How to Install an OSCAR Cluster
Software Version 4.0
Documentation Version 4.0

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an overview for the System Installation Suite software package used in OSCAR to perform the bulk of the cluster installation. Section 5 details the cluster installation procedure (the level of detail lies somewhere

3.1 Release Features

-

```
# export C3_RSH='ssh -x'
# cexec uptime
```

The warnings about `xauth` should no longer appear (and the `<`

– This will probably not kill the process (it's likely to be in a state where it is ignoring signals), but it should be tried anyway – this would allow `rpm`

```
rpmbuild --rebuild mysql-3.23.58-2.3.src.rpm
cp /usr/src/redhat/RPMS/ia64/mysql*-3.23.58-2.3.ia64.rpm /tftpboot/rpm
```

```
[HARDWARE]
  ORDER = e1000 e1000 mptscsih mptbase scsi_mod
```

- USB

5.1.3 Download a copy of OSCAR and unpack on the server

If you are reading this, you probably already hare2.eload a a 5.1.3 5.1.3ding2-2dio s ser2-2latesta and2-2Reoad5.1

7. updates system startup (`/etc/rc.d/init.d`) scripts
8. restarts affected services

A lot of output will be displayed in the console window where you invoked `install_cluster`. This reflects normal operational output from the various installation commands that OSCAR executes. The output is also saved in the file `oscarinstall.log`

The first step of the Wizard, “Step 0”, enables you to download additional packages. The OSCAR

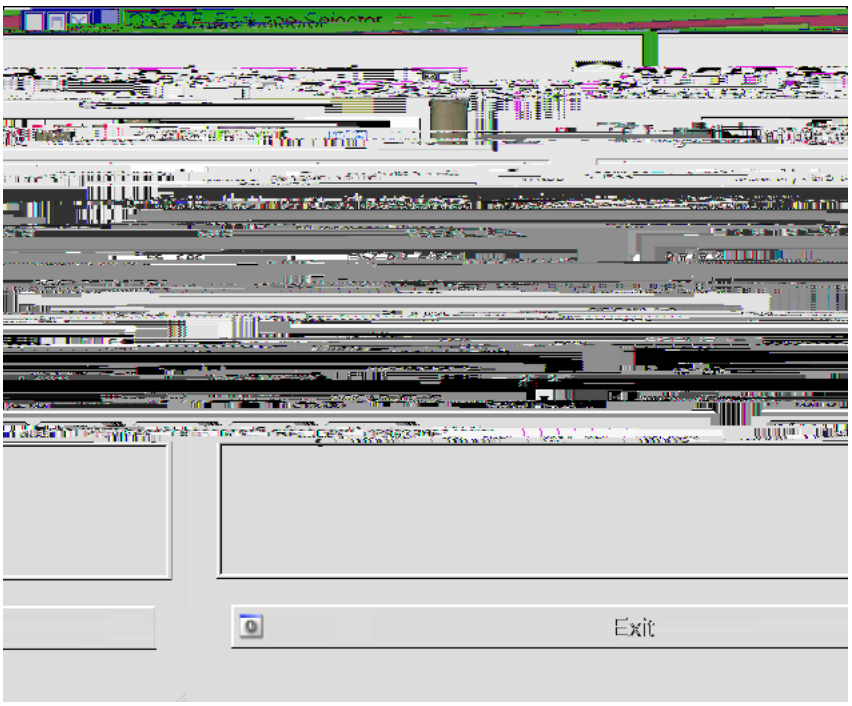


Figure 2: OSCAR package selection.

Once you have a selected a set of OSCAR packages to install, click on the **<Exit>** button to save your selections and return to the main OSCAR window. Note that closing the window yields the same result and there is no way of 'defaulting' to the original settings, so make sure your package list is complete before proceeding to the next step.

5.5 Configuring OSCAR Packages

Note: This step is optional.

Some OSCAR packages allow themselves to be configured. Clicking on the **<Configure Selected OSCAR Packages>** button will bring up a window listing all the packages that can be configured. Figure 3 shows a sample with only the Environment Switcher package listed.

Clicking on any of the packages' **<Config>** button will bring up a panel for configuring that package. Select whatever options are appropriate for that package, and then click on the **<Save>** button to save your selections, or the **<Cancel>** button to cancel all of your selections and leave the original settings. If you have saved your changes but want to go back to the default settings, simply click on the

If these conditions are not met, the installation may fail during this step or later steps.
Press the **<Build OSCAR Client Image>**

An * in the size column causes that partition to grow to fill the entire disk. You can create your own

6. The *Padding* specifies the number of digits to pad the client names, e.g., 3 digits would yeild oscarnode001. The default is 0 to have no padding between base name and number (index).

7. The *Starting IP* specifies the IP address of the first client. It will be incremented for each subsequent client. See Footnote 3 on page 19 for more information on how to pick a starting IP address.

   Clients will be given IP addresses starting with this IP address, and incrementing by 1 for each successive client. Ensure that the range of [*starting_ip*, (*starting_ip* + *num_clients*)] does not conflict with the IP addresses of any other nodes on your network.

   IMPORTANT NOTE: Be sure that the resulting range of IP addresses does *not* include typical broad-

After all clients have been created, you may press the **<Close>** button in the build clients dialogue and continue with the next step.

5.9 Setup Networking

The MAC address of a client is a twelve hex-digit hardware address embedded in the client's ethernet adapter. For example, "`00:0A:CC:01:02:03`", as opposed to the familiar format of IP addresses. These MAC addresses uniquely identify client machines on a network before they are assigned IP addresses. DHCP uses the MAC address to assign IP addresses to the clients.

In order to collect the MAC addresses, press the **<Setup Networking>** button. The OSCAR network utility dialog box will be displayed. To use this tool, you will need to know how to network boot your client nodes, or have a file that lists all the MACs from your cluster. For instructions on doing ns, orall the ehe 55.2909
needyou to collect the MACs your clustersartd the colleci(on)-933byn presoing the

You may also configure your remote boot method from this panel. The **<Build Autoinstall Floppy>** button will build a boot floppy for client nodes that do not support PXE booting. The **<Setup Network Boot>** button will configure the server to answer PXE boot requests if your client hardware supports it. See Appendix A for more details.

If your network switch supports multicasting, there is a new feature in OSCAR 3.0 which uses multicast to push files to the clients. To enable this feature simply click on the **<Enable Multicasting>** checkbox.

Once this feature is enabled, rsync will not be used for file distribution but instead by a program called Flamethrower which is bundled with SystemImager.

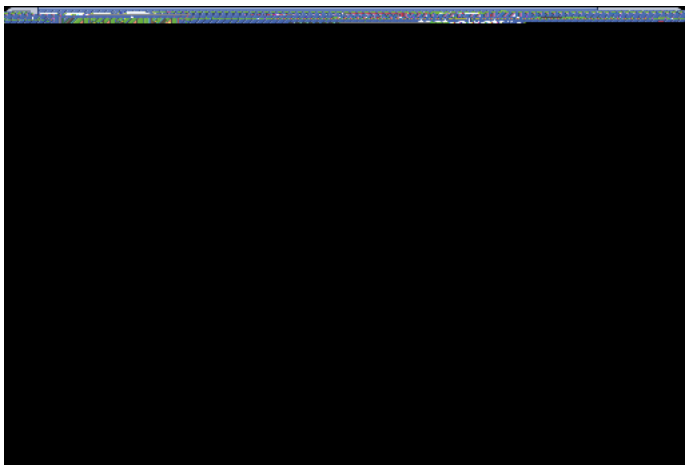


Figure 7: Setup cluster tests

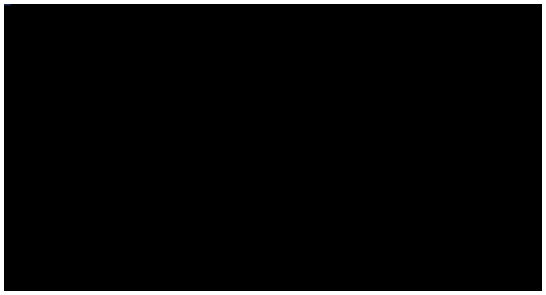


Figure 8: Adding OSCAR clients.

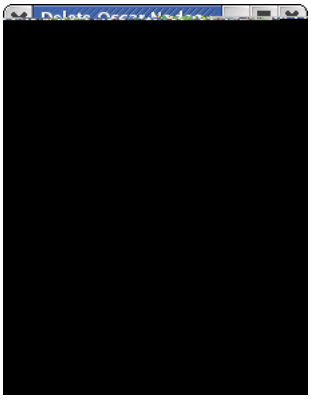


Figure 9: Deleting OSCAR clients.

compute nodes, and run them outside of the wizard environment. All scripts are re-runnable in OSCAR, and for serveral good reasons.

These options are not good ones, and we recognize this fact. We are working on better tools for general use. Generally, it is a difficult problem to judge error codes on remote systems and try to guess the appro-

6 Package-Specific Installation Notes

The following sections provide package-specific notes regarding installation.

6.1 Disabling Services

The `disable-services` OSCAR package disables the following services (if they exist) on the client

- the main OSCAR server node and all client OSCAR nodes allow `ssh` logins from anywhere
- the main OSCAR server node has http access enabled from anywhere
- any remaining network connections from outside the cluster are blocked
- the logging of bad network packets to syslog is turned off
-

6.10.1 Multicast Installs with SystemImager

SIS now includes multicast install capability with SystemImager v3.2.x and Flamethrower v1.0.x. Working with multicast can prove very beneficial, especially for large sites. However, multicast can be a tricky thing to get working reliably, based on networking equipment, multicast tuning parameters, machine speed, etc. If you are interested in giving multicast a try, see the ”HOWTO Use Flamethrower for Multicast Installs”

```
/opt/lam-1.2.3/bin/mpicc
# bash
# which mpicc
/opt/mpich-4.5.6/bin/mpicc
```

I you wish to have your current shell reflect the status of your switcher settings, you must run the "`switcher-reload`" command. For example:

4. invokes `systemconfigurator` to customize the image to the client's particular hardware and configuration.
5. unmounts `/a`.

C.2 Differences from Standard OSCAR Install

C.2.1 Cluster Definition

When setting up the networking in the OSCAR installation wizard, it is not necessary to collect the MAC

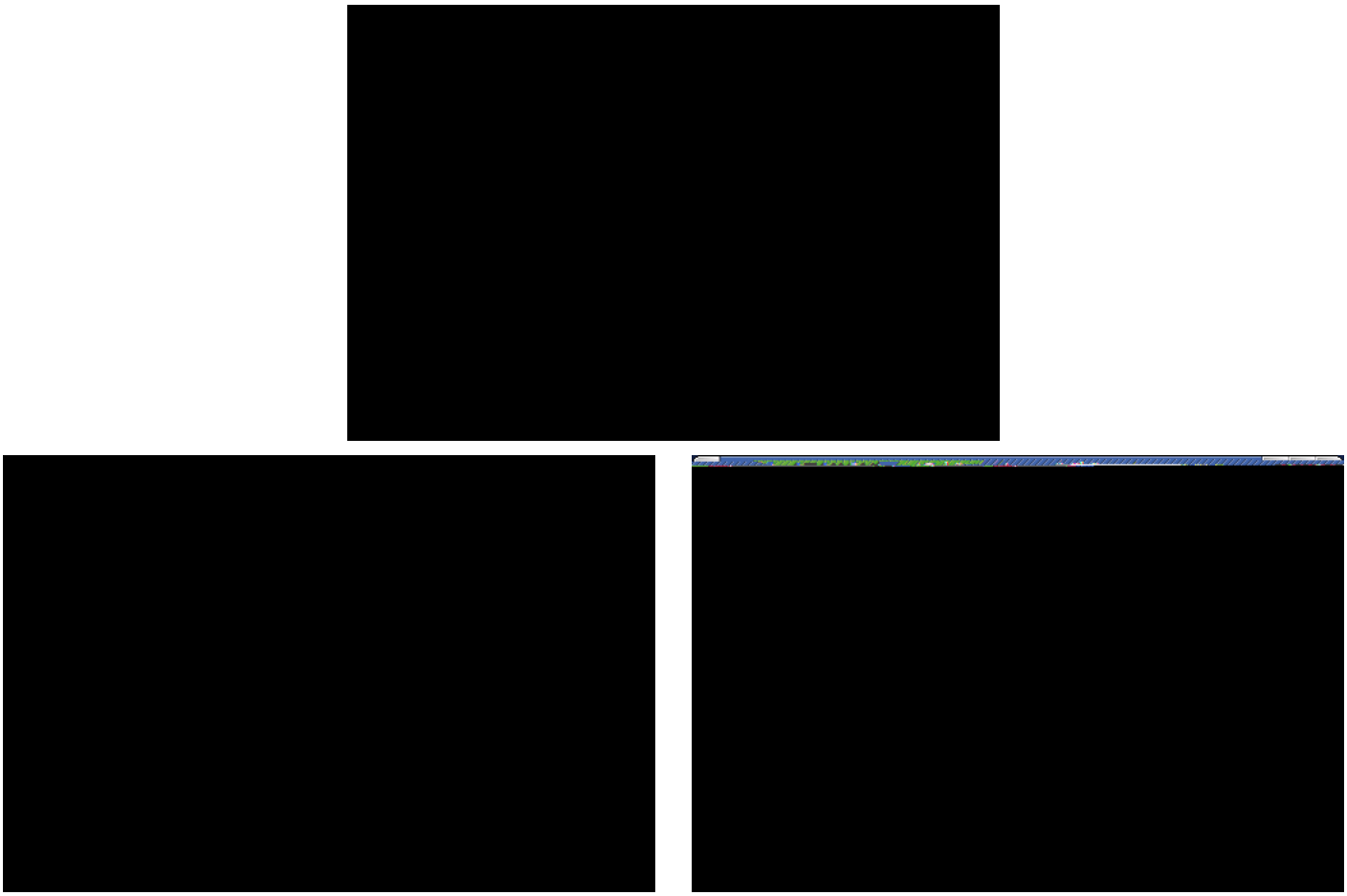


Figure 11: Configure & Install the OSCAR Toolkit.

E.5 Install OSCAR Server Packages

This step is used to setup the server for the OSCAR cluster. See details in Section 5.6, page 24.

E.6 Build OSCAR Client Image

This step builds a disk image for the clients to download and install onto their local disks. See the details in Section 5.7, page 24.

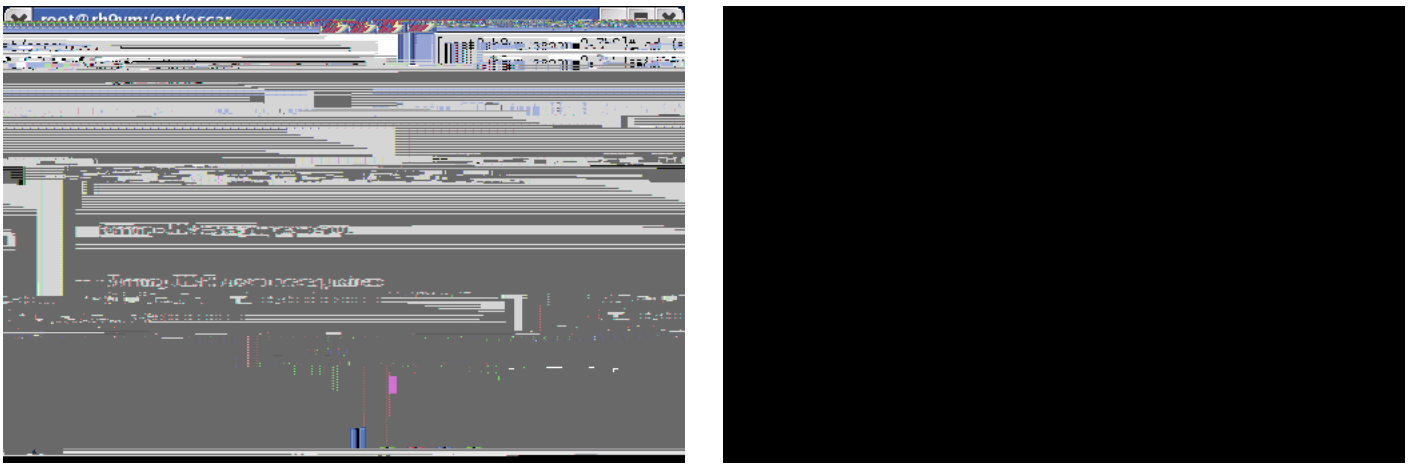


Figure 12: Running the `install_cluster` script.

Figure 13: Enter an OSCAR Database (ODA) password.

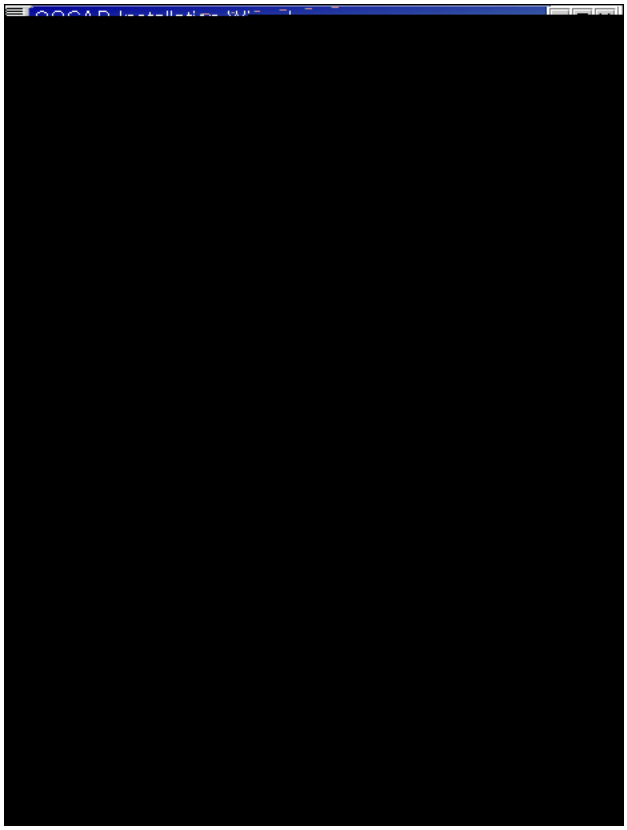


Figure 14: The OSCAR Installation Wizard.

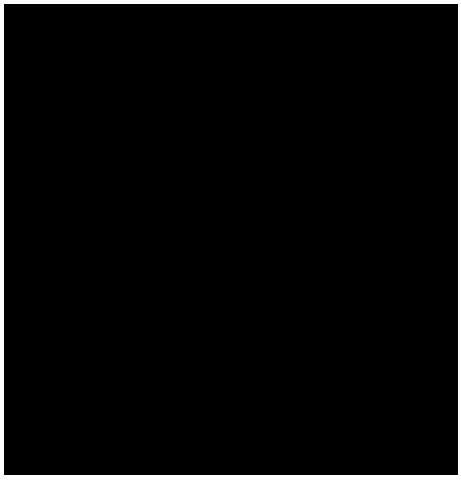
Figure 16: Adding Additional OPD Repositories.

Figure 18: Configuring selected OSCAR packages. For example, the Environment Switcher package has configuration options.

Figure 19: Successfully installed the OSCAR server packages.

E.7 Define OSCAR Clients

Step 3 is used to specify how many clients there will be, and what their TCP/IP characteristics will be. See the details in Section 5.8, page 26.



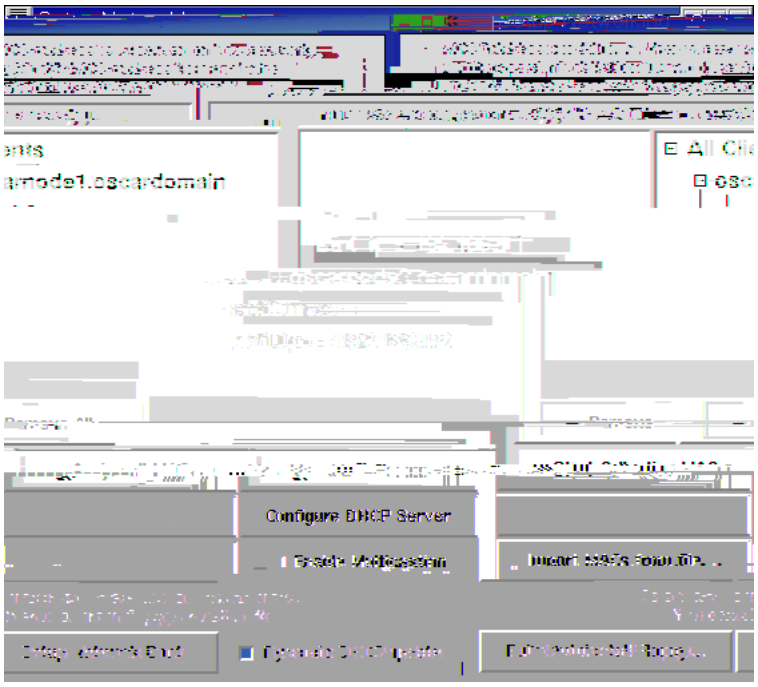


Figure 22: Setup networking: initial window.

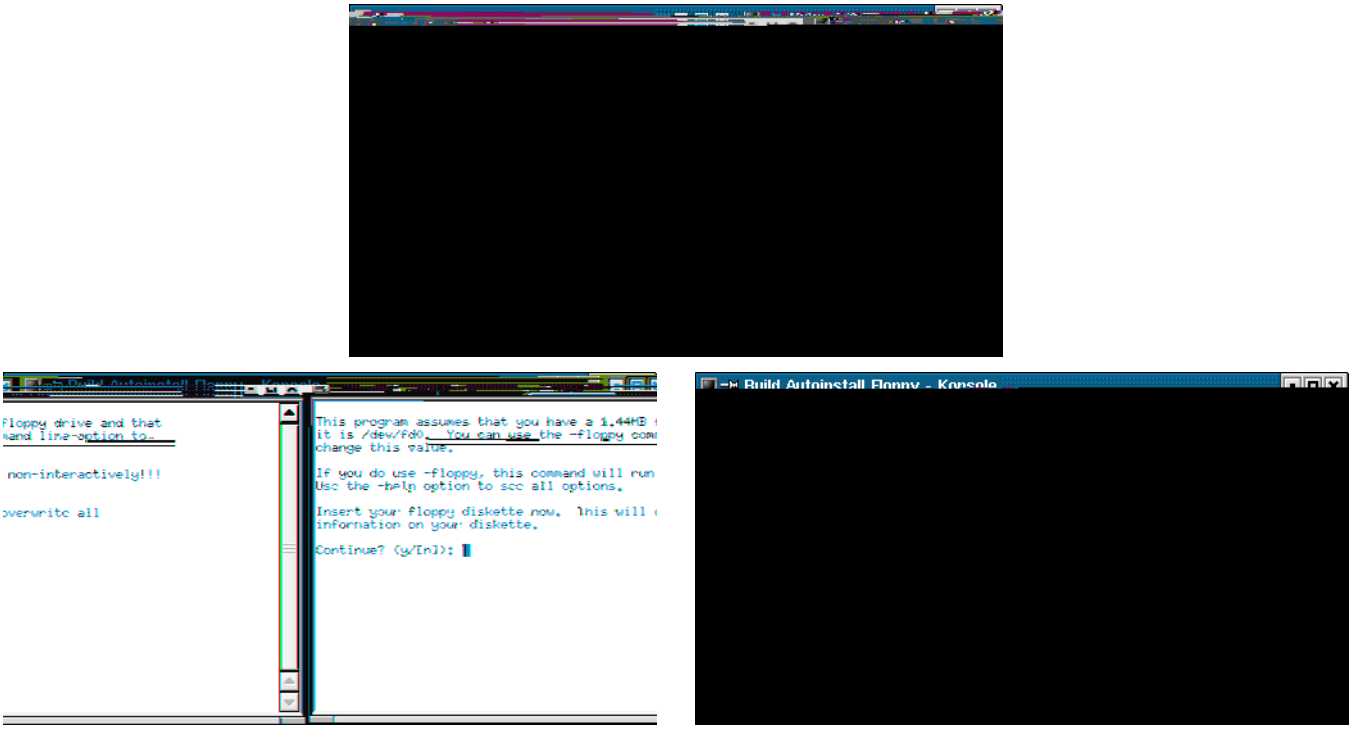


Figure 23: Setup networking: building an autoinstall floppy.

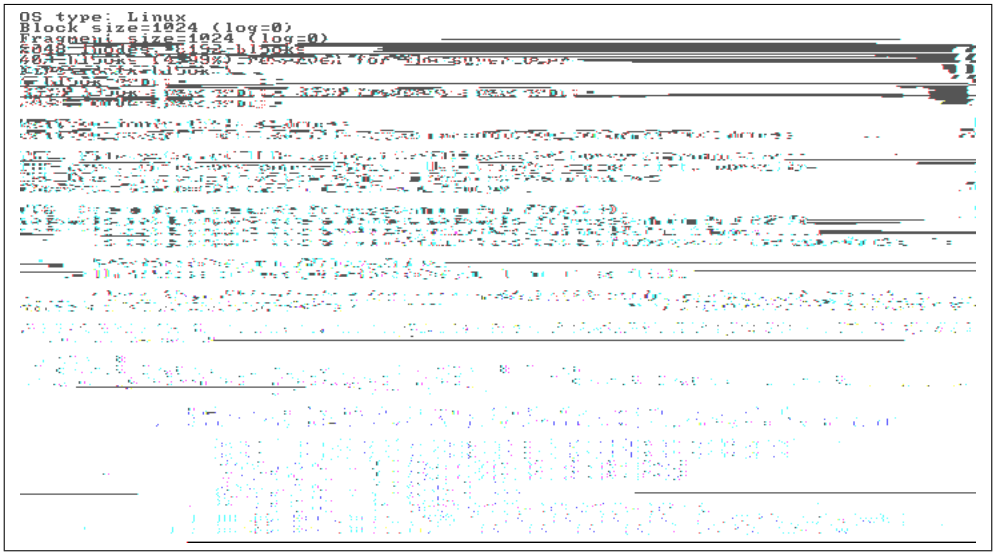


Figure 26: Setup networking: client is broadcasting, allows capture of MAC address.

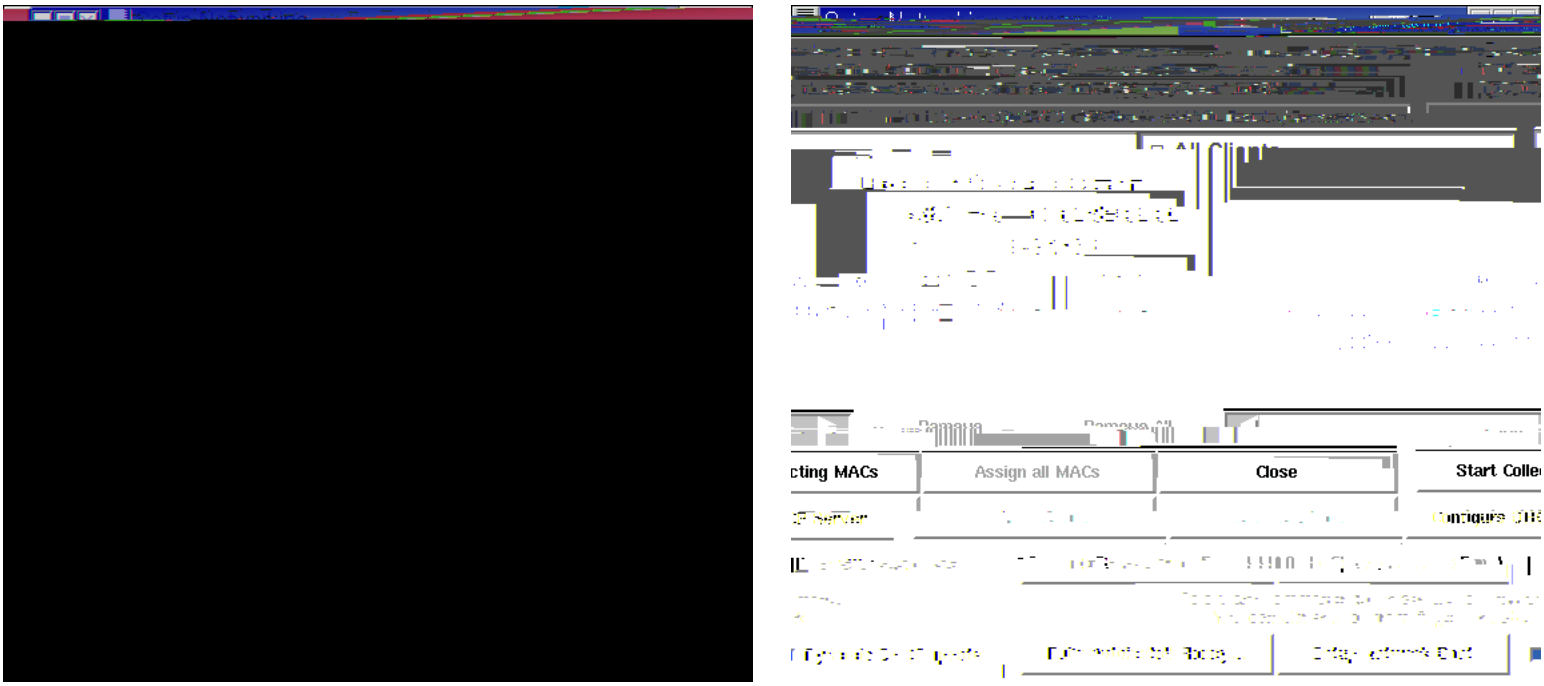


Figure 27: Setup networking: Scanning network, found first MAC address, then later assigned all MAC addresses.

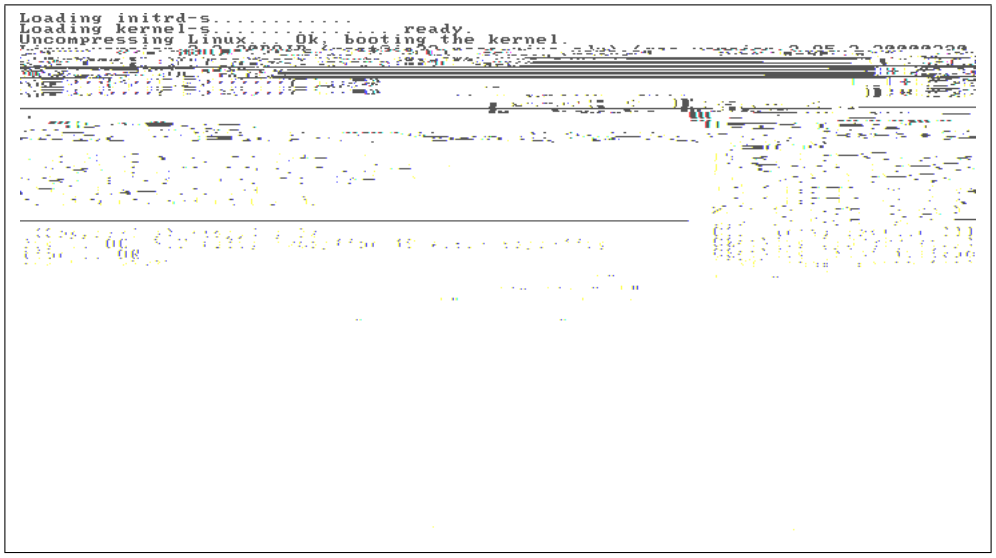
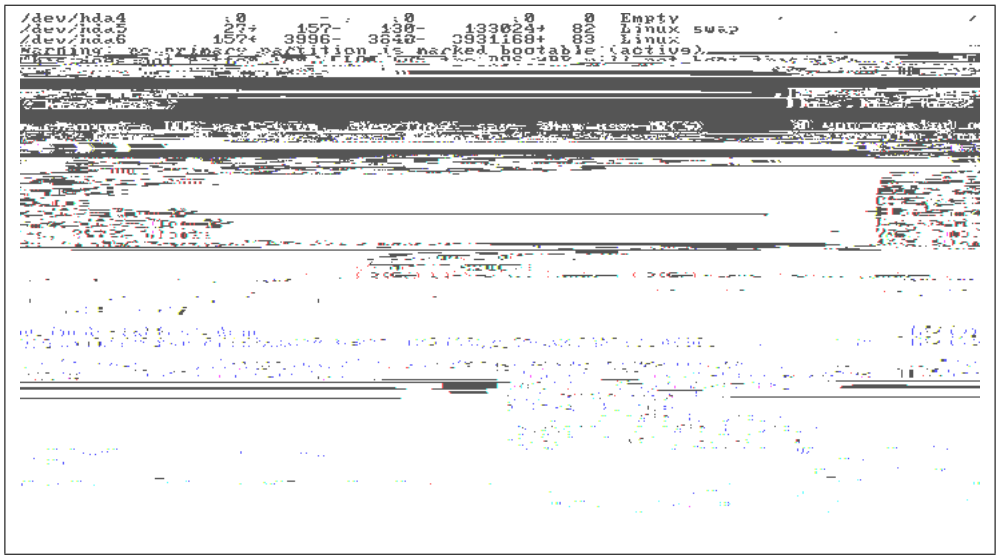
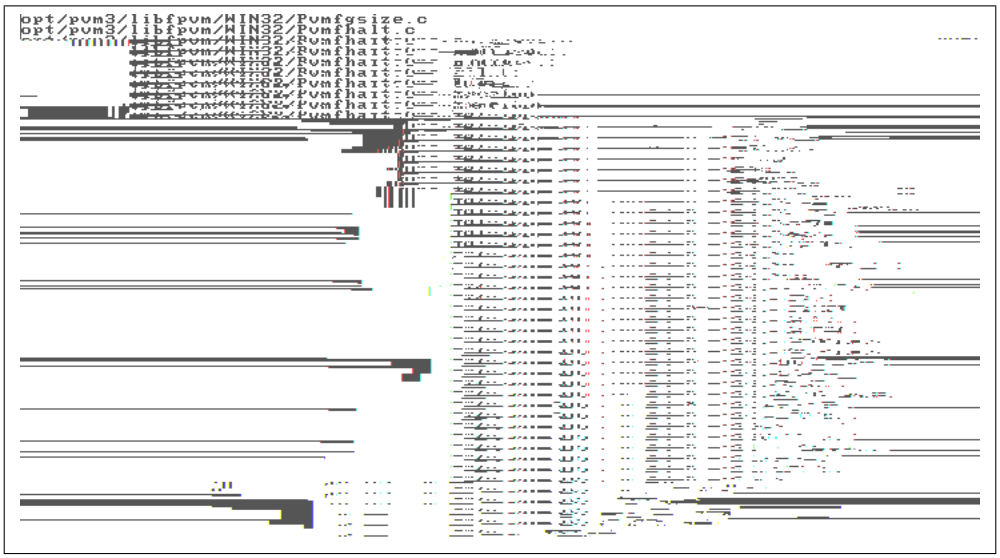


Figure 28: Booting the clienm a second time to download the image.

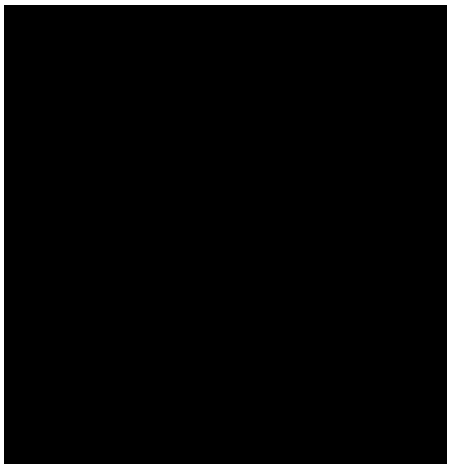




E.11 Delete Node Button

The Delete Node button can be used to delete clients from an OSCAR cluster. Note that this button only deletes OSCAR's knowledge of the clients – what physically happens to that client is not OSCAR's concern. This example shows deleting one of the clients setup in the previous sections – `oscarnode2`. The next section (Section E.12

E.12



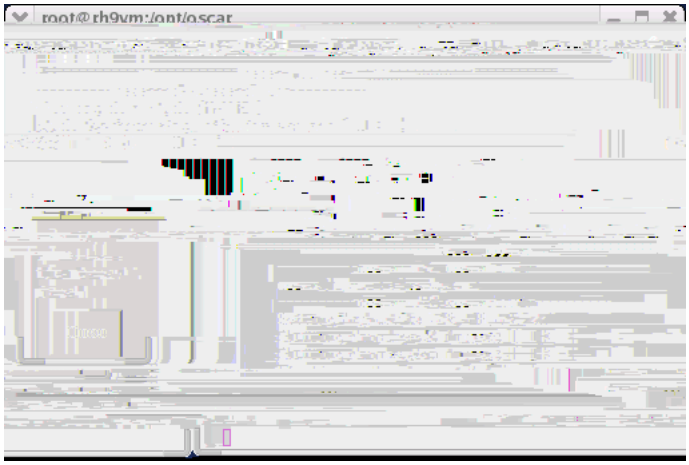


Figure 38: Add node / complete cluster setup.

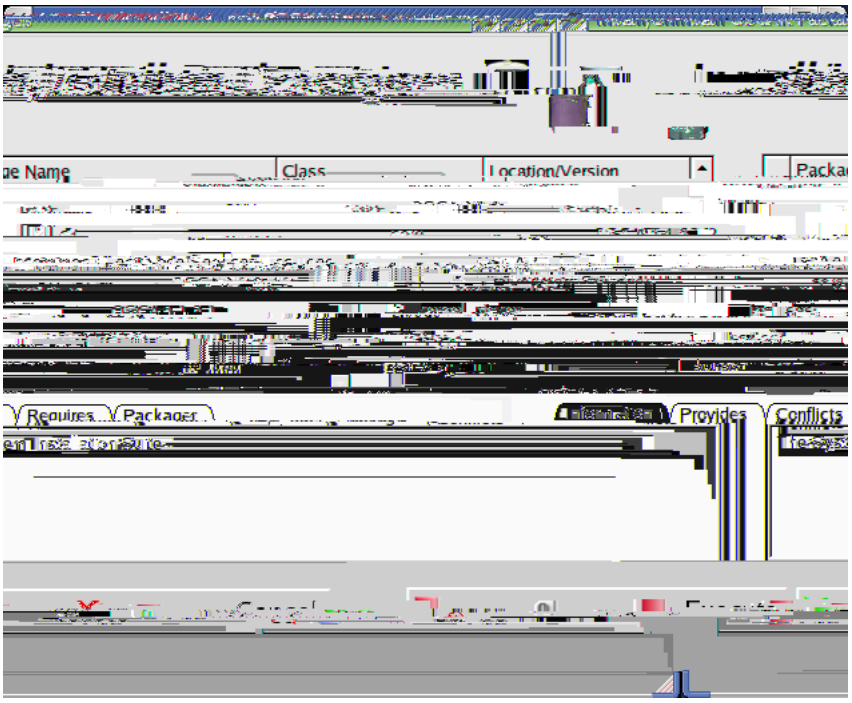


Figure 39: Install/Uninstall packages from an existing OSCAR cluster.

Figure 40: Individual OSCAR packages are color-coded to show their current installation state.