

# Installing BCM: How do I install my head node using a PXE server?

In certain situations it may be desirable to install a Bright head node by booting it off of a PXE server. There are a few preparation steps required in order to allow a Bright ISO to be deployed over the network. There is also a requirement for a machine on the network which is capable of serving TFTP and NFS. It is assumed that a PXE infrastructure (with DHCP server pointing to a TFTP server is already set up).

## Preparation

Make the kernel and initrd from the DVD ISO available through your TFTP server:

```
mkdir -p /mnt/iso
mount -o loop bright8.0-centos7u2.iso /mnt/iso
cp /mnt/iso/boot/rootfs.cgz /tftpboot/bright8-centos7u2-rootfs.cgz
cp /mnt/iso/boot/kernel /tftpboot/bright8-centos7u2-kernel
```

Make the Linux base distribution and packages tree available through NFS:

```
mkdir -p /vol/bright/base-distributions
cp /mnt/iso/data/*.tar.gz /vol/bright/base-distributions
cp -r /mnt/iso/data/packages/* /vol/bright/rpm-store
# OR alternatively replace previous command with:
# mount --bind /mnt/iso/data/packages /vol/bright/rpm-store
```

Export the NFS volume to your network:

```
# Add the following line (with network replaced) to /etc/exports:
/vol/bright 10.2.0.0/16(ro,nohide,all_squash,async)
```

```
# Reload NFS server configuration:
exportfs -a
```

Configure the PXE environment with a label such as the following. Make sure to replace relevant details appropriately (e.g. the IP address to the NFS server).

```
LABEL bright
  KERNEL bright8-centos7u2-kernel
  IPAPPEND 3
  APPEND vga=normal root=/dev/ram0 rw nokeymap xlogin nfsinstall=10.2.1.32
  initrd=bright8-centos7u2-rootfs.cgz
```

## Setting up remote installation

The installation manual (Bright Cluster Manager 8.1+) explains how to carry out an installation, mostly remotely, using SSH or VNC, when the installation is done via a DVD or USB image. A

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similar, mostly remote, installation can also be carried out using SSH or VNC when the installation is done from a PXE server. There are two ways to prepare for a remote session

- Clicking "Remote Installation" in the graphical installer after the GUI installer has been chosen from the PXE boot menu.

or

- Adding a kernel parameter called "netconf" from the PXE boot menu.

Parameter "netconf" follows this pattern: <Interface>:<IP assignment mode>,<IP address>,<Gateway>,<Netmask>:<Password>

Examples for static and DHCP assignments:

- netconf=eth1:dhcp:secret
- netconf=eth0:static,10.141.161.253,10.141.255.254,255.255.0.0:secret

With this parameter added, your APPEND line will look like:

```
APPEND vga=normal root=/dev/ram0 rw nokeymap xlogin nfsinstall=10.2.1.32  
initrd=bright8-centos7u2-rootfs.cgz  
netconf=eth0:static,10.141.161.253,10.141.255.254,255.255.0.0:br347h0fw1ld
```

If the kernel parameter and netconf parameter settings in the PXE boot menu are correct, then the SSH and VNC servers are launched after entering the settings.

**Connecting via a client remotely, and how to continue installation on connection from remote**

Using SSH:

Login to the head node using 'root' user. If you have a build-config.xml already prepared, then you can run the unattended text-mode installer: "/cm/cm-master-install --config /path/to/config/build-config.xml". You can also run non-X/fallback interactive Ncurses installer by running "cm-installer-nonx".

Using VNC:

Connect from a remote machine to the head node using the same password as SSH. Your VNC

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client should support TLS connections to be able to connect. The ssvnc client works when used with the `-ssl` option. The VNC connection then displays, on the remote machine, the GUI installer that is running on the head node. The GUI can then be managed from the remote machine.

In case of an error with the `netconf` parameter settings, the remote Installation page of the GUI installer indicates the reason for the error. E.g. "Password cannot be empty"

If you experience problems with VNC, then you can check `/var/log/x0vncserver.log` on the server.

## Performing the installation the non-remote way

- Boot the head node off the network using the correct interface. On a head node with a connection to the internal cluster network, and the external site network, the correct interface will be the external site network.
- Depending on configuration of PXE environment, make sure that the correct PXE label is loaded
- Wait until the graphical installer screen shows up. This may take a while because transferring a ~350MB `initrd` over TFTP can be a bit slow, especially on congested networks.
- Go through the installation screens until the NFS Parameters screen. At this screen, double check that all parameters are filled correctly. When in doubt, it is possible to press `Alt-Ctrl-F2` and login as root to double-check that the NFS parameters are correct. On networks where the DHCP server takes a while to respond, it may be necessary to perform a second try after an initial DHCP failure.
- In the Network Interfaces screen, make sure to assign the correct NIC for the head node to the internal and the external network. By default the first NIC is for the internal network and the second NIC is for the external network.

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Author: Martijn de Vries

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