Kernel 2.6.18 compilation for COPPER CPU

Sep. 3, 2013

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Since we found that the default kernel (2.6.18) is unstable on COPPER CPU unfortunately, we recommend you to configure and compile the kernel to obtain more stable OS.

1, Get kernel 2.6.18 source

```
[boot server] % wget https://www.kernel.org/pub/linux/kernel/v2.6/linux-2.6.18.tar.gz
[boot server] # mv linux-2.6.18 /usr/src/kernels/
```

2, Get network adapter driver for PCI-E Gigabit network connection

It is not available in the kernel tar ball.

2-1, download and compile driver source

You can download it from

https://downloadcenter.intel.com/Detail_Desc.aspx?lang=jpn&DwnldID=15817

```
[boot server] % gtar xvf e1000e-2.4.14.tar.gz
[boot server] %   cd ~/e1000e-2.4.14/src/
[boot server] %   env BUILD_KERNEL=x.y.z make
[boot server] %   cd ~/
[boot server] #   cp -r e1000e-p.q.r/src /usr/src/linux-2.6.18/drivers/net/e1000e
```

2-2, Modify Kconfig and Makefile of kernel directory

- Add the following lines to /usr/src/kernels/linux-2.6.18/drivers/net/Kconfig

```
config E1000E
        tristate "Intel(R) PRO/1000 PCI-Express Gigabit Ethernet support"
        depends on PCI
        ---help---
          This driver supports the PCI-Express Intel(R) PRO/1000 gigabit
          ethernet family of adapters. For PCI or PCI-X e1000 adapters,
          use the regular e1000 driver For more information on how to
          identify your adapter, go to the Adapter & Driver ID Guide at:

          <http://support.intel.com/support/network/adapter/pro100/21397.htm>
```

For general information and support, go to the Intel support website at:

<http://support.intel.com>

More specific information on configuring the driver is in <file:Documentation/networking/e1000e.txt>.

To compile this driver as a module, choose M here and read <file:Documentation/networking/net-modules.txt>. The module will be called e1000e.

- Add an e1000e related line to /usr/src/kernels/linux-2.6.18/drivers/net/Makefile

obj-$(CONFIG_E1000) += e1000/
+ *obj-$(CONFIG_E1000E) += e1000e/*
obj-$(CONFIG_IBM_EMAC) += ibm_emac/

3, compile and install kernel
Get a configuration file from svn,
https://belle2.cc.kek.jp/svn/trunk/software/daq/copper/driver/kernel/config-130903

```
[boot server] # cp config-130903 /usr/src/kernels/linux-2.6.18/.config
[boot server] # cd /usr/src/kernels/linux-2.6.18
[boot server] # sudo make clean
[boot server] # sudo make bzImage -j10
```

"-j10" means use 10 threads for compiling. This option is not necessary.

```
[boot server] # sudo make modules -j10
[boot server] # sudo make modules_install -j10
[boot server] # sudo make install
```

Check /etc/grub.conf if this kernel is not the default kernel for booting a PXE boot server, otherwise you may fail to boot the server.

4, copy the kernel to tftpboot directory

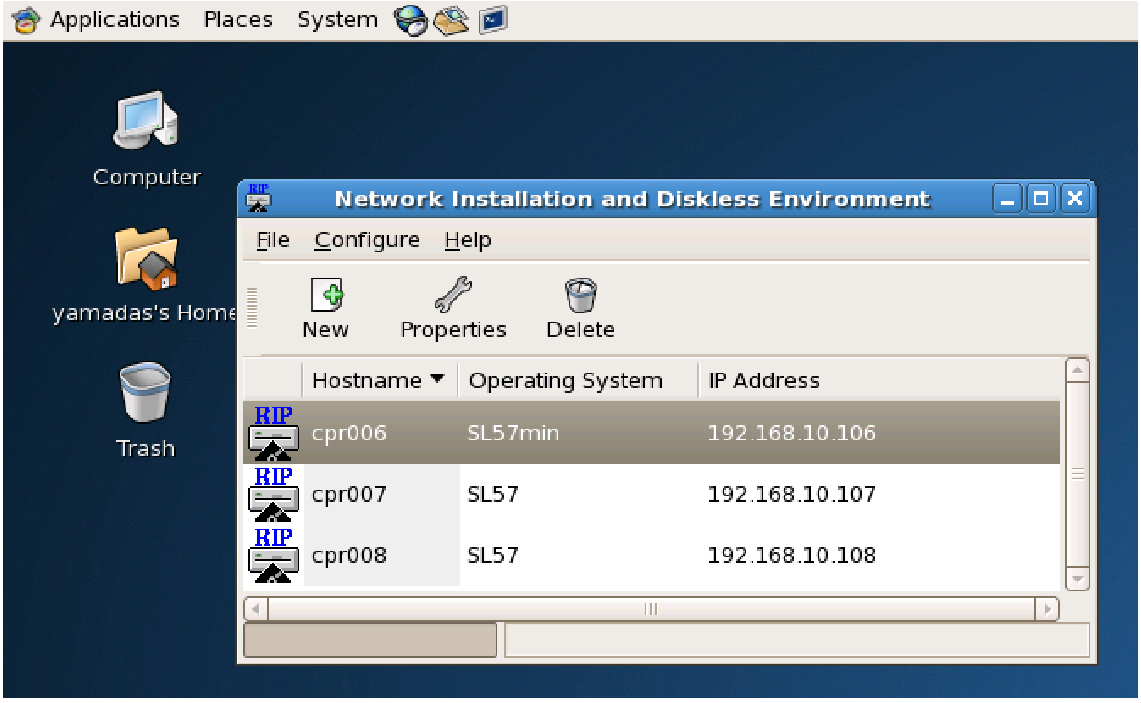
```
[boot server] # cp -r /lib/modules/2.6.18 /tftpboot/copper/root/lib/modules/
```

```
[boot server] # cp -r /usr/src/kernels/linux-2.6.18 /tftpboot/copper/root/usr/src/kernels
[boot server] # cp /boot/initrd-2.6.18.img /tftpboot/copper/root/boot
[boot server] # cp /boot/System.map-2.6.18 /tftpboot/copper/root/boot
[boot server] # cp /boot/vmlinuz-2.6.18 /tftpboot/copper/root/boot
```

5, Modify diskless client setup on PXE boot server

System -> administration -> server setting

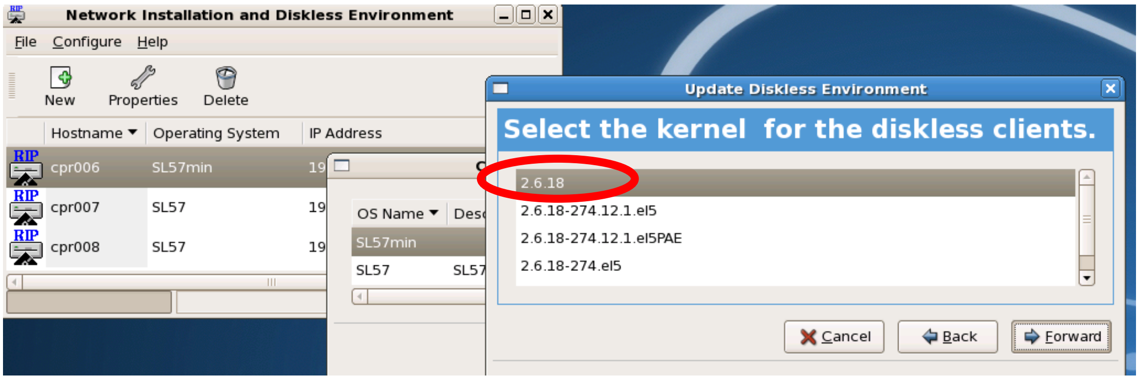
Configure->Diskless-> Add



	Hostname	Operating System	IP Address
RIP	cpr006	SL57min	192.168.10.106
RIP	cpr007	SL57	192.168.10.107
RIP	cpr008	SL57	192.168.10.108

Proceed in the same way as shown in https://belle2.cc.kek.jp/svn/trunk/software/daq/copper/doc/SetupPocketDAQ_1_PXE_bootserver.pdf

A new kernel entry should appear on a kernel list.


Network Installation and Diskless Environment
File
Configure
Help
New
Properties
Delete
Update Diskless Environment
Cancel
Back
Forward

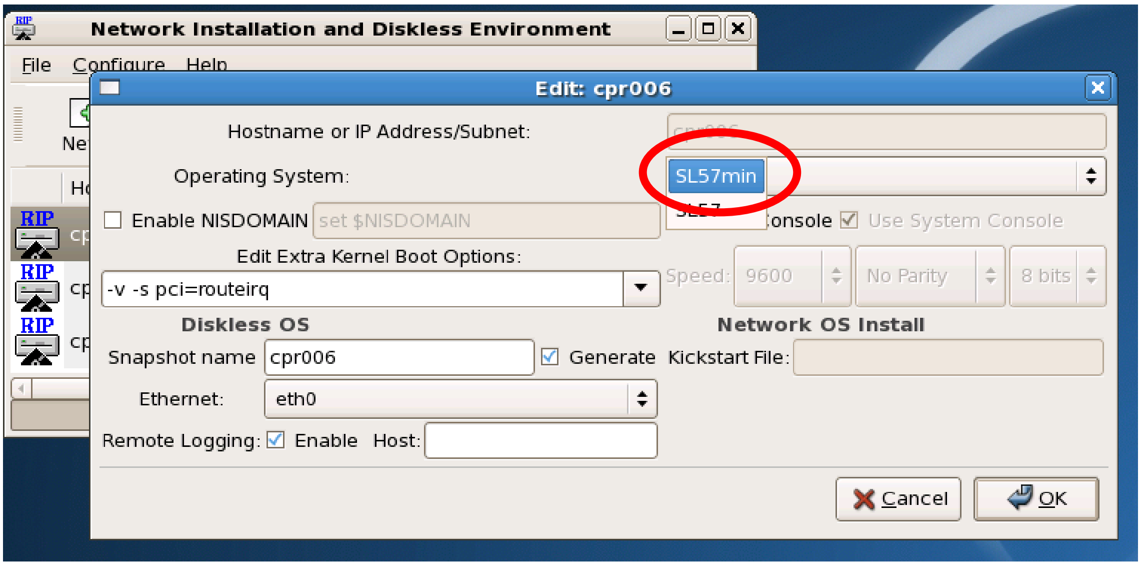
Hostname	Operating System	IP Address
cpr006	SL57min	19
cpr007	SL57	19
cpr008	SL57	19

OS Name	Desc
SL57min	
SL57	SL57

Select the kernel for the diskless clients.

```
2.6.18
2.6.18-274.12.1.el5
2.6.18-274.12.1.el5PAE
2.6.18-274.el5
```

After updating diskless environment, each COPPER CPU's setting also should be modified.



Hostname or IP Address/Subnet: cpr006

Operating System: SL57min

SL57

☐ Enable NISDOMAIN set $NISDOMAIN

Console ☑ Use System Console

Edit Extra Kernel Boot Options: -v -s pci=routeirq

Speed: 9600 No Parity 8 bits

Diskless OS

Snapshot name cpr006 ☑ Generate

Ethernet: eth0

Network OS Install

Kickstart File:

Remote Logging: ☑ Enable Host:

Please check /tftpboot/linux-install/pxelinux.cfg/C0A80A** files so that the modification is correctly applied.

6, Boot COPPER CPU