

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:

Place the settings into /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
```

As root execute the following:

```
# sysctl -p
```

Kernel parameters for Oracle*

Parameter	Oracle8i	Oracle9i	Oracle10g
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
RMEM_DEFAULT			262144
RMEM_MAX			262144
WMEM_DEFAULT			262144
WMEM_MAX			262144
FILE-MAX			65536
IP_LOCAL_PORT_RANGE			1024 65000

* per MetaLink 169706.1

Setting Process Limits

Add settings to /etc/security/limits.conf:

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

Add settings to Oracle user's .bash_profile:

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

Troubleshooting

lsof -i ssss – Shows process using port number ssss

lsof -p pid – Show open files for process number pid

netstat -anlp – Display network statistics for all ports

tcpdump or **ethereal** – Dump traffic on network

strace -p pid – Trace system calls and signals for process number pid

nc – can send/receive network data, debug connections

Bash Shell Tweaks

Place the following into ~/.bash_profile:

```
unalias ls # revert to monochrome output
alias ll='ls -l' # revert to monochrome output
```

Common Linux Commands Pocket Guide

Download this and other pocket guides in addition to other articles from our website:

www.solutionbeacon.com

Contact:

solutions@solutionbeacon.com

Solution Beacon LLC reserves the right to revise this document at any time without obligation to notify any person of such revisions. Solution Beacon does not warrant that this document is error-free. In no event shall Solution Beacon be liable for any consequential or incidental damages, including but not limited to loss of business profits. Any other commercial product names herein are trademarks, registered trademarks, or service marks of their respective owners.



Real Solutions for the Real World.®

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/nsswitch.conf – determines whether DNS is used
/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 (shmmmax, 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/shmmmax – 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/queries runlevel information for system services configured in /etc/rc[0-6].d directories
service daemon on – start a service from /etc/init.d
chroot directory – Invoke a new shell, using “directory” as new root directory
dmesg – List recent kernel messages
kudzu – Detect and configure new/changed hardware
ldd “program” – Display shared library dependencies

System Information (cont'd)

lsmod – Display info about all loaded kernel modules
pstree -ca – Display process info in tree format
shutdown -t 60 -t 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
screen – Allows management and locking of consoles
Xvfb – Daemon used to support X11 server needed by applications tiers.

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
mkswap /dev/hdb1 – Create swap space on /dev/hdb1
mount /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
mount -o loop file.iso /mnt – Mount the cd/dvd image file.iso on /mnt
mcopy file1 file2 – Copy MSDOS file to/from floppy (ex: mcopy /etc/hosts a:myhost.txt)
stfp user@host – Start secure ftp session as remote “user” on “host”
swapon /dev/hdb1 – Enable swapping on /dev/hdb1
tune2fs -c 0 /dev/hda2 – Prevent periodic preventative fsck of filesystem /dev/hda2
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
netstat -rn – Display network statistics for routing tables
host xxx – uses DNS to resolve the name or IP address for xxx. Replaces nslookup.
route -e – check contents of Kernel IP route table

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 -Fvh package – Freshens (updates) an already installed package named “package”. Does nothing if it is not installed.
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
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
tar -czvf tarfile . – Create compressed tar file of files in current directory
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
ncftp – scriptable FTP client

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
opcontrol – Hardware performance profiler