

# LINUX Admin Quick Reference

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## User Management

### Files

<a href="#">/etc/group</a> <a href="#">/etc/passwd</a> <a href="#">/etc/shadow</a>	User account information.
<a href="#">/etc/bashrc</a> <a href="#">/etc/profile</a> <a href="#">\$HOME/.bashrc</a> <a href="#">\$HOME/.bash_profile</a>	bash system wide and per user init files.
<a href="#">/etc/csh.cshrc</a> <a href="#">/etc/csh.login</a> <a href="#">\$HOME/.cshrc</a> <a href="#">\$HOME/.tcshrc</a> <a href="#">\$HOME/.login</a>	tcsh system wide and per user init files.
<a href="#">/etc/skel</a>	template files for new users.
<a href="#">/etc/default</a>	default for certain commands.
<a href="#">/etc/redhat-release</a> <a href="#">/etc/slackware-version</a>	Redhat/Slackware version info (Linux kernel version with “uname -a”)

### Commands

<a href="#">adduser</a>	script to create a new user interactively (slackware) or link to useradd (Redhat).
<a href="#">useradd</a> , <a href="#">userdel</a> , <a href="#">usermod</a>	create, delete, modify a new user or update default new user information..
<a href="#">newusers</a>	update and create new users (batch mode).
<a href="#">groupadd</a> , <a href="#">groupdel</a> , <a href="#">groupmod</a>	add, delete or modify group.
<a href="#">chage</a> , <a href="#">chfn</a> , <a href="#">chsh</a>	modify account policy (password length, expire data etc.) or finger information (full name, phone number etc.) change default login shell.
<a href="#">linux init=/bin/sh rw</a>	gain root access during boot prompt without password, can be used to fix some problems.
<a href="#">mount -w -n -o remount /</a>	

## Network Configuration

### Files

<a href="#">/etc/rc.d/rc.inet1</a> (Slackware) <a href="#">/etc/sysconfig/network-scripts/ifcfg-eth0</a> (Redhat)	IP address, Network mask, Default gateway are in these files. May edit manually to modify network parameters.
<a href="#">/etc/HOSTNAME</a>	hostname is set by “/bin/hostname” during

<a href="#">/etc/NETWORKING</a> (Slackware)	boot and the name is read from these files. May change manually.
<a href="#">/etc/sysconfig/network</a> (Redhat)	specify name server, DNS domain and search order. For Example: <a href="#">search la.asu.edu</a> <a href="#">nameserver 129.219.17.200</a>
<a href="#">etc/resolv.conf</a>	host name to IP mapping file.
<a href="#">/etc/hosts</a>	host name information look up order. Example: <a href="#">order hosts, bind</a> <a href="#">multi on</a>
<a href="#">/etc/host.conf</a>	new way to specify information source.
<a href="#">/etc/nsswitch.conf</a>	TCP/IP services and ports mapping.
<a href="#">/etc/networks</a> <a href="#">/etc/protocols</a> <a href="#">/etc/services</a>	RPC service name to their program numbers mapping.
<a href="#">/etc/rpc</a>	

### Commands

<a href="#">netconfig</a>	menu driven Ethernet setup program.
<a href="#">pppsetup</a>	setup PPP connection (Slackware). setup Ethernet during boot, for example  <a href="#">/sbin/ifconfig eth0 \${IPADDR} broadcast \${BROADCAST} netmask \${NETMASK}</a>
<a href="#">ifconfig</a>	<a href="#">/sbin/route add -net \${NETWORK} netmask \${NETMASK} eth0</a>  <a href="#">/sbin/route add default gw \${GATEWAY} netmask 0.0.0.0 metric 1</a>
<a href="#">host</a>	lookup host name or IP (similar to nslookup).
<a href="#">dnsdomainname</a>	show DNS domain name.
<a href="#">arping; arp</a>	find out Ethernet address by first arping then arp.
<a href="#">ipchains</a>	firewall and NAT (/etc/sysconfig/ipchains on Redhat)
<a href="#">iptables</a>	firewall and NAT (/etc/sysconfig/iptables on Redhat)

## Redhat files in /etc/sysconfig

### Configuration Files

<a href="#">keyboard</a>	keyboard map, e.g., KEYBOARD="/usr/lib/kdb/keytables/us.map"
<a href="#">mouse</a>	Mouse type, e.g., MOUSETYPE=Microsoft XEMU3=yes
<a href="#">network</a>	network settings, contains NETWORKING=yes

HOSTNAME=hostname.domain.com

## NFS File Sharing

### Files

<a href="#">/etc/fstab</a>	file systems mounted during boot.
<a href="#">/etc/exports</a>	NFS server export list.
<a href="#">/etc/auto.master</a>	auto mount master file.

### Commands

<a href="#">mount</a>	mount a file system or all entries in fstab.
<a href="#">exportfs</a>	export file system listed in exports
<a href="#">showmount -e hostname</a>	show file systems exported

## Printer Configuration

### Files

<a href="#">/etc/printcap</a> <a href="#">/etc/printcap.local</a>	Printer capabilities data base.
<a href="#">/etc/lpd.conf</a>	LPRng configuration file.
<a href="#">/etc/lpd.perms</a>	permissions control file for the LPRng line printer spooler
<a href="#">/etc/hosts.lpd</a>	Access control (BSD lpd).
<a href="#">/etc/hosts.equiv</a>	trusted hosts.
<a href="#">PRINTER</a>	Environment variable of default printer.
<a href="#">/dev/lp0</a>	parallel port.

### Commands

<a href="#">lpc</a> , <a href="#">lpq</a> , <a href="#">lprm</a>	line printer control program, print queue maintain
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## Sendmail

### Files

<a href="#">sendmail.cf</a> <a href="#">sendmail.mc</a>	“sendmail.cf” is the configuration file. “sendmail.mc” is a macro file which can be used to generate “sendmail.cf” by: <a href="#">m4 sendmail.mc &gt; sendmail.cf</a>
<a href="#">aliases</a>	mail aliases, must run “newaliases” after change. use :include: to include external list in a file.
<a href="#">access</a>	mail access control, FEATURE(access_db) should be set in sendmail.mc. For example, in /etc/mail/access <a href="#">cyberpromo.com REJECT</a> <a href="#">mydomain.com RELAY</a> <a href="#">spam@somewhere.com DISCARD</a>
<a href="#">/etc/mail/relax-</a>	makemap hash /etc/mail/access < /etc/mail/access list all host/domain accepted for relaying.

## domains

### Commands

<b>newaliases</b>	rebuild the data base for the mail aliases file.
<b>makemap</b>	build access database, e.g. <i>makemap hash access.db&lt;access</i>

## Useful Configuration Files

### Files

<b>httpd.conf</b>	Apache web server configuration file.
<b>smb.conf</b>	Samba server (file and print for Windows).
<b>lilo.conf</b>	LILO boot loader configuration file.
<b>syslog.conf</b>	System log daemon (syslogd) configuration.
<b>ssh_config</b> <b>ssh_d_config</b>	SSH client and server configuration files.
<b>ld.so.conf</b>	default dynamic library search path (run ldconfig).
<b>mttools.conf</b>	mttool configuration file (access DOS file).
<b>named.conf</b>	DNS name server (BIND).
<b>sysctl.conf</b>	kernel parameters by sysctl (Redhat).
<b>ntp.conf</b>	net time server.
<b>inetd.conf</b>	Internet super server.
<b>Xinetd.conf, Xinet.d directory</b>	Extended inetd configuration.
<b>proftpd.conf</b>	proftpd FTP server.
<b>amanda.conf</b>	network backup server.
<b>/etc/pine.conf</b> <b>/etc/pine.conf.fixed</b>	PINE mail client system wide settings.

## Rebuild Kernel

### Configure Kernel Parameters

<b>make config</b> <b>make menuconfig</b> <b>make xconfig</b>	Configuring the kernel with interactive, menu or X window interface.
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### Compile Kernel Source

<b>make dep</b> <b>make zImage</b> <b>make zdisk</b> <b>make zlilo</b> <b>make bzImage</b>	Building and installing a new kernel.
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### Compile Modules

<b>make modules</b> <b>make modules_install</b>	Building and installing modules.
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## Manage Modules

<b>insmod, lsmod, modinfo, modprobe, rmmod, depmod</b>	Manage loadable modules.
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## Miscellaneous

### Files

<b>/etc/shells</b>	allowed login shells
<b>/etc/ftpusers</b>	user names NOT allowed to use ftp.
<b>/etc/host.allow</b> <b>/etc/host.deny</b>	TCP wrapper host control files.
<b>/etc/sysconfig (redhat)</b>	contains system configuration files.
<b>/dev/fd0</b>	floppy drive A
<b>/etc/inittab</b> <b>/etc/init.d</b>	system run level control file.

### Commands

<b>fromdos, todos (Slackware)</b> <b>dos2unix, unix2dos (Redhat)</b>	convert text file from/to linux format.
<b>pwck, grpck</b>	verify integrity of password and group files.
<b>pwconv, pwunconv, grpconv, grpuncov</b>	convert to and from shadow passwords and groups.
<b>shadowconfig</b>	toggle shadow passwords on and off.
<b>quota, edquota, quotacheck, quotaon, quotaoff, repquota,</b>	Manage disk quota.
<b>lilo -D dos</b>	set LILO default OS (default=dos in lilo.conf)
<b>ldd</b>	find out shared library dependencies.
<b>lsuf</b>	list opened files.
<b>fuser filename</b>	show processes that using the file.
<b>ifdown</b> <b>ifup</b>	bring up/down a network interface (Redhat)
<b>sysctl</b>	configure kernel parameters (Redhat).
<b>socklist</b>	list opened socked.
<b>shutdown [-r h]</b> <b>now</b>	reboot / halt computer
<b>nmap</b>	scan a host for opened ports.

<b>crontab</b>	show or edit cron jobs.
<b>sys-unconfig</b>	unconfigure system
<b>chkconfig --list</b>	list services started at different run level.
<b>kudzu</b>	probe for new hardware (Redhat). rpm -i INSTALL a package rpm -e UNINSTALL a package rpm -q QUERY a package rpm -U UPDATE a package

<b>man cmd   col -b &gt;cmd.txt</b>	save a man page as a text file and remove control characters.
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## Configure Apache 2.0 with SSL

### mod\_ssl

- when compile apache, specify `--enable-ssl` for configure script. By default, ssl is not enabled. After compiling, use `"httpd -l"` to list the modules. "mod\_ssl" should be in them.
- generate private key with command:  
*openssl genrsa -out server.key 1024*
- generate certificate request  
*openssl req -new -key server.key -out server.csr*
- generate self-signed certificate  
*openssl x509 -req -days 60 -in server.csr -signkey server.key -out server.crt*
- modify "ssl.conf" which is included in "httpd.conf". Note, specify `"httpd -DSSL"`, otherwise, commented out `<IfDefine SSL>` in ssl.conf.

## Syslog.conf

Each line consists of a selector and an action. A selector has two parts: facilities and priorities, separated by a period (.). You may precede every priority with an equation sign ("=") to specify only this single priority and not any of the above. You may also (both is valid, too) precede the priority with an exclamation mark ("!") to ignore all that priorities, either exact this one or this and any higher priority.

### Example:

```
mail.notice /var/log/mail # log to a file
*.emerg @myhost.mydomain.org # log to remote host
```

<b>facilities</b>	auth, auth-priv, cron, daemon, kern, lpr, mail, mark, news, syslog, user, uucp, local0 - local7.
<b>priorities</b>	debug, info, notice, warning, err, crit, alert, emerg.
<b>action</b>	<b>Regular File:</b> File with full pathname beginning with "/".

**Terminal and Console:**  
Specify a tty, same with /dev/console.  
**Remote Machine:**  
@myhost.mydomain.org

# IPtables (Netfilter)

## Command Syntax

`iptables [-t <table >] <command> <chain > <parameters>`

### Save and Restore rules

`/sbin/iptables-save > /etc/sysconfig/iptables`  
`/sbin/iptables-restore < /etc/sysconfig/iptables`

### Firewall script sample

[http://tiger.la.asu.edu/iptables\\_examples.htm](http://tiger.la.asu.edu/iptables_examples.htm)

## Build-in Table

**filter** This is the default table for handling network packets. Build-in chains are:

1. **INPUT** — This chain applies to packets received via a network interface.
2. **OUTPUT** — This chain applies to packets sent out via the same network interface which received the packets.
3. **FORWARD** — This chain applies to packets received on one network interface and sent out on another.

**nat** This table used to alter packets that create a new connection. Build-in chains:

1. **PREROUTING** — This chain alters packets received via a network interface when they arrive.
2. **OUTPUT** — This chain alters locally -generated packets before they are routed via a network interface.
3. **POSTROUTING** — This chain alters packets before they are sent out via a network interface.

```
## Masquerade everything out ppp0.
iptables -t nat -A POSTROUTING -o ppp0 -j MASQUERADE
```

```
## Change source addresses to 1.2.3.4.
iptables -t nat -A POSTROUTING -o eth0 -j SNAT --to 1.2.3.4
```

**mangle** This table is used for specific types of packet alteration. Build-in chains:

1. **PREROUTING** — This chain alters packets received via a network interface before they are routed.
2. **OUTPUT** — This chain alters locally-generated packets before they are routed via a network interface.

## Commands

- flush | -F** Flush (delete) rules in the selected chain.
- policy | -P** Set default policy for a particular chain.
- list | -L** List all rules in filter table, use `[-t tablename]` to specify other tables.
- append | -A** A appends a rule to the end of the specified chain.

**-insert | -I** Inserts a rule in a chain at a particular point.

## Other commands:

(1) **--new | -N** (2) **--delete | -D** (3) **--replace | -D** (4) **--zero | -Z**  
(5) **--check | -C** (6) **delete-chain | -X** (7) **rename-chain | -E**

## Parameters

- proto | -p [!] name** protocol: by number or name, including **tcp**, **udp**, **icmp** or **all**.
- source | -s [!] addr/mask** source IP address.
- destination | -d addr/mask** destination IP address.
- in-interface | -i** incoming interface name, e.g. eth0 or ppp0.
- out-interface | -o** outgoing interface name.
- jump | -j** jump to a particular target when matching a rule. Standard options: **ACCEPT**, **DROP**, **QUEUE**, **RETURN**, **REJECT**. May jump to a user defined chain.
- fragment | -f** match second or further fragments only.

## Options for TCP and UDP protocol

- sport | --source-port** source and/or destination port. Can specify a range like 0:65535, use exclamation character (!) to NOT match ports.
- dport | destination-port**

## Options for TCP only

- syn** Match SYN packets.
- tcp-flags** Match TCP packets with specific bits set. For example, `-p tcp --tcp-flags ACK,FIN,SYN` SYN will only match TCP packets that have the SYN flag set and the ACK and FIN flags unset.

## Options for ICMP only

- icmp-type [!] type** Match specified ICMP type. Valid ICMP type can be list by `iptables -p icmp -h`

## Option for state module (-m state --state)

- ESTABLISHED** The matching packet is associated with other packets in an established connection.
- RELATED** The matching packet is starting a new connection related in some way to an existing connection.
- NEW** The matching packet is either creating a new connection or is part of a two-way connection not previously seen.
- INVALID** The matching packet cannot be tied to a known connection.

# X Window (XFree86)

## Files

To set screen resolution, in “Screen” section and Subsection “Display”, specify a mode. For example: Modes “1024x768”

To specify screen refresh rate, in “Monitor” section, specify vertical rate. For example: VertRefresh 70-120

- `/etc/X11/xinit/xinitrc` clients to run after X server started
- `$HOME/.xinitrc`
- `/etc/X11/fs/config` configure X11 font path (font server).

## Commands

- startx** start X window system.
- Xconfigurator (Redhat)** setup X server and generate XF86config.
- xfree86setup (Slackware)** **xf86config** XFree86 auto configuration (Plug-n-Play), generate a template named “XF86Config.new”
- XFree86 -configure** stop X server (on some system Ctrl+Alt+ESC).
- Ctrl+Alt+Del** F1 temporary switch to text mode, F7 switch back to graphic mode.
- Ctrl+Alt+F1** detect graphic hardware.
- Ctrl+Alt+F7** adjust X server origin and size.
- SuperProbe** modifying key map and mouse button map.
- xvidtune** server access control program for X.
- xmodmap** root window parameter setting utility for X.
- xhost** server font list displayer for X.
- xsetroot** ser preference utility for X.
- xlsfonts**
- xset**

## XF86Config

XFree86 uses a configuration file called **XF86Config** for its initial setup. This file is normally located in "/etc/X11" or "/etc" directory. The XF86Config file is composed of a number of sections which may be present in any order. Each section has the form:

```
Section "SectionName"  
SectionEntry  
...  
EndSection
```

The graphics boards are described in the **Device** sections, and the monitors are described in the **Monitor** sections. They are bound together by a **Screen** section. Keyboard and Mouse are described in **InputDevice** sections, although *Keyboard* and *Pointer* are still recognized. **ServerLayout** section is at the highest level and bind together the InputDevice and Screen sections.

A special keyword called **Option** may be used to provide free-form data to various components of the server. The Option keyword takes either one or two string arguments. The first is the option name, and the optional second argument is the option value. All Option values must be enclosed in quotes.

## File Section

### FontPath "path"

Font path elements may be either absolute directory paths, or a font server identifier

### RGBPath "path"

Sets the path name for the RGB color database.

### ModulePath "path"

Allows you to set up multiple directories to use for storing modules loaded by the XFree86 server.

#### EXAMPLE

```
Section "Files"  
RgbPath "/usr/X11R6/lib/X11/rgb"  
FontPath "unix:/7100"  
EndSection
```

## Serverflags Section

### Option "DontZap" "boolean"

Disable use **Ctrl+Alt+Backspace** to terminate X server.

### Option "DontZoom" "boolean"

Disable use **Ctrl+Alt+Keypad +** and **Ctrl+Alt+Keypad -** to switch video mode.

### Option "BlankTime" "time"

Sets the inactivity timeout for the blanking phase of the screensaver in minutes. Default 10 min.

### Option "StandbyTime" "time"

Sets the inactivity timeout for the "standby" phase of DPMS mode in minutes. Default 20 min.

### Option "SuspendTime" "time"

Sets the inactivity timeout for the "suspend" phase of DPMS mode, default 30 min.

### Option "OffTime" "time"

Sets the inactivity timeout for the "off" phase of DPMS mode, default 40 min.

### Option "DefaultServerLayout" "layout\_id"

Specify the default ServerLayout section to use. Default is the first ServerLayout section.

#### EXAMPLE

```
Section "ServerFlags"  
Option "BlankTime" "99999"  
Option "StandbyTime" "99999"  
Option "SuspendTime" "99999"  
Option "OffTime" "99999"  
EndSection
```

## Module Section

### Load "modulename"

Load a module. The module name given should be the module's standard name, not the module file name.

#### EXAMPLE

```
Section "Module"  
Load "extmod"  
Load "type1"  
EndSection
```

## InputDevice Section

There are normally at least two InputDevice sections, one for Keyboard and one for Mouse.

### Identifier

Specify a unique name for this input device.

### Driver r

Specify the name of the driver to use for this input device..

### Option "CorePointer"

This input device is installed as the primary pointer device.

### Option "CoreKeyboard"

This input device is the primary Keyboard.

#### EXAMPLE

```
Section "InputDevice"  
Identifier "Generic Keyboard"  
Driver "keyboard"  
Option "AutoRepeat" "500 30"  
Option "CoreKeyboard"  
EndSection
```

```
Section "InputDevice"  
Identifier "PS2 Mouse"  
Driver "mouse"  
Option "CorePointer"  
Option "Device" "/dev/mouse"  
Option "Protocol" "PS/2"  
Option "Emulate3Buttons" "true"  
EndSection
```

## Device Section

Specifies information about the video card used by the system. You must have at least one Device section in your configuration file. The active device is in ServerLayout->Screen.

### Identifier

Specify a unique name for this graphics card.

### Driver

Specify the name of the driver to use for this graphics card.

#### EXAMPLE

```
Section "Device"  
Identifier "ATI Mach64"  
VendorName "ATI MACH64"  
VideoRam 2048  
EndSection
```

## Monitor Section

Monitor section describes a monitor. There must be at least one monitor section and the active one is used in ServerLayout ->Screen.

### Identifier

Specify a unique name for this monitor.

### HorizSync horizsync-range

Gives the range(s) of horizontal sync frequencies of this monitor in kHz.

### VertRefresh vertrefresh-range

Gives the range(s) of vertical sync frequencies of this monitor in Hz.

#### EXAMPLE

```
Section "Monitor"  
Identifier "Generic Monitor "  
VendorName "Monitor Vendor"  
ModelName "Monitor Model"  
HorizSync 31.5-56.6  
VertRefresh 40-70  
EndSection
```

## Screen Section

Screen Section binds Device and Monitor sections. There must be at least one Screen Section. The active one is in ServerLayout section.

### Identifier

Specify an unique name for this Screen Section.

### Device "device-id"

This specifies the Identifier of **Device section** to be used for this screen.

### Monitor "monitor-id"

This specifies the Identifier of **Monitor section** to be used for this screen.

### DefaultDepth depth

Default color depth, like 8, 16 or 24.

### Option "Accel"

Enables XAA (X Acceleration Architecture), default is ON.

## DISPLAY SUBSECTION

Each Screen section must have at least one Display Subsection which matches the depth values in DefaultDepth.

### Depth depth

This entry specifies what color depth of this Display Subsection.

### Virtual xdim ydim

Specifies the virtual screen resolution to be used.

### ViewPort x0 y0

Sets the upper left corner of the initial display.

### Modes "mode-name" ...

Secifies the list of video modes to use. Each mode-name specified must be in double quotes. They must correspond to those specified in the appropriate Monitor section (including implicitly referenced built -in ESA standard modes). mode can be switched with Ctrl+Alt+Keypad-Plus or Ctrl+Alt+Keypad-Minus.

### EXAMPLE

```
Section "Screen"
    Identifier "My Screen"
    Device    "ATI Mach64"
    Monitor   "Generic Monitor"
    DefaultDepth 16
    SubSection "Display"
        Depth    16
        Modes    "1024x768" "800x600" "640x480"
    EndSubSection
    SubSection "Display"
        Depth    24
        Modes    "1024x768" "800x600" "640x480"
    EndSubSection
EndSection
```

### Identifier

An unique name for this ServerLayout Section.

### Screen screen-num "screen-id" position-information

The screen-id field is mandatory, and specifies the Screen section being referenced.

### InputDevice "idevid" "option" ...

Normally at least two are required, one for the core pointer and the other for the primary keyboard devices.

### EXAMPLE

```
Section "ServerLayout"
    Identifier    "Default Layout"
    Screen        "My Screen"
    InputDevice   "Generic Keyboard"
    InputDevice   "PS/2 Mouse"
EndSection
```

## ServerLayout Section

ServerLayout section binds a Screen section and one or more InputSection to form a complete configuration. The active ServerLayout section is specified in ServerFlags. If not, the first ServerLayout section is active. If no ServerLayout sections are present, the single active screen and two active (core) input devices are selected as described in the relevant sections.