N1 Provisioning Server 3.1, Blades Edition, Release Notes

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.

Part No: 817–4686–10
March 2004

040302@7940

Contents

Preface

The N1 Provisioning Server 3.1, Blades Edition, Release Notes contain installation problem details and other information that was not available until immediately before the release of the N1 Provisioning Server 3.1, Blades Edition software.

Who Should Use This Book

These notes are for users and system administrators who install and use the N1 Provisioning Server 3.1, Blades Edition product.

Related Books

The documentation for the N1 Provisioning Server 3.1, Blades Edition product is provided on the product DVD. You can access information in HTML and PDF from the following HTML page on the DVD: `docs/index.html`.

You can access the following books from the `http://docs.sun.com` web site:

- *N1 Provisioning Server 3.1, Blades Edition, Installation Guide*
- *N1 Provisioning Server 3.1, Blades Edition, System Administration Guide*
- *N1 Provisioning Server 3.1, Blades Edition, Control Center Management Guide*
- *N1 Provisioning Server 3.1, Blades Edition, Troubleshooting Guide*

Accessing Sun Documentation Online

The docs.sun.com^{SM} Web site enables you to access Sun technical documentation online. You can browse the docs.sun.com archive or search for a specific book title or subject. The URL is `http://docs.sun.com`.

Ordering Sun Documentation

Sun Microsystems offers select product documentation in print. For a list of documents and how to order them, see “Buy printed documentation” at `http://docs.sun.com`.

Typographic Conventions

The following table describes the typographic changes used in this book.

TABLE P–1 Typographic Conventions

Typeface or Symbol	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with on-screen computer output	`machine_name%` **`su`** `Password:`
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type **`rm`** *filename*.
AaBbCc123	Book titles, new words, or terms, or words to be emphasized.	Read Chapter 6 in *User's Guide*. These are called *class* options. You must be *root* to do this.

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P–2 Shell Prompts

Shell	Prompt
C shell prompt	`machine_name%`
C shell superuser prompt	`machine_name#`
Bourne shell and Korn shell prompt	`$`
Bourne shell and Korn shell superuser prompt	`#`

CHAPTER 1

Important Information About This Release

This chapter lists new features provided in this release.

New Features

The following features have been added or substantially changed in this release:

- Improved installation
- Support for B100*n* blades
  - Solaris™ x86 platform
  - Red Hat Enterprise Linux version 2.1
- Limited support for dual SSC configurations
- Support for flash as an archive type (Solaris only)
- Support for the JumpStart™ software as a deployment option (Solaris only)
  - "Pseudo" image
  - Supports customization of profiles
- Preconfigured images provided for the Solaris software on SPARC® and on x86 architectures
- Image wizard
- Support for Sun Fire B10*n* blades
  - Improved representation of load balancers
  - Separate VLANs for data, service, and management traffic
  - Device and path failover modes
- Improved support for unmanaged devices
- Ability to import and export farms from the Control Center
- Improved localization support for non-ASCII characters
- Multiple database support including the free PostgresSQL database
- Improved security

DVD-ROM Contents

The N1 Provisioning Server 3.1, Blades Edition product is shipped on a DVD-ROM. The directory structure is as follows:

`README`
Text file that contains important information

`./docs`
Directory that contains user documentation

`./Images/solaris9u5-sun4ublade-flash` and `./Images/solaris9u5-i86pc-flash`
Solaris 9 Operating System images for blade systems

`./install`
Executable for installing the product

`./installer`
Directory that contains installer support files

`./Solaris`
Directory that contains all N1 Provisioning Server software packages, including Java Runtime Environment 1.4.1, the SunOne Application Server 7.0, and Content Load Balancing software for Solaris and Linux clients

`./uninstall_PS`
Executable for uninstalling the product

CHAPTER 2

N1 Provisioning Server 3.1, Blades Edition Installation Issues

This chapter describes known issues related to installing the N1 Provisioning Server 3.1, Blades Edition product.

Installation Bugs

This section describes known issues related to N1 Provisioning Server installations.

Different Usernames and Passwords Not Allowed for Multiple Shelves and Switches (4849704)

At the initial installation of the shelves and switches, you must use a common username and password for all shelves and switches during the installation. After completion of the installation, you can modify the username and password on any shelf or switch and update the database to reflect the changes using the `device` command. All other discovery commands permit the use of multiple username and password combinations.

System Controller and Switch Login (4856821)

Presently, the installer utility accepts only one username and password for all chassis switches and system controllers.

Workaround: Assign the same username and password for all system controllers and chassis switches.

Segment Manager Cannot Instantiate Farm Manager (4856825)

After installing the N1 Provisioning Server software, the segment manager sometimes is unable to instantiate the Farm Manager.

Workaround: To resolve this issue, stop and restart the segment manager by executing the commands `/etc/rc3.d/S97sm stop`, then `/etc/rc3.d/S97sm start` from the control plane server.

Disk Copying Failure (4856862)

After installing the N1 Provisioning Server software, you must add properties to the file `/etc/opt/terraspring/tspr.properties` before activating any farms.

Workaround: Add the following lines to the `/etc/opt/terraspring/tspr.properties` file:

```
com.terraspring.stm.client.ScriptCopyImpl.pingInterval=60
com.terraspring.stm.client.ScriptCopyImpl.pingTimeout=300
```

System Controller Responds to Old and New IP Address (4857745)

When you change the Internet protocol (IP) address of a system controller using the command `setupsc`, the system controller begins to respond to the new IP address and also continues to respond to the previous IP address. If the previous IP address is in use by another device, connectivity issues to the other device can develop.

Workaround: To resolve this issue, issue the `resetsc` command on the offending system controller. After the system controller successfully boots, it only responds to the newly assigned IP address.

Note – As a precaution, always issue the `resetsc` command after changing an IP address.

Image Subnet Mask Length for N1 Provisioning Server Installation (4891850)

The image subnet mask length for the N1 Provisioning Server installation must be 24.

During Installation Failure, Retry Does Not Accept Changed Parameters (4989031)

Whenever the installer fails during an installation, it provides an option to change the install parameters and retry installation. However, depending upon the where the installer failed, some of the changed parameters might not take effect.

Workaround: Uninstall the software, then reinstall the software.

Installation Fails with "PES did not become active in 120 seconds" Error (4951122)

At the end of installation, the N1 Provisioning Server installer verifies all the blades in the system. Occasionally, some blades may fail this verification step with the following error:

```
50100:test FAILED: Reason was:- PES 50100 did not become active in 120 seconds
```

Workaround: When you see this message, choose option 4 in the installer menu to skip the verification step and continue. When the installation completes, run the `pestest` command manually to verify the failed blades.

Discovery Fails During Installation or Post-Installation Due to XML Errors (5001590)

Discovery of a shelf fails during installation or post-installation while running the `discoversfb1600` command.

Workaround: Use the command `setupsc` on the system controller to verify the prompt and prompt generation settings in the SC of the corresponding shelf. The prompt generation string should be set to `none`. The prompt must have a `>` symbol at the end.

Farm Activation Fails with Error 51 After Completion of Fresh Installation (4998383)

After a fresh installation, farm activations fail, leaving farms in error 51 and state NEW.

Workaround: To resolve this issue, stop and restart the segment manager by executing the commands `/etc/rc3.d/S97sm stop`, then `/etc/rc3.d/S97sm start` from the control plane server.

Installation Fails Because of Network Misconfiguration (5004515)

An attempt to install the N1 Provisioning Server 3.1, Blades Edition software fails. The following message is displayed:

```
'/etc/init.d/bootspdns start' failed with exit status 256
```

Workaround: Make sure that the `/etc/nsswitch.conf` file includes `dns` in the `hosts` line.

CHAPTER 3

N1 Provisioning Server 3.1, Blades Edition Runtime Issues

This chapter describes known issues related to running the N1 Provisioning Server 3.1, Blades Edition product.

Control Center

This section describes known issues related to the N1 Provisioning Server Control Center.

Administration Screen Time-out Issue (4849661)

In certain cases, when you navigate from the Administration screen to the Editor screen and the session times out, you might not be able to log into the Control Center.

Workaround: Close the browser, open another browser, and log in again.

If you are in the Administration screen and the session times out, when you log in again, the window might display incorrectly. If this happens, close the browser and log in again.

To vary the session time-out, modify the time-out setting in the `/opt/terraspring/gw/war/WEB-INF/web.xml` file. Look for the *session-timeout* tag. The value is specified in minutes.

Find Farm Window Displays in Full After Time-out (4849673)

If you click the Find button in the Find Farm dialog box after the Find Farm session has timed out, the Find Farm window displays in full.

Workaround: Increase the time-out value. To do so, modify the time-out setting in the `web.xml` file in the `/opt/terraspring/gw/war/WEB-INF` directory. Look for the *session-timeout* tag. The value is specified in minutes.

No Rollback After Farm Update Failure (4849688)

When a farm update fails, changes do not always roll back to the last good state of the farm.

Workaround: The workaround for the problem is as follows:

1. To clear the error state, contact the farm using the `farm -pf` *farm-ID* command.
2. View the farm in the farm editor.
3. From the farm editor, select the latest farm update request from the Request History panel on the left. The correct farm information will display.
4. Choose Commit from the File menu to resubmit the farm update. A newly updated request is issued.
5. Unblock the new request. The correct farm information will display in the farm editor after the request is completed.

Do Not Bookmark Login Page (4849693)

Do not bookmark any page except the welcome page.

Allow Dialog Pages to Finish Downloading Information (4849697)

In some dialog pages, for example, Select: Disk Image, the application needs to download information from the server. If you click any buttons on the page before that download is complete, a script error occurs.

Workaround: Wait until the page has finished downloading all information from the server before taking any actions.

Snapshot Button Not Disabled for New Disk Created (4849721)

When you create a new disk by flexing a server group, the snapshot button is not disabled as it should be. When you click that button, an error message appears.

Deleting Snapshots or Images From the Control Center (4856854)

When you delete snapshots and images from the Control Center, they are only marked as deleted. They are not yet deleted from the I-Fabric. Until you delete them from the I-Fabric, you will not be able to create snapshots and images with the same names as the ones marked as deleted.

To purge snapshots and images from the I-Fabric, issue the `image -lR` command from the control plane server to view a list of the images marked as deleted. Then issue the `image -d` command to delete them from the I-Fabric. See the `image` command man page for details.

BOM Does Not Show Unmanaged Devices (4856865)

The bill of materials (BOM) dialog box shows information about devices managed by the N1 Provisioning Server and about devices of a known type that are not managed. The BOM dialog box does not include information about unmanaged devices of an unknown type.

Graphics Not Displayed Correctly After Reload Operation (4857740)

Sometimes when you reload a current farm, the graphics in the navigation bar do not display correctly.

Workaround: Refresh the page.

Control Center Client Software Requirements (4857757)

The Control Center requires Microsoft® Internet Explorer version 6.0 web browser with a 128-bit security encryption.

Adding Port When Updating a Farm Does Not Switch Devices (4989531)

Initially, a device with only a single connection was requested and allocated. Later a second connection to the device was requested, but the request could not be granted because the allocated device only has one connection. No new device is allocated to fulfill this request.

Workaround 1: Always connect both physical interfaces to subnets even if you do not need the two interfaces. Connecting both interfaces guarantees that a device with two connected interfaces is allocated to the farm. The secondary interface can then be reconfigured at a later time once a purpose has been identified.

Workaround 2: When a farm update fails due to the lack of resources after connecting a secondary interface of a server, bring the farm into active state by changing the farm design back to its previous design and resubmitting a farm update request. When the farm is in active state, snapshot the device to which you would like to add a second interface. Once the snapshot is completed, update the farm by removing the original server to which you would like to add a second interface and replace the deleted server with a new server and initialize its disk from the snapshot image. Connect both physical interfaces of the new device to a subnet and submit the farm update request. A new server will be allocated to the farm with two connected interfaces.

Workaround 3: Add a second switch to the chassis that hosts the device requiring the second connection. Update the device using the `shelfsync` command. Then resubmit the farm update request.

Workaround 4: Instead of using the secondary interface of the server, update the farm using a virtual interface on the primary interface. This workaround will force the bandwidth of the primary interface to be shared across the `eth0` and virtual interfaces.

Imported Farm Can Have Incorrect Number of Ports (4998397)

An imported farm can have appropriate types, however, the implied number of connections might be incorrect.

Workaround: When importing a farm design from a `.feml` file, make sure that the device types match those in the current I-Fabric. In particular, make sure that the number of ports is correct for each device. If the number of ports for a device is not correct, change the device type within the device configuration dialog box before you submit the new design.

Confusing Error Message When Trying to Unblock a Farm Request With PostgresSQL (5002047)

Rhe following message appears when trying to unblock a farm request from the Pending request page:

```
Operation failed... may have been caused by ifabric misconfiguration
```

Workaround: Run the request again. After a few tries, it will succeed.

Server Administration Issues

This section describes known issues that are associated with administering the N1 Provisioning Server 3.1, Blades Edition server.

Failures During Disk Copy Operations (4849694)

When a farm goes into standby mode, disk copy operations for all servers belonging to that farm start simultaneously. However, when a failure occurs during the first disk copy operation, for example, not enough disk space, the other disk copy operations continue until all are completed, and then the failure is reported.

Workaround: None.

"No More Resources" Exception When No Servers Available in Control Plane Database (4849699)

When no more provisionable servers are available in the Control Plane database, you will not be able to move a server from one server group to another in a single farm operation.

Workaround: Remove the server from the first server group and update the farm. Then add the server to the second server group and update the farm.

Note – The server might be provisioned by another farm between removing it from the first server group and adding it to the second. Consequently a "no more resources" exception will occur.

`mls` Command Does not Show Accurate Status (4849719)

An `mls -a` command might inaccurately report the agent on a server as being marked DOWN.

Workaround: Wait 60 seconds and try again to confirm the status of the node. The normal monitoring of the node by the control plane server is not affected by this condition, and monitoring will accurately report a failed node.

Moving an Unmanaged Device Into Farm VLAN Fails (4856867)

Typically, after bench configuration, the ports on the shelf are in trunk mode. This configuration prevents you from moving an unmanaged device into a farm VLAN.

Workaround: Change the unmanaged device port from trunk mode to hybrid mode. Then, add the unmanaged device to the VLAN.

Deleting Active Requests Before Stopping the Control Plane Server (4856872)

Make sure that there are no active requests in the system before stopping the control plane server. If the control plane server fails, existing Farm Manager processes sometimes do not exit gracefully. Before restarting the control plane server, stop all remaining Farm Manager processes by performing the following steps:

1. Check the existence of any Farm Manager processes by executing the following command:

   ```
   /usr/ucb/ps -auxwww | grep -i "com.terraspring.cs.fm"
   ```

2. Use the UNIX® `kill` command to stop any remaining Farm Manager processes.

Power Command Issues (4857749)

The `power` command with the `-off` option is similar to the UNIX command `poweroff`, which powers off the device on which it is issued. When using the `power` command with the `-off` option, be sure to have a blank space between `power` and `-off`, otherwise you will power off the control plane server.

Changing Power State of Provisionable Servers Used in an Existing Farm (4919199)

Do not independently power on or off provisionable servers in an existing farm.

Gigabit Ethernet Card Instance Assignment (4924060)

The gigabit Ethernet card of the Provisioning Server machine must be assigned an instance of 0.

Load Balancer Configuration Does Not Get Updated When Only the Balancing Policy has Changed (4998087)

If you change the balancing policy of an active farm (for example, from round-robin to wt-round-robin), the farm goes through the update process. However, after the process is completed, the load balancer configuration still shows the initial policy (for example, round-robin).

Workaround: If you have already defined virtual IPs and you want to change their policies, follow these steps:

1. Delete the virtual IPs whose policy you want to change, and submit the request.
2. Change the policy to the newly desired policy.
3. Re–create the virtual IPs, and submit the request.

Load Balancer Configuration Failed Trying to Configure Nonexistent Second Switch (`eth1`) (4998088)

If a load balancer is in a chassis that has only one switch (`ssc0`) installed, the software still expects to configure the second switch (`eth1`).

Workaround: For this release, load balancing is supported only in dual-switch shelves.

Error Message When Updating Locator URL (5002040)

If you try to update the locator URL of an existing snapshot image using the command `image -u -l`, you see an error message. The error message differs based on whether the database is Oracle or PostgresSQL.

For Oracle, you see the following message:

```
Locator URL 'nfs://3001//images/master-images/solaris9u5-i86pc-flash' already exists!
```

For PostgresSQL, you see the following message:

```
ERROR: duplicate key violates unique constraint "imglocator_unique"
```

Workaround: None. This is a cosmetic bug and will likely be fixed in a later release.

Error When Replacing a Device With a Different Type but the Same Name (5002041)

You defined a device with a specific type in an active server farm (for example, an x86 farm with the name “Server1”). You want to change the type (for example, to sparc), but keep the name. If you fail to commit the delete request before you add the new device, the add request fails with an unique constraint exception, stating that there is another device in the farm that has the same name.

Workaround: You have to do the removal and addition in two separate updates. Follow these steps:

1. Activate a one-server x86 farm from the Control Center (CC). For example, with the name "Server1" with `eth0` connected to a subnet.
2. After the farm is activated, log onto the CC and delete the x86 server.
3. Submit the farm to commit this change.
4. Add a SPARC Solaris server that has the same name ("Server1").
5. Commit the change (send the update request) from the CC.

Using `backupdb` Creates Invalid Data for PostgresSQL Database `restoredb` (5002042)

When using the PostgresSQL database, `backupdb` generates invalid backup data. As a result, `restoredb` fails because of the invalid data.

Workaround: None.

`image` Command Does not Check Whether an Image is In Use (4892852 and 5002045)

The `image` command allows you to delete an image (`image -d`) or modify an image (`image -u`) even if the image is in use. However, synchronizing this change with the Control Center will fail if the image is in use.

Workaround 1: Use the Control Center to delete or modify an image.

Workaround 2: Verify that the image is not in use before you use the `image` command. To verify whether an image is in use, follow these steps:

1. Type the following command to get a list of active farms: `farm -l`
2. For each farm that is in a state other than CREATED, type the following command to determine what images it uses: `lr -lv` *fmid* `| grep Image`

   where *fmid* is the farm identifier provided in step 1.
3. For each farm that is in the CREATED state, type the following command to obtain its FML and save it to a temporary file: `farm -lv` *fmid* `> /tmp/fml`*fmid*

   Look through the temporary file and search for all occurrences of the string `<diskimage`. An image ID will be on the next line as shown below:

```
<disk id="10" location="internal" name="Disk B" size="30000000000" type="local">
<diskimage type="system">
 6
</diskimage>
<client-info id="11" object-id="10">
```

The list of unique image IDs from steps 2 and 3 are the images that are currently in use.

Using `image -d` to Delete a Nonexisting Image Causes Java Exception (5002046)

When you use the command `image -d` and the image ID that you provide does not exist, a Java exception occurs.

Workaround: Run the command again with the correct image ID.

Upgrade Causes `incompatible class` Exceptions (5002048)

After upgrading from N1 Provisioning Server 3.0 Blades Edition, Update 1, to N1 Provisioning Server 3.1, Blades Edition, running the command `request -lv` causes a runtime exception for some of the requests that were created in the previous version of the product..

Workaround: None. You will not be able to view request details of certain requests that were filed before the upgrade.

Using Image Wizard to Delete an Account Image Causes Java Exception (5002051)

When you use the image wizard to delete an account image, a Java exception occurs.

Workaround: Use the following command to delete the account image: `image -d` *image-id*

Image Wizard Stops Executing Due to Queued `replacePhysicalDevice` Request (5002052)

When you follow the instructions given by the image wizard to shut down your server, a `replacePhysicalDevice` request might be QUEUED. The image wizard does not tell you to delete that request. If you do not delete the QUEUED request, you cannot continue with the image process because the `replacePhysicalDevice` request will block the `snapshot` request from executing.

Workaround: Delete the `replacePhysicalDevice` request.

Image Command Fails to Create New Image with "Insufficient Disk Space" Error Although Space is Available (4989527)

The image server size is determined during installation by querying the file system. The size is maintained in the database as an attribute of the image server device. This value is static and does not reflect changes that are made to the file system outside of the scope of N1 Provisioning Server. The following changes are outside of the scope:

- If the images file system is being used for some other purpose and files other than those created by the N1 Provisioning Server software are copied onto it, the actual size of the image repository decreases. However, the size value in the database does not reflect the decrease in size for the image repository.

In this case, the software might allow a snapshot operation to proceed because the software assumes that enough space exists. However, the snapshot operation might fail due to lack of actual space on the filesystem.

- If the partition is extended, the original partition is replaced by a new partition on a secondary disk, or files that are unknown to the N1 Provisioning Server software are removed from the images file system, the actual size of the images file system might increase. However, the size value in the database does not reflect the increase in size for the image repository.

  In this case, the software might not allow a snapshot to proceed because the software assumes that enough space does not exist on the file system, even though sufficient space exists. The failure in this case could occur before the snapshot data is copied or after the snapshot data is copied.

In both cases, the symptom might not reflect the cause. The error that you see might not be clear enough to determine that the problem is due to incorrect image server size in the database. The error might be buried in the `/var/adm/tspr.debug` log file.

Workaround: If you see an unexplained snapshot error, follow these steps to determine whether the cause of the problem is a size inconsistency between the database and the actual file system:

1. Determine the device ID of the image server using the following command:

   ```
   # /opt/terraspring/sbin/device -Lr
   ```

2. Determine the image repository size in the N1 Provisioning Server database using the following command:

   ```
   # /opt/terraspring/sbin/device lv device-id | grep imsvsize
   ```

   where *device-id* is the ID that you determined in the previous step.

3. Determine the total size of all the images that are known to the N1 Provisioning Server repository.

   a. To get a verbose listing of all the images, type the following command:

      ```
      # image -lv > tmpfile
      ```

   b. Look through the *tmpfile* and note all the size values in the "Image Locations" section for each image.

   c. Add all the values in the previous step to arrive at the total size of all the images that are known to the repository.

4. Subtract the values from the two previous steps to determine the total available space in the image server as perceived by the N1 Provisioning Server software.

5. Determine the size of the actual filesystem using the following command:

   ```
   # df -k path-to-images-filesystem
   ```

6. Determine the available space in bytes for the actual filesystem by multiplying the value under "avail" in the `df` output by 1024.

If the value from step 4 (the perceived space) differs from the value in step 6 (the actual space), a size inconsistency exists. To resolve this inconsistency, follow these steps:

1. Add the actual available size (from step 6) and the total size of images (from step 3c). This total provides the new value for the `imsvsize` attribute in the N1 Provisioning Server repository.
2. Update the `lmsvsize` attribute in the N1 Provisioning Server database with the new value from the previous step using the following command:

   # **`device -sA imsvsize`** *new-imsvsize-value device-id*

Activating Two Farms Simultaneously Fails (4989529)

When two farms are created simultaneously on a newly installed data center, sometimes one of the farms may fail with the following error message:

```
[MSG8300 ] Sql Error::ORA-00955: name is already used by an existing object
```

Workaround: Resubmit the farm from the Control Center.

`farm -Lt` Does not Tail the Log (4997346)

In an N1 Provisioning Server 3.1, Blades Edition installation running the PostgresSQL database, the command `farm -Lt` *farm-id* sometimes stops printing the log messages.

Workaround: Kill the log tail process and rerun it.

Minor Faults Reported by SC Causes N1 Provisioning Server to Classify Blades as Failed/Unusable (4998378)

During installation when `pestest` is run or during runtime when farm activation is taking place, you might see the following message on your screen or in the debug log:

device-id`: test FAILED: Reason was: - Cannot save state information for` *device-id*`: Blade S`*n*` seems to be faulty`

Workaround: To prevent problems with later farm activation, you must do one of the following:

- Replace the defective blade. This blade is defective and needs to be replaced as soon as possible. Follow these steps:

  1. Type the following command to see the properties of the blade that is referred to by *device-id* in the message:

     # **`/opt/terraspring/sbin/device -l`** *device-id*

  2. Examine the FARM_ID column.

     If the FARM_ID column does *not* contain a hyphen (-), the blade is part of a farm.

     If the blade is part of a farm, type the following command to replace the failed blade in the farm with another blade that has similar attributes:

```
# /opt/terraspring/sbin/replacedevice farm-id failed-device-id
```

3. To find the ID of the shelf that houses this blade, type the following command:

```
# /opt/terraspring/sbin/device -l device-id
```

Look for a line similar to the following:

```
cpu:sun-b100s-blade (- -) 50100:s0 ==> pwr:sun-b1600-pwr (- -) 50160:s0
```

In this example, the device ID for the shelf is `50160`.

4. To determine the IP address for the shelf, type the following command:

```
# /opt/terraspring/sbin/device -lv shelf-device-id
```

Look for the field `ipaddress:` to obtain the IP address of the shelf.

5. Telnet to the shelf and type the following command to inform the shelf controller that the blade is to be prepared for removal:

```
# replacefru Sn
```

In response to this command, a blue LED will light on the blade.

6. Approach the blade shelf front panel and remove the defective blade.

The defective blade will have a blue LED that differentiates the defective blade from other blades in the shelf.

7. Insert a good blade into the blade shelf to replace the defective blade.
8. To detect the new blade and update the information in the database, type the following command:

```
# /opt/terraspring/sbin/shelfsync
```

9. To retest the blades, type the following command:

```
# /opt/terraspring/sbin/pestest
```

- Mark the blade as FAILED. If you choose not to replace the defective blade, you must mark that blade as FAILED. Otherwise, your farm activation could fail if the defective blade is used in the farm. Follow these steps:

1. Type the following command to see the properties of the blade:

```
# /opt/terraspring/sbin/device -l device-id
```

2. Examine the FARM_ID column.

If the FARM_ID column does *not* contain a hyphen (`-`), the blade is part of a farm.

Type the following command to replace the failed blade in the farm with another blade that has similar attributes:

```
# /opt/terraspring/sbin/replacedevice farm-id failed-device-id
```

3. Examine the STATE column.

If the STATE is not set to FAILED, type the following command to set the state to FAILED:

```
# /opt/terraspring/sbin/device -sB device-id
```

Snapshot Failure Leaves Information in `dhcpd.conf` Configuration File (4998415)

After a snapshot failure, farm activation or update fails.

Workaround: Remove configuration information of the farm from the `image-copy-subnet` section of `/etc/dhcpd.conf` file. Then, reboot the server and reactivate the farm again to restore a state prior to snapshot.

`shelfsync` Command Wants to Add a B10*n* Blade That Already Exists (5006442)

A Sun Fire B10*n* blade can be part of a high-availability load-balancing pair. In other words, the device is the child of a logical device that has a type that is subtype of device type `halb`. If you run the `shelfsync` command on the shelf that contains this blade, the `shelfsync` command reports the device as a newly discovered device. If you then choose to add this new device, the command reports a message while adding the device to the database. The message tells you that a device with the same MAC address is present in the database.

Workaround: Ignore the message.

Product Does Not Clearly Support FTP Images and Image Servers (5003423)

The N1 Provisioning Server 3.1, Blades Edition product has disabled support for FTP images and FTP image servers due to the need to support flash and JumpStart images.

Workaround: You can enable FTP support. However, be aware of the following caveats:

- Only one protocol (FTP or NFS) can be supported at a time. Therefore, the N1 datacenter where FTP support is enabled will now be able to provision and snapshot only via FTP.
- Flash and JumpStart images cannot be supported in the FTP-enabled N1 datacenter. As a result, all flash and JumpStart images must be deleted.
- Any attempts to perform a flash or JumpStart snapshot in the FTP-enabled N1 datacenter will result in an error and fail in an unknown way. Such an operation will not be supported.
- Attempts to perform flash or JumpStart provisioning might work but will not be supported.

▼ To Enable FTP in an N1 Datacenter

Steps

1. **Make sure that you accept the caveats listed above.**

2. **To determine the device ID of the image server, type the following command:**

   ```
   # /opt/terraspring/sbin/device -Lr is
   ```

   In the example shown below, the device id is `3001`:

   ```
   # /opt/terraspring/sbin/device -Lr is
    DEVICE_ID  PARENT_ID STATUS   FARM_ID    TYPE
         3001          - USED     -          cpu:sun-svr-420R-idb (Sun 420R)
   1 devices found.
   ```

3. **To verify the current protocol being used by the image server, type the following command:**

   ```
   # /opt/terraspring/sbin/device -lv image-server-device-id
   ```

   In the example shown below, the protocol is `nfs`:

   ```
   # /opt/terraspring/sbin/device -lv 3001
   Device ID: 3001, state: USED, owner: -, type: cpu:sun-svr-420R-idb (Sun 420R)
     Device Attributes:
       make:           Sun
       name:           ps1
       imsvsize:       67372343296
       halclass:       com.terraspring.drivers.sun.SunSysKonnect
       nicvips:        1000
       role:           ispdb
       model:          420R
       basepath:       /images
       compressionratio:8
       protocol:       nfs
   ...
   ```

4. **To change the protocol attribute to FTP, type the following command:**

   ```
   # /opt/terraspring/sbin/device -sA protocol ftp image-server-device-id
   ```

5. **Determine the username and password that will be used to connect to the image server via FTP.**

   You may create a new username and password for this purpose.

   In the following example, the username is set to `n1psftpu` and the password is set to `n1psftpp`.

   ```
   # useradd n1psftpu
   # passwd n1psftpu
   New Password:
   Re-enter new Password:
   passwd: password successfully changed for n1psftpu
   ```

6. **To encrypt the password, type the following command:**

```
# /opt/terraspring/sbin/encrypter password
```

Note the output in the following example.

```
# encrypter n1psftpp
ptMSB/T9fNm8Borrjxl/gw==
```

7. **To add the `ftp_user` and `ftp_password` attributes to the image server device in the database, type the following command once for each attribute:**

```
# /opt/terraspring/sbin/device -sA attribute-name attribute-value image-server-device-id
```

Note that the encrypted password must be used as the value for the `ftp_password` attribute, as shown in the following example.

```
# /opt/terraspring/sbin/device -sA ftp_user n1psftpu 3001
# /opt/terraspring/sbin/device -sA ftp_password 'ptMSB/T9fNm8Borrjxl/gw==' 3001
```

Tip – To verify your changes, type the following command:

```
# /opt/terraspring/sbin/device -lv image-server-device-id
```

---

8. **To determine the list of disk images and other images, type the following command:**

```
# /opt/terraspring/sbin/image -l
```

The following example shows two images.

```
# /opt/terraspring/sbin/image -l
IMAGE_ID IMAGE_NAME               CUSTOMER         SIZE       OS           TYPE            \
STATE     LOCATION
1        rh-linux-i86pc-disk-img  __grid__         30000000000 linux       disk_image      \
READY     nfs://3001//images/master-images/rh-linux-i86pc-disk-img
6        solaris9u5-i86pc-flash   __grid__         1500000000 solaris      flash           \
READY     nfs://3001//images/master-images/solaris9u5-i86pc-flash
```

9. **For each disk image, convert the protocol in the URLs to FTP.**

Follow these steps:

a. **To ensure that the image file is not deleted, rename the image file on the image server to a temporary name on the image server.**

```
# mv /images/master-images/rh-linux-i86pc-disk-img   \
/images/master-images/rh-linux-i86pc-disk-img.bak
```

b. **To delete the NFS URL from the image information in the database, type the command `/opt/terraspring/sbin/image -dL` *nfs-url image-id*.**

```
# /opt/terraspring/sbin/image -dL   \
nfs://3001//images/master-images/rh-linux-i86pc-disk-img 1
    Image id is: 1
    Delete URL nfs://3001//images/master-images/rh-linux-i86pc-disk-img for this image (y/n)? y
    Deleting image content at: nfs://3001//images/master-images/rh-linux-i86pc-disk-img   \
size: 1532913330   ip: 10.52.53.1   State: done
    Deleted locator URL: nfs://3001//images/master-images/rh-linux-i86pc-disk-img
```

c. Rename the image back to the original name on the image server.

```
# mv /images/master-images/rh-linux-i86pc-disk-img.bak   \
/images/master-images/rh-linux-i86pc-disk-img
```

d. To add the FTP URL to the image database, type the command `/opt/terraspring/sbin/image -uL` *ftp-url image-id*.

Note – The FTP URL is the same URL as the NFS URL, except for the protocol part, which is modified to `ftp`.

```
# /opt/terraspring/sbin/image -uL \
ftp://3001//images/master-images/rh-linux-i86pc-disk-img 1
    Updated image: 1
```

e. To update the state of the FTP URL, type the command `/opt/terraspring/sbin/imagesync --nosync` *image-id*.

```
# /opt/terraspring/sbin/imagesync --nosync 1
    Image 1  forcibly marked as synchronized
```

f. Type the following command to verify that the protocol in the URL has indeed been changed to `ftp`:

```
# /opt/terraspring/sbin/image -lv image-id
```

For example:

```
# /opt/terraspring/sbin/image -lv 1
IMAGE_ID IMAGE_NAME               CUSTOMER         SIZE       OS           TYPE            \
STATE     LOCATION
1        rh-linux-i86pc-disk-img  __grid__         30000000000 linux       disk_image      \
READY     ftp://3001//images/master-images/rh-linux-i86pc-disk-img

Description:   RedHat Linux 2.1 AS, disk image, with snet NIC
Architecture:  i86pc
Last Updated:  2004-02-12 23:19:01.0

Image Locations:
    ID    STATE     SIZE             LOCATION
    26    done      1532913330       ftp://3001//images/master-images/rh-linux-i86pc-disk-img
```

10. For each flash or JumpStart image, type the following command to delete the image:

```
# /opt/terraspring/sbin/image -d image-id
```

Note – Before you delete the flash or JumpStart images, ensure that none of the images are in use as explained in "`image` Command Does not Check Whether an Image is In Use (4892852 and 5002045)" on page 21. If an image is in use, deactivate and delete any farms that are using the image before you delete the image. If you decide not to do so, please note that future snapshots of the server disks on which these images have been deployed must be taken as `disk_image` even if the Control Center seems to allow a flash snapshot. See the caveats that precede this task.

```
# /opt/terraspring/sbin/image -d 6
Delete Image 6 (y/n)? y
Queueing request to delete image ...
Request (id: 74) submitted.
Waiting for request 74 to complete...
.
Deleting image content at: nfs://3001//images/master-images/solaris9u5-i86pc-flash
size: 647191212   ip: 10.52.53.1   State: done
```

The FTP protocol now is enabled for both provisioning and taking snapshots of images in the datacenter.

CHAPTER 4

N1 Provisioning Server 3.1, Blades Edition Documentation Issues and Additions

This chapter identifies information that is missing from the product documentation on the DVD or errors in the documentation.

Creating Linux Images

Creating Linux images involves interaction among various components. To make this process easier to follow, the process is described in multiple sections:

- Appropriate Linux and N1 Provisioning Server configurations and configuration requirements are described in Linux Configuration.
- The high-level procedure is described in To Create a Linux Image (High-Level Task).
- Individual steps within the high-level procedure are described in detail in later sections:
  - To Configure the Sun Fire B1600 Switch
  - To Create a Linux Image by Using the Image Wizard
  - To Install Linux on the Selected Resource Pool Server
  - To Prepare a Disk for Snapshot

Linux Configuration

This section describes specific requirements for configuring your Linux environment before you can create Linux images using the N1 Provisioning Server software.

Additional Linux Hardware and Software Requirements

The following requirements must be met on your Linux system:

- The PXE Boot Server machine (hereafter refered to as the *Kickstart server*) must be running Linux. The recommended version is Red Hat Enterprise Linux AS2.1 .
- You need to have the Sun Fire B1600 Platform Documentation, Drivers, and Installation CD supplied by Sun with the server blade.
- You need to have the Red Hat Enterprise Linux AS2.1 installation CDs.

Setup and Physical Connections

The Kickstart server can be networked into the N1 Provisioning Server setup in several ways. The following illustrations depict two of those possibilities.

In the scenario illustrated by Figure 4–1, one of the Ethernet interfaces (if the machine has more than one) of the Kickstart server is connected directly to one of the available ports on the blade shelf. In this example, the NETP0 port is used.

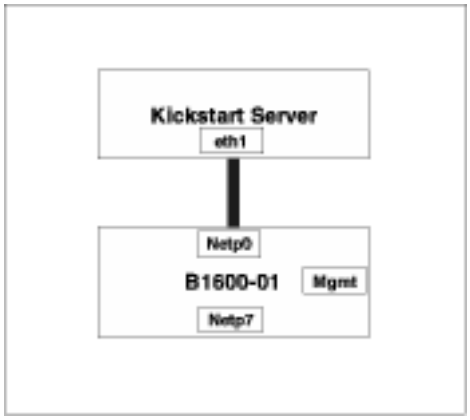

FIGURE 4–1 Kickstart Server Attached Directly to Shelf

Another possibility, as depicted in Figure 4–2, is that the Kickstart server is connected to the blade shelf via an external switch. In the figure, the interface `eth1` of the Kickstart server is connected to a Cisco switch C2924. One of the external ports of the shelf, in this case, NETP0, is also connected to the switch C2924.

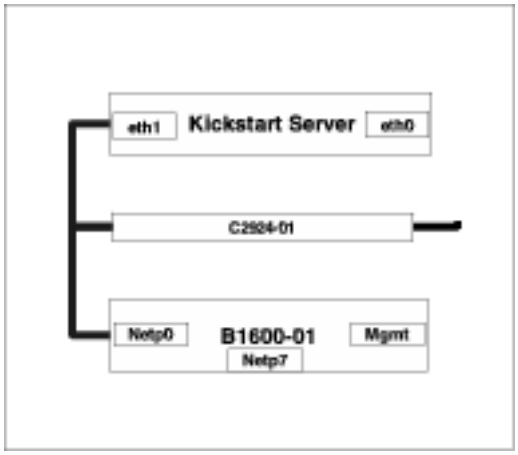

FIGURE 4–2 Kickstart Server Attached to Shelf Through Switch

The rest of the document assumes the setup shown in Figure 4–3, in which the connections with the Provisioning Server machine are included. Note that the setup is based on the one described in Figure 4–1. The Kickstart server can be reached from an external network by using a second Ethernet interface if one exists or via terminal server (if one is configured). Alternatively, the Kickstart server can be accessed directly through its console device (monitor) if one is available. The interface connected to the shelf must be plumbed and assigned a valid Internet address.

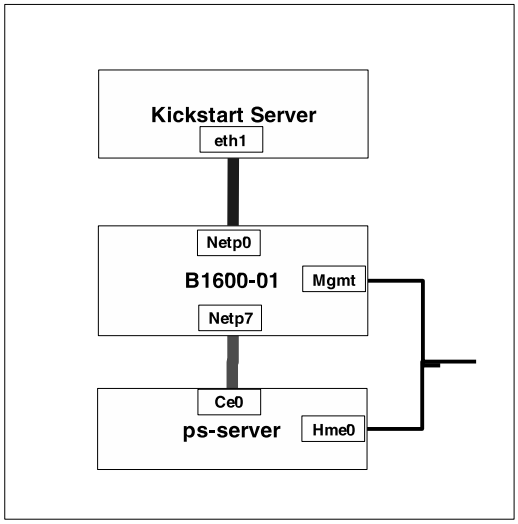

FIGURE 4–3 Typical Kickstart Server Setup in N1 Provisioning Server Environment

EXAMPLE 4–1 Sample Kickstart Server Configuration

The following is an example of the network configuration of the Kickstart server.

```
[root@ks-server root]# ifconfig -a
eth0      Link encap:Ethernet  HWaddr 00:03:47:31:71:98
          inet addr:10.5.140.151  Bcast:10.5.140.159  Mask:255.255.255.240
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:134432 errors:0 dropped:0 overruns:0 frame:0
          TX packets:114431 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:31829037 (30.3 Mb)  TX bytes:45777133 (43.6 Mb)
          Interrupt:10 Base address:0xc000

eth1      Link encap:Ethernet  HWaddr 00:03:47:31:71:99
          inet addr:10.40.40.1  Bcast:10.40.40.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:321940 errors:0 dropped:0 overruns:0 frame:0
          TX packets:1540859 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:48545214 (46.2 Mb)  TX bytes:2160671329 (2060.5 Mb)
          Interrupt:5 Base address:0xe000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:538 errors:0 dropped:0 overruns:0 frame:0
          TX packets:538 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:42254 (41.2 Kb)  TX bytes:42254 (41.2 Kb)
[root@ks-server root]#
```

The first interface (`eth0`) of the server is connected to an external switch. The server is accessible through this interface. The second interface (`eth1`) is connected directly to the shelf and assigned an IP address of `10.40.40.1` in the `10.40.40.0` network.

Preparing the Kickstart Server

To set up the Kickstart server, see the instructions in " Installing Linux From a PXE Boot Install Environment " in *Sun Fire™ B100x and B200x Server Blade Installation and Setup Guide*. Start at the beginning of Chapter 4 and stop at Step 5 in section 4.4, "Installing Linux on a Server Blade from a PXE Boot Server."

Tip – You can download the *Sun Fire™ B100x and B200x Server Blade Installation and Setup Guide* from the following web site:
`http://www.sun.com/products-n-solutions/hardware/docs/pdf/817-4604-11.pdf`

Configuring the Linux Installation

The default configuration files provided with the Red Hat distribution need to be modified with appropriate values for IP addresses and path names. Refer to steps 5, 6, and 7 of section 4.4, "Installing Linux on a Server Blade from a PXE Boot Server" in *Sun Fire™ B100x and B200x Server Blade Installation and Setup Guide*. More importantly, you need to customize the disk partition and package selection information for N1 Provisioning Server 3.1, Blades Edition.

Package Selection

The Linux image must contain some packages required by N1 Provisioning Server. To ensure that these packages are included, add the entry `N1 Required RPMS` to the package selection list. Edit the file `/<tftp_base_dir>/as-2.1/RedHat/base/comps` to add the following declaration:

```
1 N1 Required RPMS {
    pdksh
    tftp
    tftp-server
}
```

The following list is an example of package selection specified by the `ks.cfg` file.

```
%packages
@ Network Managed Workstation
@ Software Development
@ Base
@ Printing Support
@ Network Support
@ Messaging and Web Tools
@ News Server
@ NFS File Server
@ Windows File Server
@ Web Server
@ Router /Firewall
@ DNS Name Server
@ Emacs
@ Utilities
@ Advanced Server
@ N1 Required RPMS
```

Non-standard Disk Sizes and Linux

Actual disk sizes (to the byte level) vary from vendor to vendor. Therefore, for the purpose of generalization, N1 Provisioning Server assumes the size of all disks to be 30*10 ^9 bytes or 30GB. However, the actual disk size of B100*n* blades is slightly more than 30*10 ^9 bytes (30005305344 bytes). Therefore, a disk image of 30*10 ^9 is guaranteed to work on all B100*n*/B200*n* server blades and a disk image of the actual size of the disk might not work on all server blades (due to the variance). Using a disk size value of 30*10 ^9 bytes for all images created ensures that the image will be deployable on all server blades.

The Linux operating system uses disk blocks towards the end of the disk also to store its data. As a result, taking a 30*10 ^9-byte snapshot of the disk leaves out a few critical disk blocks that are towards the end. A blade provisioned with this image will fail to boot. To solve this problem, create a dummy filesystem (approximately 10 MB to account for the extra bytes) towards the end of the disk and exclude this file system before taking the snapshot.

The following disk partition is one example:

```
part /--asprimary --fstype ext3 --size 512 --grow --ondisk hda
part swap --size 2048 --ondisk hda
part /tmp --fstype ext3 --size 512 --ondisk hda
part /dummy --fstype ext3 --size 10 --ondisk hda
```

Notice the `/dummy` filesystem of size 10 MBytes in the partition information.

▼ To Create a Linux Image (High-Level Task)

You can create Linux images after you install Linux on a server blade. To install Linux on a server blade, use the Red Hat Kickstart technology. The main steps in the Linux image process follow.

Steps

1. **Set up a Kickstart environment on a server running Red Hat AS 2.1 (the Kickstart server).**

   See your Linux documentation for details.

2. **Configure the Kickstart server to be a part of N1 Provisioning Server setup, as described in "To Configure the Sun Fire B1600 Switch" on page 39.**

3. **On the Provisioning Server machine, invoke the image wizard and follow the instructions to create a manual operating system installation for a Linux system as described in "To Create a Linux Image by Using the Image Wizard" on page 40.**

4. **When you see the following prompt from the image wizard, install Linux as described in "To Install Linux on the Selected Resource Pool Server" on page 42.**

   ```
   Did the installation succeed [y/n] >
   ```

5. **Return to the image wizard and continue.**

   ```
   Did the installation succeed [y/n] > y

   Issue the following commands on the sytem controller to
   boot the resource pool server from the disk

   sc> bootmode bootscript="boot disk" s<X>
   (where "s<X>" is provided in resource pool server information)
   ```

```
then you can issue the following command to reset

sc> reset -y s<X>

Please enter y when the resource pool server has booted from disk >
```

6. **Boot the resource pool server from its disk.**

   On the system controller, type the following commands:

   sc>**bootmode bootscript="boot disk"** *console-id*
   sc>**poweron** *console-id*

   For example:

```
sc>bootmode bootscript="boot disk" s5
S5: Boot script set.
sc>poweron s5
S5: Poweron sequence started.
```

7. **Return to the image wizard and follow the instructions for customizing Linux for the N1 Provisioning Server environment.**

```
Please enter y when the resource pool server has booted from disk > y

You can customize your installation at this point in time.

Please logon to the resource pool server and customize.

Please enter y when your customization is completed > y

Please shutdown the resource pool server by issuing the command

For Solaris:
# /usr/sbin/shutdown -y -g0 -i0

For Linux:
# /sbin/shutdown -h now

Once the resource pool server shuts down, for sparc blades
set the OBP of resource pool server to boot using dhcp by
issuing the following command in the OBP prompt
(no changes are required for i86pc blades)

ok> setenv boot-device net:dhcp

Please enter y when the resource pool server has completed
the shutdown and when you have configured the
resource pool server to boot using dhcp >
```

8. **Prepare the disk for a snapshot as described in "To Prepare a Disk for Snapshot" on page 44.**

9. **Return to the image wizard window and continue from the previous point.**

Note – In the image wizard text, you see references to "PES." PES is a historical term that refers to a Resource Pool Server.

```
Please enter y when the resource pool server has completed
the shutdown and when you have configured the
resource pool server to boot using dhcp > y
Creating image.
This will take some time, please wait till the operation completes.
Do not interrupt the operation.
Please run farm -Lt <farm id> for more information.

--------------- output of internal commands ----------------
Disabling monitoring on PES 50105
Powering off PES 50105 for a move to it's original VLAN
Setting PES State to OFF
Moving PES 50105 to its original VLAN
Powering on PES 50105 in it's original VLAN
Setting PES State to ON
Activating farm 113 ...
Request (id: 597) submitted.
Waiting for request 597 to complete...
..............
Taking snapshot of target 0 for host server for farm 113 to create final image ...
Snapshot image size: 30000000000
Request (id: 601) submitted.
Waiting for request 601 to complete...
..................................................
Snapshot was successful.
Deactivating the farm 113
Request (id: 619) submitted.
Waiting for request 619 to complete...
..............
Farm 113 is deactivated.
Image rh-as2.1-disk-image is ready for use.
---------------------- end of command ----------------------
Image creation completed.

Updating image attributes.

--------------- output of internal commands ----------------
Updated image: 18
---------------------- end of command ----------------------

Image update completed.

WARNING: The farm created for image creation has to be deleted manually.
        Use the farm -D <farm id> command to delete the farm.
        Please wait for the farm to be deactivated before you issue this command.

                        IMAGE WIZARD
                        ############

This Wizard can be used to :
```

```
* create "image" and store the "image" on the image server (IS) and
  "image attributes" in the control plane database (CPDB).
* import "image" and "image attribute information" into the image
  repository and control plane database (CPDB).
* manage images and manage image attribute information in the image
  repository and control plane database (CPDB).

Please read the N1 PS System Administration Guide before using this
Wizard.

Please select,

1) Create - Create a new image and store the image in the repository
2) Import - Import an image into the repository
3) List   - List the images in the repository
4) Update - Update image attribute information in the repository
5) Delete - Delete an image in the repository
6) Validate - Validate imported images
7) Quit

Enter your selection [1-7] > 7
```

10. Clean up the stale state.

On the Provisioning Server machine, manually delete the temporary farm that was created. Use the following command:

```
# farm -D farm-id
```

Where *farm-id* is the farm ID printed by the wizard in Step 5. For example:

```
bash-2.03# farm -D 113
```

The newly created image `rh-as2.1-disk-image` is ready for deployment.

▼ To Configure the Sun Fire B1600 Switch

This section describes the steps needed to configure the switch.

Steps

1. Create a separate VLAN for Linux install.

a. Log on to the Sun Fire B1600 switch.

For a dual–switch system, make sure that you log on to the active switch.

b. Create a new VLAN for Kickstart purposes.

Type the following commands:

```
Vty-0#configure
Vty-0(config)#vlan database
Vty-0(config-vlan)#vlan vlanid name vlan-name media ethernet state active
Vty-0(config-vlan)#end
```

In the following example, a new VLAN named `kickstart` is created with a VLAN id of 3. The VLAN id must not be in use already.

```
Vty-0#configure
Vty-0(config)#vlan database
Vty-0(config-vlan)#vlan 3 name kickstart media ethernet state active
Vty-0(config-vlan)#end
```

2. **To make the Kickstart server part of N1 Provisioning Server setup, configure the interface on the shelf connecting to the Kickstart server to the Kickstart VLAN.**

```
Vty-0#configure
Vty-0(config)#interface ethernet port
Vty-0(config-if)#switchport allowed vlan add vlanid
Vty-0(config-if)#switchport native vlan vlanid
Vty-0(config-if)#end
```

Where *vlanid* is the VLAN created in the previous step and *port* is the port to which the Kickstart server machine is directly connected to the shelf. For example:

```
Vty-0#configure
Vty-0(config)#interface ethernet NETP0
Vty-0(config-if)#switchport allowed vlan add 3
Vty-0(config-if)#switchport native vlan 3
Vty-0(config-if)#end
```

The Kickstart server is now ready to perform Kickstart installations.

▼ To Create a Linux Image by Using the Image Wizard

The general procedure for using the image wizard to create images is described in detail in "To Create an Image" in *N1 Provisioning Server 3.1, Blades Edition, System Administration Guide*. The following procedure identifies specific choices that you want to make to create the appropriate Linux image.

Steps

1. **To access the image wizard, type the following command from the control plane server:**

```
# /opt/terraspring/sbin/imagewizard
```

The image wizard responds with a list of actions for you to choose.

2. **Type 1 to create a new image and store the image in the repository.**
3. **Type 2 to choose Linux for your operating system.**
4. **Type 1 to choose the x86 architecture.**
5. **Type 2 to create an image from a manual operating system installation.**
6. **To define device selection attributes for the new image, type 1.**

a. **Type 1 and select the appropriate x86 blade server type (for example, `sunfireb100x-97-blade`).**

b. **Type 2 and choose local for your disk type.**

c. **Type 3 and choose IDE for your disk controller type.**

d. **Type 4 and choose the default of 30 Gigabytes (3000000000 bytes) for your disk size.**

e. **When your device attributes are complete and correct, type 5 to return to the previous menu.**

7. **To define image atrributes for the new image, type 2.**

a. **Type 1 to provide a name for the image, for example `rh-as2.1-disk-image`.**

b. **Type 2 to provide a brief description for the image, for example `RedHat AS2.1 Image`.**

c. **Type 3 and accept the default archive type for the image (`disk_image`).**

d. **Accept the default image type for the image (Global Image).**

e. **Type 5 to identify the image size, which defaults to the disk size.**

f. **When your image attributes are complete and correct, type 6 to return to the previous menu.**

8. **To continue and create the new image, type 3.**

The screen displays the information that you have entered so far and asks you to confirm before continuing. This text might look similar to the following example:

```
Following is the information you have entered

Operating system: linux
Architecture: i86pc
Image name: rh-as2.1-disk-image
Image description: RedHat AS2.1 Image
Image archive type: disk_image
Image type: Global Image
Image size: 30000000000
Server Type: sunfireb100x-97-blade
Disk Type: local
Disk Controller Type: ide
Disk Size: 30000000000 Bytes

Enter y to continue and n to return to previous option > y
```

Tip – Make sure that there is enough space on the image server to create the new image before you continue.

At this point, the resource pool server is selected and ready for installation in the image VLAN. Write down the device ID and the console ID. You will need those IDs later.

9. **Follow the information on the terminal screen to start and complete the installation on the selected resource pool server as described in "To Install Linux on the Selected Resource Pool Server" on page 42.**

▼ To Install Linux on the Selected Resource Pool Server

Steps

1. **Configure the DHCP settings on the Kickstart server.**

   For complete instructions, see Section 4.3.1,"Configuring the DHCP Server" of *Sun Fire™ B100x and B200x Server Blade Installation and Setup Guide*.

   The following sample `dhcpd.conf` file illustrates a working configuration.

```
authoritative;
default-lease-time 691200;
max-lease-time 691200;

subnet 10.5.140.0 netmask 255.255.255.0 {
         not authoritative;
}

shared-network image-copy-subnets {
        subnet 10.40.40.0 netmask 255.255.255.0 {
        option subnet-mask 255.255.255.0;
        filename "/as-2.1/sun/pxelinux.bin";
        next-server 10.40.40.1;
        range 10.40.40.10 10.40.40.20;
        }
}
```

2. **Move the resource pool server to the Kickstart VLAN.**

   Because the Kickstart server is on a separate VLAN and is not a part of the image VLAN, the resource pool server is moved to the Kickstart VLAN. To move the resource pool server to the Kickstart VLAN, type the following commands on the Provisioning Server machine:

```
# vlanconfig -a vlanid interface device-id
# vlanconfig -n vlanid interface device-id
```

Where:

- *vlanid* is the VLAN created in Step 1 of To Configure the Sun Fire B1600 Switch.
- *device-id* is the device ID of the resource pool server that you noted in Step 8 of To Create a Linux Image by Using the Image Wizard.
- *interface* is the primary interface of the server blade .

For example:

```
bash-2.03# vlanconfig -a 3 eth0 50105
bash-2.03# vlanconfig -n 3 eth0 50105
```

3. **Boot the resource pool server through the network in the Kickstart VLAN.**

   On the shelf system controller, type the following commands:

   ```
   sc>bootmode bootscript="boot net:dhcp" device-id
   sc>reset -y device-id
   ```

   In the following example, the *device-id* is `s5`:

   ```
   sc>bootmode bootscript="boot net:dhcp" s5
   S5: Boot script set.
   sc>reset -y s5
   Reset of S5 successful
   ```

   The resource pool server will be installed with the Linux Kickstart image setup on the Kickstart server. Log on to the console of the resource pool server to monitor the progress of the installation.

4. **Customize the Linux installation, if needed.**

   At the end of the install, you will be prompted at the console to press Enter. After the resource pool server boots from the newly installed Linux, you might want to customize other information, such as changing the root password or installing RPMs that you might have missed.

5. **Halt the resource pool server.**

   On the newly installed Linux machine, type the following command:

   ```
   [root@linux-client root]# /sbin/shutdown -h now
   ```

6. **Move resource pool server back to image VLAN.**

   Move the resource pool server back to the image VLAN so that software packages like the N1 Provisioning Server agent can be installed. The resource pool server is removed from membership in the Kickstart VLAN.

   ```
   # vlanconfig -n 8 interface device-id
   # vlanconfig -r vlanid interface device-id
   ```

   Where:

   - *vlanid* is the VLAN created in Step 1 of To Configure the Sun Fire B1600 Switch.
   - *device-id* is the device id of the Resource Pool Server that you noted in Step 8 of To Create a Linux Image by Using the Image Wizard.

- *interface* is the primary interface of the server blade .

```
bash-2.03# vlanconfig -n 8 eth0 50105
bash-2.03# vlanconfig -r 3 eth0 50105
```

7. **To continue, follow the instructions in "To Prepare a Disk for Snapshot" on page 44.**

▼ To Prepare a Disk for Snapshot

Steps

1. **Boot the resource pool server from its disk into the image VLAN.**

   On the system controller, type the following commands:

   ```
   sc>bootmode bootscript="boot disk" console-id
   sc>poweron console-id
   ```

   For example:

   ```
   sc>bootmode bootscript="boot disk" s5
   S5: Boot script set.
   sc>poweron s5
   S5: Poweron sequence started.
   ```

2. **On the newly installed Linux machine, exclude the dummy file system.**

   Exclude the dummy file system created as described in "Non-standard Disk Sizes and Linux" on page 35. Comment out the entry for `/dummy` in the `/etc/fstab` file.

3. **Unmount the dummy file system.**

   Type the following commands to unmount the file system and verify that it is no longer mounted:

   ```
   [root@linux-client root]# umount /dummy
   [root@linux-client root]# df -k
   Filesystem           1k-blocks      Used Available Use% Mounted on
   /dev/hda1             26251900   1146164  23772204   5% /
   none                   1029196         0   1029196   0% /dev/shm
   /dev/hda3               507620      8253    473159   2% /tmp
   [root@linux-client root]#
   ```

4. **Make the Linux installation compatible with the N1 Provisioning Server software.**

   a. **NFS mount the `/tftpboot/terraspring` directory from the Provisioning Server machine.**

      Type the following command:

      ```
      [root@linux-client root]# mount PS-IP-address:/tftpboot/terraspring mount-point
      ```

      For example:

```
[root@linux-client root]# mount 10.42.42.1:/tftpboot/terraspring /mnt
```

b. Create a download directory for software packages and change directory to that location.

For example:

```
[root@linux-client root]# mkdir -p /tmp/packages
[root@linux-client root]# cd /tmp/packages
```

c. Copy the Sun Java Runtime Environment (JRE), N1 Provisioning Server Agent, and Content Load Balancing (CLB) modules.

```
[root@linux-client root]# cp /mnt/packages/j2re-1_4_1_06-linux-i586-rpm.bin .
[root@linux-client root]# cp /mnt/packages/TSPRaglnx-3.1.6.i386.rpm .
[root@linux-client root]# cp /mnt/packages/sunclb-admin-1.36-1.i386.rpm .
[root@linux-client root]# cp /mnt/packages/sunclb-k2_4_9_e_3smp-1.36-1.i386.rpm .
[root@linux-client root]# cp /mnt/packages/sunclb-k2_4_9_e_3-1.36-1.i386.rpm .
```

d. Unmount the directory.

```
[root@linux-client root]# umount /mnt
```

e. Install the JRE software.

Type the following commands:

```
[root@linux-client root]# sh ./j2re-1_4_1_06-linux-i586-rpm.bin
[root@linux-client root]# rpm -i j2re-1_4_1_06-fcs-linux-i586.rpm
```

f. Install and configure the N1 Provisioning Server agent.

Type the following commands:

```
[root@linux-client root]# rpm -i TSPRaglnx-3.1.6.i386.rpm
[root@linux-client root]# ln -s /usr/java/j2re1.4.1_06/bin/java /opt/terraspring/lib/java
```

g. Install and configure the CLB modules (if required).

If the server blade is to be part of a Sun Fire blade platform with content load-balancing capabilities (Sun Fire B10*n* series), type the following commands to install and configure the CLB modules:

```
[root@linux-client root]# rpm -i sunclb-admin-1.36-1.i386.rpm
[root@linux-client root]# rpm -i sunclb-k2_4_9_e_3smp-1.36-1.i386.rpm
[root@linux-client root]# rpm -i sunclb-k2_4_9_e_3-1.36-1.i386.rpm
[root@linux-client root]# ln -s /etc/init.d/sun-clb /etc/rc3.d/S99sunclb
```

h. Specify secondary Ethernet interfaces

Determine the NIC driver present on the system (for example, `snet`, `ce`, `bge`) and write the names of all the secondary interfaces (for example, `snet1`, `ce1`, `bge1`) to the file `/etc/opt/terraspring/managed_interfaces`. The following example shows a single secondary interface of `snet1`:

```
[root@linux-client root ]#cat /etc/opt/terraspring/managed_interfaces
snet1
[root@linux-client root ]#
```

5. **Halt the resource pool server.**

   ```
   [root@linux-client root ]#/sbin/shutdown -h now
   ```

   The blade is now ready for snapshot.

6. **Return to the image wizard and complete the last two steps in To Create a Linux Image (High-Level Task), starting with Step 9.**

Documentation Errata

This section would contain corrections to errors in the N1 Provisioning Server manuals. At present, there are no known corrections.