



IBM Systems Technology Group

# **AIX 5L™ for POWER™ 5300-06 Technology Level**

## ***Network installation manager***



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## Overview

- The AIX 5L operating system, IBM's industrial-strength UNIX® environment, delivers enhancements to Java™ technology, Web performance and scalability for managing systems of all sizes from single servers to large, complex on-demand business installations. Web-based remote management tools give administrators centralized control of system, enabling them to monitor key resources, including adapter and network availability, file system status and processor workload.

## 5300-06 nimsh

- Network installation manager service handler (nimsh)
  - ▶ Eliminates the need for rsh services during nim client communications
    - Uses the NIM master and client `cpu_ids` in place of the `.rhosts` file
  - ▶ Uses reserved ports 3901 and 3902
  - ▶ Installs as part of the `bos.sysmgt.nim.client` fileset

## 5300-06 using NIM

- Network installation manager (nim)
  - ▶ There are many variations on using nim depending on your environment
  - ▶ A master and client setup and an EZNIM setup will demonstrate the parts of a nim configuration
  
- ▶ For other NIM configurations and setups, refer to the Redbook *NIM from A to Z in AIX 5L*, SG24-7296

## 5300-06 using NIM

- Network installation manager (nim) master
  - ▶ Pre-installation checks
    - install the latest level of AIX
    - Check available disk space
    - Check network adapters
  - ▶ Install NIM filesets
    - smitty install\_latest
    - Select install source device
    - Select NIM package

## 5300-06 using NIM

- Network installation manager (nim) Master (cont.)
  - ▶ Configure the system as a NIM master
    - smitty nimconfig
      - smitty nim\_mkres to define the lpp\_source
      - smitty nim\_mkres to define the Shared Product Object Tree (SPOT)
      - OR
      - Easy Startup (creates a basic lpp\_source and SPOT)
        - smitty nim > Configure the NIM environment >
        - configure a Basic NIM Environment (Easy Startup)
        -

## 5300-06 using NIM

- Network installation manager (nim) client
  - ▶ Define the client
    - smitty nim\_mkmac
  - ▶ Pre-install checks
    - Verify that the correct entry has been added in the /etc/bootptab file
    - Verify that the boot files have been created in the /tftpboot directory
    - Verify that the required resources are allocated to the client and that its Cstate parameter has the right value

## 5300-06 using NIM

- Network installation manager (nim) client (cont.)
  - ▶ Install the client
    - smitty nim\_task\_inst
  - ▶ Start the client installation
    - Power on the client and go into the SMS menus
    - Using the console, press the 1 key during the boot sequence
  
  - ▶ For more information about NIM, refer to *AIX 5L Version 5.3 Installation and Migration*, SC23-4887.
  
  - ▶ For other NIM configurations and setups, refer to the Redbook *NIM from A to Z in AIX 5L*, SG24-7296



## 5300-06 EZNIM

### ■ Network installation manager (nim)

- Using EZNIM command scripts
  - configure the NIM master,
  - create the basic installation resources required to install NIM client machines,
  - configure the NIM client machines.

▶ For more information about EZNIM, refer to *AIX 5L Version 5.3 Installation and Migration*, SC23-4887.

▶ For other NIM configurations and setups, refer to the Redbook

*NIM from A to Z in AIX 5L*, SG24-7296

## 5300-06 EZNIM

- Configuring a NIM master using `nim_master_setup`
  - ▶ The **`nim_master_setup`** command
    - installs the `bos.sysmgt.nim.master` fileset (if it is not already installed),
    - configures the NIM master,
    - creates the required resources for installation,
    - including a **`mksysb`** system backup.
  
  - ▶ You can also use the SMIT `eznim_master_panel` fast path for this task.
  
  - ▶ **NOTE:** The default device to copy the AIX software from is `/dev/cd0`,
  - ▶ the default volume group to create file systems in is `rootvg`,
  - ▶ and the default file system is `/export/nim`

## 5300-06 EZNIM

- **Configuring a NIM master using nim\_master\_setup (cont.)**
  - ▶ **The nim\_master\_setup script requires**
    - that the TCP/IP must be configured using either Token ring or an Ethernet interface
    - There must be 8 MB free space in the /tmp file system
    - the volume group needs at least 1 GB for the NIM file system (/export/nim)
    - 32 MB for the /tftpboot file system
  - ▶ If the NIM file system or /tftpboot do not exist, they are created
  - ▶ The nim\_master\_setup script will create a basic lpp\_source, a SPOT, and a generic mkysb resource

## 5300-06 EZNIM

- **Configuring NIM clients with `nim_clients_setup`**
  - ▶ In order for the `nim_clients_setup` script to work
    - the `nim_master_setup` script must have completed properly
    - there must be a NIM res\_group named `basic_res_grp`
    - a `client.defs` file containing client definitions
  
  - ▶ The **`nim_clients_setup`** command is used to
    - define NIM clients
    - allocate the installation resources
    - initiate a NIM BOS installation on the clients
  
  - ▶ You can also use the SMIT `eznim_client_panel` fast path

## 5300-06 EZNIM

- Configure NIM clients using `nim_clients_setup` (cont.)
  - ▶ To initiate a change of the NIM client's boot sequence to use network as the first boot device, and to reboot the client, the `-r` option must be used with the **`nim_clients_setup`** command.
  
  - ▶ The NIM setup for installing the NIM client is now completed.
  
  - ▶ The client can be restarted to initiate network boot and BOS installation

## 5300-06 NIM common errors

- Common NIM errors
  - ▶ LED codes
  - ▶ 7-digit error codes

## 5300-06 NIM LED 608

- Common LED hangs after the client has received the boot image
  - ▶ **608 - tftp retrieve of client info file failure**
    - ▶ If a 608 hang is encountered, verify that the *ClientName*.info file exists in the /tftpboot directory. If it does not exist, retry the NIM operation to create it. If it does exist, verify that tftp access to the /tftpboot directory is not restricted in the /etc/tftpaccess.ctl file
    - ▶ It is also possible that the network adapter was not configured properly in the boot environment. In this case, use debug-enabled network boot images to look for errors in the boot environment

## 5300-06 NIM LED 611

- ▶ Common LED hangs after the client receives the boot image
- ▶ **611 - Remote mount of NFS file system failure**

LED 611 hangs occur when the client machine is unable to mount a resource from the NIM master/resource server. First ensure that NFS is running on the master/resource server. Verify that the resources specified for the operation are exported properly by checking the `/etc/exports` and `/etc/xtab` files on the server. Also, confirm that the resources have permissions set correctly for reading. Debug-enabled network boot images can also be used to determine exactly which **mount** command is failing on the client. You can also check the value of the `nfso` server `portcheck` option and usage of NFS reserved ports



## 5300-06 NIM LED 613

- ▶ Common LED hangs after the client receives the boot image
- ▶ **613 - Failure setting up route tables**
- ▶ 613 hangs can occur when a route is incorrectly defined for a network in the NIM database. Verify that the correct gateways are specified between networks, and all gateways are functional. Use debug-enabled network boot images to determine which routes could not be defined

## 5300-06 NIM 0042-xxx errors

- Common 7 digit error codes with nim
  - 0042-001 typically comes with another 7 digit error code
  - 0042-005 NIM make resources
    - check if the file system is full
  - 0042-006 m\_mkbsi: (From\_Master) connect Error 0
    - have been resolved through corrections in  
/etc/hosts,  
.rhosts file missing,  
3902 in /etc/services being used by another application

## 5300-06 NIM 0042-008

### ▪ Common 7 digit error codes with nim

- 0042-008 NIM Master has attempted to establish socket communications with a remote machine, and it has refused the connection.

If the failing operation occurred on the master, verify that the master has rsh permissions on the client and that inetd is active on the client;

Verify that the nimesis daemon is active on the master. If the failing operation was the nimit command on the client, a possible cause of failure is that the master does not have a network object that corresponds to the client's network. A network object that represents the client's network needs to be added to the database on the master; then a route needs to be added from the master's network to the client's network

## 5300-06 NIM 0042-008

- Common 7 digit error codes with nim

- 0042-008 NIM Client has attempted to establish socket communications with a remote machine, and it has refused the connection.

If the failure occurs during operations initiated from a client, using the `nimclient` command, or during a NIM installation of the base operating system, the `cpuid` attribute on the client's machine definition may be obsolete (for example, if the machine's system board was recently replaced). To guarantee that this is not the case, erase the `cpuid` from the machine definition by issuing the following from the master: `nim -Fo change -a cpuid= ClientName`

## 5300-06 NIM 0042-175

- Common 7 digit error codes with nim
  - 0042-175 errors on mksysb script on NIM Master
    - recycle NFS on the master as follows:

```
# exportfs -ua
# stopsrc -g nfs
# cd /etc
# rm -rf xtab state sm sm.bak rmtab
# cd /var/statmon
# rm -rf state sm sm.bak
# startsrc -g nfs
# exportfs -va
# exportfs
```

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