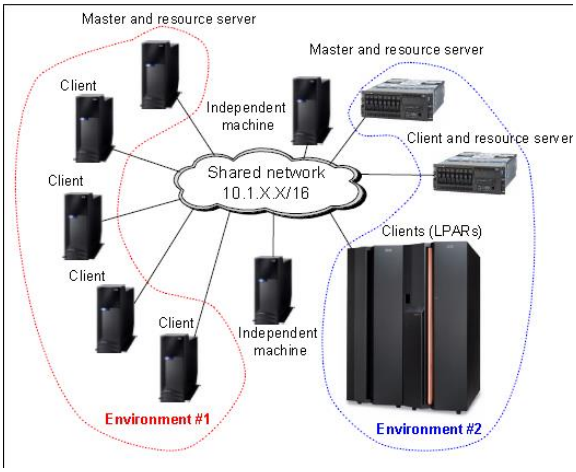
Implement NIM Server

Setup NIM Environment



install NIM master fileset on NIM Server

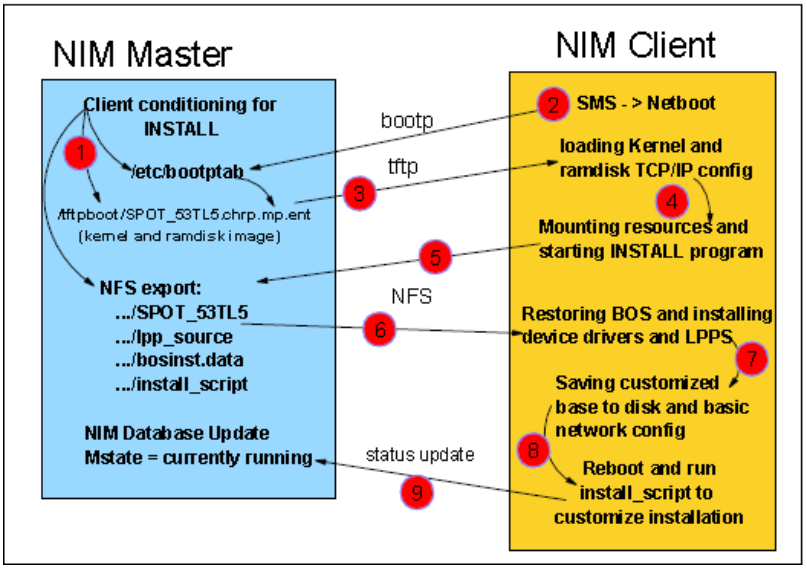
```
                Install and Update from ALL Available Software

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

[TOP]                                                   [Entry Fields]
* Installation Target                                  master
* LPP_SOURCE                                           lpp_souceAll
* Software to Install                                  [bos.adt, bos.nim    > +
```

How NIM Works

NIM Server providse OS/software needed by clients, through network; Sample steps using NIM Server to install OS on a standalone client, same thing if you use NIM Server to install software to Client, and/or backup client data using mksysb/savevg to NIM Server



Define NIM Resource

Nim Server hold NIM DB, The NIM database is stored in the AIX Object Data Management (ODM) repository on the NIM master and is divided into four classes: machines, networks, resources, groups:

Machines	Network	Resources	Groups
master	ent	lpp_source	mac_group
standalone	tok	spot	res_group
diskless	fddi	mksysb	
dataless	atm	bosinst_data	
alternate_master	generic	script	
		image_data	
		installp_bundle	
		.....	

Define lpp_source resource, Copy AIX DVD/image to NIM Server filesystem:

1. copy software packaged as CD Image(ios format) to NIM Resource Server directory /export/lpp_source, define as lpp_source:

```
#loopmount -i AIX6.1BaseTL05SP06_DVD1.iso  -o "-V cdrfs -o ro" -m /mnt
#cd /mnt
#find . -print | cpio -pdl /export/lpp_source/lpp_sourceAll

#inutoc .
```

```
#gencopy -d /recyclebox/aix6.1-tl6-sp7 -U all
```

2. Copy from CD to NIM Resource Server
   1. *Place CD into the CD-ROM drive.*
   2. *Enter # smit bffcreate*

3. You can create your own bff installation package using mkinstallp to make lpp_source

   Use mkinstallp to create bff package for AIX "smitty installp"

```
root@ifx01:/cgi #cat cgi.template
        Package Name: CGIMIGRATION
        Package VRMF: 1.0.0.0
        Update: N
        Fileset
        Fileset Name: CGIMIGRATION.rte
        Fileset VRMF: 1.0.0.0
        Fileset Description: CGIMIGRATION
        Bosboot required: N
        License agreement acceptance required: N
        Include license files in this package: N
        Requisites:
        ROOT Part: Y
        ROOTFiles
        /bin
        /bin/cgi.backup
        /bin/cgi.comment
        /bin/cgi.crfs
        /bin/cgi.db2backup
        /bin/cgi.delete
        /bin/cgi.ftp
        /bin/cgi.idsbackup
        /bin/cgi.idsrestore
        /bin/cgi.mkchunk
        EOROOTFiles
        EOFileset

root@ifx01:/cgi #mkinstallp -T /cgi/cgi.template -d /cgi
root@ifx01:/cgi/tmp #restore -qTvf CGIMIGRATION.1.0.0.0.bff
```

Copy this new created "CGIMIGRATION.1.0.0.0.bff" to
/export/lpp_source/cgitools
Create content of table for the directory:

```
#cd /export/lpp_source/cgimiragtiontools
#inutoc.
```

create new lpp_source named " cgimigrationtool"
Then, you can install this "cgimgrationtools" on any machines with NIM

#smitty nim

Manage Resources

Move cursor to desired item and press Enter.

```
  List All Network Install Resources
  Define a Resource
  Change/Show Characteristics of a Resource
  Show the Contents of a Resource
  Remove a Resource
  Perform Operations on Resources
  Verify Resources
```

Define a Resource

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

                                                      [Entry Fields]
* Resource Name                                      [lpp_souceAll]
* Resource Type                                       lpp_source
* Server of Resource                                 [master]                +
* Location of Resource                              [/export/lpp_source/lp>  /
  NFS Client Security Method                        []                      +
  NFS Version Access                                []                      +
  Architecture of Resource                          []                      +
  Source of Install Images                          []                      +/
  Names of Option Packages                          []
  Show Progress                                     [yes]                   +
  Comments                                          []

Command: OK            stdout: yes           stderr: no

Before command completion, additional instructions may appear below.

Preparing to copy install images (this will take several minutes)...


Now checking for missing install images...

All required install images have been found. This lpp_source is now ready.
```

Create s SPOT resource from lpp_source or mksysb by installing needed software in SPOT for NIM operation.

Define a Resource

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

[TOP]                                                 [Entry Fields]
* Resource Name                                      [spotAll]
* Resource Type                                       spot
* Server of Resource                                 [master]                +
  Source of Install Images                          [lpp_souceAll]          +
* Location of Resource                              [/export/spot/spotAll]   /
  NFS Client Security Method                        []                      +
  NFS Version Access                                []                      +
```

```
  Expand file systems if space needed?                yes                     +
  Comments                                           []

  installp Flags
  PREVIEW only? (install operation will NOT occur)    no                      +
  COMMIT software updates?                            no                      +
[MORE...4]
```

Then, you can install/migrate/backup/restore any machine managed by NIM Server

Backup Client Mksysb to NIM Server by creating mksysb from client

```
                                Manage Resources

Move cursor to desired item and press Enter.

  List All Network Install Resources
  Define a Resource
  Change/Show Characteristics of a Resource
  Show the Contents of a Resource
  Remove a Resource
  Perform Operations on Resources
  Verify Resources
                                Manage Resources

Mo+--------------------------------------------------------------------------+
  |                             Resource Type                                |
  |                                                                          |
  | Move cursor to desired item and press Enter. Use arrow keys to scroll.   |
  |                                                                          |
  | [MORE...8]                                                               |
  |   lpp_source      = source device for optional product images            |
  |   installp_bundle = an installp bundle file                              |
  |   fix_bundle      = fix (keyword) input file for the cust or fix_query o |
  |   bosinst_data    = config file used during base system installation     |
  |   image_data      = config file used during base system installation     |
  |   vg_data         = config file used during volume group restoration     |
  |   mksysb          = a mksysb image                                       |
  |   script          = an executable file which is executed on a client     |
  |   resolv_conf     = configuration file for name-server information       |
  |   savevg          = a savevg image                                       |
  | [MORE...10]                                                              |
  |                                                                          |
  | F1=Help                 F2=Refresh              F3=Cancel                |
  | Esc+8=Image             Esc+0=Exit              Enter=Do                 |
F1| /=Find                  n=Find Next                                      |
Es+--------------------------------------------------------------------------+
```

```
                               Define a Resource

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

[TOP]                                                 [Entry Fields]
* Resource Name                                      [mksysb_lms]
* Resource Type                                       mksysb
* Server of Resource                                 [master]                +
* Location of Resource                               [/export/mksysb/mksysb>  /
  NFS Client Security Method                         []                      +
  NFS Version Access                                 []                      +
  Comments                                           []

  Source for Replication                             []                      +
                -OR-
  System Backup Image Creation Options:
    CREATE system backup image?                       yes                    +
    NIM CLIENT to backup                             [admsrv2]               +
[MORE...14]
```

Install OS from mksysb using NIM, the best practice is to un-define disks from SAN, and run cfgmgr to configure SAN disks after OS installation finished.

and more, Check following OS level directory/file,defined bos_inst resources for a defined machine should be there,

1. /etc/bootp.conf
2. /tftpboot

Manage NIM resource

```
                          Network Installation Manager

Move cursor to desired item and press Enter.

  Configure the NIM Environment
  Perform NIM Software Installation and Maintenance Tasks
  Perform NIM Administration Tasks
  Create IPL ROM Emulation Media
  NIM POWER5 Tools
  Thin Server Maintenance

                        Perform NIM Administration Tasks

Move cursor to desired item and press Enter.

  Manage Networks
  Manage Machines
  Manage Control Objects
  Manage Resources
  Manage Groups
  Backup/Restore the NIM Database
  Configure NIM Environment Options
  Rebuild the niminfo File on the Master
  Change the Master's Primary Interface
  Manage Alternate Master Environment
  Unconfigure NIM

                  Manage Network Install Resource Allocation

Move cursor to desired item and press Enter.

  List Allocated Network Install Resources
  Allocate Network Install Resources
  Deallocate Network Install Resources

  +-----------------------------------------------------------------------------+
  |                              Target Name                                    |
  |                                                                             |
  | Move cursor to desired item and press Enter.                                |
  |                                                                             |
  |   master      machines       master                                         |
  |   admsrv2     machines       standalone                                     |
  |   admsrv1     machines       standalone                                     |
  |                                                                             |
  | F1=Help                 F2=Refresh              F3=Cancel                   |
  | Esc+8=Image             Esc+0=Exit              Enter=Do                    |
F1| /=Find                  n=Find Next                                         |
Es+-----------------------------------------------------------------------------+

                  Manage Network Install Resource Allocation

Mo+-----------------------------------------------------------------------------+
  |                   Available Network Install Resources                       |
  |                                                                             |
  | Move cursor to desired item and press Esc+7.                                |
  |     ONE OR MORE items can be selected.                                      |
  | Press Enter AFTER making all selections.                                    |
  |                                                                             |
  | [MORE...39]                                                                 |
  |   vac-aix50              installp_bundle                                    |
  |   vacpp-aix50            installp_bundle                                    |
  |   wsm_remote             installp_bundle                                    |
  |   bid_ow                 bosinst_data                                       |
  |   hacmp_source           lpp_source                                         |
  |   mksysb_lms             mksysb                                             |
  | > lpp_souceAll           lpp_source                                         |
```

```
  | > spotAll                spot                                          |
  | [BOTTOM]                                                               |
  |                                                                        |
  | F1=Help                  F2=Refresh              F3=Cancel             |
  | Esc+7=Select             Esc+8=Image             Esc+0=Exit            |
F1| Enter=Do                 /=Find                  n=Find Next           |
Es+------------------------------------------------------------------------+
```

Install/Migrate OS/software

Migration NIM Server using CD AXI6.1,

Cloning rootvg with alt_disk_install
{nimmast}:/ # unmirrorvg -c1 rootvg hdisk1
{nimmast}:/ # chpv -c hdisk1
{nimmast}:/ # lspv -l hdisk1 ; migratepv hdisk1 hdisk0 (if required)
{nimmast}:/ # lspv -l hdisk1
{nimmast}:/ # reducevg rootvg hdisk1
{nimmast}:/ # lsvg -p rootvg
{nimmast}:/ # bosboot -a -d /dev/hdisk0
{nimmast}:/ # bootlist -m normal hdisk0
{nimmast}:/ # bootlist -m normal -o
hdisk0
{nimmast}:/ # alt_disk_install -B -C hdisk1

Perform migration installation of AI6.1. We are now ready to execute the AIX migration. At this point in our case, we must go to the NIM master's console (via the HMC) and prepare to migrate via CD.

Insert AIX6.1 Installation CD Volume 1 into the CD drive.

Follow the procedure in the AIX installation and migration guide to migrate via media to AIX6.1

After the migration is finished, remove the AIX 5L V5.3 Installation Volume 1 CD from the CD-ROM drive.

Check the system configuration, for example, oslevel, disk, network, AIX error report, and so on.

Clean up old AIX 5.2 filesets. It may be necessary to remove old AIX 5.2 filesets after the migration.

Check the NIM environment. In our case, we perform some quick tests to verify the NIM environment after the migration. Using the lsnim command, we verify that the NIM database is intact. We check the state of the master and clients. We also validate some of our NIM resources.

Check the NIM database:
{nimmast}:/ # lsnim
Check the status of the NIM master:
{nimmast}:/ # lsnim -a Cstate -a Mstate master
Check the status of a NIM client:
{nimmast}:/ # lsnim -a Cstate -a Mstate LPAR4
Validate the NIM resources:
{nimmast}:/ # nim -o check LPP_52_ML8
{nimmast}:/ # nim -o check SPOT_52_ML8

Build an AIX6.1 lpp_source and SPOT.

After NIM Server Migrated successfully, We will migrate a system from AIX 5.3 to AIX 6.1 using nimadm.

The NIM master in this environment is running AIX 6.1 TL3 SP2. Our NIM client name is aix1 (running AIX 5.3 TL7 SP5 and migrating to AIX 6.1 TL3 SP1) and the NIM masters name is nim1.

Ensure that you read the AIX 6.1 release notes and review the documented requirements such as the amount of free disk space required.

Prior to a migration, it is always a good idea to run the pre_migration script on the system to catch any issues that may prevent the migration from completing successfully. You can find this script on the AIX 6.1 installation media.

Run this script, review the output (in /home/pre_migration), and correct any issues that it reports before migrating.

```
#./pre_migration

All saved information can be found in: /home/pre_migration.090903105452
```

```
Checking size of boot logical volume (hd5).

Your rootvg has mirrored logical volumes (copies greater than 1)
Recommendation:  Break existing mirrors before migrating.

Listing software that will be removed from the system.

Listing configuration files that will not be merged.

Listing configuration files that will be merged.

Saving configuration files that will be merged.

Running lppchk commands. This may take awhile.

Please check /home/pre_migration.090903105452/software_file_existence_check
for possible errors.

Please check /home/pre_migration.090903105452/software_checksum_verification
for possible errors.

Please check /home/pre_migration.090903105452/tcbck.output for possible errors.

All saved information can be found in: /home/pre_migration.090903105452

It is recommended that you create a bootable system backup of your system
before migrating.
```

I always take a copy of the /etc/sendmail.cf and /etc/motd files before an AIX migration. These files will be replaced during the migration and you will need to edit them again and add your modifications.

Commit any applied filesets. You should also consider removing any ifixes that may hinder the migration.

If rootvg is mirrored, I break the mirror and reduce it to a single disk. This gives me a spare disk that can be used for the migration.

To allow **nimadm** to do its job, I must temporarily enable rshd on the client LPAR. I will disable it again after the migration.

```
# chsubserver -a -v shell -p tcp6 -r inetd
# refresh –s inetd
# cd /
# rm .rhosts
# vi .rhosts
+
# chmod 600 .rhosts
```

On the NIM master, I can now 'rsh' to the client and run a command as root.

```
# rsh aix1 whoami
root
```

At this point I'm ready to migrate. The process will take around 30-45 minutes; all the while the applications on the LPAR will continue to function as normal.

On the NIM master, I have created a new volume group (VG) named nimadmvg. This VG has enough capacity to cater for a full copy of the NIM clients root volume group (rootvg). This VG will be empty until the migration is started.

Likewise, on the NIM client, I have a spare disk which has enough capacity for a full copy of its rootvg.

On the master (nim1):

```
# lsvg -l nimadmvg
nimadmvg:
LV NAME  TYPE       LPs     PPs     PVs  LV STATE      MOUNT POINT
```

On the client (aix1):

```
# lspv
hdisk0 0000273ac30fdcfc rootvg          active
hdisk1 000273ac30fdd6e  None
```

The fileset bos.alt_disk_install.rte fileset is installed on the NIM master:

```
# lslpp -l bos.alt_disk_install.rte
  Fileset                      Level  State      Description
  ----------------------------------------------------------------------------
```

```
Path: /usr/lib/objrepos
  bos.alt_disk_install.rte   6.1.3.1  APPLIED    Alternate Disk Installation
                                                 Runtime
```

And it is also installed in the AIX 6.1 TL3 SP1 SPOT:

```
# nim -o showres 'spotaix61031'  | grep bos.alt_disk_install.rte
  bos.alt_disk_install.rte   6.1.3.1    C     F    Alternate Disk Installation
```

The **nimadm** command is executed from the NIM master.

```
 # nimadm -j nimadmvg -c aix1 -s spotaix61031 -l lppsourceaix61031 -d "hdisk1" -Y
```

Where:

- –j flag specifies the VG on the master which will be used for the migration
- -c is the client name
- –s is the SPOT name
- -l is the lpp_source name
- -d is the hdisk name for the alternate root volume group (altinst_rootvg)
- –Y agrees to the software license agreements for software that will be installed during the migration.

Now I can sit back and watch the migration take place. All migration activity is logged on the NIM master in the /var/adm/ras/alt_mig directory. For this migration, the log file name is aix1_alt_mig.log. Here's a sample of some of the output you can expect to see for each phase:

```
MASTER DATE: Mon Nov  9 14:29:09 EETDT 2009
CLIENT DATE: Mon Nov  9 14:29:09 EETDT 2009
NIMADM PARAMETERS: -j nimadmvg -c aix1 -s spotaix61031 -l lppsourceaix61031 -d hdisk1 -Y
Starting Alternate Disk Migration.

+-----------------------------------------------------------------------+
Executing nimadm phase 1.
+-----------------------------------------------------------------------+
Cloning altinst_rootvg on client, Phase 1.
Client alt_disk_install command: alt_disk_copy -j -i /ALT_MIG_IMD -M 6.1 -P1 -d "hdisk1"
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_hd7.
Creating logical volume alt_local_lv.
Creating logical volume alt_varloglv.
Creating logical volume alt_nmonlv.
Creating logical volume alt_chksyslv.
Creating logical volume alt_hd71.
Creating logical volume alt_auditlv.
Creating logical volume alt_nsrlv.
Creating logical volume alt_hd11admin.
Creating /alt_inst/ file system.
Creating /alt_inst/admin file system.
Creating /alt_inst/home file system.
Creating /alt_inst/home/nmon file system.
Creating /alt_inst/nsr file system.
Creating /alt_inst/opt file system.
Creating /alt_inst/tmp file system.
Creating /alt_inst/usr file system.
Creating /alt_inst/usr/local file system.
Creating /alt_inst/usr/local/chksys file system.
Creating /alt_inst/var file system.
Creating /alt_inst/var/log file system.
Creating /alt_inst/var/log/audit file system.
Generating a list of files
for backup and restore into the alternate file system...
Phase 1 complete.

+-----------------------------------------------------------------------+
Executing nimadm phase 2.
+-----------------------------------------------------------------------+
Creating nimadm cache file systems on volume group nimadmvg.
Checking for initial required migration space.
```

```
Creating cache file system /aix1_alt/alt_inst
Creating cache file system /aix1_alt/alt_inst/admin
Creating cache file system /aix1_alt/alt_inst/home
Creating cache file system /aix1_alt/alt_inst/home/nmon
Creating cache file system /aix1_alt/alt_inst/nsr
Creating cache file system /aix1_alt/alt_inst/opt
Creating cache file system /aix1_alt/alt_inst/tmp
Creating cache file system /aix1_alt/alt_inst/usr
Creating cache file system /aix1_alt/alt_inst/usr/local
Creating cache file system /aix1_alt/alt_inst/usr/local/chksys
Creating cache file system /aix1_alt/alt_inst/var
Creating cache file system /aix1_alt/alt_inst/var/log
Creating cache file system /aix1_alt/alt_inst/var/log/audit

+-----------------------------------------------------------------------+
Executing nimadm phase 3.
+-----------------------------------------------------------------------+
Syncing client data to cache ...

+-----------------------------------------------------------------------+
Executing nimadm phase 4.
+-----------------------------------------------------------------------+
nimadm: There is no user customization script specified for this phase.

+-----------------------------------------------------------------------+
Executing nimadm phase 5.
+-----------------------------------------------------------------------+
Saving system configuration files.
Checking for initial required migration space.
Setting up for base operating system restore.
/aix1_alt/alt_inst
Restoring base operating system.
Merging system configuration files.
Running migration merge method: ODM_merge Config_Rules.
Running migration merge method: ODM_merge SRCextmeth.
Running migration merge method: ODM_merge SRCsubsys.
Running migration merge method: ODM_merge SWservAt.
Running migration merge method: ODM_merge pse.conf.
Running migration merge method: ODM_merge vfs.
Running migration merge method: ODM_merge xtiso.conf.
Running migration merge method: ODM_merge PdAtXtd.
Running migration merge method: ODM_merge PdDv.
Running migration merge method: convert_errnotify.
Running migration merge method: passwd_mig.
Running migration merge method: login_mig.
Running migration merge method: user_mrg.
Running migration merge method: secur_mig.
Running migration merge method: RoleMerge.
Running migration merge method: methods_mig.
Running migration merge method: mkusr_mig.
Running migration merge method: group_mig.
Running migration merge method: ldapcfg_mig.
Running migration merge method: ldapmap_mig.
Running migration merge method: convert_errlog.
Running migration merge method: ODM_merge GAI.
Running migration merge method: ODM_merge PdAt.
Running migration merge method: merge_smit_db.
Running migration merge method: ODM_merge fix.
Running migration merge method: merge_swvpds.
Running migration merge method: SysckMerge.

+-----------------------------------------------------------------------+
Executing nimadm phase 6.
+-----------------------------------------------------------------------+
Installing and migrating software.
Updating install utilities.
+-----------------------------------------------------------------------+
                        Pre-installation Verification...
+-----------------------------------------------------------------------+
Verifying selections...done
Verifying requisites...done
Results...
```

…output truncated….

```
install_all_updates: Generating list of updatable rpm packages.
install_all_updates: No updatable rpm packages found.

install_all_updates: Checking for recommended maintenance level 6100-03.
install_all_updates: Executing /usr/bin/oslevel -rf, Result = 6100-03
install_all_updates: Verification completed.
install_all_updates: Log file is /var/adm/ras/install_all_updates.log
install_all_updates: Result = SUCCESS
Restoring device ODM database.
```

```
+-----------------------------------------------------------------------+
Executing nimadm phase 7.
+-----------------------------------------------------------------------+
nimadm: There is no user customization script specified for this phase.

+-----------------------------------------------------------------------+
Executing nimadm phase 8.
+-----------------------------------------------------------------------+
Creating client boot image.
bosboot: Boot image is 40952 512 byte blocks.
Writing boot image to client's alternate boot disk hdisk1.

+-----------------------------------------------------------------------+
Executing nimadm phase 9.
+-----------------------------------------------------------------------+
Adjusting client file system sizes ...
Adjusting size for /
Adjusting size for /admin
Adjusting size for /home
Adjusting size for /home/nmon
Adjusting size for /nsr
Adjusting size for /opt
Adjusting size for /tmp
Adjusting size for /usr
Adjusting size for /usr/local
Adjusting size for /usr/local/chksys
Adjusting size for /var
Adjusting size for /var/log
Adjusting size for /var/log/audit
Syncing cache data to client ...

+-----------------------------------------------------------------------+
Executing nimadm phase 10.
+-----------------------------------------------------------------------+
Unmounting client mounts on the NIM master.
forced unmount of /aix1_alt/alt_inst/var/log/audit
forced unmount of /aix1_alt/alt_inst/var/log
forced unmount of /aix1_alt/alt_inst/var
forced unmount of /aix1_alt/alt_inst/usr/local/chksys
forced unmount of /aix1_alt/alt_inst/usr/local
forced unmount of /aix1_alt/alt_inst/usr
forced unmount of /aix1_alt/alt_inst/tmp
forced unmount of /aix1_alt/alt_inst/opt
forced unmount of /aix1_alt/alt_inst/nsr
forced unmount of /aix1_alt/alt_inst/home/nmon
forced unmount of /aix1_alt/alt_inst/home
forced unmount of /aix1_alt/alt_inst/admin
forced unmount of /aix1_alt/alt_inst
Removing nimadm cache file systems.
Removing cache file system /aix1_alt/alt_inst
Removing cache file system /aix1_alt/alt_inst/admin
Removing cache file system /aix1_alt/alt_inst/home
Removing cache file system /aix1_alt/alt_inst/home/nmon
Removing cache file system /aix1_alt/alt_inst/nsr
Removing cache file system /aix1_alt/alt_inst/opt
Removing cache file system /aix1_alt/alt_inst/tmp
Removing cache file system /aix1_alt/alt_inst/usr
Removing cache file system /aix1_alt/alt_inst/usr/local
Removing cache file system /aix1_alt/alt_inst/usr/local/chksys
Removing cache file system /aix1_alt/alt_inst/var
Removing cache file system /aix1_alt/alt_inst/var/log
Removing cache file system /aix1_alt/alt_inst/var/log/audit

+-----------------------------------------------------------------------+
Executing nimadm phase 11.
+-----------------------------------------------------------------------+
Cloning altinst_rootvg on client, Phase 3.
Client alt_disk_install command: alt_disk_copy -j -i /ALT_MIG_IMD -M 6.1 -P3 -d "hdisk1"
## Phase 3 ###################
Verifying altinst_rootvg...
Modifying ODM on cloned disk.
forced unmount of /alt_inst/var/log/audit
forced unmount of /alt_inst/var/log
forced unmount of /alt_inst/var
forced unmount of /alt_inst/usr/local/chksys
forced unmount of /alt_inst/usr/local
forced unmount of /alt_inst/usr
forced unmount of /alt_inst/tmp
forced unmount of /alt_inst/opt
forced unmount of /alt_inst/nsr
forced unmount of /alt_inst/home/nmon
forced unmount of /alt_inst/home
forced unmount of /alt_inst/admin
forced unmount of /alt_inst
Changing logical volume names in volume group descriptor area.
```

```
Fixing LV control blocks...
Fixing file system superblocks...
Bootlist is set to the boot disk: hdisk1 blv=hd5

+-----------------------------------------------------------------------+
Executing nimadm phase 12.
+-----------------------------------------------------------------------+
Cleaning up alt_disk_migration on the NIM master.
Cleaning up alt_disk_migration on client aix1.
```

After the migration is complete, I confirm that the bootlist is set to the **nst_rootvg** disk.

```
# lspv | grep rootvg
hdisk0 0000273ac30fdcfc rootvg          active
hdisk1 000273ac30fdd6e  altinst_rootvg  active


# bootlist -m normal -o
hdisk1 blv=hd5
```

At an agreed time, I reboot the LPAR and confirm that the system is now running AIX 6.1.

```
# shutdown -Fr

; system reboots here…

# oslevel -s
6100-03-01-0921


# instfix -i | grep AIX
    All filesets for 6.1.0.0_AIX_ML were found.
    All filesets for 6100-00_AIX_ML were found.
    All filesets for 6100-01_AIX_ML were found.
    All filesets for 6100-02_AIX_ML were found.
    All filesets for 6100-03_AIX_ML were found.
```

At this point, I would perform some general AIX system health checks to ensure that the system is configured and running as I'd expect.
There is also a post_migration script that you can run to verify the migration. You can find this script in /usr/lpp/bos, after the migration.
You may want to consider upgrading other software such as openssl, openssh, lsof, etc at this stage.
The rsh daemon can now be disabled after the migration.

```
# chsubserver -d -v shell -p tcp6 -r inetd
# refresh -s inetd
# cd /
# rm .rhosts
# ln -s /dev/null .rhosts
```

With the migration finished, the applications are started and the application support team verify that everything is functioning as expected. I also take a mksysb and document the system configuration after the migration.
Once we are all satisfied that the migration has completed successfully, we then return rootvg to a mirrored disk configuration.

```
# lspv | grep old_rootvg
hdisk0  000071da26fe3bd0      old_rootvg
# alt_rootvg_op -X old_rootvg
# extendvg -f rootvg hdisk0
# mirrorvg rootvg hdisk0
# bosboot -a -d /dev/hdisk0
# bosboot -a -d /dev/hdisk1
# bootlist -m normal hdisk0 hdisk1
# bootlist -m normal -o
hdisk0 blv=hd5
hdisk1 blv=hd5
```

If there was an issue with the migration, I could easily back out to the previous release of AIX. Instead of re-mirroring rootvg (above), we would change the boot list to point at the previous rootvg disk (old_rootvg) and reboot the LPAR.

```
# lspv | grep old_rootvg
hdisk0  000071da26fe3bd0      old_rootvg
# bootlist -m normal hdisk0
# bootlist -m normal -o
hdisk0 blv=hd5
# shutdown -Fr
```

This is much simpler and faster than restoring a mksysb image (via NIM, tape, or DVD), as you would with a conventional migration method.

```
Install/update Software from NIM Server

                        Install and Update Software

Move cursor to desired item and press Enter.

  Install the Base Operating System on Standalone Clients
  Install Software
  Update Installed Software to Latest Level (Update All)
  Install Software Bundle
  Update Software by Fix (APAR)
  Install and Update from ALL Available Software
  Install Linux on a Standalone Client or Machine Group

                           Perform a Network Install

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

                                                        [Entry Fields]
  Target Name                                           admsrv2
  Source for BOS Runtime Files                          rte                     +
  installp Flags                                       [-agX]
  Fileset Names                                        []
  Remain NIM client after install?                      yes                     +
  Initiate Boot Operation on Client?                    yes                     +
  Set Boot List if Boot not Initiated on Client?        no                      +
  Force Unattended Installation Enablement?             no                      +
    ACCEPT new license agreements?                     [yes]                    +

                   Manage Network Install Resource Allocation

Mo+--------------------------------------------------------------------------+
  |                   Available Network Install Resources                    |
  |                                                                          |
  | Move cursor to desired item and press Esc+7.                             |
  |     ONE OR MORE items can be selected.                                   |
  | Press Enter AFTER making all selections.                                 |
  |                                                                          |
  | [MORE...38]                                                              |
  |   openssh_server         installp_bundle                                 |
  |   vac-aix50              installp_bundle                                 |
  |   vacpp-aix50            installp_bundle                                 |
  |   wsm_remote             installp_bundle                                 |
  |   bid_ow                 bosinst_data                                    |
  | > hacmp_source           lpp_source                                      |
  | > lpp_souceAll           lpp_source                                      |
  |   spotAll                spot                                            |
  | [BOTTOM]                                                                 |
  |                                                                          |
  | F1=Help                 F2=Refresh              F3=Cancel                |
  | Esc+7=Select            Esc+8=Image             Esc+0=Exit               |
F1| Enter=Do                /=Find                  n=Find Next              |
Es+--------------------------------------------------------------------------+

                                  COMMAND STATUS

Command: failed        stdout: yes           stderr: no

Before command completion, additional instructions may appear below.

[MORE...57]
  of the selected filesets listed above.  They are not currently installed
  and could not be found on the installation media.

    bos.adt.syscalls 5.3.7.0                 # Base Level Fileset
    bos.data 5.1.0.0                         # Base Level Fileset
    bos.data 5.3.0.0                         # Base Level Fileset
    bos.net.nfs.server 5.3.7.0               # Base Level Fileset
    rsct.basic.rte 2.5.5.0                   # Base Level Fileset

  GROUP REQUISITES:  The dependencies of one or more of the selected filesets
  listed above are defined by a group requisite.  A group requisite must pass
```

```
  a specified number of requisite tests.  The following describe group
[MORE...266]

                        Verify an Optional Program Product

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

[TOP]                                                   [Entry Fields]
* Installation Target                                  admsrv2
* LPP_SOURCE                                           lpp_souceAll
* Software to Install                                  [bos.adt              > +

  Customization SCRIPT to run after installation      []                      +
    (not applicable to SPOTs)

  Force                                                 yes                   +

  installp Flags
    PREVIEW only?                                       [no]                  +
    COMMIT software updates?                            [yes]                 +
    SAVE replaced files?                                [no]                  +
[MORE...18]


                        Verify an Optional Program Product

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

[TOP]                                                   [Entry Fields]
* Installation Target                                  admsrv2
* LPP_SOURCE                                           hacmp_source
* Software to Install                                  [cluster.adt.es       > +

  Customization SCRIPT to run after installation      []                      +
    (not applicable to SPOTs)

  Force                                                 yes                   +

  installp Flags
    PREVIEW only?                                       [no]                  +
    COMMIT software updates?                            [yes]                 +
    SAVE replaced files?                                [no]                  +
[MORE...18]

                                  COMMAND STATUS

Command: failed        stdout: yes           stderr: no

Before command completion, additional instructions may appear below.

[MORE...69]
  requisite failures for filesets that you selected.  (See the "Requisite
  Failure Key" below for details of group member failures.)

   At least 1 of the following:
   |   At least 2 of the following:
   |   | * rsct.compat.clients.hacmp 2.5.4.0
   |   | * rsct.compat.basic.hacmp 2.5.4.0
   |   At least 2 of the following:
   |   | ~ rsct.compat.basic.hacmp 2.4.12.0
   |   | * bos.rte v=5, r<4
```