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Linux Advanced SysAdmin Pocket guide (ver 1.2)

Disk operations
<code>/dev/sda</code> – scsi block device
fdisk [-l] – handles partitions in Linux. -e – list all available disks in Linux.
Virtual Terminal Operations
openvt -sw basg – Opens a new virtual terminal and start the command bash in it.
chvt 8 – Changes to virtual terminal 8.
deallocvt 8 – remove virtual terminal 8 (after exiting from it).
Optical Media device operations
eject /dev/cdrom – ejects the cdrom from the system.
hal-disable-polling -device \ /dev/cdrom – Disables polling of cdrom events.
hal-disable-polling \ --enable-polling /dev/cdrom – Enables polling of cdrom events.
mkisofs -O cd1.iso -J -V “My Label” \ -iso-level 3 <DIR> – Creates an iso image from the directory <DIR>.
readed dev=/dev/dvd [-clone] f=cd.img – Creates an exact duplicate of the CD. [-clone] – duplicates also sub-channel data and identical TOC.
mount -o loop -t iso9660 cd.iso \ /mnt/cdrom – Mounts the image cd.iso to /mnt/cdrom directory.
wodim [--devices]--scanbus – scans for optical media devices.
PCI/SCSI/USB device operations
Requires to install lsscsi package (yum install -y lsscsi)
lspci – shows available pci devices in the system.
lsscsi [-l] [-t] – shows the available scsi devices in the system.
-l – long list
-t – shows controller/transport info.
echo 1 > \ /sys/class/fc_host/host_num/issue_lip – rescan fcp devices.
lsusb [-v] – shows the available usb devices in the system.

[-v] – for detailed information.
Filesystem operations
fdisk -l – Shows available disks on the system.
fdisk /dev/sda – Interactively edit the partition table of disk /dev/sda. m - for help. n – for creating new partition. d – for deleting existing partition. t – for changing partition typep.
partprobe /dev/sda – Sync the partition table of /dev/sda with the current kernel.
mkfs -t ext4 /dev/sda1 – Creates ext4 partition on /dev/sda1.
e2label /dev/sda1 – shows the label of /dev/sda1.
e2label /dev/sda1 <newlabel> – Creates a new label for /dev/sda1.
findfs LABEL=<newlabel> – finds which device has the label <newlabel>.
mount /dev/sda1 /dir1 – mounts /dev/sda1 on the directory /dir1 .
mount LABEL=<newlabel> /dir1 – mounts the device that has <newlabel> on the directory /dir1 .
umount /dir1 – unmounts /dir1 from the system.
Swap operations
Virtual memory area and is combined from the RAM and a dedicated disk storage known as swap space.
swapon -s – lists summary of system's swap devices and files.
Adding SWAP file:
dd if=/dev/zero of=/root/swapfile bs=1024 count=256000 – Creates a 256MB empty contiguous file.
mkswap /root/swapfile – Converts the file into a swap file.
swapon /root/swapfile – Add the file as a active swap device.
swapon <dev file> – Add the device or file as a swap device.
swapoff <dev file> – deletes device or swap file from being a swap device.
/etc/fstab – Add an entry containing /root/swapfile to be active at boot:
/root/swapfile swap swap defaults 0 0

LVM operations
system-config-lvm – a gui for administering LVM on Linux.
PV – Physical volumes (disks)
VG – Volume groups. (Logical Set of PVs)
LV – Logical Volumes (logical slice of VG constructed from LE).
PE – Physical extents
LE – Logical Extents.
pvs – Shows available PVs configured on the system.
vgs – Shows available VGs configured on the system.
lvs – Shows available LVs configured on the system.
pvcreate /dev/sdb – Prepare /dev/sdb to be used by LVM.
vgcreate [-s 32M] <volgrname> [/dev/sdb /dev/sdc] – Creates a volume group called <volgrname> which uses /dev/sdb and /dev/sdc as Physical volumes.
-b 32M – creates LE/PE with size of 32 MB.
lvcreate -L 700M -n <lvname> <volgrname> – Creates a new logical volume called <lvname> inside <volgrname> with a size of 700MB.
mkfs -t ext4 /dev/volgrname/lvname – Creates ext4 file-system on the device - /dev/volgrname/lvname.
mount /dev/volgrname/lvname /dir1 – Mounts the file-system /dev/volgrname/lvname on /dir1 directory.
NFS operations
NFS – Network File-System.
NFS Server side
/etc/exports – configuration file for configuring shares ACLs on server side.
Typical entry: /export/tmp *(rw) /home/haim 10.0.0.(ro)
exports -vra – Tells the kernel to start to re-read /etc/exports and start to export its contents.

showmount -e server1 – lists all available shares of server1.
service nfs [status stop start] – controls NFS service operations.
NFS client side
/etc/fstab – configuration file for using nfs shares at client side.
Typical entry: server1:/export/tmp /dir1 nfs intr 0 0
showmount -e server1 – lists all available shares of server1.
mount server:/export/home/fs1 /local/fs1 – mounts the remote nfs share named server:/export/home/fs1 to a local directory named /local/fs1.
SAMBA
SAMBA – Free software re-implementation of SMB/CIFS Print and File-System sharing.
yum install samba – installs samba on the system.
SAMBA Server side
/etc/samba/mb.conf – configuration file for configuring global samba configuration and shares.
Typical global section: [global] workgroup = MYGROUP netbios name = CENT66VM1 security = share server string = Samba Server %v log file = /var/log/samba/log.%m passdb backend = tdbsam wins support = yes wins server = w.x.y.z
service smb [stop start status] – handles smb service.
service smb [stop start status] – handle nmb service.
SAMBA client side
/etc/fstab – configuration file for using smb shares at client side.
Typical entry:

<code>\\winbox\getme /mnt/win cifs user,uid=500,rw,suid,username=sushi,password=yummy 0 0</code>
mount -t cifs //10.0.0.2/Media /Win1 – Mounts the windows share /Media to /win1 directory.
smbclient //10.0.0.2/Media – Mounts the windows
Auto File-system operations
/etc/auto_master – contains all direct and indirect maps.
Direct map – map of an absolute directory path to NFS share.
Indirect map - map of an relative directory path to NFS share.
auto_master direct map configuration - /- auto_direct
auto_master indirect map configuration - /home auto_home
Direct mapping - /etc/auto_direct: /opt/CA server1:/opt/CA
Indirect mapping - /etc/auto_home: haim server1:/export/home/haim * server:/export/home/&
Auto file-system mounting and unmounting service name: autofs
Enabling the service: service autofs start
Disabling the service: service autofs stop
Refreshing the service after creating a new mapping: service autofs restart
Package operations
yum list-repos – lists the current package repositories.

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yum install [-y] <package> – install the package on the system.
[-y] – without asking yes/no
yum search <keyword> – searches for a package contains the keyword.
yum uninstall <package> – Uninstall the package from the system.
rpm -qa – lists all available packages.
rpm -qf <package> – Shows all available files in this package.
rpm -vF <file-name> – shows which package contain the file-name.
rpm -i <package-name> – Installs the package-name on the system.
rpm -e <package-name> – Removes the package-name on the system.

Services operations

service --list-all – list all available services and their status.
service <service-name> status – shows the status of the service.
service <service-name> stop – stops the service.
service <service-name> start – starts the service.
chkconfig <service-name> --list – shows current status of the service per run-levels.
chkconfig <service-name> on/off – Enables or disables the service in all run-levels.
chkconfig <--level levels> <service-name> on/off – Enables or disables the service in the specified run-levels.

User/group operations

useradd -d /home/<login> -u <UID> -g <GID> <login> – creates the user named <login> with user id <UID> and primary group id <GID>.
userdel [-r]<login> – deletes the user named <login> .
-r – also deletes user's home directory.
groupadd -g <GID> <group-name> – creates a group-name named <group-name> with specific gid value of <GID>.
groupdel <group-name> – deletes the groupname named <group-name>.

NIC operations

ethtool eth0 – shows the characteristics of eth0.
ethtool -p eth0 – causes eth0 leads to blink (use with careful as it might disconnect you from the network).
mii-tool – a deprecated command that shows the characteristics of old NICs.

Network operations

Network Manager – a gnome service for auto-configuring network operations, mainly on desktops. Network Manager should be disabled on servers.

chkconfig NetworkManager off – Disables Gnome Network Manager from running at next boot
service NetworkManager stop – Stops Gnome Network Manager from running.
ip link show – shows available links in the system.
ip link set eth0 up – Set eth0 up.
ip addr show – shows available addresses in the system.
ip addr add dev eth0 <IP> netmask <netmask> – Add a new IP address to eth0.
ip route show – shows available routing information in the system.
ip route add default via 192.168.2.1 – Adds default gateway to the system.
ip route del default – Deletes the default gateway from the system.

Bonding

/etc/sysconfig/network-scripts/ifcfg-bond0 – main configuration file for bondings using bond0.
Typical Entries:

```
DEVICE=bond0
BOOTPROTO=static
ONBOOT=yes
IPADDR=192.168.2.20
NETMASK=255.255.255.0
```

/etc/sysconfig/network-scripts/ifcfg-

eth0 – slave configuration file for bonding eth0 to bond0.

Typical Entries:

```
DEVICE=eth0
BOOTPROTO=none
ONBOOT=yes
MASTER=bond0
```

/etc/sysconfig/network-scripts/ifcfg-eth1 – slave configuration file for bonding eth1 to bond0.

Typical Entries:

```
DEVICE=eth1
BOOTPROTO=none
ONBOOT=yes
MASTER=bond0
```

/etc/modprobe.d/bond.conf – Configuration file for enabling bonding module in the kernel.
Typical entry:
alias bond0 bonding

Vlan tagging

/etc/sysconfig/network- – A configuration file for enabling VLAN tagging globally.

Typical entry:
VLAN=yes

/etc/sysconfig/network-scripts/ifcfg-eth1.101 – A configuration file for enabling eth1 with vlan tagging using vid=101.

Typical Entries:

```
DEVICE=eth1.101
BOOTPROTO=static
ONBOOT=yes
IPADDR=192.168.2.20
NETMASK=255.255.255.0
```

Security operations

getenforce – Shows the current status of SELinux mode.
setenforce <0|1> – set the current status of SELinux mode:
0 – Permissive (only log information).
1 – Enforcing (SELinux is activated).
/etc/selinux/config – SELinux main configuration file.
SELINUX=disabled
SELINUX=permissive
SELINUX=enforcing

iptables -L – shows iptables configuration.
service iptables stop/start – stops/starts iptables service.
chkconfig iptables <off/on> – disables/enables iptables service from starting at boot.