

# Install the latest AoE driver and tools in Novell SLES and openSuSE

## Objective

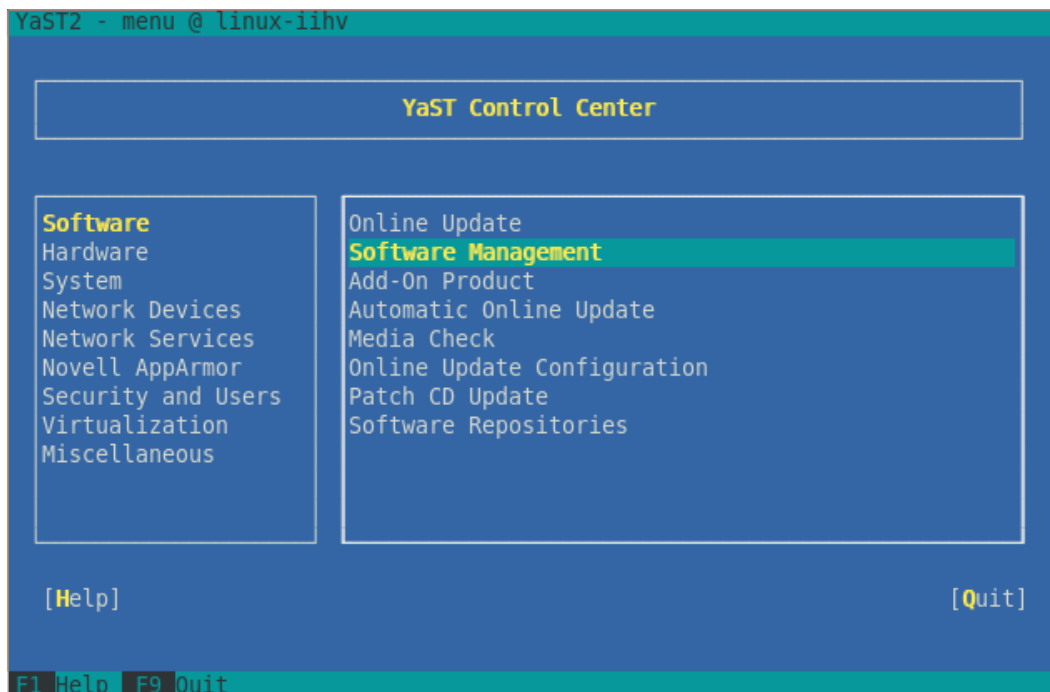
Novell SLES and openSuSE are powerful Linux based operating systems, with their centralized management (through YaST) as their biggest selling point. We will demonstrate how to install the latest AoE driver and aoetools within openSuSE and SLES variants. We will be using openSuSE 11.0, but the process will be very similar for versions of SLES and openSuSE.

An older AoE driver is in the Linux kernel as of 2.6.11, but does not include aoetools. If you just want to install the AoE tools but want to leave the AoE driver version alone, please visit <http://aoetools.sourceforge.net/> If not, this document will take you through the installation of both the latest AoE driver and aoetools, including the [cec \(Coraid Ethernet Console\) client](#).

## Resolution

### 1. Install prerequisites

The installation assumes that you have several packages to compile the driver. To install these, go into Yast, then “Software Management” or “Add or Remove Software,” depending on you version of SLES or openSuSE.



Now, search and install the gcc, make, patch, and kernel-source packages. Now you should be ready to download and install the latest AoE driver.

### 2. Remove old AoE driver

As mentioned, as of the Linux kernel version 2.6.11, an older AoE driver is in the kernel. If you do not want to upgrade the AoE driver, please visit <http://aoetools.sourceforge.net/> to get just the AoE tools. We will now remove the old one to replace it with a newer version. These commands will remove the old AoE driver from the system. This assumes that there are no AoE LUNs mounted on the system.

```
openSuSEServer:~ # rm -rf /dev/etherd
openSuSEServer:~ # find /lib/modules/`uname -r` -name aoe.ko -print0 | xargs -0 rm
openSuSEServer:~ # rmmod aoe
```

### 3. Install AoE driver

The latest AoE drivers will always be located at <http://support.coraid.com/support/linux/> Here are the steps to download and install them. Notice that this document was written during the AoE driver revision 64. Newer versions of the driver may be available, so please visit the aforementioned website for the newest updates.

```
openSuSEServer:~ # wget http://support.coraid.com/support/linux/aoe6-64.tar.gz
--2008-09-30 15:38:41-- http://support.coraid.com/support/linux/aoe6-64.tar.gz
Resolving support.coraid.com... 12.51.113.3
Connecting to support.coraid.com|12.51.113.3|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 129015 (126K) [application/x-tar]
Saving to: `aoe6-64.tar.gz'

100%[=====>] 129,015
127K/s in 1.0s

2008-09-30 15:38:45 (127 KB/s) - `aoe6-64.tar.gz' saved [129015/129015]
```

Now, unpack the archive file, and then make the driver.

```
openSuSEServer:~ # tar -xvzf aoe6-64.tar.gz
aoe6-64/
aoe6-64/COPYING
aoe6-64/EtherDrive-2.6-HOWTO.shtml
....(output truncated)
openSuSEServer:~ # cd aoe6-64/
openSuSEServer:~/aoe6-64 # make
ensuring compatibility ... 1
patching file linux/drivers/block/aoe/disk_attr.h
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
patching file linux/drivers/block/aoe/aoenet.c
....(output truncated)
openSuSEServer:~/aoe6-64 # make install
ensuring compatibility ... 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 ok
cd aoetools-27 && make
make[1]: Entering directory `/root/aoe6-64/aoetools-27'
....(output truncated)
```

At this point, the driver is installed. Now we will initialize the driver.

```
openSuSEServer:~/aoe6-64 # modprobe aoe
```

You can verify the driver and aoetools version by using the aoe-version command.

```
openSuSEServer:~/aoe6-64 # aoe-version  
aoetools:          27  
installed aoe driver: 64  
running aoe driver:  64
```

Notice that the aoetools and driver versions are the same ones that we had downloaded, signifying not only that we do not have the old driver present, but that the new one is running. This may be different depending on which driver version was downloaded and installed.

#### 4. View available LUNs

Now that we have the driver installed and loaded, we can see which LUNs are available for mounting from this server.

```
openSuSEServer:~/aoe6-64 # aoe-discover  
openSuSEServer:~/aoe6-64 # aoe-stat  
e1.0  6501.401GB  eth0 1024 up  
e2.0  5701.311GB  eth0 1024 up  
openSuSEServer:~/aoe6-64 # ls -l /dev/etherd/e*  
brw-rw---- 1 root disk 152, 0 2008-08-20 16:08 /dev/etherd/e1.0  
brw-rw---- 1 root disk 152, 16 2008-08-20 16:10 /dev/etherd/e2.0
```

In this case, I have two Coraid SR boxes on the network, so I can see the LUNs from each box. You can now put any filesystem on the device. You can mount these devices wherever you please, as they are readable, writable LUNs presented to the server. For example, if you had formatted e1.0 as an XFS filesystem, you can mount it by issuing the following command.

```
openSuSEServer:~/aoe6-64 # mkdir /data  
openSuSEServer:~/aoe6-64 # mount /dev/etherd/e1.0 /data  
openSuSEServer:~/aoe6-64 # mount | grep e1.0  
/dev/etherd/e1.0 on /data type xfs (rw)
```

#### 5. Install bootup script

For your convenience, we have created a startup and shutdown script for the AoE driver. As it is a skeleton, there may be configuration changes that you may need to make. But if you want the AoE driver to be cleanly loaded at bootup and cleanly unloaded at shutdown, please closely follow the [script's documentation](#). Once you have downloaded the script into the /etc/init.d directory, as the file /etc/init.d/aoe-init, modify it to fit your server's needs. The script assumes that the server will be running in runlevel 3 or 5. After that, run the following commands to activate the script.

```
openSuSEServer:~/aoe6-64 # chmod 755 /etc/init.d/aoe-init
openSuSEServer:/aoe6-64 # cd /etc/rc.d/rc3.d && ln -s ../init.d/aoe-init S99aoe-init
openSuSEServer:/etc/rc.d/rc3.d # cd /etc/rc.d/rc5.d && ln -s ../init.d/aoe-init S99aoe-init
openSuSEServer:/etc/rc.d/rc5.d # cd /etc/rc.d/rc0.d && ln -s ../init.d/aoe-init K01aoe-init
openSuSEServer:/etc/rc.d/rc0.d # cd /etc/rc.d/rc1.d && ln -s ../init.d/aoe-init K01aoe-init
openSuSEServer:/etc/rc.d/rc1.d # cd /etc/rc.d/rc2.d && ln -s ../init.d/aoe-init K01aoe-init
openSuSEServer:/etc/rc.d/rc2.d # cd /etc/rc.d/rc6.d && ln -s ../init.d/aoe-init K01aoe-init
```

These commands are listed in the script header for your convenience. Now you can test the script by executing a reboot command.

## **6. Install cec (optional)**

Now that the system is recognizing and using AoE mountpoints in the /dev/etherd directory, it may be useful to access the Coraid SR boxes directly. The cec (Coraid Ethernet Console) client will be the way to do this. Although this is an optional step, if you would like to install the cec client, please reference our [cec documentation](#).

### *Additional Information*

For more information, please reference the [EtherDrive storage Linux documentation](#) and our [Linux driver page](#). If you have any questions or comments please let us know at [documentation@coraid.com](mailto:documentation@coraid.com)

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