

How to build COPPER boot server for new PrPMC**1. Install SL5 for server**

With GNOME desktop environment

Optional packages

```
yum groupinstall 'system tools' 'administration tools' 'server configuration tools'
yum install 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/mgs, 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

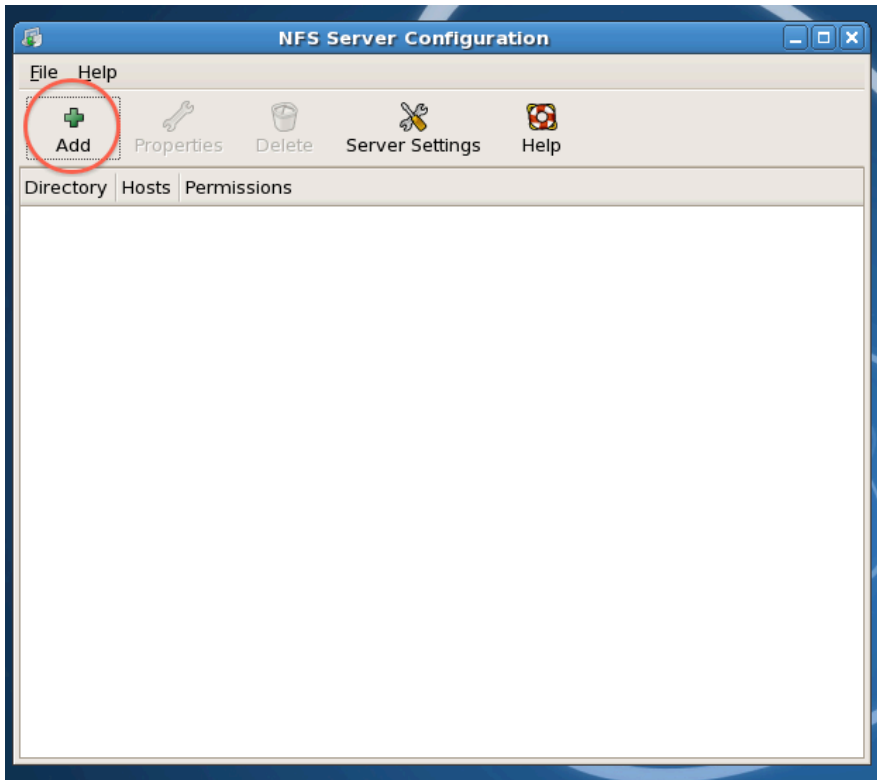
```
yum --installroot=/tftpboot/copper/root groupinstall Base
```

3. Assign NIC as boot server

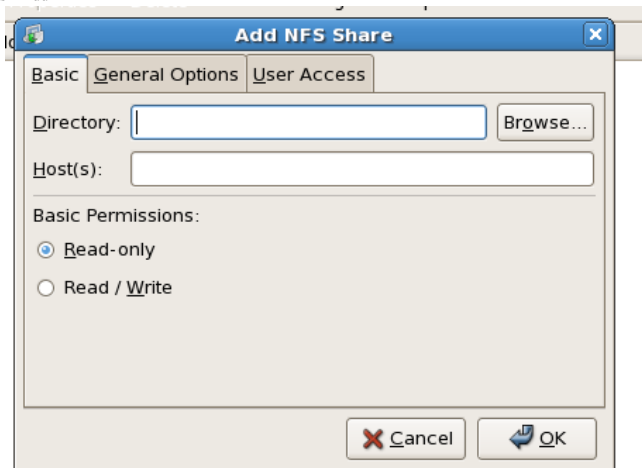
for example, we will use 192.168.10.1 and netmask 255.255.255.0

4. Configure NFS export

you will see

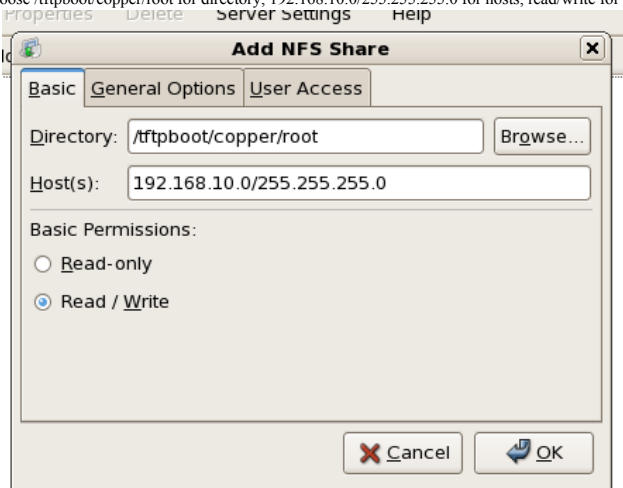


push Add

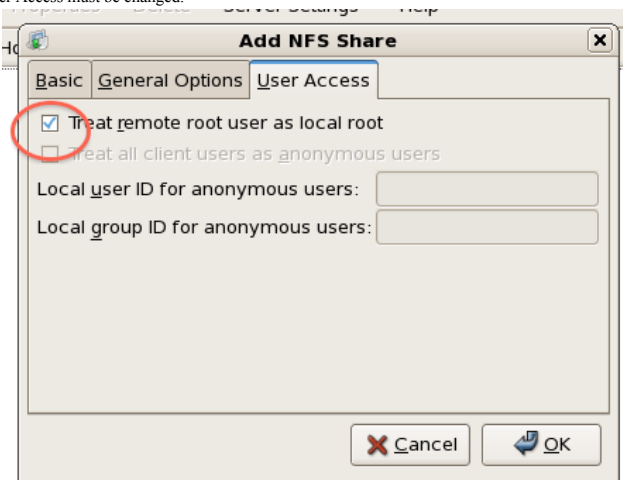


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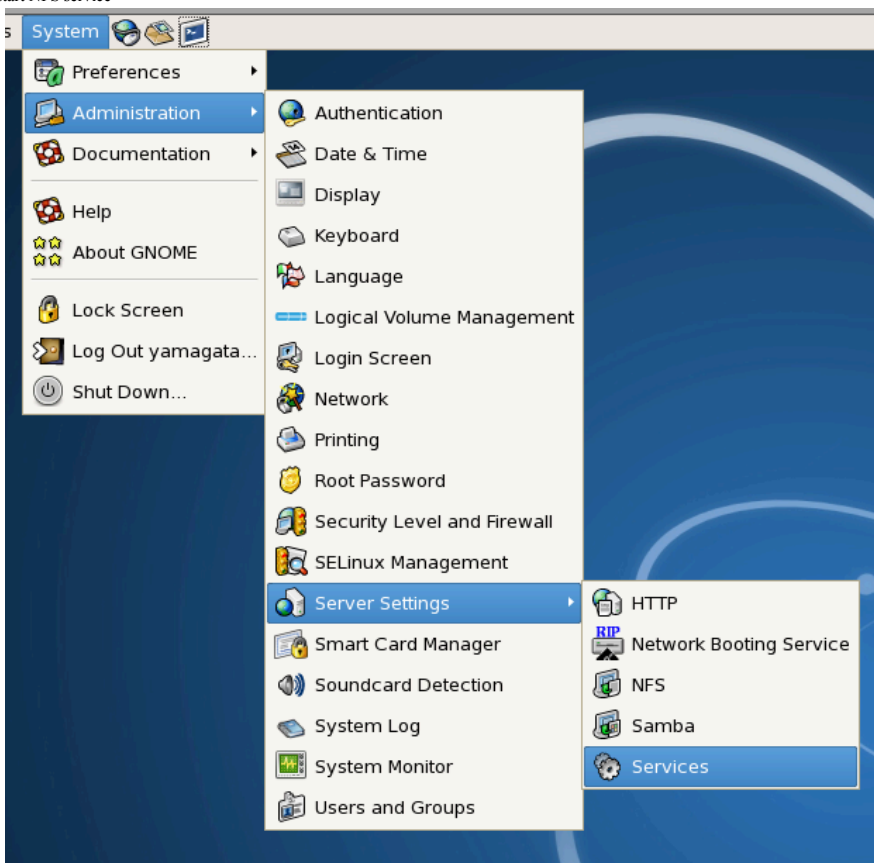
Choose /tftpboot/copper/root for directory, 192.168.10.0/255.255.255.0 for hosts, read/write for permission



User Access must be changed.

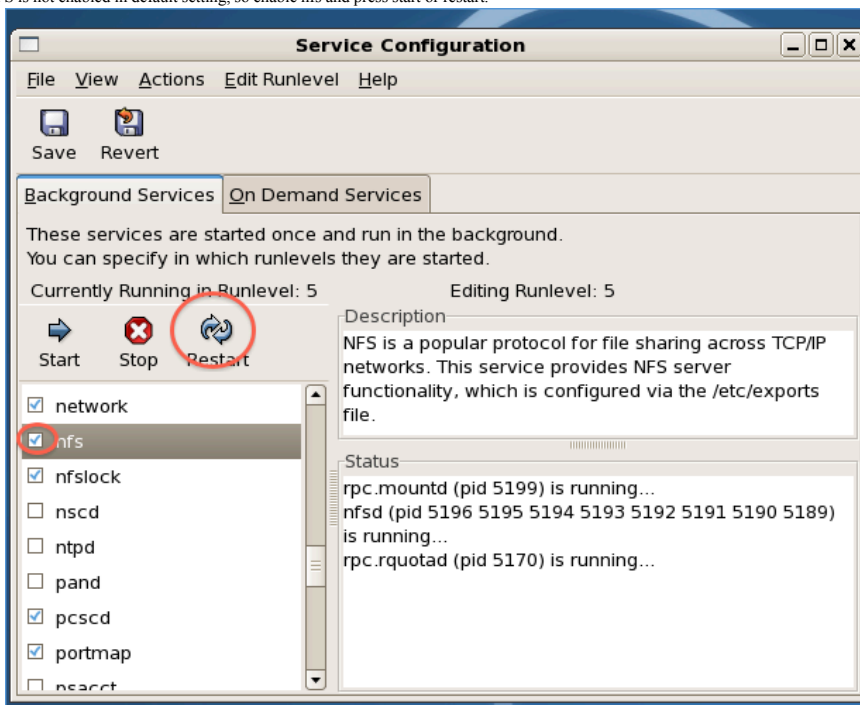


Press OK
restart NFS service



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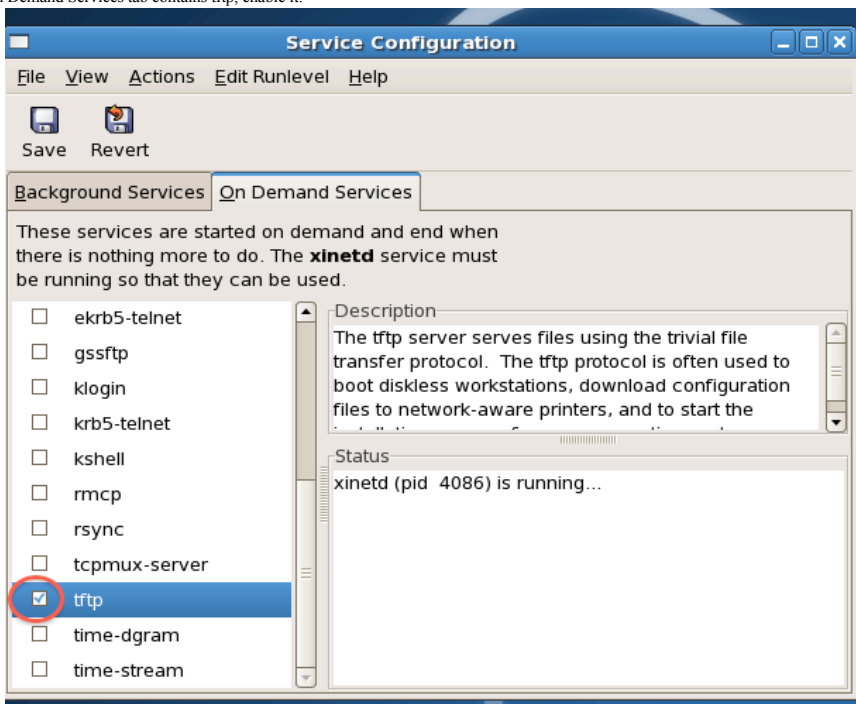
NFS is not enabled in default setting, so enable nfs and press start or restart.



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

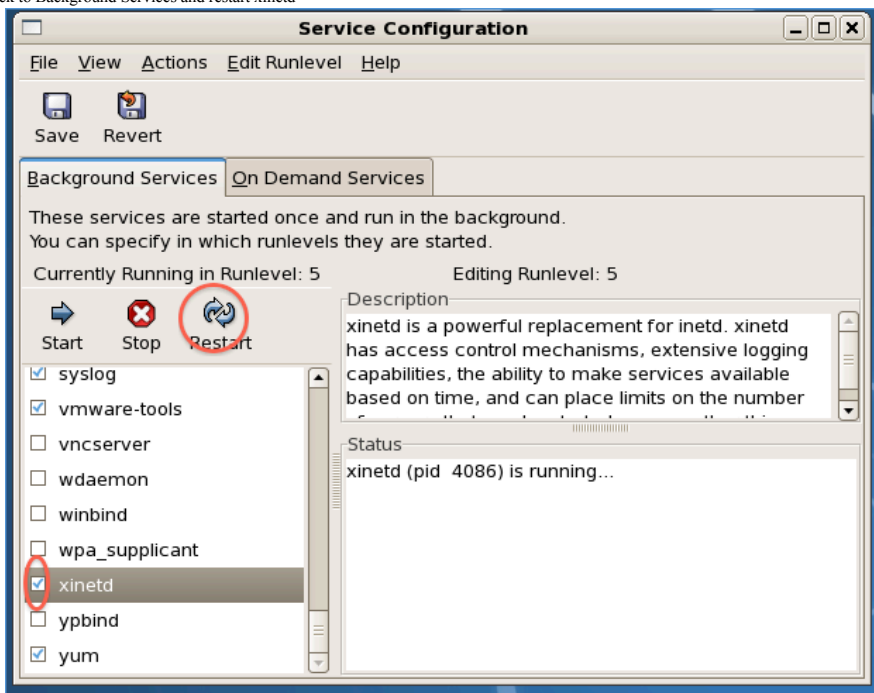
5. Enable tftpd

On Demand Services tab contains tftp, enable it.



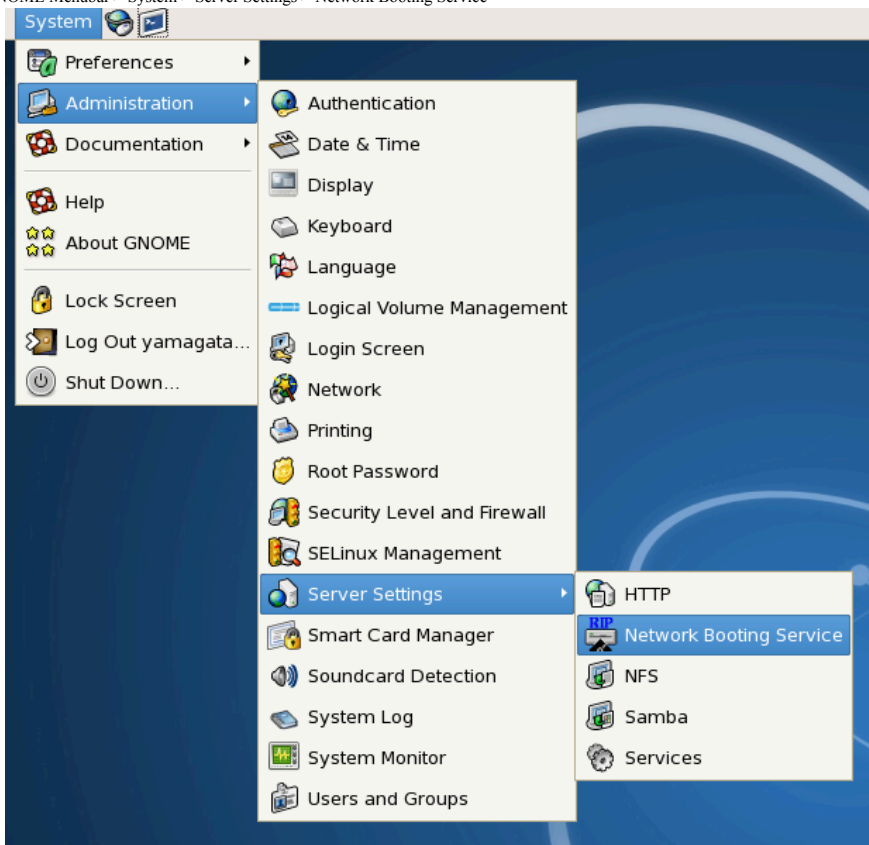
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back to Background Services and restart xinetd



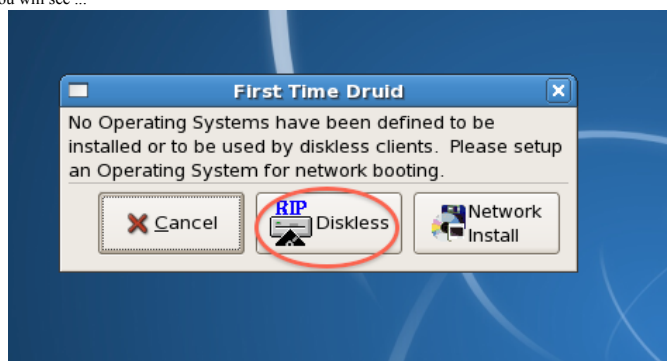
6. Configure pxelinux

GNOME Menubar > System > Server Settings > Network Booting Service



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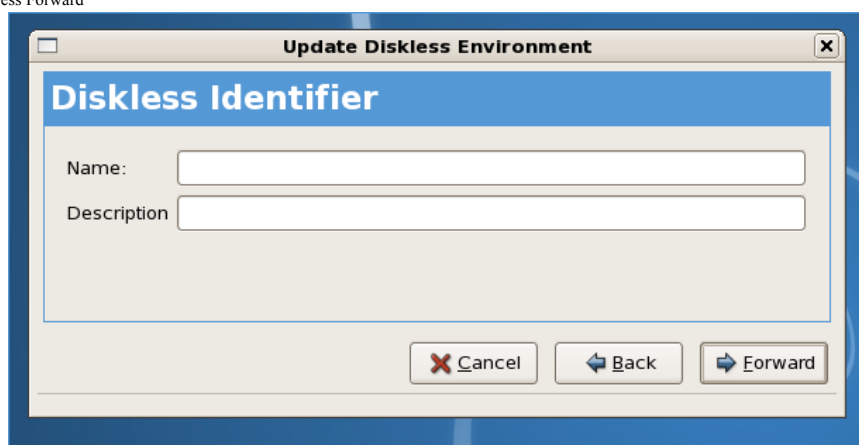
You will see ...



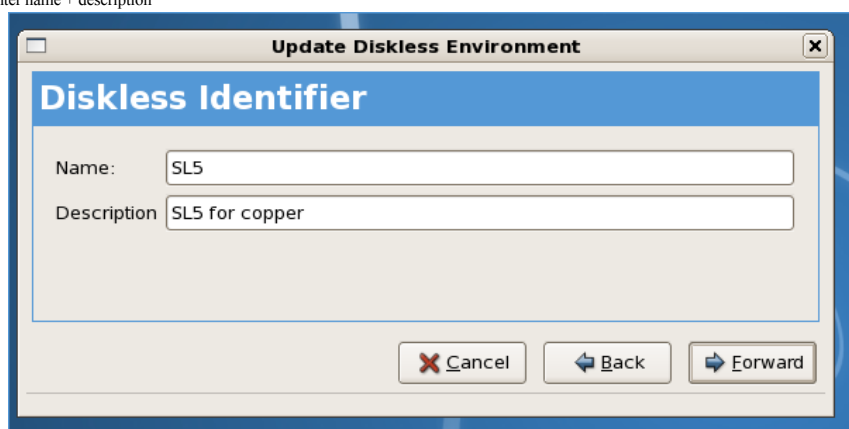
Press diskless



Press Forward

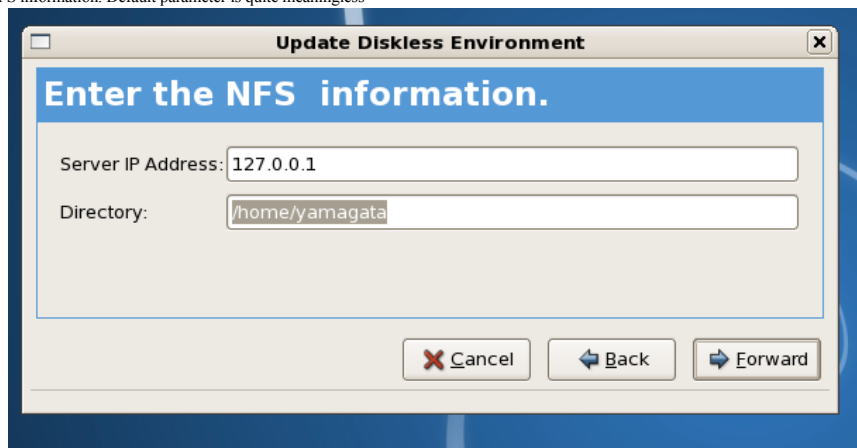


Enter name + description

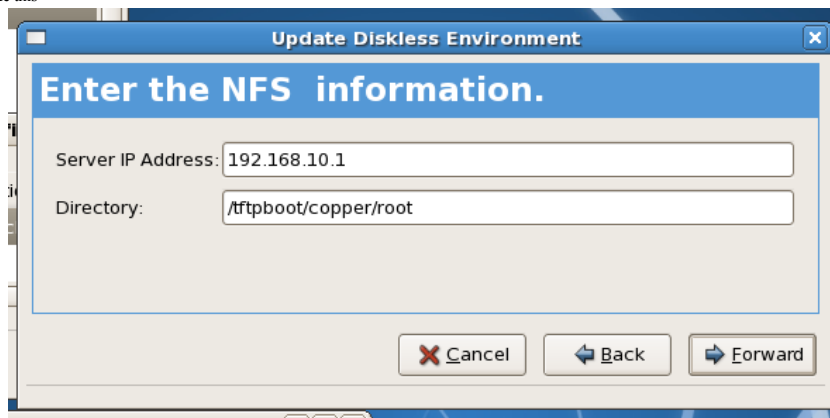


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NFS information. Default parameter is quite meaningless



like this



choose kernel



confirm

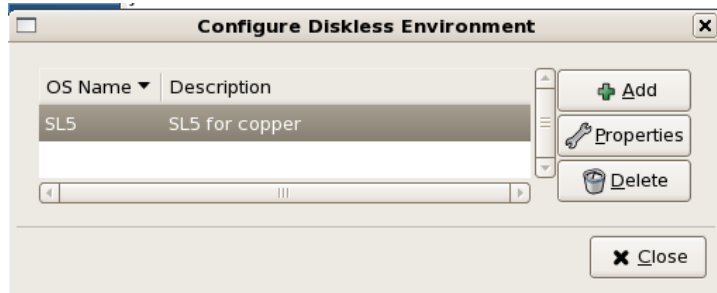


you will see a window like 1 or 2

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

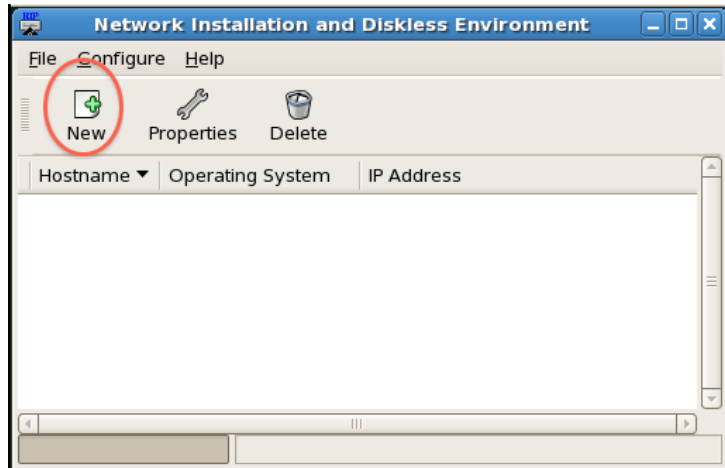
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1.

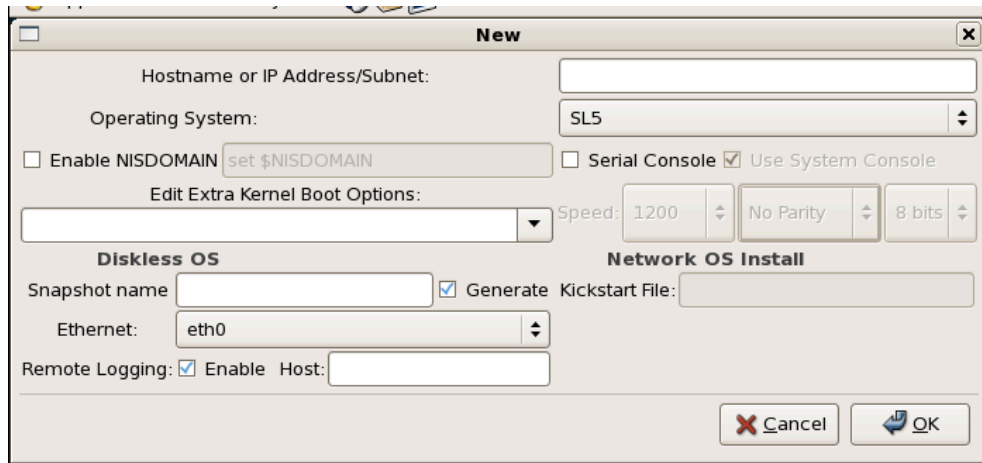


If you will see this, something problematic may have occurred. Only you can do "close". In this case, the OS choice column will be empty after re-launch of system-config-netboot. In my case, the problem was that files in /tftpboot/linux-install/ are deleted.

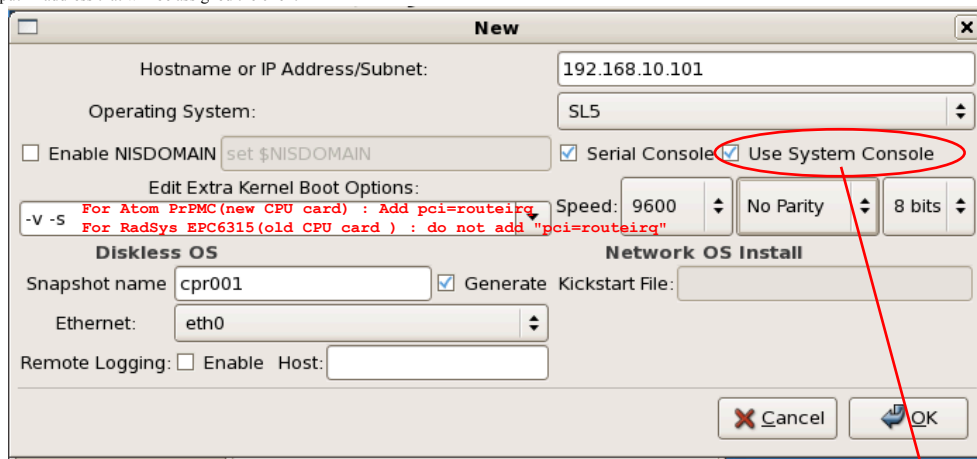
2.



Press new



Input IP address that will be assigned the client

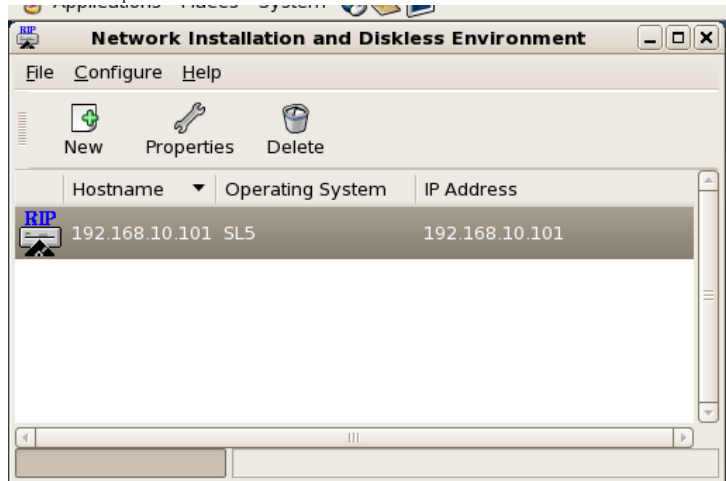


It is better to enable serial console and system console both.

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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client 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/mgs
/tftpboot/linux-install/mgs/expert.msg
/tftpboot/linux-install/mgs/boot.msg
/tftpboot/linux-install/mgs/param.msg
/tftpboot/linux-install/mgs/general.msg
/tftpboot/linux-install/mgs/snake.msg
/tftpboot/linux-install/mgs/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 1600;
    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 'infinite'.(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, `dhcpcd -d -d -d`

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

Turn on COPPER crate,

step1 dhcpcd 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`.