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Before using the information in this book, read the general information in “Appendix E. Notices” on page 165.

Contents

Installing to Clients on ATM Networks 21
BOS Installation Over Non-ATM Adapters 21
BOS Installation Over ATM Adapters 21
Configuration Requirements 22
Converting Generic Networks into ATM Networks 22
System Recovery After Boot Failure 22
Customizing NIM Clients and SPOT Resources 23
Prerequisites 23
From Web-based System Manager 23
From SMIT 23

From the Command Line. 38
Adding New Members to Machine Groups

From SMIT

Interacting with the Dynamic Host Configuration Protocol 67
Creating File Resources in the root Directory 67
Restricting NIM Client Resource Allocation 68

SPOT (Shared Product Object Tree) Resource 93
tmp Resource 96
Distributed NIM Resources 97
NIM Operations 98
allocate 98
alt_disk_install 98
bos_inst 100
change 104
check 104
cust 105
deallocate 106
define 106
diag 107
dkls_init 107
dtls_init 108
fix_query 108
lppchk 109
maint 109
maint_boot 110
reboot 110
remove

For a Running Machine 157

Appendix C. Sample Files 159
bosinst.data File 159
script Resource File 160
Definition File for the nimdef Command 160

Appendix D. NIM Compatibility and Limitations 163
Operations 163
Resources 163
Default Routes 163
NIM Master 163
Memory Requirements for AIX 4.3 or later 163
Remote Dump over ISA Ethernet 163
LAN SCSI Adapter 63

About This Book

Chapter 1. Network Installation Management (NIM) Introduction

Overview of Network Installation Management (NIM) Operations

Network Installation Management operations include:

- “Installing BOS”
- “Customizing (Installing) the Software”
- “Maintaining the Software”
- “Configuring the Machine”
- “Booting Diagnostics”
- “Booting in Maintenance Mode”
- “Initializing Diskless and Dataless Clients” on page 3

Initializing Diskless and Dataless Clients

You can manage resources for diskless and dataless clients from the NIM master.

Installing BOS on an Alternate Disk

```
crfs -v jfs -g rootvg -a size=$((2000*150)) \
-m /export/dd_resource -A yes -p rw -t no \
-a frag=4096 -a nbpi=4096 -a compress=no
```

```
platform=rspc
kernel=up
cable type=bnc
```

6. Many applications, particularly databases, maintain data in *sparse files*. A sparse file is one with empty space, or gaps, left open for future addition of data. If the empty spaces are filled with the ASCII null character and the spaces are large enough, the file will be sparse, and disk blocks will not be allocated to it.

   This creates an exposure in that a large file will be created, but the disk blocks will not be allocated. As

7. Select a TARGET for the operation.
8. Select **mksysb**

Note:

Notes:

1. The steps to perform a **SPOT-copy** installation are almost identical to the steps to perform other types of BOS installations.

and mounts network installation resources for the BOS installation. The installation then proceeds as normal until the customization phase. During NIM customization, the ATM adapter is not reconfigured with a **mktcpip** command since the ODM already contains information carried over from before the machine was reinstalled. All other aspects of NIM customization are the same as for non-ATM clients.

Configuration Requirements

- Machines that will have BOS installed over ATM must be running and configured NIM clients.

  Note: Configured NIM clients have the **bos.sysmgt.nim.client** fileset installed, are registered in the NIM master database, and have a valid

e. **sync**
f. **sync**
g. **reboot -q**

If errors are detected during the NIM **bos_inst** operation and the client machines hasn't rebooted, it is possible to stop the machine from rebooting, and then execute the sequence of commands in the above

```
mount /cdfs
```

From the Command Line

To define a diskless or dataless client, enter:

```
nim -o define -t Diskless/Dataless \
-a platform=PlatformType -a netboot_kernel=NetbootKernelType \
-a if1=InterfaceDescription -a net_definition=DefinitionName \
-a ring_speed1=Speedvalue -a cable_type1=TypeValue \
-a iplrom_emu=
```

Note: For detailed information about other attributes you can specify for the **dkls_init** and **dtls_init** operations, see “dkls_init” on page 107 and “dtls_init” on page 108.

3. The **bos.alt_disk_install.rte** fileset must be installed on the NIM client. To install a new fileset on a NIM Client, see “Customizing NIM Clients and SPOT Resources” on page 23.

From Web-based System Manager

1. Select the Machines Container.
2. In the contents area, select the standalone machine for the alternate disk installation.
3. From the Selected menu, choose **Alternate Disk Installation 3.Selecu8et.0di3(stomizintoClientfinish333(Selecu8**

control = *StandaloneClientName* **push_off**

4. Select a machine from the list on the right, and click on the **<** button to add the machine to the new

Using Resource Groups to Allocate Related Resources to NIM Machines

NIM resource groups allow association of resources so they can be allocated as a logical unit to machines prior to other NIM operations. Resource groups can only contain one of each resource type, except for **script** and **installp_bundle** resources, which may occur multiple times in a given resource group.

Resource groups are not currently supported in the Web-based System Manager application.

Defining a Resource Group

From SMIT

1. To define a resource group, enter the **smit nim_mkgrp_resource** fast path.
2. Enter the name of the group with member information.

From the Command Line

To define a resource group, enter:

```
nim -o define -t res_group -a
```

3. Fill in the name of the group that is to act as the default.

From the Command Line

3. Select a target for the operation.

niminst	Output from the installation of user-specified software (including installation of NIM client software during a **bos_inst** operation)
bosinst	Output from the BOS installation program
boot	The machine's boot log
lppchk	A log of the output from the **lppchk** operation executed on a standalone NIM client
script	Output from any configuration script resources allocated for a **bos_inst** operation
nimerr	Errors encountered during execution of the **nim** command.

By default, the **showlog** operation applied to a standalone machine displays the **niminst** log and shows

From SMIT

1. Enter the **smit nim_mac_op**

Chapter 6. Advanced NIM Configuration Tasks

This chapter describes the following procedures for performing advanced Network Installation Management (NIM) configuration tasks using the Web-based System Manager NIM application or the System Management Interface Tool (SMIT), as well as from the command line:

- “Removing Machines from the NIM Environment

Creating Additional Interface Attributes

The primary interface or the first interface (

```
nim -o change -a if2='Network2 srv1_ent 0' -a \
cable_type2=bnc master
```

With this syntax, another **if** attribute is created for the master, which tells NIM that the master has an

From the Command Line

To create a **/usr-SPOT**, enter:

```
nim -o define -t spot -a server=ServerName \
-a location=/usr -a source=SourceName ResourceName
```

Example:

To convert the

A SPOT named **spot1** was created on the NIM master in the

From Web-based System Manager

From the Command Line

From SMIT

Initiating the maint_boot Operation from the Client

1. Enter the **smit nim_client_op** fast path.
2. Select the **maint_boot**

Reducing Space Requirements for NIM Resources

It is not unusual for resources such as the **SPOT** and **lpp_source** to take several hundred megabytes of storage space on a NIM server. By creating **/usr SPOTs** and defining CD-ROM file system directories as **lpp_sources**, space consumption can be reduced significantly on resource servers.

A **/usr SPOT** can be created from the **/usr** file system of the NIM master or any NIM client. The AIX system files for the Base Operating System are already installed, so only software for additional device support will be added to the system. The resulting system ultimately has more software installed on it than it needs to run, but far less disk space is used than otherwise would have been, had a **non-/usr SPOT** been created on the same system. For more information on creating **/usr SPOT** resources, see “SPOT (Shared Product Object Tree) Resource” on page 93 and “Defining /usr versus non-/usr SPOTs” on page 53.

A directory on the AIX product CD can be mounted and defined as an **lpp_source**, eliminating the need to copy installation images to the hard disk of a resource server. The defined **lpp_source** contains all the

Restricting NIM Client Resource Allocation

NIM provides client machines with the capability of allocating and using any resource in the NIM environment. In some tightly controlled NIM environments, administrators may not want clients to be able to access all resources at all times. To control client-resource allocation, a NIM administrator can use the **client_alloc** attribute. The restrictions placed by the **client_alloc** attribute will prevent clients from allocating and using resources, but the NIM master will continue to have the full capability of performing operations on clients.

Note: This task is not currently supported by Web-based System Manager.

From SMIT

NIM client-allocation restrictions can be changed from the SMIT interface by typing the SMIT fast path:

```
smit nim_control_alloc
```

From the Command Line

To restrict all clients from being able to use any resources, set the attribute **client_alloc=no** on the NIM

From SMIT

Manage the creation of boot images from the SMIT interface by typing the SMIT fast path:

```
smit nim_control_boot
```

From the Command Line

To rebuild the list of machine types and networks that must be supported by network boot images in the NIM environment, perform a **change** operation on the NIM master with the **if_discover=yes** attribute:

```
nim -o change -a if_discover=yes master
```

To rebuild network boot images from a SPOT, perform a **check** operation on the SPOT with the **force** option:

```
nim -Fo check spot_name
```

If an administrator prefers to have NIM always create all possible boot images from the SPOT resources, the **if_prebuild=yes** attribute can be specified on the master:

```
nim -o change -a if_prebuild=yes master
```

To return NIM to the behavior of creating only the boot images that are required for the environment, remove the **if_prebuild** attribute from the master by setting it to ″no″:

```
nim -o change -a if_prebuild=no master
```

Updating a Spot With New Device Support for a New Level of AIX

A NIM SPOT may be updated from one level of AIX to another using the **update_all** option of NIM's **cust** operation. This process will update all current SPOTs with the latest level of code on the installation media. However, this process will not automatically install new software packages or device drivers from the installation media.

Diskless and Dataless Clients

Diskless and dataless clients are machines that are not capable of booting and running without the assistance of servers on a network. As their names imply, diskless clients have no hard disk, and dataless

Network Boot of the Client

The client machine is booted over the network using standard **bootp** procedures for the machine type. The client obtains the boot image and begins running a mini-kernel in a file system in RAM.

The client tftp

environment. When NIM clients are defined, the associated network for the client must be specified. During NIM operations, the NIM master is able to use information from the client's network definition when necessary.

When the NIM master is configured, the network associated with the master is automatically defined in the NIM environment. It is only necessary to define additional NIM networks if clients reside on other local area networks or subnets. The procedures described in this guide and reference are designed to automatically define NIM networks, if necessary, when clients are added. However, this section is included to describe NIM networks in detail in case manual definition of networks and routes is required.

Supported NIM Network Types

The currently supported network types are:

- Ethernet
- Standard Ethernet
- IEEE 802.3 Ethernet
- Token-Ring
- FDDI
- ATM
- Generic

Network boot support is provided for Ethernet, Token-Ring, and FDDI. Unlike other network adapters, ATM adapters cannot be used to boot a machine. This means that installing a machine over an ATM network requires special processing. See "Installing to Clients on ATM Networks" on page 21. The Generic network type is used to represent all other network types where network boot support is not available. For clients on Generic networks, NIM operations that require a network boot, such as **bos_inst** and **diag**, are not supported. However, nonbooting operations, such as **cust** and **maint**, are allowed. Diskless and dataless clients cannot be associated with Generic networks, since they inherently rely on network boot capability.

Defining NIM Networks

Networks are defined in the NIM environment using the NIM **define** operation. The command line syntax is as follows:

```
nim -o define -t NetworkType -a Attribute=Value ... MachineName
```

where the following attributes are required:

-a net_addr=*Value* Specifies the IP address of the network being defined. If the network address is not$SpecDe NIaddre3(

NIM provides the ability to define default or static routes. Default NIM routes provide the following advantages over static routes:

- They more closely model the network configuration of common network environments.
- They also permit resources that are distributed throughout a NIM environment to be more easily accessed by any client in the NIM environment.

Static NIM routes are supported for backward compatibility with NIM environments defined on machines running AIX 4.1 (and later).

To determine the gateway used by machines on a given network, run **netstat -rn**

Because a single NIM network object is used to represent one network, the **other_net_type** attribute is

2. Use the General page to add a network type to the network.

From SMIT

1. To add another network type, enter the **smit nim_chnet** fast path.
2. Select the network to change.
3. Specify the additional network type to be supported.

From the Command Line

To define a NIM network, enter:

```
nim -o change -a other_net_type<i>SequenceNumber=NetworkType NetworkName</i>
```

For example, to change a Token-Ring network called `network1` to also support Ethernet and FDDI, enter:

```
nim -o change -a other_net_type1=ent -a other_net_type2=fddi  network1
```

exclude_files Resource

An **exclude_files** resource represents a file that contains a list of files and directories that should be

-a source=*Value*	Specifies an existing **fix_bundle** resource to be replicated when defining a new resource. The file pointed to by the source resource will be copied to the new location.

home Resource

A **home** resource represents a directory in which client **/home** directories are maintained. When this type of resource is allocated to a client, NIM creates a subdirectory for the client'

POWER-based	Itanium-based
bos	**bos**
bos.64bit (if AIX 4.3 or later)	N/A
bos.rte.up (if AIX 4.1)	N/A
bos.rte.mp (if AIX 4.1)	N/A
bos.up (if AIX 4.2 or later)	N/A
bos.mp (if AIX 4.2 or later)	**bos.mp**
bos.net	**bos.net**
bos.diag	**bos.diag**
bos.sysmgt	**bos.sysmgt**
bos.terminfo	**bos.terminfo**
bos.terminfo.data	**bos.terminfo.data**
devices.base	**devices.ia64.base**
devices.buc	N/A
devices.common	**devices.common**
devices.graphics	**devices.graphics**
devices.mca	**devices.pci**
devices.rs6ksmp.base	N/A
devices.scsi	**devices.scsi**
N/A	**devices.ide**
devices.sio	**devices.isa_sio**
devices.sys	N/A
devices.tty	**devices.tty**
xlC.rte	**xlC.rte**

Note: When copying device images to a directory that you plan to define as an **lpp_source**, be sure to copy all the device images for a given type of device. For example,

```
cp /cdfs/usr/sys/inst.images/devices.pci.*  lpp_source_directory
```

You can define an **lpp_source** in several ways:

- If a directory containing installation images already exists, it can be directly defined as an **lpp_source** resource.
- If a directory should be created and populated by NIM with the default set of support images for a BOS install, use the **source** attribute when defining the resource. This attribute specifies the name of the device that contains the installation images. NIM copies the software images from this device into the location specified for the **lpp_source**. The images copied will include those from the **simages** list, all,s33(thm281 0 TDsi

system be created to contain an **lpp_source**

The following attributes are optional for this resource:

-a comments=*Value* Describes the **mksysb**.

-a exclude_files=*Value* Specifies an **exclude_files** resource to use to exclude files and directories from the system backup.

-a group=*Value*

Note: Whenever this resource is deallocated, NIM removes the subdirectory that was created for the client's use. Therefore, any files you want to save in the client's subdirectory should be backed up before you deallocate a resource of this type.

Defining a root Resource

The command line syntax for defining a

shared_home Resource

A **shared_home** resource represents a directory that can be used as a common **/home** directory by one or more clients. When this type of resource is allocated to a client, and when the **dkls_init** or **dtls_init** operation is performed, NIM configures the client's configuration to use this common directory. After

- “

initialization, anytime the client performs a network boot, the client NFS mounts this subdirectory over **/tmp** to gain access to the **/tmp** directory that has been set up for its use. This subdirectory remains mounted over **/tmp** on the client as long as the client is running.

Note:

NIM Operations

A large number of operations can be performed to manage a NIM environment and perform software installation and maintenance. The Web-based System Manager and SMIT interfaces are designed to hide much of the detail required for the command line interface. Therefore, this section only documents the

The command line syntax for the **alt_disk_install rootvg** clone operation is as follows:

```
nim -o alt_disk_install -a source=rootvg -a disk=target_disk(s) \
 -a attribute=Value....  TargetName
```

The target of an **alt_disk_install** operation can be a standalone NIM client or a group of standalone NIM clients. The clients must be running AIX 4.1.4 or higher and have the **bos.alt_disk_install.rte** fileset installed.

-a image_data=*Value* Specifies the image_data resource to use when creating the new alternate **rootvg** and its logical volumes and file systems. The new volume group created must be large enough to restore the **mksysb** image or a copy of the running **rootvg**. An **exclude_files** attribute can also be used with an **alt_disk_install rootvg** clone to specify files or directories that should not be backed up.

-a resolv_conf=*Value* Specifies the **resolv_conf** resource to use for configuring the domain and name resolution on the client system when the system is rebooted. This is the **/etc/resolv_conf** file that will be copied into the alternate disk's file system. This may be useful if the **mksysb** image you are using has a different **/etc/resolv_conf** file than the one you want the client to retain.

-a script=

image to.7(32.8r. Tusing)T32.7(o)Tj/F19 1 Tf6.61[use-a(system)-332.8(when)-332.7(thrTj/F19314.6(This)-332.7(i)0bef0 TD(mksysb)Tj/F19 1 Tf4

-a source=

-a resolv_conf=*Value*	Specifies the **resolv_conf** resource to use for configuring domain and name resolution on a client.
-a script=*Value*	Specifies the **script** resource to be run on the target system after all software has been installed.
-a set_bootlist=*Value*	Indicates whether or not NIM should set the bootlist of the client so that the client boots over the network on the next reboot. Usually, **set_bootlist** would be **yes** if the client is not going to be rebooted immediately for installation (**no_client_boot=yes** or **boot_client=no**). The default value is **resou906 0 Tm01.22(19 TD(installed37.37j/6 1 Tf-12.7178 21.3333 TD0.007332.w_progf**

installation or migration of the base operating system. If client support is copied to the target machine, NIM will automatically expand the necessary file systems on the target unless the **auto_expand**

The target of a **check** operation can be any NIM client, a group of NIM clients, a **SPOT** resource, or an **lpp_source** resource.

The following list includes all the flags and attributes that can be specified for the **check** operation:

-a async=*Value*

The command line syntax for the **define** operation is as follows:

```
nim -o define -t ObjectType -a Attribute=Value ... ObjectName
```

""" operation The attributes required for the define operation vary for the different object types. For a complete description of the attributes required to define the various NIM objects, see “NIM Networks” on page 78, “NIM Machines” on

The target of a **fix_query** operation can be any standalone NIM client, group of standalone NIM clients, or **SPOT** resource.

The following are optional attributes that can be specified for the **fix_query** operation:

-a fix_bundle=*Value* Specifies a **fix_bundle** resource containing a list of fix keywords. This attribute is required unless the **fixes** attribute is specified for the operation.

-a fixes=*Value* Specifies a list of keywords for the **fix_query** operation. Fix keywords are APAR numbers used to identify software updates that can span multiple filesets. This attribute

The following are required attributes that can be specified for the **maint** operation:

-a installp_flags=*Value* Identifies the flags that tell **installp** what to do with the installed software.

The following are optional attributes that can be specified for the **maint** operation:

-a async=*Value* Specifies whether NIM should perform operations on group members asynchronously and not wait for the operation to complete on one member before beginning the operation on the next. The default value is **async=yes**.

-a filesets=*Value* Specifies a list of filesets to be maintained on the target.

The command line syntax for the **showres** operation is as follows:

`nim -o showres -a` *`Attribute=Value ... TargetName`*

The target of a **showres** operation may be a **SPOT**, **lpp_source**, **script**,

A **sync_roots** operation can be performed automatically when the **check** operation is performed on a **SPOT**

member=*Value*

For example, the resource group, `res_grp1`, contains the `spot1`, `lpp_source1`, `bosinst_data1`, `script1`, and `resolv_conf1` resources. To use the resource group to perform an **rte bos_inst**

Chapter 9. Network Installation Management Commands Reference

The

Chapter 10. Error and Warning Messages

This chapter contains information about Network Installation Management (NIM) error and warning messages, with suggestions for resolving specific problems.

Message 0042-003 and 0042-004
Explanation An error has been returned from a system call.
User Action Fix the condition that caused the system call to fail and perform the operation again.

Message 0042-005
Explanation The Object Data Manager (ODM) has returned an error.
User Action Refer to the *Messages Guide and Reference* for specific details of the error. Fix the ODM problem and perform the NIM operation again.

Message 0042-006
Explanation

Message 0042-013
Explanation

User Action Specify the missing attribute. If the failing command is the **nim** or **nimclient** command, to obtain a list of attributes, enter from the master:

`lsnim -q ObjectName`

OR

`lsnim -q -t ObjectType`

OR enter from the clients:

`nimclient -l lsnimOptions`

For the other NIM commands, see the appropriate NIM man page.

Message 0042-022
Explanation A value was specified that exceeds the bounds of acceptable values.
User Action Supply a value within the acceptable bounds.

Message 0042-023
Explanation The specified value is not valid.
User Action Try the command again with a valid value. To determine the valid values for classes of objects and operations as they pertain to those objects, enter:

`lsnim -Pc ObjectClass`

AND

`lsnim -POc ObjectClass`

where *ObjectClass* is one of machines, networks, or resources.

Message 0042-024
Explanation An invalid NIM object type was specified.
User Action Specify a valid NIM object type. See user actions for error 023 for **lsnim** options to determine a valid object type.

Message 0042-025
Explanation The specified operation cannot be supplied to the specified NIM object.
User Action Specify an operation that can be applied to the object. Enter `lsnim -O ObjectName` for a list of valid operations that can be applied to the object.

Message 0042-027
Explanation

Message 0042-033

Explanation The specified value is not unique and it must be. An attribute with a sequence number requires a unique value.

User Action Supply a unique value.

Message 0042-034

Explanation The specified value is not unique and it must be.

User Action Supply a unique value.

Message 0042-035

Explanation NIM was attempting to access an attribute that had the specified characteristics, but the attribute doesn't exist.

User Action Make sure the attribute exists and retry the operation.

Message 0042-036

Explanation The **define** operation failed for a resource because the specified server does not have a standalone configuration.

User Action Try the operation again using a NIM client that is a standalone machine.

Message 0042-037

Explanation The NIM state of the specified object prevents the operation from succeeding.

User Action NIM states are used to synchronize activity among NIM objects. To perform the desired operation, the state of the specified object must be changed. If the specified object is in an unexpected state, check the system to make sure another user or process is not manipulating the object. Use the **reset** operation to set the object to a known state and try the operation again.

Message 0042-038

Explanation An object that NIM would operat Tfitya7a9f833 TD(Explanau-332.7(objectleadtry)-332.lockcted)-332.7(and)-332.

User Action **fm3vTT194 0 TD[(An3.8948)-332.(t)0.1(o)-0.3194 -2.6667 T34-331age**

Explanation

User Action If the operation you were attempting to perform requires that the target machine be running and

Explanation You have requested an operation to be performed on a NIM resource object that is currently allocated for client use. NIM is not allowing this operation to be performed because it may interrupt the client's use of the resource.

User Action Try the operation again when the resource is not allocated for use. If necessary, try the **force** option (**-F** flag) to disregard the preliminary check by NIM. In some cases NIM may not...4461

User Action Try the operation again when the state changes or, if necessary, try using the **force** option (**-F**

Message 0042-081

Explanation NIM uses NFS to make remote resources available for client use. To avoid NFS export errors, NIM enforces some restrictions on where a resource can be defined. In general, a NIM resource cannot be defined within a directory that is already a NIM resource. Conversely, a NIM resource cannot be defined for a directory that already contains an existing NIM resource.

User Action Move the resource to a location that adheres to NIM export rules and try the operation again.

Message 0042-083

Explanation Each network communications adapter has an associated network hardware address that is

Message 0042-121
Explanation An invalid value has been specified.
User Action Try the operation again, using a valid value.

Message 0042-124
Explanation An NFS option was specified that is not supported.
User Action

User Action

Message 0042-157

Explanation The operation you have requested could not be performed because a required file could not be

Explanation Some NIM operations do not allow the source of installable images to be a CD-ROM. NIM is not always able to construct an environment that supports the use of a CD-ROM for the operation being performed. This is true for the operation you tried to perform.

User Action Try the operation again using a different source for installable images.

Message Explanation 0042-165

User Action

Explanation Unable to write the IPLROM emulation.

User Action The **mkboot** command failed to write the IPLROM emulation on the client. Boot the client manually over the network to begin the BOS installation.

failed to write the IPLROM BOStoritelslv1(PLROM)-lriteAction

2mkboot

User Action

Message Explanation 0042-215

User Action Check previous error messages to understand why the creation of the resource failed. Correct

Explanation An attempt was made to create the same file system twice: once for an **lpp_source** and once

Explanation Unable to locate a matching network.

User Action The **find_net** keyword was used in the **if** attribute of the machine. However, no matching network was found. Either define the network prior to defining the machine interface, or use the **net_definition**

User Action The **net_definition** must reference a machine interface, so specify an **if** attribute when using the **net_definition** attribute.

Message 0042-258
Explanation You cannot specify the **net_definition**

User Action Use the **ps -ef | grep nim**

User Action

4. If the **/etc/bootptab** file is correct, verify that the **inetd** daemon is running. If it is not running, start it and retry the network boot from the client. If the **inetd** daemon is running, it should automatically start the **bootpd** daemon when the

Action

Producing Debug Output from a Network Boot Image

1. Create debug versions of the network boot images using the **check** operation from the Web-based System Manager or SMIT interfaces or by using the following command:

   ```
   nim -Fo check -a debug=yes SPOTName
   ```

   where *SPOTName*

Producing Debug Output from the BOS Install Program

There are two ways to obtain debug output from the BOS install program. Method A involves entering a

If your client does not require emulation, turn the key to the Secure position and turn on the machine. Watch the LEDs on the front of the machine. They will eventually stop changing and display **200**. Then, change the key position to Service and quickly press the reset (yellow) button. When the **bootp** menus display, continue with step 3.

Note: On model numbers 570, 580, 58H, 59H, 591, and 595, the system powers on in the Secure mode, the power-on light does not come on, and the LED remains blank. The system performs no further (emula7507y6oT(colnge)-333(the)-333(key)-3i7507y6o(reset)-333(to)-333(the)-3Nerfalnge)-3or(to)-333(
200 200

9. Specify the subnet mask for your client machine if you are prompted for one in the `subnet mask` field. All machines in your subnet have the same subnet mask.
10. After you specify the addresses, press Enter to save the addresses and continue.

Appendix D. NIM Compatibility and Limitations

This section contains information about compatibility and limitations between AIX 4.1 and AIX 4.2 (and later).

Operations

showlog	Not supported on AIX 4.1 **SPOT** or machine targets.
showres	Not supported on AIX 4.1 **SPOT** or machine targets.
lppchk	Not supported on AIX 4.1 **SPOT** or machine targets.
maint_boot	Cannot use an AIX 4.1 **SPOT** as the **SPOT** resource when booting a client machine.

Resources

The **resolv_conf** resource is not supported when allocated to an AIX 4.1 machine target.

Appendix E. Notices

push installation. In the *Network Installation Management* (NIM) (page 167) environment, an installation that is initiated from the master (page 167).

push permissions. Permissions that enable remote execution of commands.

resource. Any file, directory, file system, or device that is required to perform a *Network Installation Management* (NIM) (page 167) operation.

resource state. A state that indicates that the resource is either available or unavailable for use.

server.c A machine that makes resources (page 168) eithee[([(resource)-3332.7(f)0.1(or)-332.7(mo(r)-332.6(un(available)-m.7(thapage)-3

s

Index

Special Characters

/etc/niminfo file
    recovering 57

dump resource 84

listing fixes
installed on a SPOT 43

NIM *(continued)*
nimesis daemon 71
operations
basic 7
overview 1
SPOTs
migrating 66
warning messages 119
NIM attributes 81
NIM concepts 73
NIM database

resources *(continued)*
boot 83

tmp resource *(continued)*
defined 96
defining 97
overview 96
troubleshooting
introduction 147
network boot problem 147
client and server, establishing network communication 147
obtaining the boot image from the server 147
running the boot image on the client 148
producing debug output 149
producing debug output from
a network boot image 150
BOS install program 151
troubleshooting procedures

Readers' Comments — We'd Like to Hear from You

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Network Installation Management Guide and Reference

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Overall, how satisfied are you with the information in this book?