AIX Command Crib Sheet

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The LaTeX 2_ε version of this document compiled by Robert Day.

Latest version can be found at **http://mort.level5.net/johnr/index.html**.

1 Miscellaneous

`http://www.rs6000.ibm.com/cgi-bin/ds_form`	Web based man pages.
`compress -c file.txt > file.Z`	Create a compressed file.

`uuencode (infile) (extract-file-name) > (output file)`
Converts a binary file to an ASCII file for transfer by modem or email.
`uudecode (encoded file)`
Extracts a binary file from encoded file and calls it the extract-file-name.
Examples :-

```
uuencode maymap maymap > maymap.enc
uudecode maymap.enc
```

`od -c /tmp`	Displays contents of the /tmp directory file.
`ls -i`	Lists files with their inode numbers.
`echo *`	Lists files, can be used if ls is corrupt/missing.
`chtz (timezone e.g. GMT0BST)`	Changes the timezone in /etc/environment file.
`chlang (language e.g. En_GB)`	Changes the language in /etc/environment file.
`ar -v -t (archive file)`	List contents of an archive.
`ar -v -x (archive file)`	Extracts the archive.
`ar -v -t /usr/lib/libC-r.a`	Lists contents of the libC_r.a library.

`find /source -print | cpio -pdm /target`
Copying directories using cpio, creates /target/source directory.
Note: Cannot handle files greater than 2 Gig, cpio limitation.

`dump -nTv (binary executable)`	Displays the contents of an executable file.
`dump -c`	Displays string information.
`dump -o`	Displays object file headers.
`dump -l`	Displays line numbers.
`dump -s`	Displays the text section.
`snap -ao /dev/rmt0`	Create a snapshot onto tape.
`snap -ad (directory)`	Create a snapshot into a named directory other than the default (/tmp/ibmsupt).
`/usr/dt/bin/dtconfig -d`	Disables desktop logins.
`/usr/dt/bin/dtconfig -e`	Enables desktop logins.
`/var/dt/Xpid`	PID of the dtlogin process.
`nroff -man bas.1 | more`	For reading man page format files (bas.1).
`snap -g`	Creates snap.tar.Z file in /tmp/ibmsupt (system config info).
`snap -r`	Removes old snap data.

2 Licenses/Software Installation

`lslicense`	Displays number of current user licenses.
`chlicense -u (number)`	Changes the number of user licenses.

Note: ftp,rexec and rsh (without -i flag) do not need an AIX user license to be able to access the system.

```
oslevel                    Returns operating system level.
4 . 3 . 3 . 0 <---------   Preventive Maintenance Level.
|   |   |
|   |   +---------------   Modification.
|   +-------------------   Release.
+-----------------------   Version.
```

`oslevel -l 4.3.3.0`	Displays all filesets that are downlevel.
`whence (program)`	Returns full path of program.
`whereis (program)`	Returns full path of program.
`what (program)`	Displays identifying info from the executable like version number, when compiled.
`lslpp -L all`	List all installed software.
`lslpp -L (program set name)`	Check if software installed.
`lslpp -f`	Lists filesets vs packages.
`lslpp -ha`	Lists installation history of filesets.
`lslpp -w /usr/bin/swapon`	Lists the fileset that the file belongs to.
`lppchk -c`	Checks file checksums against SWVPD.
`lppchk -l`	Checks symbolic links against SWVPD.
`instfix -ik (fix number e.g. IX66617)`	Checks id fix is installed.
`instfix -ik 4330-02_AIX_ML`	
`instfix -i | grep ML`	Displays all ML's installed.
`instfix -k IX38794 -d /dev/cd0`	Installs a fix from cdrom.
`/usr/sbin/install_assist`	Smitty Installation Assistant.
`/usr/sys/inst.images/sys.bundles`	Software bundle files.
`alt_disk_install -c hdisk1`	Clones a running rootvg onto hdisk1.
`alt_disk_install -w`	Wakes up alt vg.
`alt_disk_install -s`	Sends alt vg to sleep !
`alt_disk_install -x`	Removes alt vg from disk.

`/usr/lpp/bosinst/blvset -d /dev/hdisk0 -p 4.2`
Resets the pad string in the BLV to the correct AIX version. Needed if the migration option is missing when installing.

`installp -ad (device) (fileset) (level)`	Install apply and commit fileset.
`installp -pad (device) (fileset) (level)`	Preview install.
`installp -u (fileset)`	Remove fileset.
`installp -ld (device)`	List all software on device.

example:-
`installp -pad /dev/rmt0 X11.base 4.3.3.0`
`installp -C` Cleans up after a premature cancel or interrupted installation.

3 Terminals/Displays

`/usr/share/lib/terminfo`	Directory with all support terminal info files.
`tty`	Displays what the tty/pty number of the terminal is.
`termdef`	Reports the termtype setup in smit for the tty port that termdef is run on.

`chdev -l (device eg tty1) -a term=vt100` Sets tty to a vt100 terminal type.

`penable tty0`	Adds getty line into /etc/inittab for tty0 and starts getty.
`pdisable tty0`	Disables the getty line and disables getty.
`penable/pdisable`	-a option is for all.
`stty erase ^?`	Set backspace key for vt100 terminals.
`stty erase ^H`	Set backspace key for wyse50 terminals.
`lscons`	Displays the console device.

`chcons -a login=enable (device eg /dev/tty1)` Changes the console device.

`lsdisp` Display adapter device information.
`chdisp` Change default display used by LFT subsystem.

Create ttys on ports 0 to 7 on adapter sa2 :-

```
for i in 0 1 2 3 4 5 6 7
do
  mkdev -c tty1 -t tty -s rs232 -p sa2 -w$i -a login=enable -a term=vt100
done
```

`portmir -t /dev/tty0` Mirror current terminal onto /dev/tty0.
`portmir -o` Turns off port mirroring.
`sysline` Displays system status on a terminal's status line.

4 Network

`host (ip or hostname)` Resolves a hostname/ip address.
`hostname` Displays hostname.
`hostname (hostname)` Sets the hostname until next reboot.
`lsdev -Cc if` Lists all available/defined network interfaces.
`chdev -l (device name) -a hostname=(hostname)` Changes hostname permanently.

```
chdev -l inet0 -a hostname=thomas
```

`ifconfig (device name)` Displays network card settings.
`ifconfig (device name) up` Turns on network card.
`chdev -l (device name) -a state=up` Turns on network card.
`ifconfig (device name) down` Turns off network card.
`ifconfig (device name) detach` Removes the network card from the network interface list.

```
ifconfig en0 inet 194.35.52.1 netmask 255.255.255.0 up
```

`ifconfig lo0 alias 195.60.60.1` Create alias ip address for loopback.
`route (add/delete) (-net/-host) (destination) (gateway)`

Adds or deletes routes to other networks or hosts, does not update the ODM database and will be lost at reboot.

```
route add -net 194.60.89.0 194.60.90.4
chdev -l inet0 -a "net,-hopcount,1,-netmask \
                     ,255.255.255.0,207.156.168.0,10.0.15.254"
                                  (destination) ( gateway )
```

Adds route and adds entry into ODM. Route survives a reboot.

`route -rn` Display route table.
`odmget -q "attribute=route" CuAt` Displays routes in the ODM.
`lsattr -EHl inet0` Displays routes set in ODM and hostname.
`odmget -q "name=inet0" CuAt` Displays routes set in ODM and hostname.
`refresh -s inetd` Refresh inetd after changes to inetd.conf.
`kill -1 (inetd PID)` Refresh inetd after changes to inted.conf.
`netstat -i` Displays interface statistics
`entstat -d (ethernet adapter eg en0)` Displays ethernet statistics
`arp -a` Displays ip to mac address table from arp cache
`no -a` Displays network options use -o to set individual options or -d to set individual options to default.
`no -o option=value` (this value is reset at reboot).
`no -o "ipforwarding=1"`.
`traceroute (name or ipaddress)` Displays all the hops from source to destination destination supplied.
`ping -R (hostname or ipaddress)` Same as traceroute except repeats.
`spray (hostname or ipaddress)` Send a stream of packets to a host.
`stopsrc -g tcpip` Stops all running TCP/IP daemons
`/etc/tcp.clean` Stops all running TCP/IP daemons and removes all lock files.
`/etc/rc.tcpip` Start all TCP/IP daemons.
Note: Do not use startsrc -g tcpip as this will start all TCP/IP daemons including routed and gated.

5 NFS

`exportfs`	Lists all exported filesystems.
`exportfs -a`	Exports all fs's in /etc/exports file.
`exportfs -u (filesystem)`	Un-exports a filesystem.
`mknfs`	Configures and starts NFS services.
`rmnfs`	Stops and un-configures NFS services.
`mknfsexp -d /directory`	Creates an NFS export directory.
`mknfsmnt`	Creates an NFS mount directory.
`mount hostname:/filesystem /mount-point`	Mount an NFS filesystem.
`nfso -a`	Display NFS Options.
`nfso -o option=value`	Set an NFS Option.
`nfso -o nfs_use_reserved_port=1`	

6 Backups

6.1 MKSYSB (Uses AIX backup command)

`mkszfile -f`	Creates /image.data file (4.x onwards).
`mkszfile -X`	Creates /fs.size file (3.x).
`mksysb -i (device of file)`	Creates a mksysb image.

Note: Mksysb does not save any raw data and will not backup a filesystem that is not mounted.

6.2 SAVEVG (Uses AIX backup command)

`savevg -if (device or file) (vg)`	Creates a savevg image.
`restvg -q -f (device or file)`	Restore from a savevg image.
	Ensure that the restvg command is run from /.
`mkvgdata (vg)`	Creates new vgname.data file.

6.3 CPIO Archive (Cannot handle files greater than 2 Gig)

`find (filesystem) -print | cpio -ocv > (filename or device)`
e.g. `find ./usr/ -print | cpio -ocv > /dev/rmt0`

6.4 CPIO Restore

`cpio -ict < (filename or device) | more`	Lists archive.
`cpio -icdv < (filename or device)`	
`cpio -icdv < (filename or device) ("files or directories to restore")`	
e.g. `cpio -icdv < /dev/rmt0 "tcpip/*"`	Restore directory and contents.
`cpio -icdv < /dev/rmt0 "*resolve.conf"`	Restore a named file.

6.5 TAR Archive (Cannot handle files greater than 2 Gig)

`tar -cvf (filename or device) ("files or directories to archive")`
e.g. `tar -cvf /dev/rmt0 "/usr/*"`

6.6 TAR Restore

`tar -tvf (filename or device)`	Lists archive.
`tar -xvf (filename or device)`	Restore all.
`tar -xvf (filename or device) ("files or directories to restore")`	
(use -p option for restoring with orginal permissions.)	
e.g. `tar -xvf /dev/rmt0 "tcpip"`	Restore directory and contents.
`tar -xvf /dev/rmt0 "tcpip/resolve.conf"`	Restore a named file.

6.7 AIX Archive

`find (filesystem) -print | backup -iqvf (filename or device)` Backup by filename.

e.g. `find /usr/ -print | backup -iqvf /dev/rmt0`

`backup -(backup level 0 to 9) -f (filename or device) ("filesystem")`

Backup by inode.

e.g. `backup -0 -f /dev/rmt0 "/usr"` -u option updates /etc/dumpdates file.

6.8 AIX Restore

`restore -qTvf (filename or device)` Lists archive.

`restore -qvxf (filename or device)` Restores all.

`restore -qvxf (filename or device) ("files or directories to restore")`

(use -d for restore directories.)

`restore -qvxf /dev/rmt0.1 "./etc/passwd"` Restore /etc/passwd file.

`restore -s4 -qTvf /dev/rmt0.1` Lists contents of a mksysb tape.

6.9 Backups Across a Network

Note: Cannot handle files greater than 2 Gig. Cpio limitation.

To run the backup on a local machine (cpio) and backup on the remote machine's (remhost) tape drive (/dev/rmt0).

```
find /data -print | cpio -ocv | dd obs=32k | rsh remhost \
                                "dd ibs=32k obs=64k of=/dev/rmt0"
```

To restore/read the backup (cpio) on the remote machine.

```
dd ibs=64k if=/dev/rmt0 | cpio -icvt
```

To restore/read the backup (cpio) on the local machine from the remote machine's (remhost) tape drive (/dev/rmt0).

```
rsh remhost "dd ibs=64k obs=32k if=/dev/rmt0" | dd ibs=32k \
                                              | cpio -icvt
```

To run the backup (cpio) on a remote machine (remhost) and backup to the local machines tape drive (/dev/rmt0).

```
rsh remhost "find /data -print | cpio -ocv | dd ibs=32k" \
                               | dd ibs=32k obs=64k of=/dev/rmt0
tar cBf - .  | rsh remhost "dd ibs=512 obs=512 of=/dev/rmt0"
```

Same as above but using tar instead of cpio.

7 Copying Diskettes and Tape

7.1 Copying Diskettes

```
dd if=/dev/fd0 of=(filename) bs=36k
dd if=(filename) of=/dev/fd0 bs=36k conv=sync
```

or `flcopy`.

7.2 Copying Tapes

```
dd if=/dev/rmt0 of=(filename)
dd if=(filename) of=/dev/rmt0
```

or `tcopy`.

8 VI Commands

`:g/xxx/s//yyy/` Global change where xxx is to be changed by yyy.

```
sed 's(ctrl v ctrl m)g//g' old.filename > new.filename
```

Strips out `^M` characters from ascii files that have been transferred as binary.

To enter crontrol characters type ctrl v then ctrl ? where ? is whatever ctrl character you need.

9 Devices

`lscfg`	Lists all installed devices.
`lscfg -v`	Lists all installed devices in detail.
`lscfg -vl (device name)`	Lists device details.
`bootinfo -b`	Reports last device the system booted from.
`bootinfo -k`	Reports keyswitch position 1=secure, 2=service, 3=normal.
`bootinfo -r`	Reports amount of memory (/ by 1024).
`bootinfo -s (disk device)`	Reports size of disk drive.
`bootinfo -T`	Reports type of machine. i.e. rspc,rs6ksmp,rspc or chrp.
`lsattr -El sys0 -a realmem`	Reports amount of useable memory.
`mknod (device) c (major no) (minor no)`	Creates a /dev/ device file.

`mknod /dev/null1 c 2 3`

`lsdev -C` Lists all customised devices i.e. installed.

`lsdev -P` Lists all pre-defined devices i.e. supported.

`lsdev -(C or P) -c (class) -t (type) -s (subtype)`

`chdev -l (device) -a (attribute)=(new value)` Change a device attribute.

`chdev -l sys0 -a maxuproc=80`

`lsattr -EH -l (device) -D` Lists the defaults in the pre-defined db.

`lsattr -EH -l sys0 -a modelname`

`rmdev -l (device)`	Change device state from available to defined.
`rmdev -l (device) -d`	Delete the device.
`rmdev -l (device) -SR`	S stops device, R unconfigures child devices.
`lsresource -l (device)`	Displays bus resource attributes of a device.
`cfgmgr`	Configures devices.
`cfgmgr -i /dev/cd0`	Configure devices and install drivers from /dev/cd0 if required.
`cfgmgr -S`	Run in serial, used with a larger number of disks.
`cfgmgr -l scsi0`	Configure devices on adapter scsi0 only.
`diag`	Run hardware diagnostic menu.
`smitty diag`	Run hardware diagnostic menu.

Note: 7020-40P and 7248-43P machines cannot run diagnostics, use diagnostics in the SMS menus instead.

`diag -d (device)`	Run diagnostics against a device.
`lsslot`	Displays all hot swap slots.
`lsslot -c pci`	Lists all pci hot swap slots.
`lsslot -c pci -a`	Lists all available pci hot swap slots.
`drslot`	Reconfgiures PCI hot-plug slots.
`drslot -i -c pci -s U0.1-P1-I3`	Display a slot, flashes the LED next to the slot so that it can be identified.

9.1 Power Management (PCI and CHRP machines)

`pmctrl -a`	Displays the Power Management state.
`rmdev -l pmc0`	Unconfigure Power Management.
`mkdev -l pmc0`	Configure Power Management.

10 Tape Drives

`rmt0.x` where x = A + B + C

A = density	0 = high	4 = low	
B = retension	0 = no	2 = yes	
C = rewind *	0 = yes	1 = no	(* rewind on finish)

`tctl -f (tape device) fsf (No)`	Skips forward (No) tape markers.
`tctl -f (tape device) bsf (No)`	Skips back (No) tape markers.
`tctl -f (tape device) rewind`	Rewind the tape.
`tctl -f (tape device) offline`	Eject the tape.
`tctl -f (tape device) status`	Show status of tape drive.
`chdev -l rmt0 -a block_size=512`	changes block size to 512 bytes. (4mm = 1024, 8mm = variable but 1024 recommended).

`dd if=/dev/rmt0 bs=128k count=1 | wc -c`
Displays the block size of an unknow tape. Set block size to 0 first.

`bootinfo -e` answer of 1 = machine can boot from a tape drive.
answer of 0 = machine CANNOT boot from tape drive.

`diag -c -d (tape device)`	Hardware reset a tape drive.
`diag -c -d rmt0`	
`tapechk (No of files)`	Checks Number of files on tape.
`< /dev/rmt0`	Rewinds the tape !!!

11 Printers/Print Queues

`splp (device)`	Displays/changes printer driver settings.
`splp /dev/lp0`	
`export $LPDEST="pqname"`	Set default printer queue for login session.
`lsvirprt`	Lists/changes virtual printer attributes.
`lsallq`	Displays all queues.
`rmvirprt -q queuename -d queuedevice`	Removes a virtual printer.
`qpri -#(job No) -a(new priority)`	Change a queue job priority.
`qhld -#(job No)`	Put a hold on hold.
`qhld -r #(job No)`	Release a held job.
`qchk -A`	Status of jobs in queues.
`lpstat`	
`lpstat -p(queue)`	Status of jobs in a named queue.
`lpstat -w`	Wide lpstat display (for long queue names).
`qcan -x (job No)`	Cancel a job from a queue.
`cancel (job No)`	
`enq -U -P(queue)`	Enable a queue.
`enable (queue)`	
`enq -D -P(queue)`	Disable a queue.
`disable (queue)`	
`qmov -m(new queue) -#(job No)`	Move a job to another queue.
`startsrc -s qdaemon`	Start qdaemon sub-system.
`lssrc -s qdaemon`	List status of qdaemon sub-system.
`stop -s qdaemon`	Stop qdaemon sub-system.
`enscript (filename)`	Prints ascii file to a postscript queue.
`enscript -d(queue) (filename)`	Prints ascii file to a named postcript queue.
`enscript -r (filename)`	Prints ascii file in landscape to ps queue.
`enscript -fCourier8 (filename)`	Prints ascii file using Courier font size 8.

12 File Systems

12.1 Physical Volumes (PV's)

`lspv`	Lists all physical volumes (hard disks).
`lspv (pv)`	Lists the physical volume details.
`lspv -l (pv)`	Lists the logical volumes on the physical volume.
`lspv -p (pv)`	Lists the physical partition usage for that PV.
`lspv -M (pv)`	Lists the PP allocation table for that PV.

If the PV state is "missing" but the disk is okay, use `"varyonvg vg"` to change the state of the PV to "active".

`chdev -l (pv) -a pv=yes`	Makes a new hdisk a pysical volume.
`chpv -v r (pv)`	Removes a disk from the system.
`chpv -v a (pv)`	Adds the removed disk back into the system.
`chpv -a y (pv)`	Changes pv allocatable state to YES.
`chpv -a n (pv)`	Changes pv allocatable state to NO.
`migratepv (old pv) (new pv)`	Moves all LV's from one PV to another PV, both PV's must be in the same volume group.

Note: Migratepv cannot migrate striped logical volumes, use cplv and rmlv.

`replacepv (old pv) (new pv)` (4.3.3 onwards)

`/usr/lpp/diagnostics/bin/uformat -d (pv) -o certify`	Will cerify (read all on disk media) scsi disks only.

12.2 Volume Groups (VG's)

`lsvg`	Lists all volume groups.
`lsvg (vg)`	Lists the volume group details.
`lsvg -l (vg)`	Lists all logical volumes in the volume group.
`lsvg -p (vg)`	Lists all physical volumes in the volume group.
`lsvg -o`	Lists all varied on volume groups.
`varyonvg (vg)`	Vary On a volume group.
`varyonvg -f (vg)`	Forces the varyon process.
`varyonvg -s (vg)`	Vary on a VG in maintenance mode. LV commands can be used on VG, but LV,s cannot be opened for I/O.
`varyoffvg (vg)`	Vary Off a volume group.
`synclvodm (vg)`	Tries to resync VGDA, LV control blocks and ODM.
`synclvodm -v (vg)`	Rebuilds the LVCB.

Note: the vg needs to be varied on before running synclvodm.

`mkvg -y(vg) -s(PP size) (pv)`	Create a volume group.
`mkvg -y datavg -s 4 hdisk1`	
`reducevg (vg) (pv)`	Removes a volume group.
`reducevg -d (vg) (pv)`	Removes a volume group and delete all LV's on the PV.
`reducevg (vg) (PVID)`	Removes the PVID disk reference from the VGDA when a disk has vanished without the reducevg (vg) (pv) command being run first.
`reducevg -df (vg) (pv)`	Deletes all LV's from the VG and removes the VG from the disk. If the last disk in the VG then the VG is deleted.
`extendvg (vg) (new pv)`	Adds another PV into a VG.
`exportvg (vg)`	Exports the volume group, removes the VG entries and removes all FS entries from /etc/filesystems but leaves the mount points.

Note : Cannot export a VG if it has active paging space, turn off paging, reboot before exporting VG. Exporting removes entries from filesystems file but does not remove the mount points.

`chvg -a y (vg)`	Auto Vary On a volume group at system start.
`chvg -u (vg)`	Unlocks a locked volume group.
`lqueryvg -Atp (pv)`	Details volume group info for the hard disk.
`importvg -y (vg name) (pv)`	Import a volume group from a disk.
`importvg (pv)`	Same as above but VG will be called vg00 etc.

Note: 4.3 onwards, importvg will automatically varyon the VG.

`chvg -Q (y/n) (vg name)`	Turns on/off Quorum checking on a VG.
`reorgvg (vg) (lv)`	Reorganised a fragmented LV, must state an LV at the command line else the first LV in the VG is picked. Does not reorg the PP's of striped LV's.

12.3 Logical Volumes (LV's)

`lslv (lv)` Lists the logical volume details.
`lslv -l (lv)` Lists the physical volume which the LV is on.
`lsattr -EHl (lv)` Displays more logical volume details.
`mklv (vg) (No of PP's) (pv name optional)` Create a logical volume.
`mklv -y (lv) (PP's) (pv name optional)` Creates a named logical volume.
Note: use -t jfs2 when creating an LV for a JFS2 filesystem.
`chlv -n (new lv) (old lv)` Rename a logical volume.
`chlv -x (number) (lv)` Change max no of PP's.
`chlv -s n (lv)` Turns of strickness on the LV.
`extendlv (lv) (extra No of PP's)` Increase the size of an LV.
`rmlv (lv)` Remove a logical volume.
`cplv -v (vg to copy to) -y (new lv) (lv)` Copy an LV to a new LV.
If copying a filesystem LV, umount the filesystem before copying, otherwise you will have to fsck the the new LV before the filesystem can be mounted. If copying a striped LV to an LV that is already created, and the stripe size is different (or not even striped), then these new parameters are maintained when the data is copied to the new LV.
`cplv -e (new lv) (old lv)` Copy to an existing LV.
Note: new lv must have type as copy use chlv -t copy (new lv) to change.
`mklv/extendlv -aX` where X is the alocation policy.
m = middle c = center e = edge
ie = inner edge im = inner middle
`migratepv -l (lv) (old pv) (new pv)`
Move a logical volume between physical volumes. Both physical volumes must be in the same volume group !
`mklv -y (lv) -t jfslog (vg) (No of PP's) (pv Name optional)` Creates a JFSlog logical volume.
`logform (/dev/lv)` Initialises an LV for use as an JFSlog.
`getlvcb -AT (lv)` Displays Logical Volume Control Block information.

12.4 File Systems (FS's)

`lsfs` Lists all filesystems.
`lsfs -q (fs)` Lists the file system details.
`lsjfs` Displays data about all filesystems in CSV style format.
`mount` Lists all the mounted filesystems.
`mount (fs or lv)` Mounts a named filesystem.
`mount -a` Mounts all filesystems.
`mount all`
`mount -r -v cdrfs /dev/cd0 /cdrom` mounts cd0 drive over /cdrom.
`crfs -v jfs -d(lv) -m(mount point) -A yes`
Will create a file system on the whole of the logical volume, adds entry into /etc/filesystems and will create mount point directory if it does not exist.
Note: use -v jfs2 for JFS2 filesystems.
`crfs -v jfs -g(vg) -m(mount point) -a size=(size of fs) -A yes`
Will create a logical volume on the volume group and create the file system on the logical volume. All at the size stated. Will add entry into /etc/filesystems and will create the mount point directory if it does not exist.
Use attribute "`-a log=/dev/log01`" to specify a jfslog devices.
Use attrubute "`-a bf=true`" for a large file enabled filesystem.
`chfs -A yes (fs)` Change file system to Auto mount in /etc/filesystems.
`chfs -a size=(new fs size)(fs)` Change file system size.
`chfs -m (new-mount-point) (fs)` Change the file system mount point.

`rmfs (fs)`	Removes the file system and will also remove the LV if there are no onther file systems on it.
`defrag -q (fs)`	Reports the fragment status of the file system.
`defragfs -r (fs)`	Runs in report only defrag mode (no action).
`defragfs (fs)`	Defragments a file system.
`fsck (fs)`	Verify a file system, the file system must be unmounted !
`fsck (-y or -n) (fs)`	Pre-answer questions either yes or no !
`fsck -p (fs)`	Will restore primary superblock from backup copy if the superblock is corrupt.

(or `dd count=1 bs=4k skip=31 seek=1 if=/dev/lv00 of=/dev/lv00`)

12.5 Mirroring

`mklv -y (lv) -c(copies 2 or 3) (vg) (No of PP's) (PV Name optional)`
Creates a mirrored named logical volume.
`mklvcopy -s n (lv) (copies 2 or 3) (pv)`
Creates a copy of a logical volume onto another physical volume. The physical volume MUST be in the same volume group as the orginal logical volume !

`rmlvcopy (lv) (copies 1 or 2)`	Removes logical volume copies
`rmlvcopy (lv) (copies 1 or 2) (pv)`	From this pv only!
`syncvg -p (pv)`	Synchronize logical partion copies
`syncvg -l (lv)`	
`syncvg -v (vg)`	
`mirrorvg (vg) (pv)`	Mirrors the all the logical volumes in a volume group onto a new physical volume. New physical volume must already be part of the volume group.

`chfs -a splitcopy=/backup -a copy=2 /data1`
Splits off a copy of a 3 way mirror and mount read only for use as an offline backup.

13 Boot Logical Volume (BLV)/Processors/Kernel

Mirroring does not work with the BLV as it is not a true logical volume, bosboot must be run against the other disk after mirroring the rootvg.

`bootlist -m (normal or service) -o`	displays bootlist.
`bootlist -m (normal or service) (list of devices)`	change bootlist.
`bootinfo -b`	Identifies the bootable disk.
`bootinfo -t`	Specifies type of boot.
`bosboot -a -d (/dev/pv)`	Creates a complete boot image on a physical volume.
`mkboot -c -d (/dev/pv)`	Zero's out the boot records on the physical volume.
`savebase -d (/dev/pv)`	Saves customised ODM info onto the boot device.
`lslv -m hd5`	Find out which disk the BLV is on
`bootinfo -y`	Displays which kernel can be used, 32 or 64 bit.
`genkex`	Reports all loaded kernel extensions.
`lsdev -Cc processor`	Lists all processors.
`lsattr -EHl proc0`	Displays attributes of processor 0. AIX 5.1L will display processor clock frequency

14 System Dump

1. AIX 4.2.1 and greater supports system dump to paging space.
2. AIX 4.3.3 and greater supports system dump to mirrored paging space.
3. Primary dump device must be in the rootvg.
4. Secondary dump device can be outside rootvg unless it is a paging device.

`sysdumpdev -l` Lists current dump destination.
`sysdumpdev -e` Estimates dumpsize of the current system in bytes.
`sysdumpdev -L` Displays information about the previous dump.
`sysdumpstart -p` Starts a dump and writes to the primary dump device.
`sysdumpstart -s` Starts a dump and writes to the secondary dump device.
Note: MCA machine can also dump if key is in service position and the reset button is pressed.
`sysdumpdev -p (dump device) -P` Sets the default dump device, permanently.
Analyse dump file :-
`echo "stat\n status\n t -m" | crash /var/adm/ras/vmcore.0`
`snap -gfkD -o /dev/rmt0` Copy dump to tape to send to IBM support, uses tar.

15 Paging Space (PS's)

`lsps -a` Lists out all paging space.
`lsps -s` Displays total paging and total useage.
`lsps (ps)`
`swappon /dev/ps` Activates a paging device eg /dev/paging00.
`swappoff /dev/ps` Deactivates a paging device (AIX 5.x only).
`mkps -s(No of PP's) -n -a (vg)`
`mkps -s(No of PP's) -n -a (vg) (pv)`
-n = don't activate/swapon now -a = activate/swapon at reboot.
`mklv -b n -t paging -y hd6 (vg) (No of PP's) (pv)`
Creates paging space using the mklv command.
`chps -a n (ps)` Turns off paging space.
`chps -s(No of PP's) (ps)` Increases paging space.
`chps -d(No of PP's) (ps)` Decreases paging space (AIX 5.x only).
`chlv -n (new name) (old name)` Change paging space name.
`rmps (ps)` Remove paging space. PS must have been turned off and then the system rebooted before it can be removed.
Note: Need to change the swapon entry in /sbin/rc.boot script if you are changing the default paging space from /dev/hd6. You also need to do a "`bosboot -a -d /dev/hdiskx`" before the reboot.
`/etc/swapspaces` File that lists all paging space devices that are activated/swapon during reboot.

16 Scheduling

`crontab -l` List out crontab entrys.
`crontab -e` Edit crontab entrys.
`crontab -l > (filename)` Output crontab entrys to a file.
`crontab (filename)` Enter a crontab from a file.
`crontab -r` Removes all crontab entrys.
`crontab -v` Displays crontab submission time.
`/var/adm/cron/cron.allow` File containing users allowed crontab use.
`/var/adm/cron/cron.deny` File containing users denied crontab use.
`/var/adm/cron/crontab` Directory containing users crontab entries.
`/var/adm/cron/log` Cron log file.
`at (now + 2 minutes, 13:05, etc) {return}` Schedule a job using at.
`<Command or shell script> {return}`
`{CTRL D}`
`echo "shutdown -Fr" | at now + 1 minute`

`at -l`	
`atq`	Lists out jobs scheduled to run via at command.
`at -r (at job No)`	
`atrm (at job No)`	Removes an at job scheduled to run.
`/var/adm/cron/at.allow`	File containing users allowed at use.
`/var/adm/cron/at.deny`	File containing users denied at use.
`/var/adm/cron/atjobs`	Directory containing users at entries.
`/tmp/crout(pid)`	Output of currently running cron or at jobs.

17 Security

`nulladm /var/adm/wtmp`	To recreate/clear down the wtmp file.
`groups`	Lists out the groups that the user is a member of.
`setgroups`	Shows user and process groups.
`chmod abcd (filename)`	Changes files/directory permissions.

Where a is (4 SUID) + (2 SGID) + (1 SVTX)
b is (4 read) + (2 write) + (1 execute) permissions for owner
c is (4 read) + (2 write) + (1 execute) permissions for group
d is (4 read) + (2 write) + (1 execute) permissions for others

```
-rwxrwxrwx   -rwxrwxrwx   -rwxrwxrwx
 |||             |||             |||
  -               -               -
  |               |               |
Owner           Group           Others
-rwSrwxrwx = SUID   -rwxrwSrwx = SGID   drwxrwxrwt = SVTX
```

`chown (new owner) (filename)`	Changes file/directory owners.
`chgrp (new group) (filename)`	Changes file/directory groups.
`chown (new owner).(new group) (filename)`	Do both !!!
`umask`	Displays umask settings.
`umask abc`	Changes users umask settings.

where 7 - a = new file read permissions
7 - b = new file write permissions
7 - c = new file execute permissions

e.g.
umask 022 = new file permissions of 755
= `read write and execute` for owner
= `read ----- and execute` for group
= `read ----- and execute` for other

`mrgpwd > file.txt`	Creates a standard password file in file.txt.
`passwd`	Change current user password.
`pwdadm (username)`	Change a users password.
`pwdck -t ALL`	Verifies the correctness of local authentication.
`lsgroup ALL`	Lists all groups on the system.
`mkgroup (new group)`	Creates a group.
`chgroup (attribute) (group)`	Change a group attribute.
`rmgroup (group)`	Removes a group.

18 Users/Environment

`passwd -f`	Change current users gecos (user description).
`passwd -s`	Change current users shell.
`chfn (username)`	Changes users gecos.
`chsh (username) (shell)`	Changes users shell.
`env`	Displays values of environment variables.
`printenv`	
`idr`	Displays current user's uid and gid details.
`id (user)`	Displays user uid and gid details.
`whoami`	Displays current user details.
`who am i`	(or `who -m`)
`who`	Displays details of all users currently logged in.
w `who -b`	Displays system reboot time.
`uptime`	Displays number of users logged in, time since last reboot, and the machine load averages.
`lsuser ALL`	Lists all users details.
`lsuser (username)`	Lists details for user.
`lsuser -a(attribute) (username or ALL)`	Lists user attributes.
`lsuser -a home ALL`	
`mkuser -a(attributes) (newuser)`	Add a new user.
`chuser (attributes) (user)`	Change a user.
`chuser login=false (user)`	Lock a user account.
`rmuser -p (user)`	Removes a user and all entries in security files.
`usrck -t ALL`	Checks all the user entires are okay.
`fuser -u (logical volume)`	Displays processes using the files in that LV.
`fuser -k /dev/lv02`	Will send a kill signal to all processes using /dev/lv02.
`lsattr -D -l sys0 -a maxuproc`	Displays max number of processes per user.
`chdev -l sys0 -a maxuproc=(number)`	Changes max number of processes per user.

`chlang (language)` Changes the language settings for system or user

`En_GB`	=	PC850 code pages
`en_GB`	=	ISO8859 code pages (Great Britain)
`C`	=	posix

`su - (user)`	Switch to new user and change to the new users environment.
`su (user)`	Switch to new user, current environment is propated to the new shell.

19 Remote Users

`ruser -a -f (user)`	Adds entry into /etc/ftpusers file.
`ruser -a -p (host)`	Adds entry into /etc/host.lpd file.
`ruser -a -r (host)`	Adds entry into /etc/hosts.equiv file.
`ruser -d -f (user)`	Deletes entry in /etc/ftpusers file.
`ruser -d -p (host)`	Deletes entry in /etc/host.lpd file.
`ruser -d -r (host)`	Deletes entry in /etc/hosts.equiv file.
`ruser -s -F`	Shows all entries in /etc/ftpusers file.
`ruser -s -P`	Shows all entries in /etc/host.lpd file.
`ruser -s -R`	Shows all entries in /etc/hosts.equiv file.
`ruser -X -F`	Deletes all entries in /etc/ftpusers file.
`ruser -X -P`	Deletes all entries in /etc/host.lpd file.
`ruser -X -R`	Deletes all entries in /etc/hosts.equiv file.

20 Inittab

`telinit S`	Switches to single user mode.
`telinit 2`	Switches to multi user mode.
`telinit q`	Re-examines /etc/inittab.
`lsitab -a`	Lists all entries in inittab.
`lsitab (ident eg tty1)`	Lists the tty1 entry in inittab.
`mkitab ("details")`	Creates a new inittab entry.
`chitab ("details")`	Ammends an existing inittab entry.
`rmitab (ident eg tty1)`	Removes an inittab entry.

`chitab "tty1:2:respawn:/usr/bin/getty /dev/tty1"`

21 ODM

`odmget -q "name=lp1" CuDv |more`	Gets lp1 info from pre-defined database.
`odmget -q "name-lp1" CuAt |more`	Gets lp1 info from customised database.
`odmdelete -o CuAt -q "name=lp1"`	Deletes lp1 info from customised db
`odmget -q "name=lp1" CuAt > lp1.CuAt`	Export ODM info to text file.
`odmadd lp1.CuAt`	Import ODM info from text file.

`odmshow CuAt` Displays fields and record structures of CuAt.

`odmchange`

`odmdrop`

22 Error Logging/Logs

`/usr/lib/errdemon -l`	Displays errorlog attributes.
`/usr/lib/errdemon`	Starts error logging.
`/usr/lib/errstop`	Stops error logging.
`errpt`	Displays summary errorlog report.
`errpt -a`	Displays detailed errorlog report.
`errpt -j (identifier)`	Displays singe errorlog report.

Note: errorlog classes are H=Hardware S=Software O=Information V=Undetermined.

`errclear (days)`	Deletes all error classes in the errorlog.
`errclear -d (class) (days)`	Deletes all error class entries in errlog.

Note: The errclear command will delete all entries older than the numbers of days specified in the days paramenter. To delete ALL entries use 0.

`errlogger "message up to 230 chrs"`	Enters an operator notifaction message into the errorlog.
`alog -L`	Lists all logs define in the alog db.
`alog -o -t (type)`	Display contents of log (type).

`alog -o -t boot`

`cat /tmp/boot.log | alot -q -t (type)` Copies contents of a file to alog.

23 Performance Monitoring/Tuning

`vmstat (drive) (interval) (count)` Reports virtual memory statistics.

`vmstat hdisk0 5 20`

`vmstat -s`	Diplays number of paging events since system start.
`vmstat -f`	Diplays number of forks since system start.
`vmstat -i`	Diplays number of interupts by device since system start.

`iostat (drive) (interval) (count)`	Reports i/o and cpu statistics.
`iostat hdisk0 5 20`	
`iostat -d (drive) (interval) (count)`	Limits report to drive statistics.
`iostat -t (interval) (count)`	Limits report to tty statistics.
`sar -u -P ALL 10 10`	Displays %usr %sys %wio %idle for all processors.
`/usr/samples/kernel/vmtune`	Displays "Virtual Memory Manager" settings.

24 DOS Diskettes

`dosdir`	Reads directory listing of a diskette.
`dosdir (directory)`	Reads directory listing of a named directory.
`dosread -D/dev/fd0 C41.TXT c41.txt`	Gets C41.TXT from diskette drive fd0.
`dosread -D/dev/fd0 DIRECTORY/C41.TXT c41.txt`	(-D option can be dropped if using fd0).
`doswrite -D/dev/fd0 (unixfile) (dosfile)`	Writes a file to diskette.
`dosdel (dosfile)`	Deletes a dos file on diskette.
`dosformat`	Formats the diskette.

25 Sendmail

`sendmail -bi`	Creates new aliase db from /etc/aliase file.
`newaliases`	
`sendmail -bp`	Displays the contents of the mail queue.
`mailq`	
`sendmail -q`	Processe the sendmail queue NOW.
`sendmail -bt -d0.4 < /dev/null`	Prints out sendmail version, compile defines and system information.
`refresh -s sendmail`	Restart sendmail, will re-read /etc/sendmail.cf.
`kill -l (sendmail PID)`	
`stopsrc -s sendmail`	Stops the sendmail daemon.
`startsrc -s sendmail "-bd -q30"`	Starts the sendmail daemon.