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NIM 201

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Agenda

- Introduction
- System being used
- nimadm
- Hints and tips

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Cool NIM things you can do

- The obvious
  - Install and maintain systems
  - Backup and restore AIX LPARs and VIO servers
  - Update LPARs and VIO servers
  - Alternate disk – install, copy, clone
  - Migrations
  - Alternate Masters

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Nim Commands

- nim –o operation –a attribute=value …. Targetname(s)
- cust
  - Install filesets or updates on clients or SPOT resources
- sync
  - Sync NIM database with an alternate master
- fix_query
  - Check fix status on a client
- maint
  - Uninstall filesets and commit or reject updates on a client or SPOT
- maint_boot
  - Boot client into maintenance mode
- reboot
  - Reboot a NIM client
- lppchk
  - Verify software installed correctly
- lppmgr
  - Helps manage base install images and update images in an lpp_source
- activate or deactivate
  - Start or stop a managed system
- showlog
  - List software installed on a client or SPOT
- update
  - Update the lpp_source by adding or removing packages
- updateios
  - Update and customize the VIO server
- alt_disk_install
  - Install to an alternate disk to current rootvg
- bos_inst
  - Install AIX on a client
- change
  - Modify NIM object attributes
- check
  - Verify usability of a NIM resource or machine
- chwpar
  - Change characteristics of a WPAR
- allocate or deallocate
  - Allocate or deallocate resources to a client
- define
  - Create networks, machines or resources
- diag
  - Netboot client into diagnostic mode
- remove
  - Remove objects from the NIM environment
- reset
  - Reset the state of a client or resource
- takeover
  - Allow alternate_master to take control
- unconfig
  - Unconfigure the NIM environment
- showres
- lslpp

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NIM Server Setup

- Must be at highest level of AIX that you plan to support
- **Should use dedicated resources for Disk and Network**
  - Affects ability to restore images if depends on VIO
  - Same applies to TSM server
- Plan for memory (2-4GB is plenty) and core (.5 of a core with 2 VPs)
- Create scaleable VG - nimvg on disk to hold NIM resources
  - Do not put NIM resources into rootvg
- Create /nim filesystem in nimvg (JFS2)
- I also create a separate filesystem called /backups for mksysb images
- Install filesets and any updates from TLs for them
- bos.sysmgt.nim.master
- bos.sysmgt.nim.spot
- bos.sysmgt.nim.client
- Also ensure the following filesets are installed
  - bos.net.tcp.server
  - bos.net.nfs.server
- Use lslpp to check they are there

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More Setup

- Note – NIM does not like dot in resource names so use _
- Put AIX DVD in the DVD drive or replace /dev/cd0 below with the directory you have the BFFs from the DVD loaded up to
- Setup NIM

```
nim_master_setup –B –a device=/dev/cd0  -a file_system=/nim -a volume_group=nimvg
```

Creates /tftpboot
Will not take a mksysb of the NIM server
Creates SPOT and lpp_source resources in /nim

Directory Structure:
/nim
/nim/lpp_source
/nim/images
/nim/spot
/nim/bosinst_data
/nim/resolv_conf
I use /nim/mksysb for migrating mksysb images

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NIM on my 7.2 system

oslevel -s (on NIM Master)
7200-01-02-1717

lslpp -l | grep bos.sysmgt.nim

```
  bos.sysmgt.nim.client     7.2.1.1  COMMITTED  Network Install Manager -
  bos.sysmgt.nim.master     7.2.1.0  COMMITTED  Network Install Manager -
  bos.sysmgt.nim.spot       7.2.1.0  COMMITTED  Network Install Manager - SPOT
  bos.sysmgt.nim.client     7.2.1.1  COMMITTED  Network Install Manager –
```

 # df -g /nim

```
Filesystem    GB blocks     Free %Used    Iused %Iused Mounted on
/dev/lvnim      501.00    488.40    3%    47329     1% /nim
```

 # ls -al /nim

```
total 8
drwxr-xr-x    8 root     system        256 Dec 08 2016  .
drwxr-xr-x   24 root     system       4096 Oct 03 12:35 ..
drwxr-xr-x    2 root     system        256 Dec 08 2016  bosinst_data
drwxr-xr-x    2 root     system        256 Dec 08 2016  images
drwxr-xr-x    2 root     system        256 Dec 06 2016  lost+found
drwxr-xr-x    4 root     system        256 Dec 08 2016  lpp_source
drwxr-xr-x    2 root     system        256 Dec 08 2016  resolv_conf
drwxr-xr-x    4 root     system        256 Dec 08 2016  spot
```

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Check network setup

#cat /etc/hosts

```
192.168.2.71    vio1
192.168.2.72    vio2
192.168.2.73    aix1nim
192.168.2.74    aix2
192.168.2.75    aix3
192.168.2.76    aix4
```

 # cat /etc/inetd.conf

```
##
## service  socket  protocol  wait/  user    server    server program
##  name     type            nowait        program     arguments
##
bootps  dgram   udp     wait    root    /usr/sbin/bootpd       bootpd /etc/bootptab
tftp    dgram  udp6    SRC     nobody  /usr/sbin/tftpd        tftpd -n
```

Do not TCP wrap these
For security reasons you can comment them out and just uncomment and refresh –s inetd when you want to use them

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Create LPP and SPOT

Download base DVDs as ISO images and use smitty bffcreate to create a source directory containing the images
Download the latest service pack and save the images into a directory

Create an LPPsource
nim -o define -t lpp_source -a server=master -a source=/software/aix72/aix72-base -a packages=all -a location=/nim/lpp_source/lpp_72tl01sp2 lpp_72tl01sp2
Update LPPsource with fixes and additional packages
nim -o update -a packages=all -a source=/software/addons lpp_72tl01sp2
Above installs any addons you may need
nim -o update -a packages=all -a source=/software/flrtfixes/sslssh lpp_72tl01sp2
Above update ssh and ssl to more secure versions
nim -o update -a packages=all -a source=/software/aix72/aix72tl01sp2 lpp_72tl01sp2
Above updates the LPP to AIX 7.2 tl01 sp2
nim -o check lpp_72tl01sp2

Create the SPOT
nim -o define -t spot -a server=master -a source=lpp_72tl01sp2 -a location=/nim/spot/spot_72tl01sp2 spot_72tl01sp2
nim -o check spot_72tl01sp2
nim -o cust -a filesets=bos.alt_disk_install.boot_images -a lpp_source=lpp_72tl01sp2 spot_72tl01sp2
You may need to use smitty to install bos.alt_disk_install.boot_images and bos.alt_disk_install.rte into the SPOT

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Show resources

nim -o showres lpp_72tl01sp2 | grep bos.suma

```
bos.suma            7.2.0.0          I  N usr,root
bos.suma            7.2.1.0          S  N usr,root
```

nim -o showres lpp_72tl01sp2 | grep -i bos.alt

```
bos.alt_disk_install.boot_images 7.2.0.0          I  N usr
bos.alt_disk_install.boot_images 7.2.1.2          S  N usr
bos.alt_disk_install.boot_images 7.2.1.3          S  N usr
bos.alt_disk_install.rte   7.2.0.0          I  N usr,root
bos.alt_disk_install.rte   7.2.1.0          S  N usr,root
bos.alt_disk_install.rte   7.2.1.1          S  N usr,root
```

nim -o showres spot_72tl01sp2 | grep -i bos.alt

```
bos.alt_disk_install.boot_images
bos.alt_disk_install.rte   7.2.0.0   C    F   Alternate Disk Installation
```

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NIM Resources 1/2

#ls -l /nim/lpp_source

```
drwxr-xr-x   5 root    system        256 Dec 08 2016  lpp_72tl01sp1
drwxr-xr-x   6 root    system        256 Oct 09 19:21 lpp_72tl01sp2
drwxr-xr-x   5 root    system        256 Dec 08 2016  lpp_res
```

 # ls –l /nim/spot

```
drwxr-xr-x   3 bin     bin          256 Dec 08 2016  spot_72tl01sp1
drwxr-xr-x   3 root    system        256 Oct 09 19:25 spot_72tl01sp2
drwxr-xr-x   3 bin     bin          256 Dec 08 2016  spot_res
```

#ls –l /nim/images

```
-rw-r--r--   1 root    system   8488089600 Apr 24 09:38 xxmksysb-apr2417
```

#ls –l /nim/mksysb

```
-rw-r--r--   1 root    system   8231219200 Apr 24 11:24 xxapr2417mksysb
-rw-r--r--   1 root    system   8440883200 May 04 15:37 xxmksysb-may0417
-rw-r--r--   1 root    system   8440883200 May 05 13:04 xxmksysb-may0517
```

#lspv | grep nimvg

```
hdisk1        00f95d3ad4c066ee                nimvg         active
```

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NIM Resources 2/2

 # lsvg nimvg

```
VOLUME GROUP:          nimvg                    VG IDENTIFIER:  00f95d3a00004c0000000158d5107f55
VG STATE:              active                   PP SIZE:        1024 megabyte(s)
VG PERMISSION:         read/write               TOTAL PPs:      1063 (1088512 megabytes)
MAX LVs:               256                      FREE PPs:       103 (105472 megabytes)
LVs:                   5                        USED PPs:       960 (983040 megabytes)
OPEN LVs:              5                        QUORUM:         2 (Enabled)
TOTAL PVs:             1                        VG DESCRIPTORS: 2
STALE PVs:             0                        STALE PPs:      0
ACTIVE PVs:            1                        AUTO ON:        yes
MAX PPs per VG:        32768                    MAX PVs:        1024
LTG size (Dynamic):    256 kilobyte(s)          AUTO SYNC:      no
HOT SPARE:             no                       BB POLICY:      relocatable
MIRROR POOL STRICT:    off
PV RESTRICTION:        none                     INFINITE RETRY: no
DISK BLOCK SIZE:       512                      CRITICAL VG:    no
FS SYNC OPTION:        no                       CRITICAL PVs:   no
```

 # lsvg -l nimvg

```
nimvg:
LV NAME          TYPE      LPs    PPs    PVs  LV STATE      MOUNT POINT
lvnim            jfs2      501    501    1    open/syncd    /nim
lvbackups        jfs2      200    200    1    open/syncd    /backups
lvsoftware       jfs2      250    250    1    open/syncd    /software
loglv00          jfs2log   1      1      1    open/syncd    N/A
lvtftpboot       jfs2      8      8      1    open/syncd    /tftpboot
```

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List resources

```
# lsnim
master                  machines        master
boot                    resources       boot
nim_script              resources       nim_script
master_net              networks        ent
master_net_conf         resources       resolv_conf
7200-01bid_ow           resources       bosinst_data
lpp_res                 resources       lpp_source
spot_res                resources       spot
basic_res_grp           groups          res_group
lpp_72tl01sp1           resources       lpp_source
spot_72tl01sp1          resources       spot
aix2                    machines        standalone
aix3                    machines        standalone
mksysb_aix72tl01sp1     resources       mksysb
aix4                    machines        standalone
lpp_72tl01sp2           resources       lpp_source
spot_72tl01sp2          resources       spot
```

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List resources

```
# lsnim -l aix2
aix2:
  class        = machines
  type         = standalone
  connect      = nimsh
  platform     = chrp
  netboot_kernel = 64
  if1          = master_net aix2 0
  cable_type1  = N/A
  Cstate       = ready for a NIM operation
  prev_state   = not running
  Mstate       = currently running
  cpuid        = 00F95D3A4C00
  Cstate_result  = success

# lsnim -l lpp_72tl01sp2
lpp_72tl01sp2:
  class      = resources
  type       = lpp_source
  arch       = power
  Rstate     = ready for use
  prev_state  = verification is being performed
  location    = /nim/lpp_source/lpp_72tl01sp2
  simages     = yes
  alloc_count = 0
  server      = master
```

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Update resources

- Put update CD in or change into fixes directory
- Update SPOT and lpp_source

  smitty nim
  Perform nim administration tasks
  Manage resources
  Perform operations on resources
  Select the SPOT
  Select update_all
  Point it to the update CD or directory

- OR
- nim -o define -t lpp_source -a server=master -a location=/nim/lpp_source/lpp_71tl01sp1 -a source=/software/aixv7/aix71-base lpp_71tl01sp1
- nim -o update -a packages=all -a source=/software/aixv7/aixv7-tl01-sp1 lpp_71tl01sp1
- nim -o define -t spot -a server=master -a location=/nim/spot -a source=lpp_71tl01sp1 spot_71tl01sp1
- nim -o check spot_71tl01sp1
- nim -o check lpp_71tl01sp1
- nim -o reset -a force=yes b740nl1

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Setup a client to restore from a mksysb

- Make sure gandalf (client) is in /etc/hosts or in DNS and that the name can be resolved
- Create the client (gandalf) machine to nim as a machine object
- The first step is to define gandalf as a client machine
- smitty nim, perform admin tasks, manage machines
- Define gandalf as a machine
- Select 64 as kernel, nimsh as shell, N/A as network i/face

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Image_data

- Template is /usr/lpp/bosinst/image.template
- Copy and modify
- Specify things like
  - logical volume policy
  - SHRINK=no
  - EXACT_FIT=no
  - lv_data: (an lv_data stanza for each logical volume in rootvg)
    - COPIES= 1 (or 2, 3 to mirror. make sure you have enough target disk stanzas in the bosinst_data resource)
    - LPs= nn (the number of logical partitions)
    - PP= nn (if mirroring, this is an exact 2x or 3x of LPs)
- If you don't specify an image_data resource, NIM will use the file embedded in the mksysb image.
- Typical use of a "side" image.data file is when mksysb is mirrored, but the new install is to be nonmirrored, or vice-versa.

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Setup mksysb as a resource

smitty nim
Perform nim administrative tasks
Manage resources
Define a resource

Select mksysb resource and then fill in the following fields
name = aix61tl2sp2_mksysb
server = master
location = /nim/images/aix61tl2sp2-golden.mksysb

nim -o define -t mksysb -a server=master -a location=/nim/images/aix71tl01sp1-nov2811.mksysb mksysb_71tl01sp1

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Tell NIM to use the mksysb for this machine

smitty nim_bosinst
- Select gandalf
- install source = aixtl2sp2_mksysb
- select mksysb and spot as resources (also select the lpp)
- Select yes to accept licenses
- Select no to initiate now

Initiate now = no means this is a pull resource and must be initiated at the client

nim -o allocate -a spot=spot_61tl05 -a lpp_source=61tl05_lpp -a mksysb=mksysb_61tl05 p6datst1
OR
nim -o allocate -a lpp_source=lpp_tl01sp1 -a spot=spot7212 -a mksysb=xxmksysb-may0417 -a bosinst_data=bosinst72 -a installp_bundle=netapphak60 gandalf

nim -o bos_inst -a source=mksysb -a accept_licenses=yes -a boot_client=no -a installp_flags='-agX' p6datst1

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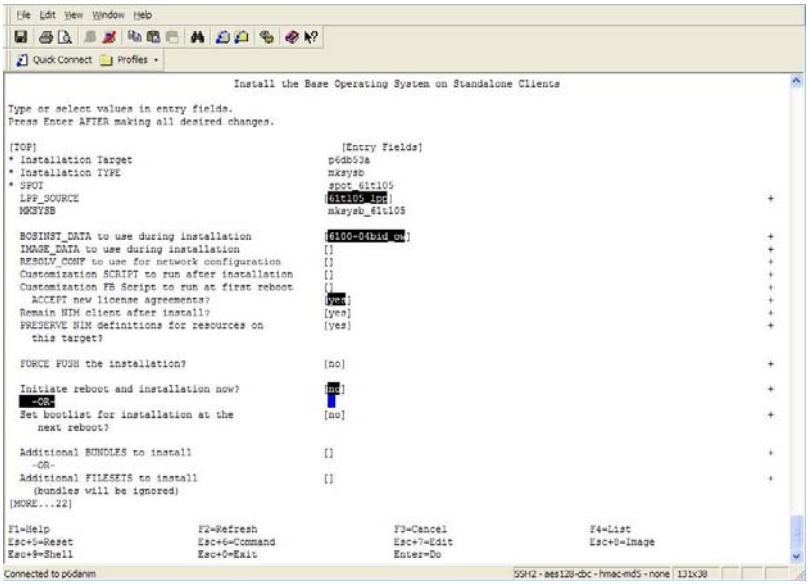
Tell NIM to use the mksysb for this machine



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Checks

- showmount –e

- /nim/lpp_source/61tl05_lpp gandalf
- /nim/spot/spot_61tl05/spot_61tl05/usr gandalf
- /nim/images/aix61-tl05sp1-golden.mksysb gandalf

- # cat /etc/bootptab
- gandalf:bf=/tftpboot/gandalf:ip=10.152.10.124:ht=ethernet:sa=10.152.10.203:sm=255.255.255.0:

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Checks

- # ls -al /tftpboot

- lrwxrwxrwx 1 root system 18 May 14 16:14 10.152.10.124 -> /tftpboot/gandalf
- lrwxrwxrwx 1 root system 18 May 14 16:14 10.152.10.124.boot -> /tftpboot/gandalf
- lrwxrwxrwx 1 root system 23 May 14 16:14 10.152.10.124.info -> /tftpboot/gandalf.info
- lrwxrwxrwx 1 root system 28 May 14 16:14 10.152.10.124.iplrecord -> /tftpboot/gandalf.iplrecord
- lrwxrwxrwx 1 root system 33 May 14 16:14 gandalf -> /tftpboot/spot_61tl05.chrp.64.ent
- -rw-r--r-- 1 root system 1156 May 14 16:14 gandalf.info
- lrwxrwxrwx 1 root system 35 May 14 16:14 gandalf.iplrecord -> /tftpboot/spot_61tl05.iplrecord.ent
- -rw-r--r-- 1 root system 16958976 Apr 29 12:52 spot_61tl05.chrp.64.ent
- -rw-r--r-- 1 root system 512 Apr 29 12:52 spot_61tl05.iplrecord.ent
- -rw-r--r-- 1 root system 16752640 Mar 16 2010 spot_aix61tl04sp3.chrp.64.ent
- -rw-r--r-- 1 root system 512 Mar 16 2010
-

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Useful NIM commands

- Recover missing simages if needs be:
- nim -o update -a recover=yes -a source=/software/aixv7/aix71-base lpp_71tl01sp1

- ALLOCATIONS
- nim -o deallocate -a spot=spot_71tl01sp1 -a lpp_source=lpp_71tl01sp1 -a mksysb=mksysb_71tl01sp1 b740nl1

- nim -o allocate -a spot=spot_71tl01sp1 -a lpp_source=lpp_71tl01sp1 -a mksysb=mksysb_71tl01sp1 b740nl1

- nim -o bos_inst -a source=mksysb -a accept_licenses=yes -a boot_client=no -a installp_flags='-agX' b740nl1

- OTHER
- To add the bos.games 5.2.0.0 and bos.terminfo filesets to lpp_source1, type:
- nim -o update -a packages="bos.games 5.2.0.0 bos.terminfo" \
- -a source=/dev/cd0 lpp_source1
- To remove bos.games from lpp_source1, type:
- nim -o update -a rm_images=yes -a packages="bos.games" lpp_source1

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Backout

- If you have a machine enabled for install, and need to back out...
  - nim -o reset –a force=yes <nimclienthostname>
  - nim -Fo deallocate –a subclass=all <nimclienthostname>

- Need to do this after an LPM move so cupid reflects new system
  - nim -o change -a cpuid="" <nimclienthostname>

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Start the install from the client

- Boot client into SMS mode either from the HMC or the server

```
Select 2 for setup remote IPL
        Select 1 for first ethernet
        Select 1 for IPV4
        Select 1 for bootp
        Select 1 for IP parameters
                1 - client – 10.0.1.5          Use the client IP here
                2 - server - 10.0.1.9          Use the  NIM server IP here
                3 - Gateway - 10.0.1.1         You may need to leave this as 0.0.0.0
                4 - Subnet - 255.255.255.0
        Esc
        Select 2 for adapter config
                2 spanning tree - ensure it is disabled (this can speed things up)
                ESC
                3 - protocol - set it to standard
                ESC and ESC
                3 Ping test then 1 to execute ping test
If the ping test is successful return to main menu
Select 5 - boot options
        1 select boot device
        6 select network
        1 bootp
        1 select first ethernet
        2 normal mode boot
        1 yes I want to exit
```

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Next steps

- LPAR/Server should boot and you should see tftp start up
- After around 30,000 to 50,000 packets the console prompt should appear
    - F1 and enter for console
    - 1 for english during install
    - An error message that "all LVs are being created exactly as they were but the disks are not the same" may appear. Unless there is a reason not to, go ahead and:
    - Choose 1 to continue with install
    - 2 Check install settings
    -
    - Make sure that only 1 disk is chosen here and that it is the correct one for rootvg:
    - Choose hdisk0
    - Use maps for installation – I tend to choose no
    - Check that importvgs defaults to n
    - 0 to continue with choices
- Note make sure the mksysb you are using is not of a mirrored system – if it is mirrored then you will need to provide 2 disks to restore to
- After the system reboots you can import volume groups, remirror rootvg and perform further tailoring

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Continuing on

- After reboot install should start
- Monitor using lsnim –l lparname
- This will show you how far it has gone

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Useful commands

- lsnim
- lsnim –l lparname
- nim -o reset –a force=yes clientnode
- nim -Fo deallocate –a subclass=all clientnode
- nim -o change -a cpuid="" clientnode
- bootlist -m normal –o (check bootlist)
- arp and ping
- oslevel –s
- Instfix
- showmount –e
- ls –al /tftpboot

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Useful commands on master

```
# lsnim -l mksysb_aix72tl01sp1
mksysb_aix72tl01sp1:
  class        = resources
  type         = mksysb
  creation_date = Thu Dec 8 11:38:39 2016
  Rstate       = ready for use
  prev_state   = unavailable for use
  location     = /nim/images/aix1nim.mksysb
  version      = 7
  release      = 2
  mod          = 1
  oslevel_r    = 7200-01
  oslevel_s    = 7200-01-01-1642
  alloc_count  = 0
  server       = master
```

```
lsnim -l xxmksysb-apr2417_mig_72_2
xxmksysb-apr2417_mig_72_2:
  class        = resources
  type         = mksysb
  comments     = Created by nimadm on Fri May 5 13:04:37
CDT 2017
  creation_date = Fri May 5 13:05:46 2017
  Rstate       = ready for use
  prev_state   = unavailable for use
  location     = /nim/mksysb/xxmksysb-may0517
  version      = 7
  release      = 2
  mod          = 1
  oslevel_r    = 7200-00
  oslevel_s    = 7100-04-03-1642
  alloc_count  = 0
  server       = master
```

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Useful commands on master - LPP

```
# lsnim -l lpp_72tl01sp2
lpp_72tl01sp2:
  class       = resources
  type        = lpp_source
  arch        = power
  Rstate      = ready for use
  prev_state  = verification is being performed
  location    = /nim/lpp_source/lpp_72tl01sp2
  simages     = yes
  alloc_count = 0
  server      = master
```

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Useful commands on master - SPOT

```
# lsnim -l spot_72tl01sp2
spot_72tl01sp2:
  class        = resources
  type         = spot
  plat_defined  = chrp
  arch         = power
  bos_license   = yes
  Rstate       = ready for use
  prev_state    = verification is being performed
  location      = /nim/spot/spot_72tl01sp2/spot_72tl01sp2/usr
  version       = 7
  release       = 2
  mod           = 1
  oslevel_r     = 7200-00
  oslevel_s     = 7200-00-00-0000
  alloc_count   = 0
  server        = master
  if_supported  = chrp.64 ent
  Rstate_result = success
```

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Useful commands on master - niminfo

```
ls -al /etc/niminfo
-rw-r--r--    1 root     system         167 Feb 17 11:16 /etc/niminfo

cat /etc/niminfo
# nimconfig
export NIM_NAME=master
export NIM_CONFIGURATION=master
export NIM_MASTER_PORT=1058
export NIM_REGISTRATION_PORT=1059
export NIM_MASTER_HOSTNAME=aix1nim
```

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Useful commands on master

 # ls -l /etc/objrepos/nim*

```
-rw-rw-r--   1 root    system      8192 Oct 09 19:38 /etc/objrepos/nim_attr
-rw-rw-r--   1 root    system      8192 Oct 09 19:38 /etc/objrepos/nim_attr.vc
-rw-rw-r--   1 root    system      4096 Oct 09 19:37 /etc/objrepos/nim_object
-rw-rw-r--   1 root    system      4096 Oct 09 19:37 /etc/objrepos/nim_object.vc
-r-xr-x---   1 root    system     28672 Dec 08 2016  /etc/objrepos/nim_pdattr
-r-xr-x---   1 root    system     28672 Dec 08 2016  /etc/objrepos/nim_pdattr.vc
```

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Backing up and restoring NIM

- Save the following NIM files on the master

- /etc/niminfo
- /etc/objrepos/nim_attr
- /etc/objrepos/nim_attr.vc
- /etc/objrepos/nim_object
- /etc/objrepos/nim_object.vc

- You can restore the NIM database and activate the NIM master using SMIT or the command line.

- Restore the files saved in Backing up the NIM database.

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Recovering /etc/niminfo

- /etc/niminfo is required on master and running NIM clients to run NIM operations and commands
- You can rebuild it on the master:
- nimconfig -rTo
- You can rebuild it from a running NIM client:
- niminit -a master_port= PortNumber -a master= MasterHostName -a name= ClientMachineObjectName

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/etc/niminfo on the client

```
aix2:/> cat /etc/niminfo
#----------------- Network Install Manager ---------------
# warning - this file contains NIM configuration information
#      and should only be updated by NIM
export NIM_NAME=aix2
export NIM_HOSTNAME=aix2
export NIM_CONFIGURATION=standalone
export NIM_MASTER_HOSTNAME=aix1nim
export NIM_MASTER_PORT=1058
export NIM_REGISTRATION_PORT=1059
export NIM_SHELL="nimsh"
export NIM_MASTERID=00F95D3A4C00
export NIM_FIPS_MODE=0
export NIM_LICENSE_ACCEPT=yes
export RC_CONFIG=rc.bos_inst
export NIM_BOSINST_RECOVER="/../SPOT/usr/lpp/bos.sysmgt/nim/methods/c_bosinst_env -a hostname=aix2"
export SPOT=aix1nim:/nim/spot/spot_72tl01sp1/usr
export NIM_CUSTOM="/../SPOT/usr/lpp/bos.sysmgt/nim/methods/c_script -a
location=aix1nim:/export/nim/scripts/aix2.script"
export NIM_BOS_IMAGE=/NIM_BOS_IMAGE
export NIM_BOS_FORMAT=mksysb
export NIM_HOSTS=" 127.0.0.1:loopback:localhost  10.1.2.236:aix2  10.1.2.13:aix1nim "
export NIM_MOUNTS=" aix1nim:/nim/lpp_source/lpp_72tl01sp1:/SPOT/usr/sys/inst.images:dir
aix1nim:/nim/images/aix1nim.mksysb:/NIM_BOS_IMAGE:file "
export ROUTES=" default:0:10.1.2.2 "
```

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Migrations and Updates

Migration

Changes version or release

Update

Preserves version and release
Basically changes a TL or SP

Both migrations and updates can use alternate copies of rootvg if there is an unused disk available

After changes, boot from altinst_rootvg and test

Migrate or update NIM Master first
Then update LPP_SOURCE and SPOT

Use nimadm for migrations, to install a down level mksysb and then migrate it or to install a new golden image

Use nim_alt_clone with update_all to update a TL or SP
With multibos the standby copy of AIX can be on the same physical disk as the current rootvg

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Backup Tips

- I take mksysbs to an NFS directory exported from my NIM server - /usr/local/backups
- When I want to use a mksysb image I copy it to /nim/images and create it as a mksysb resource
- This avoids issues around the way NIM exports mksysb images
- As an example
  - If NIM exports a mksysb image only the file is exported to NFS clients
  - However, if someone is taking a mksysb to that same directory the whole parent directory is exported
  - This will cause NFS errors so it is best to keep them separate
  - OR you can use the environment variable that will cause NIM to use subdirectories to separate mksysb images

    NIM_MKSYSB_SUBDIRS=yes

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NIMADM

nimadm (Network Install Manager Alternate Disk Migration) command

Utility that allows the system administrator to:

Create a copy of rootvg to a free disk (or disks) and simultaneously migrate it to a new version or release level of AIX.

Using a copy of rootvg, create a new NIM mksysb resource that has been migrated to a new version or release level of AIX.

Using a NIM mksysb resource, create a new NIM mksysb resource that has been migrated to a new version or release level of AIX.

nimadm -T xxmksysb-apr2417 -O /nim/mksysb/xxmksysb-may0417 -s spot7212 -l lpp_tl01sp1 -j nimvg -Y -N

Using a NIM mksysb resource, restore to a free disk (or disks) and simultaneously migrate to a new version or release level of AIX.

Once upgraded mksysb is there you can either boot from it over the network or copy it to the client and use alt disk install to restore the mksysb to the alt disk.

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nimadm

Make sure bos.alt_disk_install.rte is installed into your spot or you will get error messages

 # nimadm -T cg-aix61 -O /export/mksysb/cg-aix71 -s spotaix7tl0sp2 -l aix7tl0sp2 -j nimadmvg -Y -N cg-aix71

The flags indicate the following:

-T specifies the existing AIX 6.1 NIM mksysb resource.
-O specifies the output location for the migrated mksysb resource.
-s indicates the AIX 7.1 NIM SPOT resource for the migration.
-l indicates the AIX 7.1 NIM lpp_source resource for the migration.
-j identifies the volume group that will be used on the NIM master to create file systems.
-Y Agrees to required software license agreements for software to be installed.
-N specifies the name of the new AIX 7.1 NIM mksysb resource to be created after migration.

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nim_alt_clone

Clone rootvg to another disk – can use this for VIO servers as well as regular LPARs

```
alt_disk_copy –d hdisk2
bosboot –a –d hdisk2
bootlist –m normal hdisk2
```

Update within the same version/release (i.e update a TL or SP)

Build the lpp_source at the desired level with simages-yes
Update NIM master from this lpp_source and reboot master

On client

Unmirror rootvg and cleanup (chpv –c and reducevg)
bosboot –a and bootlist –m

Master

smitty nim_alt_clone
Specify target client and target disks
Set FIXES to install to "update_all"
Point to lpp_source from above and accept licenses

The clone and update will take place on altinst_rootvg while still running on rootvg
Boot from altinst_rootvg and test
Either reboot from old rootvg or make this the production one
If you don't plan to reboot immediately then ensure the bootlist is set to the original rootvg hdisk

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MULTIBOS

Creates, updates, and manages multiple versions of the Base Operating System (BOS) on a rootvg.

The multibos command allows the root level administrator to create multiple instances of AIX(R) on the same rootvg.

The multibos setup operation creates a standby Base Operating System (BOS) that boots from a distinct boot logical volume (BLV).

This creates two bootable sets of BOS on a given rootvg and the administrator can boot from either instance of BOS by specifying the respective BLV as an argument to the bootlist command or using system firmware boot operations.

Two bootable instances of BOS can be simultaneously maintained.

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Alternate Disk Install

- http://pic.dhe.ibm.com/infocenter/aix/v7r1/topic/com.ibm.aix.install/doc/insgdrf/HT_insgdrf_altdiskinstall_clone.htm

- Make sure you have a spare hard disk or LUN
- Install bos.alt_disk_install.rte and update it
- Create a bundle to install to the new disk and any custom scripts
  - Or take a mksysb of the system to a file
- Clone rootvg using smitty alt_clone
- lspv now shows a disk as rootvg and one as altinst_rootvg
- Check your bootlist as the alt disk install process changes it
  - bootlist –m normal –o
- Correct the bootlist back to normal until you are ready
- Now you can use smitty alt_disk_install to do the upgrades to the new hard drive
- When happy with the upgrade you update the bootlist and reboot on the new image
- If having problems with nimadm you can create the migrated mksysb then copy it to the client and use alternate disk install to restore the mksysb on a separate disk

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Alt Disk from mksysb

Commands to look at:
alt_disk_copy
alt_disk_install
alt_disk_mksysb
alt_rootvg_op


```
#
# lspv
hdisk0      00f6934c642af030          rootvg      active
hdisk1      none                      None
# lsdev -Ccdisk
hdisk0 Available  Virtual SCSI Disk Drive
hdisk1 Available  Virtual SCSI Disk Drive
#
# lslpp -l | grep bos.alt
  bos.alt_disk_install.boot_images
  bos.alt_disk_install.rte  7.1.4.30  COMMITTED  Alternate Disk Installation
  bos.alt_disk_install.rte  7.1.4.30  COMMITTED  Alternate Disk Installation
```

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Alt Disk from mksysb

```
                    Install mksysb on an Alternate Disk

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                                      [Entry Fields]
* Target Disk(s) to install                          [hdisk1]                +
* Device or image name                               [/usr/local/backups/b7> +
  Phase to execute                                    all                   +
  image.data file                                    []                      /
  Customization script                               []                      /
  Set bootlist to boot from this disk
  on next reboot?                                     no                     +
  Reboot when complete?                               no                     +
  Verbose output?                                     yes                    +
  Debug output?                                       no                     +
  resolv.conf file                                   []                      /


F1=Help             F2=Refresh          F3=Cancel           F4=List
Esc+5=Reset         F6=Command          F7=Edit             F8=Image
F9=Shell            F10=Exit            Enter=Do
```

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Alt Disk from mksysb

```
                              COMMAND STATUS

Command: running       stdout: yes           stderr: no

Before command completion, additional instructions may appear below.

[MORE...6]
Restoring /image.data from mksysb image.
Checking disk sizes.
Creating cloned rootvg volume group and associated logical volumes.
Creating logical volume alt_hd5.
Creating logical volume alt_hd6.
Creating logical volume alt_hd8.
Creating logical volume alt_hd4.
Creating logical volume alt_hd2.
Creating logical volume alt_hd9var.
Creating logical volume alt_hd3.
Creating logical volume alt_hd1.
Creating logical volume alt_hd10opt.
Creating logical volume alt_hd11admin.
Creating logical volume alt_lg_dumplv.

[BOTTOM]
```

Plus many more as it restores from the mksysb image

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Alt Disk from mksysb

Now we see:

```
# lspv
hdisk0      00f6934c642af030          rootvg          active
hdisk1      00f6934c75816830          altinst_rootvg  active

# bootlist -m normal -o
hdisk0 blv=hd5 pathid=0
```

Phase 1 Creates the **altinst_rootvg** volume group, the **alt_** "logical volumes", the **/alt_inst** file systems, and restores the mksysb or rootvg data.

Phase 2 Runs any specified customization script, installs updates, new filesets, fixes or bundles (cloning only), copies a **resolv.conf** file if specified, and copies files over to remain a NIM client if specified.

Phase 3 Unmounts the **/alt_inst** file systems, renames the file systems and logical volumes, removes the **alt_ logical** volumes, names ODM and varies off the altinst_rootvg. It sets the bootlist and reboots if specified.

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Alt Disk from mksysb

```
# lspv -l hdisk0
hdisk0:
LV NAME      LPs  PPs  DISTRIBUTION     MOUNT POINT
hd8           1    1   00..00..01..00..00   N/A
hd6          64   64   00..64..00..00..00   N/A
hd2          80   80   00..00..80..00..00   /usr
hd4          10   10   00..00..10..00..00   /
hd3          48   48   00..00..48..00..00   /tmp
hd9var       12   12   00..00..12..00..00   /var
hd10opt      32   32   00..32..00..00..00   /opt
hd1           4    4   00..00..04..00..00   /home
hd5           1    1   01..00..00..00..00   N/A
lg_dumplv2   16   16   00..16..00..00..00   N/A
fslv00       80   80   80..00..00..00..00   /usr/local
fslv01       16   16   00..16..00..00..00   /usr/local/logs
lg_dumplv    16   16   00..16..00..00..00   N/A
livedump      4    4   00..04..00..00..00   /var/adm/ras/livedump
hd11admin     4    4   00..00..04..00..00   /admin
```

```
# lspv -l hdisk1
hdisk1:
LV NAME      LPs  PPs  DISTRIBUTION     MOUNT POINT
alt_hd10opt  32   32   00..32..00..00..00   /alt_inst/opt
alt_hd1       4    4   00..00..04..00..00   /alt_inst/home
alt_hd3      48   48   00..00..48..00..00   /alt_inst/tmp
alt_hd9var   12   12   00..00..12..00..00   /alt_inst/var
alt_hd2      80   80   00..00..80..00..00   /alt_inst/usr
alt_hd4      10   10   00..00..10..00..00   /alt_inst
alt_hd8       1    1   00..00..01..00..00   N/A
alt_hd6      64   64   00..64..00..00..00   N/A
alt_hd5       1    1   01..00..00..00..00   N/A
alt_lg_dumplv 16  16   00..16..00..00..00   N/A
alt_hd11admin 4    4   00..00..04..00..00   /alt_inst/admin
alt_lg_dumplv2 16 16   00..16..00..00..00   N/A
alt_fslv01   16   16   00..16..00..00..00   /alt_inst/usr/local/logs
alt_fslv00   80   80   80..00..00..00..00   /alt_inst/usr/local
alt_livedump  4    4   00..04..00..00..00
/alt_inst/var/adm/ras/livedump
```

You can display the above during the mksysb clone
At the end altinst_rootvg is varied offline and these (the alt ones) are all unmounted

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Alt Disk from mksysb

You can wake up the altinst_rootvg to mount the filesystems and put it back to sleep:

```
# alt_disk_install -W hdisk1
+-----------------------------------------------------------------------------+
ATTENTION: calling new module /usr/sbin/alt_rootvg_op. Please see the
alt_rootvg_op man page and documentation for more details.
Executing command: /usr/sbin/alt_rootvg_op -W -d hdisk1
+-----------------------------------------------------------------------------+
Waking up altinst_rootvg volume group ...
```

```
# lspv
hdisk0      00f6934c642af030              rootvg        active
hdisk1      00f6934c75816830              altinst_rootvg  active
```

Back to sleep

```
# alt_disk_install -S hdisk1
+-----------------------------------------------------------------------------+
ATTENTION: calling new module /usr/sbin/alt_rootvg_op. Please see the
alt_rootvg_op man page and documentation for more details.
Executing command: /usr/sbin/alt_rootvg_op -S hdisk1
+-----------------------------------------------------------------------------+
Putting volume group altinst_rootvg to sleep ...
forced unmount of /alt_inst/var/adm/ras/livedump
forced unmount of /alt_inst/var/adm/ras/livedump
forced unmount of /alt_inst/var
forced unmount of /alt_inst/var
forced unmount of /alt_inst/usr/local/logs
forced unmount of /alt_inst/usr/local/logs
forced unmount of /alt_inst/usr/local
forced unmount of /alt_inst/usr/local
forced unmount of /alt_inst/usr
forced unmount of /alt_inst/usr
forced unmount of /alt_inst/tmp
forced unmount of /alt_inst/tmp
forced unmount of /alt_inst/opt
forced unmount of /alt_inst/opt
forced unmount of /alt_inst/home
forced unmount of /alt_inst/home
forced unmount of /alt_inst/admin
forced unmount of /alt_inst/admin
forced unmount of /alt_inst
forced unmount of /alt_inst
Fixing LV control blocks...
Fixing file system superblocks...

# lspv
hdisk0      00f6934c642af030              rootvg        active
hdisk1      00f6934c75816830              altinst_rootvg
```

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Alt Disk from mksysb

```
# df -g
Filesystem    GB blocks    Free %Used    Iused %Iused Mounted on
/dev/hd4                   0.62         0.41  35%   10330  10%                /
/dev/hd2                   5.00         2.37  53%   62100  11%/usr
/dev/hd9var                0.75         0.47  38%    5785   5% /var
/dev/hd3                   3.00         3.00  1%       72   1% /tmp
/dev/hd1                   0.25         0.25  1%       11   1% /home
/dev/hd11admin             0.25         0.25  1%        5   1% /admin
/proc                       -           -     -        -    -    /proc
/dev/hd10opt               2.00         1.41  30%   13901   5% /opt
/dev/livedump              0.25         0.25  1%        4   1% /var/adm/ras/livedump
/dev/fslv00                5.00         4.93  2%      231   1% /usr/local
/dev/fslv01                1.00         0.98  2%       39   1% /usr/local/logs

/dev/alt_hd4               0.62         0.53  1%       13   1% /alt_inst
/dev/alt_hd11admin       0.25           0.25  1%        5   1%  /alt_inst/admin
/dev/alt_hd1               0.25         0.25  1%       11   1%  /alt_inst/home
/dev/alt_hd10opt           2.00         1.41  30%   13900   5% /alt_inst/opt
/dev/alt_hd3               3.00         3.00  1%       61   1% /alt_inst/tmp
/dev/alt_hd2               5.00         2.37  53%   62100  11%                /alt_inst/usr
/dev/alt_fslv00            5.00         4.93  2%      230   1% /alt_inst/usr/local
/dev/alt_fslv01            1.00         0.98  2%       39   1% /alt_inst/usr/local/logs
/dev/alt_hd9var            0.75         0.47  38%    5761   5% /alt_inst/var
/dev/alt_livedump          0.25         0.25  1%        4   1% /alt_inst/var/adm/ras/livedump
```

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Quick alt_disk_copy Example

alt_disk_copy -d hdisk1 -F 6100-01_AIX_ML -l /updates

The above copies the current 6100-00 rootvg to hdisk1
It applies the updates from /updates to bring the cloned rootvg to 6100-01
It also sets the bootlist to boot from hdisk1

Allows you to copy the running system and apply maintenance in one step
After reboot the old rootvg will be named old_rootvg
Use alt_rootvg_op to remove it later
Use bootlist to go back if needs be

OR
alt_disk_copy –d hdisk2
Above just copies rootvg across to hdisk2
https://www.ibm.com/support/knowledgecenter/en/ssw_aix_71/com.ibm.aix.cmds1/alt_disk_copy.htm

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Migrating a 7.1 mksysb to 7.2

Take a mksysb on the client to be updated

Copy it to /nim/images and add it as a resource

Check the mksysb

```
listvgbackup -f'/nim/images/jlmksysb-may2317' | grep  rc.tcpip
listvgbackup -f'/nim/images/jlmksysb-may2317' | grep  inetd.conf
```

Convert the mksysb to 7.2

```
nimadm -T jlmksysb-may2317 -O /nim/mksysb/jlmksysb72-may2317 -s spot7212 -l lpp7211 -j nimvg -Y -N
```

Check the converted mksysb

```
listvgbackup -f'/nim/mksysb/jlmksysb72-may2317' | grep  rc.tcpip
listvgbackup -f'/nim/mksysb/jlmksysb72-may2317' | grep  inetd.conf
```

If all good on master then copy it to the client:

```
cp /nim/mksysb/jlmksysb72-may2317  /usr/local/backups
```

And on client install in this case to hdisk11:

```
alt_disk_mksysb -m /backups/jlmksysb72-may2317 -d hdisk11 –k
```

NOTE: Ensure your /etc/inetd.conf and /etc/inittab are pristine. We had a bug where a line in inetd.conf went over 2 lines and it caused the resulting converted mksysb to drop over 2000 filesets

If not rebooting migrated image immediately then make sure to set the bootlist to the original rootvg

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VIOS and NIM

- Use of NIM to back up, install, and update the VIOS is supported.
- **Note**: For install, always create the SPOT resource directly from the VIOS **mksysb** image. Do NOT update the SPOT from an LPP_SOURCE.
- Use of NIM to update the VIOS is supported as follows:
Ensure that the NIM Master is at the appropriate level to support the VIOS image.
- http://www14.software.ibm.com/webapp/set2/sas/f/flrt/viostable.html
- On the NIM Master, use the operation **updateios** to update the VIOS Server.
- "**nim –o updateios –a lpp_source=lpp_source1 ... ...**"
- On the NIM Master, use the operation **alt_disk_install** to update an alternate disk copy of the VIOS Server.
- "**nim –o alt_disk_install –a source=rootvg –a disk=target_disk –a fix_bundle=(Value) ... ...**"
- If NIM is not used to update the VIOS, only the **updateios** or the **alt_root_vg** command from the padmin shell can be used to update the VIOS.

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VIOS and NIM

- Add VIOS partition as a client
- Copy the VIOS mksysb image from the CD to your NIM master
  - On VIOS 2.2 media there are 3 images now – the 3rd is on DVD 2
  - Copy all 3 images individually to a directory and then use cat to combine them
  - cat /export/mksysb/vios2.2/mksysb_image /export/mksysb/vios2.2/mksysb_image2 /export/mksysb/vios2.2/mksysb_image3 >/export/mksysb/nim_vios2.2mksysb
- Define mksysb resource to NIM master
- Define spot on NIM master
  - The source for the SPOT will be the combined mksysb
- Copy the bosinst.data from the DVD and create a viosbosinst resource
- You can now use bos_inst to do a mksysb install once the partition profile is defined
- http://www-01.ibm.com/support/docview.wss?uid=isg3T1011386

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Backing up VIOS (nim_resources.tar)

- Use viosbr to backup user defined virtual resources on the VIO
- Make sure to save that backup in rootvg
  - viosbr –backup –file /tmp/viosbkup-oct0917
    Backup of this node (vio1) successful
  - You can also use viosbr to view or restore
    viosbr –view –file /tmp/viosbkup-oct0917.tar.gz
  - http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/p7hcg/viosbr.htm
- Mount NFS filesystem to backup to (in my case /backups)
- mkdir /backups/viosa
- Then as padmin:
- backupios –file /backups/viosa -nomedialib
- The above creates a nim_resources.tar package in that directory and it can be used to clone or restore VIO servers
- The nim_resources.tar file contains all the necessary resources to restore the Virtual I/O Server, including the mksysb image, the bosinst.data file, the network boot image, and SPOT resource.
- The NFS export should allow root access to the Virtual I/O Server, otherwise the backup will fail with permission errors.
- If nim installios is not working check that apar IY85192 is installed to enable it

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$ backupios -file /usr/local/backups/viosa -nomedialib

```
Creating information file for volume group fbovg.
Creating list of files to back up.
Backing up 15 files.........

15 of 15 files (100%)
0512-038 savevg: Backup Completed Successfully.
Backup in progress.  This command can take a considerable amount of time
to complete, please be patient...
$

# ls -al viosa
total 44300704
drwxr-xr-x    2 root     staff          256 Oct 09 23:32 .
drwxr-xr-x    4 root     system        4096 Oct 09 22:42 ..
-rw-r--r--    1 root     staff    22678507520 Oct 09 23:32 nim_resources.tar

# du -sg viosa
21.12   viosa
```

But I saw it get as big as 40GB during the process

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Restore from nim_resources.tar

If you plan to use NIM to restore to a specific disk then you will need to follow this procedure:

Extract from the nim_resources.tar the bosinst.data

tar -xvf nim_resources.tar ./bosinst.data

The following is an example of the target_disk_data stanza of the bosinst.data generated by backupios.

target_disk_data:
LOCATION =
SIZE_MB =
HDISKNAME =

Fill the value of HDISKNAME with the name of the disk to which you want to restore to

Put back the modified bosinst.data in the nim_resources.tar image

tar -uvf nim_resources.tar ./bosinst.data

All other parts of the nim_resources.tar image must remain unchanged.

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Restore from nim_resources.tar

Once bosinst.data is changed (if needed)
run the *installios* command without any flag from the HMC command line.

- Select the Managed System where you want to restore your Virtual I/O Server from the objects of type "managed system" found by installios command.
- Select the VIOS Partition where you want to restore your system from the objects of type "virtual I/O server partition" found
- Select the Profile from the objects of type "profile" found.
- Enter the source of the installation images [/dev/cdrom]: *server:/exported_dir*
- Enter the client's intended IP address: *<IP address of the VIOS>*
- Enter the client's intended subnet mask: *<subnet of the VIOS>*
- Enter the client's gateway: *<default gateway of the VIOS>*
- Enter the client's speed [100]: *<network speed>*
- Enter the client's duplex [full]: *<network duplex>*
- Would you like to configure the client's network after the installation [yes]/no?
- Select the Ethernet Adapter used for the installation from the objects of type "ethernet adapters" found.

When the restoration is finished, open a virtual terminal connection (for example, using telnet) to the Virtual I/O Server that you restored.

Don't forget to use your viosbr to restore your virtual devices as needed.

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Using NIM with VIOS mksysb

Again we run the viosbr to backup the virtual resources
Then:
backupios –file /backups/viosmksysb-oct0917.mksysb –mksysb
To restore from this image first copy the image to /nim/images
Define the mksysb as a nim object
nim -o define -t mksysb -a server=master –a location=/nim/images/ viosmksysb-oct0917.mksysb viosmksysb
Now define a spot
nim -o define -t spot -a server=master -a location =/nim/spot -a source=viosmksysb spotvios
Then smitty bos_inst and select a mksysb restore along with the mksysb and spot resources created above
Open a vterm (I use vtmenu from the HMC) to the vios
Activate the partition in SMS mode
Set up the remote_ipl parameters
Do the ping test
Select boot options and boot from the network from the NIM server
Reply to prompts in the vtmenu console

IBM document on this at:
ftp://ftp.software.ibm.com/software/server/vios/docs/backupios_mod.pdf

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Cloning disks

After installing vio1, if you have all the disks in vio1 you can take a clone to build vio2
If your server has a split backplane then you can make a clone
Make sure the 4 disks are split (2 and 2) across the backplane
vio1 is using hdisk0 and hdisk1, hdisk2 and 3 are on the other adapter and will be used for vio2
Put all the disks into vio1 (both adapters)
Install vio1 on hdisk0 – from NIM, DVD, HMC …..
Now clone it to hdisk2
alt_disk_copy –d hdisk2
Remove vio2 hdisks from vio1, Shutdown vio1, Remove vio2 resources from vio1 profile and reactivate vio1
Clean up vio1 removing any extra disks, etc that now show as defined. Also remove the adapter definitions for them.
Shut vio1 down until vio2 has been activated and cleaned up

Activate vio2
Remove any disks, adapters, networks etc that show as defined on vio2
Now cleanup vio2 (see next slide)

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Cleaning up after cloning vio

Cleanup vio2:
stopsrc -g rsct_rm; stopsrc -g rsct
Clear Nodeid
chdev -l cluster0 -a node_uuid=00000000-0000-0000-0000-000000000000
OR
/usr/bin/odmdelete -o CuAt -q 'attribute=node_uuid'

Generate new nodeid
/usr/sbin/rsct/bin/mknodeid -f

lsattr -El cluster0
/usr/sbin/rsct/bin/lsnodeid
/usr/sbin/rsct/install/bin/recfgct

lspartition -dlpar
lssrc -g rsct_rm; lssrc –g rsct
You may have to start ctcas – startsrc –s ctcas
To be safe - reboot

Also now you can boot vio1

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Uninstalling NIM

- nim –o unconfig master
- installp –u bos.sysmgt.nim.master
- Note: the NIM master must be unconfigured before you can uninstall the master fileset

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NIM and NFS exports

- Never export your /nim filesystem using NFS – NIM will do this when it needs to
- By default NIM creates an entry in /etc/exports granting both client mount access and root access for root users
- If you have numerous clients and need to exceed 32767 characters in the exports file

nim –o change –a restrict_nfs_exports=no master

https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.install/addl_mstr_mgmt_tasks_incr_hosts.htm

The above change causes NIM to only grant root access to target hosts

Still have to obey NFS limitation of 256 hostnames in a root exports file entry

You can change this back easily by reissuing the command changing no to yes

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Suppressing output

- Use show_progress=no to suppress progress messages
- nim -o cust -a show_progress=no -a lpp_source=images1 \ -a fixes=update_all Standalone1

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Alternate NIM Master

Assumes there is already a NIM master
Install bos.sysmgt.nim.master fileset
Then smitty niminit_altmstr
Use smitty nim_altmstr fast path to synchronize the alternate master with the master or:
On master
- nim –o sync altmastername
- Or nim –o sync –a replicate=yes altmastername
- Above causes it to replicate masters resources to the Alt.
- You can add reset_clients=yes to also rebuild the NIM clients list in/etc/niminfo to be aware of the alternate master
- You may need to add –F (-Fo sync) to overwrite existing NIM database

You can use niminit command if you prefer
niminit -a is_alternate=yes -a master=mastername -a pif_name=en0 -a cable_type1=N/A -a platform=chrp -a name=altmastername
Then go to the master and register the alternate:
niminit -a is_alternate=yes -a master=altmastername -a pif_name=en0 -a cable_type1=N/A -a platform=chrp -a name=mastername

To takeover from the master
- On the alternate: nim –o takeover mastername (can add –a async=yes or no – default is yes)

To remove an alternate master (from the master)
- nim –o remove altmastername

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Thank you for your time

If you have questions please email me at:
Jaqui@circle4.com or jlynch@flagshipsg.com

Also check out:
http://www.circle4.com/movies/

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NIM Specific Useful Links

- How to install AIX 5L (look for EZNIM)
  - http://www.ibm.com/developerworks/aix/library/au-install-aix.html
- SG24-7296 – NIM from A-Z in AIX 5L Redbook – 30 May 2007
  - http://www.redbooks.ibm.com/redbooks/pdfs/sg247296.pdf
- The Power of Network Install Manager
  - http://www.ibm.com/developerworks/aix/library/au-nim/index.html?S_TACT=105AGX20
- Simplifying with NIM – article from IBM Systems Magazine 2006
  - http://www.circle4.com/jaqui/eserver/aixtra-FebMar06-SimplifyingwithNIM.pdf
- NIM Concepts
  - http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.install/doc/insgdrf/nim_concepts.htm
- Backing up the NIM Database
  - http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.install/doc/insgdrf/adv_config_backup_db_cmd_line.htm
- AIX v6.1 NIM Pages
  - http://publib.boulder.ibm.com/infocenter/aix/v6r1/topic/com.ibm.aix.install/doc/insgdrf/basic_config.htm
- Nim Tips
  - https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.install/nim_master_manage_tasks.htm
- **Using NIM Operations (all the subcommands)**
  - https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.install/concepts_operations.htm
- Configuring NIM
  - https://www.ibm.com/support/knowledgecenter/en/ssw_aix_72/com.ibm.aix.install/nim_basic.htm

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Useful Links

- Jaqui Lynch Articles
  - http://www.circle4.com/jaqui/eserver.html
- Nigel Griffiths Twitter – mr_nmon
  - https://twitter.com/mr_nmon
- Gareth Coates Twitter – power_gaz
  - https://twitter.com/power_gaz
- Jaqui's Movie Replays
  - http://www.circle4.com/movies
- IBM US Virtual User Group
  - http://www.tinyurl.com/ibmaixvug
- Power Systems UK User Group
  - http://tinyurl.com/PowerSystemsTechnicalWebinars

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