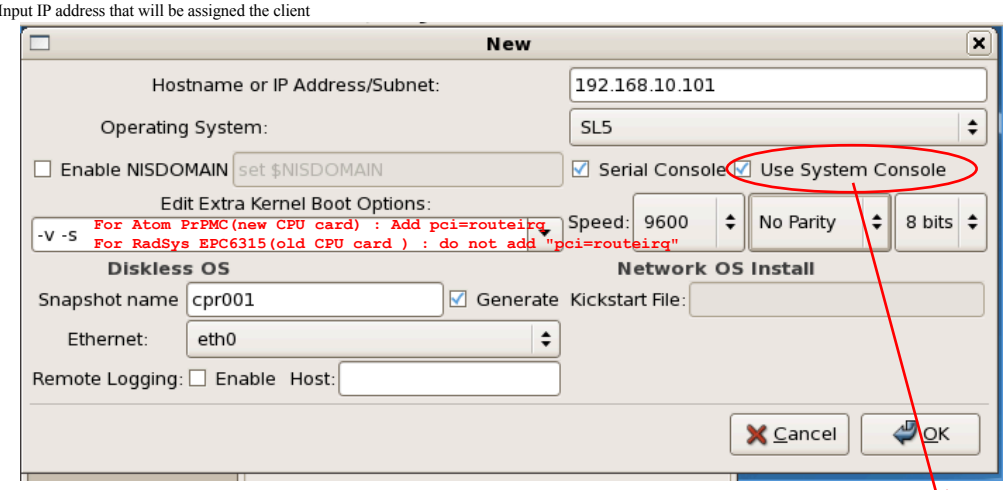
2



Press new



Input IP address that will be assigned the client



It is better to enable serial console and system console both.

For using a VGA debug card (COPPERIII only) to monitor a console.
(If you use a COPPER-II board, uncheck this, otherwise the serial console does not work well.)
VGA debug card : (e.g. console=tty0)
http://qirex.kek.jp/tesko/doku.php?id=atom:newprpmc:debugboard
Serial console : (e.g. console=ttyS0,9600n8)
https://belle2.cc.kek.jp/~twiki/bin/viewauth/Detector/DAQ/EPC6315

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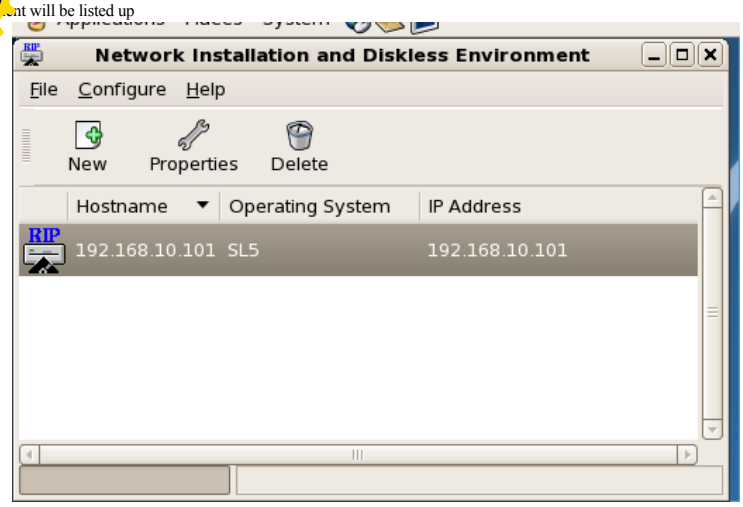
nt will be listed up



You will find `/tftpboot/linux-install/pxelinux.cfg/[IP address of COPPER in HEX format]` and `/tftpboot/linux-install/[Operating System Name that you assigned]`

```
/tftpboot/linux-install
/tftpboot/linux-install/msgs
/tftpboot/linux-install/msgs/expert.msg
/tftpboot/linux-install/msgs/boot.msg
/tftpboot/linux-install/msgs/param.msg
/tftpboot/linux-install/msgs/general.msg
/tftpboot/linux-install/msgs/snake.msg
/tftpboot/linux-install/msgs/rescue.msg
/tftpboot/linux-install/SL5
/tftpboot/linux-install/SL5/vmlinuz
/tftpboot/linux-install/SL5/initrd.img
/tftpboot/linux-install/pxelinux.cfg
/tftpboot/linux-install/pxelinux.cfg/default
/tftpboot/linux-install/pxelinux.cfg/pxeos.xml
/tftpboot/linux-install/pxelinux.cfg/C0A80A65
/tftpboot/linux-install/pxelinux.0
```

Confirm you can get files for pxelinux boot.

```
cd /tmp
tftp  192.168.10.1
  get linux-install/pxelinux.0
  get linux-install/pxelinux.cfg/C0A80A65
  quit
```

confirm the file consistency.

7. **Configure dhcpd**

there is no good GUI and you have to do it manually. For example,

```
ddns-update-style none;
ignore client-updates;

subnet 192.168.10.0 netmask 255.255.255.0 {

        option routers                  192.168.10.1;
        option subnet-mask              255.255.255.0;

        option domain-name-servers      192.168.10.1;

        range dynamic-bootp 192.168.10.128 192.168.10.254;
        default-lease-time 21600;
        max-lease-time 43200;

        next-server                     192.168.10.1;
        filename                        "/linux-install/pxelinux.0";


        host cpr001 {
                hardware ethernet 00:50:56:22:8E:F3;
                fixed-address 192.168.10.101;
        }
}
```

Change lease time to 'inifinite'.(w/o quotation marks)
Otherwise, COPPER OS sometimes becomes inaccessible from outside.

8. **Boot test**

Before turning on power of COPPER crate,

open two terminals

On first terminal, `dhcpd -d -d -d`

On second terminal, `tcpdump -i ethX -n -p -vvvv -s 2000`

Turn on COPPER crate,

step1 dhcpd will show DHCP interaction

step2 the COPPER will take, linux-install/pxelinux.0

step3 that will take, pxelinux.cfg/C0A80A65

step4 that will take copper/root/boot/vmlinuz and initrd

If you have connected to serial or VGA console on the debug board, you will see the boot message.

After external ver.0.5.0?, basf2 requires GLEW(The OpenGL Extension Wrangler Library).
The following procedure worked fine.

```
1, install the yum epel repository.
ropc01$ wget http://ftp-srv2.kddilabs.jp/Linux/distributions/fedora/epel/5/i386/epel-release-5-4.noarch.rpm
ropc01$ ssh cpr** -lroot
cpr**# rpm -ivh epel-release-5-4.noarch.rpm
cpr**# ls -lrt /etc/yum.repos.d/
cpr**# exit
2, install glew on COPPER
ropc01$  sudo yum install  glew --installroot=/tftpboot/copper/root
If you are complained to that the mirrorlist could not be retrieved,
 uncomment a "baseurl" line in /etc/yum.repo/epel.repo.
```

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Other tips :

1, Disable yum.cron on COPPER not to let it consuming CPU resource
(COPPER basically cannot connect to Internet and yum fails)
ropc# rm /tftpboot/copper/root/etc/cron.daily/yum.cron

2, mouting ropc:/home from COPPER
- edit ropc:/etc/exportfs and copper:/etc/fstab
- restart nfs on ropc (/sbin/service nfs restart)

3, User acounts on COPPER
- Edit ropc:/tftpboot/copper/root/etc/passwd and shadow .
(e.g. Copy entries from /etc/passwd, shadow on ropc)