AIX 5L™ for POWER™ 5300-06 Technology Level
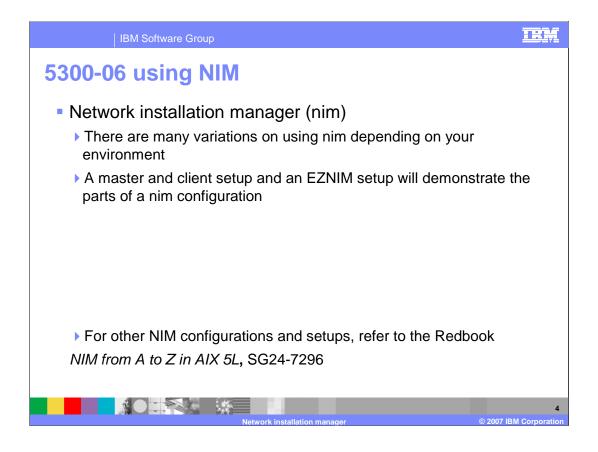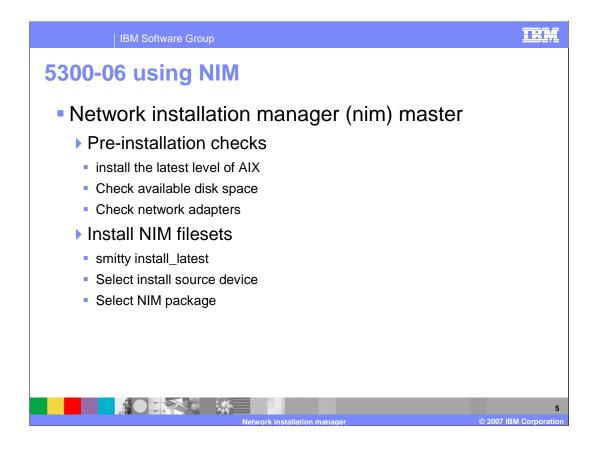
Network installation manager

@business on demand.

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.

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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 mksysb 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_mkbosi: (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 niminit 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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