Key System Configuration Files

/etc/exports – Contains file systems which may be exported to NFS clients
/etc/fstab – Contains file systems mounted automatically at boot. Similar to /etc/vfstab for Solaris
/etc/grub.conf – Configuration file for grub boot loader
/etc/init.d – Control scripts that run at startup and shutdown to start/stop system processes
/etc/inittab – Describes processes that startup at different runlevels as defined in /etc/init.d
/etc/lilo.conf – Configuration file for lilo boot loader
/etc/ocfs.conf – Oracle cluster file system config file
/etc/profile.d – Default environment scripts to initialize system wide environment variables during login
/etc/raidtab – Configuration file for raid (md) devices
/etc/security/limits.conf – Configuration file containing resource limits for a user
/etc/sysconfig – Directory where many files that control system configuration are stored
/etc/sysctl.conf – Contains installation specific tunable kernel parameters (shmmax, shmmni, etc.)
/etc/updatedb.conf – Config file for slocate (updatedb) used to index file locations for fast searching
/etc/xinetd.d – Contains configuration files for different inet services (rsh, ftp, imap, etc.)
/etc/X11/XF86Config – X-windows configuration file
/proc/cpuinfo – Contains cpu count and processor info
/proc/meminfo – Contains memory size, free memory, swap size, etc
/proc/mdstat – Contains raid meta device information
/proc/swaps – Contains swap information
/proc/sys/kernel/sem – Contains current kernel semaphore settings
/proc/sys/kernel/shmmax – Contains current kernel max shared memory settings
/proc/sys/kernel/shmmni – Contains current kernel shared memory identifier settings

*Use cat, less, or more to view /proc configuration info

System Information

chkconfig – Updates and queries runlevel information for system services configured in /etc/rc[0-6].d directories
chroot "directory" – Invoke a new shell, using "directory" as new root directory
dmesg – List messages displayed during boot process
kudzu – Detect and configure new/changed hardware
ldd "program" – Display shared library dependencies
lsmod – Display info about all loaded kernel modules

System Information (cont'd)

lsof – List open files
pstree -ca – Display process info in tree format
shutdown -t 60 -r time "mesg" – Initiate shutdown at "time", wait 60 secs between warning and kill signals, send "mesg" to users, then reboot after shutdown
startx – Switch from text mode to X-windows mode
strace – Trace system calls and signals, useful for debugging and troubleshooting failed system calls

File System Management

fdformat /dev/fd0H1440 – Format high density floppy
fdisk -l – List partition table for all disk devices
fdisk /dev/hda – Manage partition table for /dev/hda
hdparm -i /dev/hda – Display hard drive performance parameters; useful for tuning exercises
hdparm -i -d1 -m16 -c3 -k1 /dev/hda – Set hard drive performance parameters (dma=1, multi-sectors=16, 32 bit i/o mode=3, keep settings=1) for /dev/hda
mkbootdisk "kernel" – Make floppy boot disk (default device /dev/fd0) for "kernel", which must be listed in output of "ls /lib/modules" command
mk2efs -m 1 -j /dev/hdb5 – Make ext3 file system on partition 5 for device /dev/hdb, leave 1% free for root
mkfs.ocfs /dev/hdb1 – Create OCFS file system
mkswap /dev/hdb1 – Create swap space on /dev/hdb1
mount -t iso9660 /dev/cdrom /mnt/cdrom – Mount a cdrom device on /mnt/cdrom
mount -t vfat /dev/hda9 /mnt – Mount a Windows fat32 file system for device /dev/hda9 on /mnt
mcopy "file1" "file2" – Copy MSDOS file to/from floppy (ex: mcopy /etc/hosts a:myhost.txt)
sftp user@host – Start secure ftp session as remote "user" on "host"
swapon /dev/hdb1 – Enable swapping on /dev/hdb1
tune2fs -L /vol2 -j /dev/hda2 – Convert ext2 file system to ext3 on device /dev/hda2, set label to /vol2
tune2fs -l /dev/hda1 – List file system super block information for partition /dev/hda1
umount "filesystem" – Unmount file system

Network Information

dig "domain" – Perform DNS lookup for "domain" and display results from the name server
ifconfig -a – Display all network interfaces configured
lsof -i – Show processes using ports
netstat -a – Display network statistics for all ports
netstat -rn – Display network statistics for routing tables
tcpdump – Dump traffic on network

Package Management

rpm -qa – Query all installed packages
rpm -qil "package" – Query package name "package", show all info, list package files
rpm -ivh "package" – Install new package name "package", verbosely, show progress hash marks
rpm -uvh "package" – Upgrade new package name "package", verbosely, show progress hash marks
rpm -e "package" – Erase (remove) package
up2date – Automated install and upgrade of all or selected packages to current versions (Red Hat)

User Management

$HOME/.bash_profile – Commands executed automatically at login for user
$HOME/.bash_logout – Commands executed automatically at logout for user
chage – Change password and expiration information
chage -d0 – Force user to change password next login
chsh – Change login shell
groupadd "group" – Add new group "group"
passwd "user" – Set password for "user" (run as root)
passwd – Set new password for current user
pwconv – Create /etc/shadow from /etc/passwd
ssh user@host – Logon to remote host as "user" with secure shell protocol
ulimit -a – Display all resource limits for current user
useradd -d home_dir -g primary_group -G secondary_group "username" – Add user "username"

Backup, Restore, and File Transfer

curl "url" – Transfer data from or to a server using http, https, ftp, etc protocols
scp "user@host:file1 file2" – Copy file1 on remote host to local file2 using secure copy
tar -xzvf "tarfile" – Extract files from compressed tar file "tarfile". Similar to "gzip -dc | tar xvf -"
tar -czvf "tarfile" – Create compressed tar file of files in current directory. Similar to "tar cvf - * | gzip -dc"
unzip "zipfile" "pattern" – Extract from compressed "zipfile" files matching "pattern" into current directory. If "pattern" is omitted, extract all files
zip -r "zipfile" "pattern" – Create compressed "zipfile" from files/directories matching "pattern" recursively

Miscellaneous

dircolors – Setup terminal for color ls command
import – Screen capture tool included with ImageMagick
import -frame "filename.jpg" – Capture screen with a mouse click on the window, including window frame
info – Documentation on Linux commands and programs
opcontrol – Hardware performance profiler

Setting Kernel Parameters

Unlike legacy UNIX, with Linux you can quickly set kernel parameters without rebooting; to set typical values for Oracle, perform the following: (order is semmsl semmns semopm semmni for semaphores, max shared memory, shared memory identifiers, max file descriptors, min_port max_port for port range)

```
# echo 250 32000 100 128 > /proc/sys/kernel/sem
# echo 2147483648 >  /proc/sys/kernel/shmmax
# echo 100 >  /proc/sys/kernel/shmmni
# echo 65536 >/proc/sys/fs/file-max
# echo 1024 65000  \
>/proc/sys/net/ipv4/ip_local_port_range
```

To make the settings persistent after rebooting, add them /etc/sysctl.conf:

```
kernel.sem = 250 32000 100 128
kernel.shmmax = 2147483648
kernel.shmmni = 100
kernel.shmall = 2097152
fs.file-max = 65536
net.ipv4.ip_local_port_range = 1024 65000
```

Kernel parameters for Oracle*

Parameter	Oracle8*i*	Oracle9*i*	Oracle 10*g*
SEMMNI	100	100	128
SEMMNS	# db x 10 + (sum processes) + 2 x largest proc param	256	32000
SEMMSL	10 + largest processes param	100	250
SEMOPM	100	100	100
SEMVMX	32737	32737	32737
SHMMAX	.5 x total phys memory	.5 x total phy mem	.5 x total phy mem
SHMMIN	1	1	1
SHMMNI	100	100	4096
SHMSEG	10	10	10

**** per MetaLink 169706.1***

Setting Process limits

```
ulimit -n 65536
ulimit -u 16384
```

To make the settings persistent after rebooting, add them to /etc/security/limits.conf:

```
oracle soft nofile 65536
oracle hard nofile 65536
oracle soft nproc 16384
oracle hard nproc 16384
```

Adding Interim Swap Space

Determine file system with free space to hold extra swap space. Then, perform the following (adds 1GB swap):

```
# dd if=/dev/zero of=tempswap bs=1k count=1048576
# chmod 600 tempswap
# mkswap tempswap
# swapon tempswap
```

Remove the interim swap when it's no longer needed:

```
# swapoff tempswap; rm tempswap
```

Adding Interim /tmp Space

Determine an ext2/ext3 file system with enough space to hold required tmp space. Then, perform the following:

```
# mkdir /interim_filesystem/tmp
# chgrp root /interim_filesystem/tmp
# chmod 1777 /interim_filesystem/tmp
```

Before running the program that needs extra /tmp (like runInstaller for Oracle), perform the following:

```
# TEMP=/interim_filesystem/tmp; export TEMP
# TMPDIR=/interim_filesystem/tmp; export TMPDIR
```

Configuring an OCFS File System

Download rpm's from http://oss.oracle.com/projects/ocfs and install:

```
# rpm -ivh ocfs*.rpm
```

Next, create /etc/ocfs.conf:

```
# cat <<eof>>/etc/ocfs.conf
### ocfs test config ###
node_name = localhost.localdomain
ip_address = 10.0.0.1
ip_port = 7000
comm_voting = 1
eof
```

Create the unique identification key and load OCFS the first time (boot process runs load_ocfs automatically):

```
# ocfs_uid_gen -c
# load_ocfs
```

Make an OCFS file system (choose any *empty* partition):

```
# mkfs.ocfs -b 128 -g dba -u oracle -L "/ocfstest2" -m
/ocfstest2 /dev/hdg5
```

Mount the new OCFS file system on /ofcstest:

```
# mount -t ocfs /dev/hdg5 /ocfstest
```

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