Index

SYMBOLS

& (ampersand)
  && (double ampersand) number comparison operators, 399
  shell background processing, 377
*** (asterisks), 146**
  * operator (Python), 794
  /etc/passwd files, 336
  shell pattern-matching searches, 374
  wildcards, 662
\ (backslashes), 390
  \' escape sequence, 816
  \" escape sequence, 816
  \\ escape sequence, 816
` (backticks), replacing strings with output, 390
{ } (braces), 797
[ ] (brackets)
  [ ] operators, 812
  [global] section (/etc/samba/smb.conf files), 598-599
  [homes] section (/etc/samba/smb.conf files), 598-600
  [printers] section (/etc/samba/smb.conf files), 598-601
  [programs] section (/etc/samba/smb.conf files), 598-599
: (colons), as slices, 797
  copying lists in Python, 796
$ (dollar sign)
  $* built-in variable, 387
  $# built-in variable, 387
  $? built-in variable, 387
  $0 built-in variable, 387

- **= (equal sign), 814**
  - == (double equal sign) string comparison operators, 396
  - string expression operators, 391
- **! (exclamation point), 333**
  - != (is not equal) symbol, 575
    - string comparison operators, 396
    - string expression operators, 391
  - bangs, 333
  - logical comparison operators, 395
  - number comparison operators, 399
- **< (greater than sign)**
  - < operators, 397
  - << (double greater than) here operator, 376
  - <= (greater than or equal) operators, 397
- **> (less than sign)**
  - > operators, 397
  - => (less than or equal) operators, 397
- **| (pipes), 373, 968**
  - | (bar) operators, 376
  - || (double pipe)
    - number comparison operators, 399
    - string concatenation function, 574
- **+ (plus sign) operators (Python), 794-795**
- **# (pound sign)**
  - # run-parts lines (/etc/crontab files), 370
  - #! (she-bangs), 380-381, 769
- **? (question mark), shell pattern-matching searches, 375**
- **’ (quotes)**
  - ” (double quotes), resolving variables in shell strings with embedded spaces, 388-389
  - maintaining shell strings with unexpanded variables, 389
- **/ (slashes)**
  - /bin directory, 123
  - /bin/sh files, user login process, 347
  - /boot directory, 124
  - /configs subdirectory (/usr/src/linux-2.6 directory), 975
  - /dev directory, 124
  - /dev/modem, 98
  - /dev/null devices, 969
  - /dev/zero devices, 969
  - /etc directory, 85, 124-126, 128
  - /etc/at.allow files, 369
  - /etc/at.deny files, 369
  - /etc/crontab files, 370
  - /etc/cups directory, 300
  - /etc/exports files, 595
  - /etc/fstab files
    - implementing disk quotas, 348
    - mounting file systems, 955-957
    - options of, 594, 955-956
  - /etc/group files, 329-330
  - /etc/host.conf files, 478, 703
  - /etc/hosts files, 456, 476-477, 704-705
  - /etc/inittab files, 177, 356
  - /etc/modprobe.conf files, 85, 469-470, 978-979
  - /etc/nologin files, user login process, 346
  - /etc/nsswitch.conf files, 477-478, 703-704
  - /etc/passwd files, 325-327
    - GECO field, 336
    - list of, 337-338
    - system users, 337
    - user login process, 347
  - /etc/pcmcia files, 86
  - /etc/ppp/ppp-off files, 495
  - /etc/ppp/ppp-on files, 495
  - /etc/ppp/ppp-on-dialer files, 495
  - /etc/printcap files, 300-301
  - /etc/rc.d/init.d/httpd script files, starting/stopping Apache Web server, 531-532
  - /etc/rc.d/rc.sysinit files, 354
  - /etc/resolv.conf files, 478, 705
  - /etc/samba/smb.conf files, 598
    - [global] section, 599
    - [homes] section, 599-600
    - [printers] section, 600-601
  - /etc/services files, 477

/etc/shadow files, 338-339, 347
/etc/skel files, 333, 347
/etc/squid/squid.conf configuration files, 693
/etc/sudoers files, 343-344
/etc/sysconfig/apmd files, 85
/etc/sysconfig/clock files, 85
/etc/sysconfig/hwconf files, 85
/etc/sysconfig/irda files, 85
/etc/sysconfig/keyboard files, 85
/etc/sysconfig/mouse files, 85
/etc/sysconfig/network files, 478-479
/etc/syslog.conf files, controlling system logging, 386
/etc/usertty files, user login process, 346
/etc/vsftpd.banned emails configuration files, 644
/etc/vsftpd.chroot list configuration files, 644
/etc/vsftpd.user list configuration files, 644
/etc/xen files, 520
/etc/xinetd.conf files, 363-364
/home directory, 47, 129
/opt directory, Linux file system hosting, 48
/proc directory, 129-130
/sbin directory, 123
/sbin/ifconfig, 472-474
/sbin/netstat, 475-476
/sbin/route, 474-475
/tmp directory, 48, 131
/usr directory, 131
  Linux file system hosting, 48
  subdirectories list, 167-168
/usr/bin directory, 167
/usr/include directory, 167
/usr/lib directory, 167
/usr/lib/modules directory, 168
/usr/lib/X11 directory, 168
/usr/sbin/ftpshut files, scheduling FTP server downtime, 664-665
/usr/sbin/smbd command. *See* smbd daemon, starting
/usr/share/doc directory, software package documentation, 139-140
/usr/src/linux-2.6 directory
  /configs subdirectory, 975
  arch directory, 976
  Documentation directory, 975
  kernel source code, 976
  kernel testing programs, 976
  scripts directory, 976
  sound card documentation, 271
/usr/src/linux-2.6/configs directory, 985
/usr/X11/man directory, 168
/var directory, 48, 131
/var/log/vsftpd.log configuration files, 644
/var/log/wtmp files, monitoring user logins/logouts, 335
/var/log/xferlog files
  fields, list of, 666-667
  FTP servers, viewing server transaction logs, 666-667
/var/spool/cron directories, 371
~ (tilde), 145

NUMBERS

00-INDEX files, 975
10BASE-T, 464
64-bit Fedora, 22
100BASE-T, 464-465
1000BASE-T, 465

A

- **-a logical comparison operators, 395**
- **a2p command, 786**
- **a2ps command, 303**
- **AbiWord (GNOME Office), 252-253**
- **abiword command, 259**
- **ac command, 335, 349**
- **accept command, 303, 311, 622**
- **access control directives (ftpaccess configuration file), Wu-FTPd server configuration**
  - anonymous user access, limiting, 647
  - classes
    - defining user classes, 648
    - restricting number of users in, 649
  - invalid password entries, limiting number of, 650
  - permissions
    - limiting individual ID-based permissions, 649
    - restricting Group ID-based permissions, 649
  - servers, blocking host access, 648
- **access permissions (files), changing via chmod shell command, 905**
- **access points, wireless network security, 877**
- **accounts**
  - Fetchmail, 682-684
  - root accounts
    - creating, 74
    - remote server security, 512
  - user accounts
    - adding users, 334-335
    - chgrp command, 328
    - chmod command, 328
    - chown command, 328
    - command-line tools, 332-333, 349-350
    - disk quotas, 348-349
    - /etc/passwd files, 325
    - /etc/skel files, 333
    - Fetchmail, 682-684
    - file ownership, 326
    - file permissions, 327-328
    - GIDs (group IDs), 327
    - granting system administrator privileges, 341-346
    - locking users out of, 333
    - login process, overview of, 346
    - monitoring user activity, 335-336
    - MySQL, adding to, 580
    - PAM (Pluggable Authentication Modules), 339-340
    - passwords, 336-341
    - regular users, 326
    - root users, 326
    - standard users, 327
    - stereotypes, 328
    - super-users, 326
    - system users, 327
    - UIDs (User IDs), 327, 341-343
    - usernames, 335
    - viewing, 326
    - websites, 350
- **ACID (Atomicity Consistency Isolation Durability), database compliance comparisons, 577**
- **ACL (access control list), 693-697, 734-735, 937**
- **actions (PHP loops), 824**
- **active files (INN), 760-761**
- **ad blocking via caching nameservers, 714**
- **Add a New Print Queue configuration dialog (system-config-printer tool), 306**
- **add-on prefixes/postfixes, 659**
- **addresses**
  - address-based virtual hosts, 551
  - broadcasting, 463
  - IP addresses
    - dotted quad IP addresses, 701
    - IP masquerading, 460
    - limitations, 459-460
    - netmasks, 459, 462-463
    - network classes, 458-459
    - Squid proxy server, 698

  - multicasting, 463
  - unicast, 463

adduser command, user management, 333-334

administration tools. *See* LDAP

Administrator Mode button (kdm), 179

administrator privileges, granting to users. *See also* DBAs; super-user accounts
  - restricted shells, 346
  - root privileges, granting on occasion, 343-345
  - UIDs (user IDs), temporarily changing, 341-343

Adobe Photoshop, 286

Advanced Linux Sound Architecture (ALSA). *See* ALSA (Advanced Linux Sound Architecture)

Advanced Power Management (APM). *See* APM (Advanced Power Management)

afio backup software, 439

alias command, 657-658

aliases
  - myenv shell script, 378
  - Sendmail, 677-678

all-in-one (print/fax/scan) devices, troubleshooting, 621

allow directive (Apache Web server), 541-542

AllowOverrides directive (Apache Web server), 540-541

ALSA (Advanced Linux Sound Architecture), 96, 271

alsamixer command, 96, 271, 282

Amanda backup application, 438

amd (automount daemon), mounting file systems, 958

amdump command, 453

American Registry for Internet Numbers, 458

ampersand (&)
  - && (double ampersand) number comparison operators, 399
  - shell background processing, 377

AMTP email protocol, 214

Anaconda installer, 18, 63

AND statements (SQL), 575

anon mkdir write enable setting (vstfpd server anonymous access control), 643

anon other write enable setting (vstfpd server anonymous access control), 643

anon upload enable setting (vstfpd server anonymous access control), 643

anon world readable only setting (vstfpd server anonymous access control), 643

anonymous access control (vsftpd server), 643

anonymous enable setting (vstfpd server anonymous access control), 643

anonymous FTP servers, 636
  - authenticated servers versus, 637
  - configuring, 646

AOL (America Online), 491

Apache Software Foundation, 524

Apache Web server
  - development of, 524
  - documentation websites, 524
  - downloading, 525-526
  - dynamic content
    - CGI, 555-556
    - flow control, 561
    - PHP, 555
    - SSI, 556
  - file systems, 542
    - access control, 541, 545
    - authentication, 543-544
  - graphic interface configuration, 561-564
  - installing, 525-529
  - Internet security, 541
  - logging, 553-554
  - mod_access module, 546
  - mod_alias module, 546
  - mod_asis module, 546
  - mod_auth module, 547
  - mod_auth_anon module, 547
  - mod_auth_dbm module, 547

  - mod_auth_digest module, 547
  - mod_autoindex module, 548
  - mod_cgi module, 548
  - mod_dir module, 548
  - mod_env module, 548
  - mod_expires module, 548
  - mod_headers module, 548
  - mod_include module, 549
  - mod_info module, 549
  - mod_log_config module, 549
  - mod_mime module, 549
  - mod_mime_magic module, 549
  - mod_negotiation module, 549
  - mod_proxy module, 549
  - mod_rewrite module, 549
  - mod_setenvif module, 550
  - mod_sll module, 550
  - mod_speling module, 550
  - mod_status module, 550
  - mod_unique_id module, 550
  - mod_userdir module, 550
  - mod_usertrack module, 550
  - mod_vhost_alias module, 550
- optimizing, 891-892
- quick start guide, 529-530
- runtime configuration, 535
  - .htaccess files, 539-541
  - httpd.conf configuration files, 536-538
  - MPM, 538-539
- security report websites, 526
- source code, building, 527-528
- starting/stopping
  - chkconfig command (Red Hat), 533-534
  - /etc/rc.d/init.d/httpd script, 531-532
  - manually starting, 530-531
  - quick start guide, 529-530
  - service command (Red Hat), 533
  - system-config-services client (Red Hat), 534
- upgrading, file locations, 527
- usage statistics, 523
- version information, 525
- virtual hosting, 551-553
- websites, 566

apachectl command, 565

APM (Advanced Power Management), 102-104

apm command, 103, 116

apmd files, 85

apmsleep command, 103

application development (Fedora deployment plans), 31

Application Output window (Mono), 861

apropos command, 138, 145

ar command, 857

arch directory (/usr/src/linux-2.6 directory), 976

args, Mono, 863-864

ark backup tool, 435-437

ark command, 453

ARPANet, Internet development, 210

arrays, 812-813
- data types, 811
- functions
  - array_keys(), 830
  - array_unique(), 830
  - array_values(), 830
  - arsort(), 831
  - asort(), 830-831
  - extract(), 831
  - krsort(), 831
  - ksort(), 830-831
  - shuffle(), 830
- Perl, 770-771

articles (newgroups), formats of, 225

as command, 857

ascii command, 626

ash shell, 372

ash.static shell, 372

assigning
  permissions, 152, 639
  values to
    shell script variables, 382
    strings, Python, 792
asterisks (*), 146
  * operator (Python), 794
  /etc/passwd files, 336
  shell pattern-matching searches, 374
  wildcards, 662
at command, scheduling tasks, 367-369
ATAPI (AT Attachment Packet Interface), 109
atime (files), disabling for file system optimization, 889-890
atomicity (ACID), database compliance comparisons, 577
atq command, viewing batch job numbers, 368-369
atrm command, deleting batch jobs, 369
Audio Format FAQ, 272
audio. *See* sound
authenticated FTP servers, 636-637
authentication
  Apache Web server file systems, 542-544
  BIND (Berkeley Internet Name Domain), 716
  PAM (Pluggable Authentication Modules), 339-340
AuthGroupFile directive (Apache Web server), 544
AuthName directive (Apache Web server), 544
authoritative nameservers, 707-708
AuthType directive (Apache Web server), 544
AuthUserFile directive (Apache Web server), 544
autoconf command, 857
autoconf utility (C/C++ programming), 849
autofs, NFS client configuration, 596
autohacking, 874
automating tasks
  scheduling tasks
    at command, 367-369
    batch command, 368-369
    cron daemon, 369-372
  shell scripts, 384-386
    #! (shebang lines), 380-381
    built-in variables, 382
    built-in variables, viewing, 387
    commands as, 377
    environment variables, 382
    executing, 379
    positional parameters, 383-384
    reasons for using, 377
    special characters list, 387-388
    storing for system-wide access, 380
    testing, 386
    trojan scripts, 380
    user variables, 382
    variables, assigning/accessing values, 382-383
    writing, 378
  shells
    background processing, 377
    backslashes (\ ) as escape characters, 390
    backticks (`), replacing strings with output, 390
    changing, 380
    Fedora shells list, 372-373
    input/output redirection, 373-376
    job-control commands, 373-374
    maintaining shell strings with unexpanded variables, 389
    man pages, 373
    pattern-matching, 373-375
    pipes (|), 373, 376
    positional parameters, 383-384
    resolving variables in strings with embedded spaces, 388-389
    shell command line, 373-377, 383-384

  system services
    changing runlevels, 364
    controlling at boot, 360-363
    manually starting/stopping, 366
    operation at bootup, 352-360
    running through xinetd daemon, 363-364
    troubleshooting runlevels, 365-366
  websites, 410-411
autoresponders (email), 687
.avi file format, 278
Ax, shell pattern-matching searches, 375
Axis Linux-based cameras website, 287

B

background processing, 377
backreferencing, 837
backslashes (\ ), 390
  \’ escape sequence, 816
  \” escape sequence, 816
  \\ escape sequence, 816
backticks (`), replacing strings with output, 390
backups, 423
  as security, 878
  configuration files, 157, 424
  consultants, 425
  data loss, reasons for, 424
  dd command, 437
  floppy disks, 437
  frequency of, determining, 425-426
  FTP configuration files, 646
  full backups
    incremental backups with, 429
    tar command-line backup software, 433
  hardware
    CD-RW drives, 431
    FireWire (IEEE-1394) drives, 431
    NAS, 431-432
    solid-state drives, 430
    tape drives, 432
    USB drives, 430-431
    Zip drives, 430
  incremental backups
    full backup strategies with, 428-429
    tar command-line backup software, 433
  kernels, 985
  levels of, 428
  MBR, 448
  needs assessments, 425-426
  references, 453-454
  resources, availability of, 425
  restoring files from, tar command-line backup software, 434-435
  software
    afio, 439
    Amanda backup application, 438
    ark, 435, 437
    cdbackup, 439
    File Roller, 435-436
    flexbackup, 439
    free software websites, 439
    kdat, 435
    tar, 433-435
  sound practices, 426
  strategies
    choosing, 429
    evaluating, 427
    full strategies, 428-429
    home user strategies, 427
    inheriting, 427
    large enterprise strategies, 427
    mirroring data, 429
    principles of, 426
    RAID arrays, 429
    simple strategies, 428
    small enterprise strategies, 427
    small office strategies, 427
  xorg.conf files, 96

badblocks command, file system optimization, 889

Bagwell, Chris, 272

balsa command, 688

Balsa email client (GNOME Office), 217, 253

bangs (!), 333

banners
- display banners, 654
- prelogin banners, 650-651

bar operators (|), 376

Base (OpenOffice.org), 242

bash (Bourne Again Shell), 141, 372
- comparison of expression
  - file comparisons, 394-395
  - logical comparisons, 395-396
  - number comparisons, 392-394
  - string comparisons, 391-392
- test command
  - file comparisons, 394-395
  - logical comparisons, 395-396
  - number comparisons, 392-394
  - string comparisons, 391-392

batch command, scheduling tasks, 367-369

batch password changes, 341

Beagle, Mono, 865-867

BeagleTest, MonoDevelop, 865

beep codes, 353

Behlendorf, Brian, Apache Web server development, 524

Berkeley Internet Name Domain. ***See*** **BIND**

beta releases, testing, 25

biff command, 688

bin command, 626

binary patching, 516

BIND (Berkeley Internet Name Domain)
- authentication, 716
- installing, 715-716
- logging, 722-723
- named nameserver daemon, running, 724-725
- named.conf files, 717-719
- resolver configuration, 723-724
- rndc.conf files, 717
- upgrading, 715
- versions of, 715
- zone files, 719-722

BIOS (Basic Input Output System)
- beep codes, 353
- boot loading process, initiating, 352
- Fedora installation, 45
- hard disks/drives
  - detection, 959
  - optimization, 886

blade servers, 515

block devices, managing files for
- mknod command, 969
- naming conventions, 969
- overview of, 967-968

blocks (file system structure), 936
- redundant file system descriptors, 937
- size of, 938
- superblocks, 937

Bluecurve desktop theme (Red Hat), 166

.bmp graphics file format, 294

boolean data types, 811

boot process
- boot loaders
  - BootMagic, 353
  - CD, 353
  - choosing, 56-57, 68
  - configuring, 69-70
  - GRUB (Grand Unified Boot Loaders), 56, 353, 358-359, 450
  - IDE disks, 946
  - installing, 56, 352-353
  - LILO, 353
  - passwords, 69, 877
- Fedora rescue disc, 449-450
- floppy disks, 450
- initiating, 353
- prompt options, 61-62
- Recovery Facility (installation disc), 451-452

- system services, controlling at, 360-363
- times, changing, 78

boot.iso boot images, 58

BootMagic, 353

Bourne Again Shell (bash). *See* bash (Bourne Again Shell)

braces ({ }), 797

brackets ([ ])
- [ ] operators, 812
- [global] section (/etc/samba/smb.conf files), 598-599
- [homes] section (/etc/samba/smb.conf files), 598-600
- [printers] section (/etc/samba/smb.conf files), 598-601
- [programs] section (/etc/samba/smb.conf files), 598-599

break keyword (Python), controlling loops, 800

break statements, 409, 822-823

bridges, 468, 880

broadcasting, 463

browsers. *See* web browsers

brute-forcing, 511

Bsdftpd-ssl servers, 638

Bt series video chipsets (Brooktree), 275-276

built-in variables (shell scripts), 382, 387

bunzip2 command, 146

burning
- CDs, 263-264, 267-269
- DVDs, 265-269

business-related features, overview of, 20-21

BusyBox, system rescue, 452

button assignment (mouse devices), 133

bye command, 627

bzDisk directive, kernel compilation, 986

bzImage directive, kernel compilation, 986

bzip2 command, 146

bzip2 utility, 982

C

C programming language
- autoconf utility, 849
- books about, 857
- comments, 845
- constants, 846
- CVS, 849-850
- gcc, compilation process, 852
- gdb tool, 851-852
- gprof command, 851
- identifiers, 845
- keywords, 846, 850
- make command, 846-848
- overview of, 843-844
- programming
  - example of, 852-853
  - process of, 845
  - starting, 844-845
- RCS, 849-850
- references, 858
- splint command, 850-851
- syntax notation, 846
- syntax of, 845-846

C++ programming language
- autoconf utility, 849
- books about, 857
- comments, 845
- constants, 846
- CVS, 849-850
- gdb tool, 851-852
- GNU C++ compiler, 852
- gprof command, 851
- identifiers, 845
- keywords, 846, 850
- make command, 846-848
- overview of, 844
- programming, 844-845
- RCS, 849-850
- references, 858
- splint command, 850-851
- syntax of, 845-846

cable
  fiber optic, 467
  UTP (unshielded twisted pair), 464-467
caches
  local caches, 708
  nameservers, 713-714
Calc (OpenOffice.org), 241, 247-248
  spreadsheet formatting, 249-250
  summarizing data with, 250-252
cameras
  digital
    F-Spot photo-management application, 290
    gThumb, 289
    handheld cameras, 288-289
  parallel port cameras, documentation, 288
  surveillance, 287
  webcams, 287-288
cancel command, 303, 311, 622
capturing screen images, 296-297
cardctl command, 109, 116
case statements, 407-408
case-sensitive functions, 827
cat command, 129, 145
cat shell command, 902-903
Category 1 UTP cables, 466
Category 2 UTP cables, 466
Category 3 UTP cables, 466
Category 4 UTP cables, 466
Category 5 UTP cables, 466
Category 6 UTP cables, 467
catlsusb command, 293
cd command, 144
CD drives
  CD-RW drives, 431
  configuring, 109
    drive assignments, checking, 110-111
    FireWire CD drives, initializing, 111-114
cd shell command, 903-905
CD writers, installing, 262
CD-ROM
  Fedora installation, 44, 56-58
  file systems, 945, 956
  installation media, testing via installer, 18
cdbackup backup software, 439
cdda2wav command, 116, 282
cdlabelgen command, 282
cdp command, 282
cdparanoia command, 116, 282
cdrdao command, DAO CD-ROM creation, 114
cdrecord command, 58, 112, 116, 264, 282
cdrecord—scanbus command, 262-263
CDs
  boot loading process, 353
  burning, 263-264, 267-269
  CD writers, installing, 262
  erasing, 264
  informational websites, 267
  lun (logical unit number), 263
  multi-session CDs, 264
  overburning, 264
  storage capacity, 264
  uses for, 262
Cedega, 314, 321-322
cellular networking, 488-489
certification course websites, 1002
cervisia command, 857
CGI (Common Gateway Interfaces), Apache Web server dynamic content, 555-556
.cgm graphics file format, 294
change command, 349
changing
  directories via cd shell command, 903-905
  file access permissions via chmod shell command, 905
  kernel symbolic links, 982
  runlevels, 364
  shells, 380
  user information via chfn command, 137

character devices, managing files for, 967-969
chats (Internet)
  IRC clients
    cursing website, 235
    etiquette, 235
    IRCd servers, 236
    using as root users, 234
    X-Chat, 234
  Mozilla Mail, 219
chattr command
  file attributes, viewing, 937
  file system optimization, 890
  immutable files, 937
chfn (change finger information) command, 137, 155, 349
chgrp command, 349
  file/directory permissions, changing, 328
  group management, 331
chkconfig command, 116, 360-361, 367
  Apache Web server, starting/stopping, 533-534
  mouse configurations, 94
chmod command, 153-154, 328, 349, 603, 905
chown command, 328, 349
chpasswd command, 341, 349
chroot (UNIX), DNS security, 733
chroot command, system rescue, 452
chsh command, 141, 333, 349, 410
Class A networks, 458
Class B networks, 459
Class C networks, 459
classes, Python
  defining in, 801
  inheritance, 804-806
  instances, creating in, 802
  methods in, 801
  object variables in, 802
cleanfeed package, 763
CLI (command line interpreter)
  basic commands list, 901-902
  cat command, 902-903
  cd command, 903-905
  chmod command, 905
  commands, combining, 920-922
  cp command, 905
  du command, 906-907
  find command, 907-909
  grep command, 909-910
  less command, 910-912
  ln command, 912-913
  locate command, 914
  ls command, 914-916
  man command, 916
  mkdir command, 916-917
  mv command, 917
  ps command, 917
  reasons for using, 900-901
  rm command, 918
  screen command, 922-924
  tail command, 918
  top command, 919-920
  which command, 920
clients. *See also* specific clients
  client/server database model, 568
  gdmsetup, 178
  kcontrol, 179
  NFS server configuration, 596-597
  switchdesk, 182-183
  terminal clients, 168
  X Window System, 165
clock files, 85
close command, 626
CN (common names), 742, 745
Coda network file system, 939
colons (:), as slices, 796-797
column types (SQL), 571
column-level privileges (MySQL), 580
combining commands, 920-922
command-line
  basic commands list, 901-902
  books about, 924
  cat command, 902-903
  cd command, 903-905

- chmod command, 905
- commands, combining, 920-922
- cp command, 905
- database clients, 586
- du command, 906-907
- find command, 907-909
- grep command, 909-910
- less command, 910-912
- ln command, 912-913
- locate command, 914
- ls command, 914-916
- man command, 916
- mkdir command, 916-917
- mv command, 917
- processing, Perl coding example, 785
- programming, Python, 801-806
- ps command, 917
- reasons for using, 900-901
- references, 924
- rm command, 918
- screen command, 922-924
- scripting, Python. *See* individual entry command-line scripting, Python
- tail command, 918
- top command, 919-920
- which command, 920

command-line interpreter. *See* CLI

command-line scripting, Python
- conditional statements, conditional checks, 798
- dictionaries, 797
- functions, defining, 800-801
- installing, 789
- interactive interpreter, 790
- lists
  - built-in methods, 796
  - copying, 796
  - mutability, 795
  - nested lists, 795
- loops
  - blocks, 799
  - break keyword, 800
  - continue keyword, 800
  - for loops, 798-799
  - infinite loops, 799
  - multiline loops, 799
  - while loops, 799
- number-handling, 791
  - floating-point values, 791
  - integers, 791
  - large numbers, 792
  - number type conversions, 792
  - numeric operators, 791
- operator overloading, 795
- script execution, 790
- strings
  - assigning value to, 792
  - built-in methods, 794
  - concatenating, 794
  - immutable sequences, 792
  - indexing, 793
  - repeating, 794
  - unofficial scripts/add-ons websites, 807

commands. *See also* specific commands
- combining, 920-922
- copying files, 442
- mknod, 969
- printing
  - commands list, 303-304
  - location of, 920
- shell scripts, writing, 410
- startx, 180-181
- tune2fs, 965
- Xorg, 188

comments in
- C/C++, 845
- PHP, 815
- shell scripts, 378

commercial support websites, 1002-1003

common log format (Apache Web server), 553

common names (CN), 742, 745

Common UNIX Printing System. *See* CUPS

CommuniGate Pro, 688
comparison of expressions, 390
  pdksh shells versus bash shells
    file comparisons, 394-395
    logical comparisons, 395-396
    number comparisons, 392, 394
    string comparisons, 391-392
  tcsh shell
    file comparisons, 398-399
    logical comparisons, 399
    number comparisons, 397
    string comparisons, 396
comparison operators (Perl), 772
compiled languages, 844
compilers (Mono), 860
compiling kernel, 983-984, 987-988
  BzDisk directive, 986
  bzImage directive, 986
  multiple versions, 982
  retaining current kernel version, 985
  speeding up, 986
  troubleshooting, 993
  zImage directive, 986
compound operators (Perl), 773
Comprehensive Perl Archive Network (CPAN). ***See*** **CPAN (Comprehensive Perl Archive Network)**
compressing
  directories, tar command-line backup software, 440
  files, 24, 146-147
CONCAT() function, 574
concatenating strings, Python, 794
Concurrent Versions System (CVS). ***See*** **CVS (Concurrent Versions System)**
conditional checks (Python conditional statements), 798
conditional statements
  Perl, 774-775
  PHP, 819-821
  Python, 798
conditions (PHP loops), 824
config directive (SSI), 557-559
configuration files
  backups, creating, 424
  /etc/host.conf, 478
  /etc/hosts, 476-477
  /etc/nsswitch.conf, 477-478
  /etc/resolv.conf, 478
  /etc/services, 477
  /etc/sysconfig/network, 478-479
Configure Keyboard dialog, 87
Configure Mouse dialog, 92
configure script, building Apache Web server source code, 528
configuring
  anonymous FTP servers, 646
  Apache Web server, 535-536
    graphic interface configuration, 561-564
    .htaccess files, 539-541
    httpd.conf configuration files, 536-538
    MPM, 538-539
  APM (Advanced Power Management), 102-104
  BIND (Berkeley Internet Name Domain), 717-722
  boot loaders, 69-70
  CD drives, 109-114
  date/time, 105-107
  DHCP (Dynamic Host Configuration Protocol)
    dhclient, 483-484
    DHCP servers, 484-486
  disk quotas, manual configuration, 349
  display graphics, 94-96
  DNS (domain name system), 702
    caching nameservers, 713-714
    DHCP (Dynamic Host Configuration Protocol), 705
    /etc/host.conf files, 703
    /etc/hosts files, 704-705
    /etc/nsswitch.conf files, 703-704

  /etc/resolv.conf files, 705
  resolvers, 723-724
DVD drives, 109-111
Evolution, 747-748
Fetchmail
  global options, 681-682
  mail server options, 682
  user accounts, 682-684
firewalls, 78, 881-882
firstboot, 78-80
FTP server file-conversion actions
  add-on prefixes/postfixes, 659
  example of, 660-661
  external commands, 660
  strip prefixes/postfixes, 659
guest operating systems, 518-519
INN (InterNetNews), 754
  active files, 760-761
  history files, 761-762
  incoming.conf files, 757
  inn.conf files, 755-757
  newsgroups files, 760-761
  readers.conf files, 758-760
  running innd, 762-763
  storage.conf files, 757-758
Internet connections, 491
  dial-in PPP servers, 502-504
  dial-up access, 495-500
  DSL, 492-494
  troubleshooting, 501
  voice modem support, 503
kernel
  make config utility, 987
  make menuconfig utility, 987-988
  make xconfig utility, 988-989
  RAM disk images, 992
  selecting kernel type, 977
  subsections of, 989-992
keyboards, 86, 89-90
kudzu service, 84-86
LDAP servers, 742-744
localhost interface, 456-457
logwatch command, 386
modems, 97
  fax modems, 101
  minicom script, 101
  serial modems, 98-100
  WinModems, 102
monitors via system-config-display client, 175
MySQL, 578-579
name servers, 478
networks, 70-71, 471
  /etc/host.conf files, 478
  /etc/hosts files, 476-477
  /etc/nsswitch.conf files, 477-478
  /etc/resolv.conf files, 478
  /etc/services files, 477
  /etc/sysconfig/network files, 478-479
  ifconfig, 472-474
  netstat, 475-476
  route, 474-475
  system-config-network tool, 479-481
NFS (Network File System), 594-597
OpenOffice.org, 243-244
PCMCIA cards, 107-109
pointing devices, 90-94
Postfix, 679-680
PostgreSQL, 582-584
print queues, 306-310
printers
  console-based printers, 303
  GUI-based printers, 302
  local printers, 305-310
related commands, 116
Samba with /etc/samba/smb.conf files, 598
  [global] section, 599
  [homes] section, 599-600
  [printers] section, 600-601
  SWAT, 603-607

  Sendmail
    aliases, 677-678
    delivery intervals, 676
    mail forwarding, 677-678
    mail relaying, 677
    masquerading, 675
    rejecting email from specified websites, 678-679
    sendmail.cf files, 674-677
    smart hosts, 675
  sound cards, 271
  sound devices, 96-97
  Squid proxy server
    ACL, 693-697
    client configuration, 692
    examples of, 699-700
    specifying client IP addresses, 698
  SSH servers, 508-509
  Telnet servers, 507-508
  Thunderbird (Mozilla), 748
  troubleshooting, 83-84
  TWiki interactive collaboration tool, documentation website, 234
  video cards via system-config-display client, 175
  vsftpd servers, 643-644
  websites, 117-118
  wireless networks, 114-116
  Wu-FTPd servers, 646-658
  X Window System, 173
    manual configuration, 176-177
    system-config-display client, 174-176
    xorg.conf configuration files, 168-173
  Xen, 519-520
  xinetd daemons, 641-642
  yum (Yellowdog Updater, Modified) command, 931-932

consistency (ACID), database compliance comparisons, 577

console
  basic commands list, 901-902
  cat command, 902-903
  cd command, 903-905
  chmod command, 905
  combining, 920-922
  cp command, 905
  du command, 906-907
  find command, 907-909
  grep command, 909-910
  less command, 910-912
  ln command, 912-913
  locate command, 914
  ls command, 914-916
  man command, 916
  mkdir command, 916-917
  mv command, 917
  print control, 613-616
  printers, configuring, 303
  ps command, 917
  reasons for using, 900-901
  rm command, 918
  screen command, 922-924
  system monitoring, 413-415
  tail command, 918
  top command, 919-920
  virtual consoles, 132-133
  which command, 920

Console Project template (MonoDevelop), 861

constants
  C/C++, 846
  PHP, 813-814

constructor methods, Python, 803

continue keyword (Python), controlling loops, 800

Control Center dialog (KDE), 188

Control Center dialog (kdm), 179

control structures. *See* looping constructs

control.ctl files, 754

controllerless modems, 37-38

controlling queries, 735-736

controlling zone transfers, 736

convert utility, 294-295

converting
  ext3 disk file systems to ext2 disk file systems, 965-967
  files, configuring FTP server file-conversion actions, 658-661
  graphics file formats, 294
  number types in Python, 792
copying, 133
  directory structures, tar command-line backup software, 440
  files
    cp command, 441
    cp shell command, 905
    FTP, 442
    mc command-line file management software, 441
    multiple files between servers, 511
    rsync command, 444-445
    remote files, 510
    rtools, 442
    scp command, 442-443
    SFTP, 443
    tar command-line backup software, 439-440
    uucp, 442
    with scp, 442
  lists, 796
  MBR, 448
cp command, 145, 453
  configuration file backups, 424
  copying files, 441
cp shell command, 905
CPAN (Comprehensive Perl Archive Network), installing modules in Perl, 780-782
cpio command, 453
CPUs, Fedora installation, 39-40
crackers versus hackers, 874
cramfs modules, 936
CREATE DATABASE statements
  MySQL, 579
  PostgreSQL, 583
CREATE statements (SQL), 572
CREATE USER statements (PostgreSQL), 584
createdb command (PostgreSQL), 591
createrepo command, creating yum command repositories, 933-934
createuser command (PostgreSQL), 591
cron daemon
  crontab files, reading, 371
  tasks
    repeatedly running, 369-372
    scheduling, 367
crontab files, 370-372
csh shell, 372
ctlinnd command, 762
ctlinnd files, 753
CUPS (Common UNIX Printing System), 616
  printers
    creating entries, 618-620
    defined printers database, 300
  website, 620
cupsd, 300
curl command, file transfers, 632
current directory, listing files via ls shell command, 914-916
cursors, 812
CustomLog directive (Apache Web server), 554
CVS (Concurrent Versions System), C/C++ programming, 849-850
cvs command, 857
cyclic buffer spool article storage method (news servers), 758

D

-d file comparison operators, 394, 398
daemons. *See* specific daemons
data directories, initializing
  MySQL, 578
  PostgreSQL, 582-583

data
  integrity, database comparisons, 577
  locking, database comparisons, 576
  loss, reasons for, 424
  mirroring, 429
  storage, RDBMS, 569
data pilots (Calc), 250-252
data=journal / data=ordered / data=writeback mode (ext3 disk file system), 952
database administrators (DBAs). ***See*** **DBAs (Database Administrators)**
databases
  access/permission issues, 586
  clients
    client/server model, 568
    command-line clients, 586
    local GUI database access, 587
    middleware, 588
    psql command-line client, 590-591
    SSH database access, 586
    web database access, 588
  comparisons, 575
    ACID compliance, 577
    data locking, 576
    procedural languages, 578
    speed, 576
    SQL subqueries, 577
    triggers, 578
  flat file, limitations of, 568
  MySQL
    adding user accounts, 580
    command-line client, 588-590
    creating, 579
    data directory ownership, 578
    database-level privileges, 580
    granting/revoking privileges, 580
    graphical clients, 591
    initializing data directories, 578
    initializing grant tables, 578
    installing, 578
    root user passwords, 579
  PostgreSQL
    creating databases, 583
    creating/deleting database users, 584-585
    exiting psql command-line client, 584
    granting/revoking privileges, 585
    initializing data directories, 582-583
    installing, 581
    RPM distribution, 581
    starting postmaster program, 583
  RDBMS
    data storage, 569
    SQL basics, 571-575
    table relations, 569-570
  references, 592
date command, 105
date/time, configuring, 105-107
DBAs (database administrators), responsibilities of, 567-568
dd command, 453
  blank image files, creating, 962
  floppy disk backups, 437
  if= values, 437
  of= values, 437
Debian Project website, 34
debugging C/C++
  gdb tool, 851-852
  gprof command, 851
  splint command, 850-851
declarations (PHP loops), 824
decompressing files, 146-147
defragementation, ext3 disk file system, 941
delegation (DNS), troubleshooting, 729
deleting. ***See also*** **removing**
  batch jobs, 369
  directories via rm shell command, 918
  files. *See also* files, recovery
    immutable files, 937
    via rm shell command, 918
  PostgreSQL database users, 584-585
delivery intervals (Sendmail), setting, 676

Dell Computers website, preinstalled Linux systems, 33
deny directive (Apache Web server), 541-542
dependency checking, 846
depmod command, modular kernel management, 978
description field (ftpconversions files), 660
Designer button (MonoDevelop), 868
designer command, 857
desktop environments
  components of, 182
  GNOME, 186
    Balsa email client, 217
    C/C++ programming, 845, 855-856
    Epiphany web browser, 212
    File Roller, 435-436
    GAIM, 236
    Glade, 855-856
    GnomeMeeting Internet videoconferencing application, 236-237
    Nautilus web browser, FTP sessions, 635
    optimizing, 891
    Pan news client, 226-228
  KDE, 188
    ark backup tool, 435-437
    C/C++ programming, 845, 853-854
    kdat backup tool, 435
    KDevelop, C/C++ programming, 853-854
    KMail email client, 219
    KNode news client, 228-229
    Konqueror web browser, 212, 634-635, 692
    optimizing, 891
    Qt Designer (Trolltech), C/C++ programming, 854
destructor methods, Python, 803
development releases (kernel) versus stable kernels, 981
device drivers, 976
device files, 968
device labels, 956
Device section (xorg.conf configuration files), 172
devicenames == command, 304-305
devices.txt files, 975
df command, 374, 970
dhclient, installation, 483-484
dhclient command, 504
DHCP (Dynamic Host Configuration Protocol), 463, 481
  activating, 482-483
  dhclient installation, 483-484
  DHCP server configuration, 484-486
  DHCP server installation, 484
  dhcpd.conf options, 487
  DNS client configuration, 705
  servers, installation/configuration, 484-486
dhcpd.conf options, 487
Dia (OpenOffice.org), 242
dial-in PPP servers, 502-504
dial-up Internet access, 495-500
dial-up logins, 134
dictionaries (Python), 797
die function (Perl), 783
dig (Domain Information Groper) command, 709, 739
digital cameras, 287
  F-Spot photo-management application, 290
  gThumb, 289
  handheld cameras, 288-289
digital images, managing, 22
digital subscriber line (DSL) Internet access. *See* DSL (digital subscriber line) Internet access
directives
  .htaccess files, 539
    AllowOverrides directive, 540-541
    Options directive, 540
  httpd.conf files
    DirectoryIndex, 538
    DocumentRoot, 538

        Group, 537
        Listen, 536
        ServerAdmin, 537
        ServerName, 537
        ServerRoot, 536
        User, 537
        UserDir, 538
    SSI
        config, 557-559
        echo, 559
        exec, 559
        flastmod, 560
        fsize, 560
        include, 560
        printenv, 560
        set, 560
        variables, 560
directories
    basic directories list, 123
    /bin, 123
    /boot, 124
    changing via cd shell command, 903-905
    compressing via tar command-line backup software, 440
    creating via mkdir shell command, 916-917
    deleting via rm shell command, 918
    /dev, 124
    /etc, 124-126, 128
    files, listing via ls shell command, 914-916
    /home, 129
    permissions, 151-154
    /proc, 129-130
    /sbin, 123
    structures, copying via tar command-line backup software, 440
    /tmp, 131
    /usr, 131
    /var, 131
DirectoryIndex directive (httpd.conf files), 538
dirlist enable setting (vsftpd server default settings), 645
dirmessage enable setting (vsftpd server default settings), 645
disable command, 303, 311, 622
disabling
    atime (files), file system optimization, 889-890
    SSH1 in SSH servers, 509
disaster recovery plans, 883
disk file systems, 938
    ext2, 939
        creating via mke2fs command, 951
        defragmentation, 941
        ext3 conversion, 965-967
        ext3 transitions, 941
    ext3, 939
        creating, 951-952
        defragmentation, 941
        development of, 940-941
        ext2 conversion, 965-967
        ext2 transitions, 941
        file/directory sizes, 941
        journaling options, 942, 952
        performance, 941
        structure of, 941
        verifying file integrity, 943
    FAT, 939, 945, 950
    reiserfs, 939, 944, 950-952
disk quotas, 348-349, 418
disk usage, printing via du shell command, 906-907
display banners, 654
display graphics, configuring, 94-96
display managers, 177
    gdm, 178-179
    kdm, 179
    X Window System, 167
    xdm, 180
display power management signaling (DPMS). ***See*** **DPMS (display power management signaling)**

Display Settings main screen (system-config-display client), 174

distribution version numbers, 17

DivX file format, 278

dmesg command, 83, 100, 108, 116, 130
- Fedora installation, 46
- pointer configuration, 91
- serial-port modem configurations, 98

DN (distinguished names), 742-744

DNS (domain name system), 701-702
- BIND (Berkeley Internet Name Domain)
  - authentication, 716
  - installing, 715-716
  - logging, 722-723
  - named nameserver daemon, running, 724-725
  - named.conf files, 717-719
  - resolver configuration, 723-724
  - rndc.conf files, 717
  - upgrading, 715
  - versions of, 715
  - zone files, 719-722
- configuring, 702-705
- delegation, 729
- dig command, 709-710
- DNSSEC (DNS Security Extensions), 737-738
- domain names, 707
- domain registration, 728
- dotted quad IP addresses, 701
- forward lookups, 709
- forward zones, 725-727
- host command, 710
- informational websites, 728, 733, 739
- local caches, 708
- name resolution overview, 708
- nameservers
  - authoritative nameservers, 707-708
  - caching nameservers, 713-714
- namespaces, structure of, 706
- nslookup command, 711
- potential problem host alerts, 736-737
- resolvers, 701, 707
- reverse lookups, 709
- reverse resolution, 729-730
- reverse zones, 727-728
- RR (resource records), 706-707
- search order, setting, 478
- security
  - ACL (access control list), 734-735
  - controlling queries, 735-736
  - controlling zone transfers, 736
  - DNSSEC (DNS Security Extensions), 737-738
  - poisoning, 733
  - potential problem host alerts, 736-737
  - related commands, 739
  - split DNS, 738-739
  - spoofing, 733
  - UNIX security considerations, 733-734
- slave nameserver serial number accuracy, 730
- system-config-bind BIND configuration tool, 731-732
- third-party DNS services, 714-715
- tools, troubleshooting, 731
- whois command, 711-713
- zone files, troubleshooting, 730-731

DNSSEC (DNS Security Extensions), 737-738

do, until loops (Perl), 778

do, while loops, 778, 825

Documentation directory (/usr/src/linux-2.6 directory), 975

DocumentRoot directive (httpd.conf files), 538

dollar sign ($)
- $* built-in variable, 387
- $# built-in variable, 387
- $? built-in variable, 387
- $0 built-in variable, 387

dom0, 517

Domain Name System (DNS). ***See*** **DNS (Domain Name System)**

domain O, 517

domain parameter (innd.conf), 756

domains. *See also* DNS (domain name system)

- dom0, 517
- FQDN (fully qualified domain names), 707
- names, 707
- registering, 728
- unprivileged domains, 517

domU, 517

***Doom 3*, installation, 315-316**

DOS file systems, 945, 950-953

dotted quad IP addresses, 701

double ampersand (&&) number comparison operators, 399

double equal sign (==) string comparison operators, 396

double greater than sign (<<) here operator, 376

double pipe (||) number comparison operators, 399

double quotes ("), resolving variables in shell strings with embedded spaces, 388-389

download enable setting (vsftpd server default settings), 645

downloading

- Apache Web server, 525-526
- TWiki interactive collaboration tool, 233-234
- websites for offline reading, 633

downtime, scheduling (FTP server), 664-665

DPMS (display power management signaling), 103

Draw (OpenOffice.org), 242

drive geometry, 946

drivers

- printer drivers list, 303-304
- video drivers, installation, 314-315

drives

- CD-RW drives, 431
- DVD+RW/-RW drives, 431
- FireWire, 431
- IDE drives as SCSI drive emulators, 263
- NAS (Network Attached Storage), 431-432
- solid-state drives, 430
- tape backup drives, 432
- USB drives, 430
- Zip drives, 430

DROP USER statement (PostgreSQL), 585

dropdb command (PostgreSQL), 591

dropuser command (PostgreSQL), 584, 591

DSL (digital subscriber line) Internet access, 492-494

du command, 906-907, 970

Dual head tab (system-config-display client), 176

dual-core processors, 23

dual-host no-NIC networks, 464

dumb gateways, 468

dummy interfaces, 456

dump command, 970

dumpe2fs command, 970

dumpkeys command, 88

durability (ACID), database compliance comparisons, 577

dvd+rw-tools command, 282

dvd+rw-tools package, 265-266

DVDs

- burning, 265-269
- drives, configuring, 109-111
- DVD/video players, 281
- DVD+RW/-RW drives, 266, 431
- formats of, 265
- preformatted DVDs, 266
- storage capacity, 265

dvgrab command, 297

dvi command, 303

dynamic content, Apache Web server

- CGI, 555-556
- flow control, 561
- PHP, 555
- SSI, 556

Dynamic Host Configuration Protocol. ***See*** **DHCP (Dynamic Host Configuration Protocol)**
dynamic links, 123-124

E

-e file comparison operators, 398
e2fsadm command, 970
e2fsck command, file system optimization, 889
e2image command, 970
echo command, 130, 374
echo directive (SSI), 559
ed (text editor), 147
editing
  crontab files, 371-372
  /etc/modprobe.conf files, 469-470
  /etc/printcap, 301
  FTP server files, 646
  ftpaccess configuration files, 647
  .htaccess files, 539-541
  httpd.conf Apache Web server configuration files, 536-538
  local printer settings, 310-311
  partition tables, 947-950
  system jobs, 370-371
edquota command, 349
elevation of privileges, 326
elinks, 565
emacs (text editor), 147-151
emacs command, 763
email, 669
  autoresponders, 687
  Balsa (GNOME Office), 217, 253
  books about, 690
  client development, 213
  CommuniGate Pro, 688
  Evolution (Ximian), 215-217, 253, 747-748
  Exchange Server, 687
  Fetchmail, 680
    configuring, 681
    global options, 681-682
    installing, 681
    mail server options, 682
    user accounts, 682-684
  KMail, 219
  mail daemons, 686
  mail utility, 221-222
  mbox format, 672
  MDAs (Mail Delivery Agents), 673
    choosing, 684-685
    defining, 214
    FetchYahoo, 686
    Gotmail, 686
    Hotwayd, 686
    MailScanner, 686
    Procmail, 685
    Spamassassin, 685
    Squirrelmail, 685-686
  Mozilla Mail, 219
  MTAs (Mail Transport Agents), 670
    choosing, 672
    defining, 214
    Exim, 672
    maildir, 672
    Postfix, 671, 679-680
    Qmail, 671
    Sendmail, 670-671, 674-679
  MUAs (Mail User Agents), 213, 673-674
  mutt, 222-224
  new client information websites, 224
  Perl, sending via, 781-783
  Pine, 222
  Postfix, configuring, 679-680
  protocols, 214
  references, 238
  related commands, 688
  Sendmail, 670-671
    aliases, 677-678
    delivery intervals, 676
    email access rules, 678

    - mail forwarding, 677-678
    - mail relaying, 677
    - masquerading, 675
    - rejecting email from specified websites, 678-679
    - sendmail.cf files, 674-677
    - smart hosts, 675
  - SMTP (Simple Mail Transfer Protocol), 669-670, 673
  - Sylpheed-claws, 224
  - Thunderbird (Mozilla), 217, 748
  - websites, 689

enable command, 303, 311, 622

encscript command, 303

endless loops, 401-402

Enterprise Linux (Red Hat, Inc.)
  - overview of, 13
  - release cycles, 17
  - uses of, 20

env command, 142

environment variables, 142-144, 382

eog command, 297

epiphany command, 667

Epiphany web browser, 212

-eq number comparison operators, 392

equal sign (=), 814
  - == (double equal sign) string comparison operators, 396
  - string expression operators, 391

erasing CDs, 264

error-checking, Mono command line, 864

escape characters, 389-390

escape sequences, PHP, 815-816

escputil command, 303

etc/log.d/logwatch.conf files, configuring via logwatch command, 386

Ethereal, 884

ethereal command, 504

ethereal tool, 420

ethernet, 465

evolution command, 688

Evolution email client, 215-217, 253, 747-748

Exchange Server, 687

exclamation point (!), 333
  - != (is not equal) symbol, 575
    - string comparison operators, 396
    - string expression operators, 391
  - bangs, 333
  - logical comparison operators, 395
  - number comparison operators, 399

.exe file extensions, Mono, 862

exec directive (SSI), 559

execution operators (PHP), 821

Exim, 672

exit statements, 409

expire.ctl files, 754

export command, 144

exportfs command, 595

exports files, 595

expressions, 146, 373
  - comparison of expressions, 390
    - pdksh shells versus bash shells, 391-396
    - tcsh shells, 396-399
  - regular expressions, 550, 778-779

ext2 disk file system, 939
  - creating via mke2fs command, 951
  - defragmentation, 941
  - ext3
    - conversions, 965-967
    - transitions, 941

ext2fs undeletion process, 446

ext3 disk file system, 18, 939
  - creating via
    - mke2fs command, 951
    - mkfs.ext3 command, 951-952
  - defragmentation, 941
  - development of, 940-941
  - directories, sizes of, 941
  - ext2
    - conversions, 965-967
    - transitions, 941

- files
  - sizes of, 941
  - verifying integrity of, 943
- journaling options, 942, 952
- performance, 941
- structure of, 941

ext3 modules, 936

extended partitions, 947

external commands (ftpconversion files), 660

external computer attacks, defining, 873-874

extract() array function, 831

extraversion level (kernel), 981

F

-f file comparison operators, 394, 398

F-Spot, 290

failsafe window managers, twm, 183

FAT (File Allocation Table) disk file system, 939, 945, 950

fat modules, 936

fax command, 101

faxes
- all-in-one (print/fax/scan) devices, troubleshooting, 621
- modems, configuring, 101

fclose() file function, 833-834

fdisk command, 970
- Fedora installation, 46
- functions of, 949
- IDE partitions, 947
- Microsoft version versus Linux version, 946
- partitions, editing, 947-949

Fedora
- 64-bit features, 22
- business-related features, 20-21
- components of, 16
- description of, 13-15
- desktops, choosing, 166
- distribution of, 15
- documentation, 23-24
- dual-core processors, 23
- filesystem features, 18-19
- graphical logins, 81
- installation, 53
  - Anaconda installing, 18, 63
  - BIOS settings, 45
  - boot loaders, 56-57, 68-70
  - boot prompt options, 61-62
  - boot screen navigation, 60-61
  - boot times, changing, 78
  - business considerations, 30
  - CD-ROM installation, 54-58
  - controllerless modems, 37-38
  - CPU, 39-40
  - deployment plans, 33
  - finishing, 76-77
  - firstboot configuration, 78-80
  - FTP, 58-59
  - hard drive partitions, 45-48, 66-68
  - hard drive storage, 35
  - hardware compatibility, 36-37
  - hardware inventories, 40-43
  - hardware requirements, 33-34
  - hardware specifications, researching, 53-54
  - HTTP, 59
  - install methods/types, choosing, 54, 57
  - keyboards, choosing, 64
  - kickstart method, 48-51
  - languages, choosing, 64
  - legacy hardware, 34
  - logical volume management, 66
  - media checks, 62, 64
  - methods of, 43-44
  - minimum Fedora requirements, 34
  - monitors, 60, 64
  - motherboard-based hardware, 38-39
  - mouse device configuration, 64

        multiple Ethernet devices, 71
        network installations/configurations, 58-59, 70-71
        NFS, 59
        overview of, 43
        partition strategies, planning, 55
        predeployment checklist, 32
        references, 51-52, 82
        root accounts, creating, 74
        root passwords, creating, 73-74
        software, choosing/installing, 54-55, 74-76
        system considerations, 30-31
        text-based installations, 60
        time zones, setting, 71-72
        USB devices, 38
        user considerations, 31
        user satisfaction, 32
    PPC platforms, 22-23
    problems, reporting, 25
    Red Hat software tools included with, 16
    references, 26
    rescue disc, 448-450
    shutdowns, 81
    software support, 15
    text-based prompts, 81
    upgrades, 17
    website, 13
Fedora Announcements mailing list, 1000
Fedora Modem Configuration Wizard, 498-500
Fedora Project, 1004
    assisting with, 25
    description of, 13
    Developer's Guide website, 25
    mailing lists, 1008-1009
    minimum Fedora hardware requirements, 34
Fetchmail, installing/configuring, 680-684
fetchmail command, 688
fetchmailconf command, 688
FetchYahoo, 686
FHS (Filesystem Hierarchy Standard), 120
fiber optics
    cables, 467
    networks, 465
file command, determining file compression methods, 206
File Roller, 203, 435-436
file systems
    CD-ROM, 945, 956
    creating, 945
        disks as storage device, 946
        partition tables, 947-950
        partitioned disks, 950-952
    directories
        basic directories, list of, 123
        /bin, 123
        /boot, 124
        /dev, 124
        /etc, 124-128
        /home, 129
        /proc, 129-130
        /sbin, 123
        /tmp, 131
        /usr, 131
        /var, 131
    disk file systems, 938
        ext2, 939-941, 951, 965-967
        ext3, 939-943, 951-952, 965-967
        FAT, 939, 945, 950
        reiserfs, 939, 944, 950-952
    DOS, 945, 950-953
    features, overview of, 18-19
    FHS (Filesystem Hierarchy Standard), 120
    high-level formatting, 950
    JFS, 939, 944
    journaling file systems, 939
    layout of, 120-121
    loopback file systems, 962-964
    LVM, 961-962
    metadata, defining, 935
    modular kernel support, 936

- mounting, 953
  - amd, 958
  - defining, 938
  - /etc/fstab files, 955-957
  - Floppy Formatter (KDE), 957-958
  - KDiskFree (KDE), 957
  - KwikDisk (KDE), 957
  - mount command, 954
  - umount command, 955
  - User Mount Tool (KDE), 957-958
  - usermount graphical file system management client, 957
- network file systems, 938-939
- optimizing, 888-890
- partitions
  - mounting as read-only, 964-965
  - supported types, 938
- references, 970-972
- relocating, 959-961
- structure of, 936-938
- sync command, 888
- test file systems, creating/mounting, 962-964
- viewing, 121-123, 940
- virtual file systems, 129
- XFS, 939, 944

files
- access permissions, changing via chmod shell command, 905
- attributes, viewing from inodes, 937
- comparisons (comparison of expression), 394-395, 398-399
- compressing, 146-147
- contents, printing via cat shell command, 902-903
- conversion, configuring FTP server file-conversion actions, 658-661
- copying
  - cp command, 441, 905
  - FTP, 442
  - mc command-line file management software, 441
  - multiple files between servers, 511
  - remote files, 510
  - rsync command, 444-445
  - rtools, 442
  - scp command, 442-443
  - SFTP, 443
  - tar command-line backup software, 439-440
  - uucp, 442
  - with scp, 442
- current directory, listing in via ls shell command, 914-916
- decompressing, 146-147
- deleting. *See also* files, recovery; files, undeleting
  - immutable files, 937
  - via rm shell command, 918
- handles, 833
- immutable files, 937
- integrity, verifying in ext3 disk file systems, 943
- linking via ln shell command, 912-913
- managing
  - for character devices, block devices, and special devices, 967-969
  - via shell, 145-146
- moving via mkdir shell command, 917
- multiple files, copying between servers, 511
- paging through output via less shell command, 910-912
- permissions, 151, 327
  - assigning, 152
  - chgrp command, 328
  - chmod command, 328
  - chown command, 328
- PHP functions, 832-834
- printing last lines via tail shell command, 918
- recovery, 446-447. *See also* files, deleting
- restoring from backup via tar command-line backup software, 434-435

- searches
  - find shell command, 907-909
  - locate shell command, 914
- sharing. *See* NFS (Network File System), Samba
- transfers, 631-633
- undeleting, 446-447. *See also* files, deleting

Files section (xorg.conf configuration file), 169-170
filesize() file function, 834
file_get_contents() file function, 832
file_put_contents() file function, 832
filtering spam, 763
find command, 155-156, 433, 907-909
find2perl command, 786
finger command, displaying user information, 137
finger information fields (/etc/passwd files), 336
Finish and Create New Print Queue dialog (system-config-printer tool), 308
Firefox web browser (Mozilla), 210-211, 565, 692
firewalls, 78, 881-882
FireWire (IEEE-1394) drives, 111-114, 431
firstboot, 78-80
Flash plug-in (Macromedia), 279
flastmod directive (SSI), 560
flat file databases, limitations of, 568
flexbackup backup software, 439
float data types, 811
floating-point numeric values, Python, 791
floppy disks
- backups, dd command, 437
- drives, creating DOS file systems for, 953
- Linux distribution websites, 1005
- system boots, GRUB, 450

Floppy Formatter (KDE), mounting file systems, 957-958
flow control (Apache Web server dynamic content), 561
focus policy, 181
fopen() file function, 832-833
for loops, 824
- Perl, 776
- Python, 798-799

for statements, 400-401
foreach loops, 824-825
- Mono, 863
- Perl, 776

format command, creating FAT disk file systems, 950
formatting
- Calc spreadsheets, 249-250
- file systems, high-level formatting, 950
- Writer documents, 246-247

forward lookups, 709
forward zones, 725-727
forwarding email via Sendmail, 677-678
fpthosts files, allowing/denying FTP server connections, 661-662
FQDN (fully qualified domain names), 707
fread() file function, 833
free backup software websites, 439
free command, 129, 374, 418
free memory, displaying, 418
FROM clauses, SELECT statements, 573
fromhost parameter (innd.conf), 756
fsck command, 943, 970
fsize directive (SSI), 560
fstab files, 125, 594
FTP (File Transfer Protocol), 625
- commands list, 667
- copying files, 442
- Fedora installation, 44, 58
- ftp.kernel.org, 982
- graphics-based client interface
  - gFTP, 633-634
  - Konqueror web browser (KDE), 634-635
  - Nautilus web browser (GNOME), 635
- references, 667-668
- servers
  - allowing/denying connections via ftphosts file commands, 661-662
  - anonymous servers, 636-637, 646

    - authenticated servers, 636-637
    - Bsdftpd-ssl servers, 638
    - configuration file backups, 646
    - configuring file-conversion actions, 658
    - add-on prefixes/postfixes, 659
    - example of, 660-661
    - external commands, 660
    - strip prefixes/postfixes, 659
    - editing server files, 646
    - NcFTPd servers, 637-638
    - quick installation, 641
    - vsftpd servers, 637, 642-645
    - xinetd daemons, configuring, 641-642
    - Wu-FTPd servers, 646-658, 662-667
  - software, installing, 638-639
  - text-based client interface
    - commands list, 626-627
    - ftp command-based sessions, 627-630
    - Iftp command file transfers, 631-632
    - info pages, 631
    - wget command file transfers, 632-633
  - users
    - assigning permissions, 639
    - passwords, 639-640
  - version information, hiding, 651

ftp command, 667
  - FTP text-based client interface sessions, 627-630
  - SSH servers, 509

ftpaccess configuration files
  - editing, 647
  - ftpusers file, 648
  - Wu-FTPd servers, configuring, 646
    - access control directives, 647-650
    - cdpath directed commands, 657-658
    - permission control directives, 655-657
    - shutdown file structures, 658
    - system logging directives, 654-655
    - user information directives, 650-654

ftpconversions files, 646, 660

ftpcopy command, 667

ftpcount command, 662

ftpcp command, 667

ftphosts Wu-FTPd server configuration files, 646

ftprestart command, 662, 665

ftpshut command, 662
  - FTP servers, scheduling downtime, 664
  - magic cookies, 665

ftpusers files, ftpaccess configuration files, 648

ftpwho command, 662

ftpwho fields (output format tables), 662

full backups, 428-429, 433

full newsfeed news servers, 752

functions
  - defined, 844
  - Perl
    - die, 783
    - use, 780
  - PHP
    - array functions, 830-831
    - file functions, 832-834
    - isset(), 834
    - PCRE functions, 836
    - string functions, 826-828
    - unset(), 834
    - var dump(), 835-836
  - Python
    - class methods, 801
    - defining, 800-801
  - shell scripts, 409-410

fwrite() file function, 833

G

.g3 graphics file format, 294

GAIM instant messaging client, 236

games
  - Cedega, 314, 321-322
  - *Doom 3*, installation, 315-316

- *Maelstrom*, 314
- *Quake 4*, installation, 318
- references, 322
- types of, 313
- *Unreal Tournament 2004*, installation, 317-318
- video driver installation, 314-315
- *Wolfenstein: Enemy Territory*, installation, 319

gatekeepers, 237
gateways, smart/dumb, 468
Gatos Project, 275
gcc (GNU C compiler), 852
gcc command, 857, 995
gdb command, 857
gdb tool (C/C++ programming), 851-852
gdm (GNOME display manager), configuring, 178-179
gdmsetup client, 178, 189
GECOS field (/etc/passwd files), 336
gedit (text editor), 148
get command, 626
GetCodecs, 278
getlist files, 753
gFTP (graphical File Transfer Protocol) client interface, 633-634
gftp command, 667
Ghostscript, versions of, 305
Ghostscript interpreter, 299, 304
GIDs (Group IDs), 327
.gif graphics file format, 294
gigabit ethernet, 465
GIMP (GNU Image Manipulation Program), 253, 285

- GTK (Gimp Tool Kit) widget set, 252
- local directory, 286
- menu navigation, 286
- Photoshop (Adobe) compared to, 286

gimp command, 259, 286, 297
Glade, 855-856
glade-2 command, 857
global options (Fetchmail), 681-682
global-level privileges (MySQL), 580
GMT (Greenwich Mean Time), 72
GNOME (GNU Network Object Model Environment) desktop environment, 186

- Balsa email client, 217
- C/C++ programming, 845, 855-856
- configuring, 187
- Epiphany web browser, 212
- Evolution email client, 215-217, 253, 747-748
- File Roller, 435-436
- GAIM, 236
- Glade, C/C++ programming, 855-856
- GnomeMeeting, 236-237, 288
- mailing lists, 1008
- menu editing, enabling, 274
- Nautilus web browser, FTP sessions, 635
- optimizing, 891
- Pan news client, 226-228

GNOME office, 252-254
Gnome-CD, 273
gnome-lokkit command, 504, 884
gnome-mouse-properties command, 90-92
gnome-nettool tool, 420
gnome-panel-screenshot utility, 296
gnome-system-monitor tool, 420
GNU C++ compiler, 852
Gnumeric (GNOME Office), 253
gnumeric command, 259
gocr optical character recognition client, 292
Google, 1001

- kernel errors, troubleshooting, 994
- Linux pages website, 37

Gotmail, 686
gpasswd command, group management, 330-331
gphoto2 client, overview of, 22
gpm (General Purpose Mouse)

- drivers, 93
- server, 133-134

gpm-root command, custom menu creation, 134

gprof command, 851, 857
gqview command, 297
grabbers, 278
grabbing mode (webcams), 287
Gracenote CDDB Music Recognition Service, 267
GRANT statement
  PostgreSQL, 585
  SQL, 580
grant tables (MySQL), initializing, 578
granting
  privileges
    MySQL, 580
    PostgreSQL, 585
  system administrator privileges to users
    restricted shells, 346
    root privileges, granting on occasion, 343-345
    UIDs (user IDs), temporarily changing, 341-343
graphic interface configuration (Apache Web server), 561
  peak performance configuration, 564
  server configuration, 563
  virtual host properties, 562
graphical database clients (MySQL), 591
graphical installers, screen navigation, 63
graphics
  digital cameras, 287-290
  file formats, 293-296
  GIMP (GNU Image Manipulation Program), 252-253, 285-286
  related commands, 297
  scanners, 292-293
  screen images, capturing, 296-297
  unknown image files, identifying, 295
  websites, 297-298
greater than sign (<)
  < operators, 397
  << (double greater than) here operator, 376
  <= (greater than or equal) operators, 397
Green, Andy, Telnet servers, 508
greeting command, hiding FTP version information, 651
grep command, 146, 374, 909-910
  chkconfig command output, 360
  serial-port modem configurations, 98
grephistory files, 753
greplog shell script, 385-386
grip command, 282
grolbp command, 303
Group directive (httpd.conf files), 537
group files, 329-330
groupadd command, group management, 330-331
groupdel command, group management, 330
groupmod command, group management, 330
groups
  GIDs (Group IDs), 327
  management, 328-331
groups command, 349
groupware, 254
growisofs command, 266
grpck command, group management, 331
GRUB (Grand Unified Boot Loaders), 56, 353
  dual-boot Fedora configurations, 46
  passwords, 358
  system boots, 450
  system services, booting to nondefault runlevel, 358-359
gs client, 299
gs command, 303-305
gsbj command, 303
gsdj command, 303
gThumb, 289-290
GTK (Gimp Tool Kit) widget set, 252
Gtk#, Mono, 867-868
gtkam command, 297
GtkTest, 868
guest operating systems, setting up, 518-519
GUI Network Configuration tool, 705

GUI (graphical user interfaces)
  Gtk#, creating via, 868
  printers, configuring, 302
gunzip command, 146
gv command, 304
gzip command, 146, 453
gzip packages, 982

H

hackers versus crackers, 874
halt command, Fedora shutdowns, 81
Hancom Office, 258
handheld digital cameras, 288-289
hard disks/drives
  BIOS detection, 959
  components of, 946
  cylinder limitations, 960
  drive geometry, 946
  Fedora installation, 44
  installing, relocating file systems, 959-960
  LBA, 959-960
  logical volume management, 66
  master/slave jumpers, 959-960
  MBR, 946
  optimizing
    benchmarks, 885
    BIOS adjustments, 886
    file system adjustments, 888-890
    hdparm command, 886-887
  partitions
    backups, 46-47
    choosing partitioning schemes, 47
    creating, 66-68
    creating file systems, 950-952
    dual-boot configurations, 46
    Fedora installation, 44-46
    hosting on separate partitions, 47-48
    planning, 55
  storage devices, 946
hard links, 912-913
hardware
  backups
    CD-RW drives, 431
    DVD+RW/-RW drives, 431
    FireWire (IEEE-1394) drives, 431
    NAS, 431-432
    solid-state drives, 430
    tape drives, 432
    USB drives, 430
    Zip drives, 430
  compatibility
    database website, 36
    Fedora deployment plans, 31
  inventories, 40-43
  kudzu service, 84-86
  specifications, researching, 53-54
  workarounds, specifying via installers, 18
Hardware tab (system-config-display client), 174-176
hash command, 626
hashes (Perl), 770-771
hdparm command, hard disk/drive optimization, 886-887
hdx=ide-scsi command, hard disk/drive optimization, 886
header files, 844
hfs modules, 936
hidden processes, viewing, 420
hiding FTP version information, 651
high-level formatting (file systems), 950
history files (INN), 761-762
HMAC-MD5 algorithm, 716
HOME environment variable, 145
HOME lines (/etc/crontab files, 370
home user backup strategies, 427
host command, 710, 739
host.conf files, 478, 703
hostname command, 608
hosts
  /etc/hosts files, adding to, 476-477
  network settings, 478-479

hosts files, 456, 476-477, 704-705
Hotwayd, 686
HOWTO documents
  chroot-BIND, 734
  compressed files, reading, 24
  description of, 139
  disk quotas, 349
  DVD+RW/+R/-R[W], 265
  ext2fs undeletion process, 446
  HTML format, reading in, 24
  LILO configuration, 994
  LVM, 962
  Network Boot and Exotic Root, 877
  quitting, 24
  Xinerama, 176
HP (Hewlitt-Packard), preinstalled Linux systems, 33
.htaccess files, 539-541
HTML (Hypertext Markup Language)
  browsing files, 140
  HOWTO documents, reading, 24
  PHP, 837-838
htpasswd command (Apache Web server), creating user files, 543
HTTP (Hypertext Transfer Protocol), Fedora installation, 44, 59
httpd script, starting/stopping Apache Web server, 531-532
httpd. *See* Apache Web server
httpd.conf configuration files (Apache Web server), 535-538
hubs, 467
hwclock command, 72, 105-106
hwconf files, 85

I

IBM
  Linux website, 1002
  preinstalled Linux systems, 33
Icecast, 275
.ico graphics file format, 294
IDE (integrated development environment)
  disks, bootloaders, 946
  drives as SCSI drive emulators, 263
  partitions, fdisk command, 947
ide.txt files, 975
idebus=xx command, hard disk optimization, 886
identifiers (C/C++), 845
identify command (ImageMagick), 295
idex=ata66 command, hard disk optimization, 886
idex=autotune command, hard disk optimization, 886
idex=dma command, hard disk optimization, 886
if statements, 405-406
if/else conditional statements (Perl), 775
if= values (dd command), 437
ifconfig command, 456-457, 472-474, 504, 608
Iftp command, 631-632, 667
IM (instant messaging), 236
  GAIM, 236
  Jabber protocol, 236
ImageMagick, 295-297
images. *See* graphics
IMAP (Internet Mail Access Protocol), 214
immutable files, 937
immutable sequences, strings as (Python), 792
import utility, 296
Impress (OpenOffice.org), 242
in-line kernels, 977
include directive (SSI), 560
include files, 844
include keyword (PHP), 826
incoming.conf files, 754, 757
incremental backups
  full backup strategies with, 428-429
  tar command-line backup software, 433

indexing, Python
  dictionaries, 797
  strings, 793
infinite loops, Python, 799
info command, 139
inheritance, Python, 804-806
init command
  system reboots, 134
  system services, booting to runlevel, 354
init processes, 353
init scripts, 359-360
initdb program, Postgre SQL data directory permissions, 583
initializing
  FireWire CD drives, 111-114
  NICs (network interface cards), 468-471
initrd files, 965-967
initrd.txt files, 975
inittab files, 125, 356
INN (InterNetNews) package, 751
  configuration files, 754-755
  full newsfeed news servers, 752
  innd configuration
    active files, 760-761
    history files, 761-762
    incoming.conf files, 757
    inn.conf files, 755-757
    newsgroups files, 760-761
    readers.conf files, 758-760
    running innd, 762-763
    storage.conf files, 757-758
  installing, 755
  leaf node news servers, 752
  local news servers, 753
  newsgroup commands, 763
  program files, 753-754
  readers.conf files, 758
  spam filtering, 763
  websites, 751, 763
inn.conf files, 754-757
inncheck files, 753
innconfval files, 753
innd command, 763
innd configuration
  active files, 760-761
  history files, 761-762
  incoming.conf files, 757
  inn.conf files, 755-757
  newsgroups files, 760-761
  readers.conf files, 758-760
  running innd, 762-763
  storage.conf files, 757-758
innd files, 753
inndstart files, 753
innfeed.conf files, 754
innreport files, 753
innstat files, 753
innwatch files, 753
innwatch.ctl files, 754
inodes, 937
input strings, searches via grep shell command, 909-910
input/output redirection, 373-376
InputDevice section (xorg.conf configuration files), 170-171
INSERT statements (SQL), 573
insmod command, 116, 978
installation disc (Recovery Facility), system boots, 451-452
installed packages, listing, 1001-1002
installers. *See* Anaconda installer
installing
  Apache Web server, 525-529
  BIND (Berkeley Internet Name Domain), 715-716
  CD writers, 262
  CPAN modules in Perl, 782
  DHCP (Dynamic Host Configuration Protocol)
    dhclient, 483-484
    DHCP servers, 484
  Doom 3, 315-316
  Fedora, 53
    Anaconda installing, 18, 63
    BIOS settings, 45

- boot loaders, 56-57, 68-70
- boot prompt options, 61-62
- boot screen navigation, 60-61
- boot times, changing, 78
- business considerations, 30
- CD-ROM installation, 54-58
- controllerless modems, 37-38
- CPU, 39-40
- deployment plans, 33
- finishing, 76-77
- firstboot configuration, 78-80
- FTP, 58-59
- hard drive partitions, 45-48, 66-68
- hard drive storage, 35
- hardware compatibility, 36-37
- hardware inventories, 40-43
- hardware requirements, 33-34
- hardware specifications, researching, 53-54
- HTTP, 59
- install methods/types, choosing, 54, 57
- keyboards, choosing, 64
- kickstart method, 48-51
- languages, choosing, 64
- legacy hardware, 34
- logical volume management, 66
- media checks, 62, 64
- methods of, 43-44
- minimum Fedora requirements, 34
- monitors, 60, 64
- motherboard-based hardware, 38-39
- mouse device configuration, 64
- multiple Ethernet devices, 71
- network installations/configurations, 58-59, 70-71
- NFS, 59
- overview of, 43
- partition strategies, planning, 55
- predeployment checklist, 32
- references, 51-52, 82
- root accounts, creating, 74
- root passwords, creating, 73-74
- software, choosing/installing, 54-55, 74-76
- system considerations, 30-31
- text-based installations, 60
- time zones, setting, 71-72
- USB devices, 38
- user considerations, 31
- user satisfaction, 32

Fetchmail, 681
FTP servers, quick installation, 641
FTP software, 638-639
hard disks/drives, relocating file systems, 959-960
INN (InterNetNews) packages, 755
install methods, specifying, 18
installation media, testing via installer, 18
MySQL, 578-579
NFS (Network File System), 594
Nmap, 876
OpenOffice.org, 243-244
Personal Desktop, 21
PostgreSQL, 581
precompiled kernels, 980
Python, 789
Quake 4, 318
Samba, 597
Squid proxy server, 692
Tripwire security tool, 878
TWiki interactive collaboration tool, 233
Unreal Tournament 2004, 317-318
video drivers, 314-315
Wolfenstein: Enemy Territory, 319
Xen, 517-518

integers
data types, 811
Python, 791

Intel-based Linux distribution websites, 1005

intellectual property rights, 261

interactive interpreter (Python), 790

interfaces
  dummy interfaces, 456
  localhost, 455
    checking availability of, 456
    manual configuration, 456-457
InterMezzo network file system, 939
internal computer attacks, defining, 873-875
internal network websites, Apache Web server virtual hosting, 553
Internet
  chats, IRC clients, 234-236
  connections, 490
    AOL, 491
    common configuration, 491-492
    dial-in PPP servers, 502-504
    dial-up access, 495-500
    DSL, 492-494
    overview of, 22
    troubleshooting, 501
    voice modem support, 503
  development of, 210
  email clients
    Balsa (GNOME Office), 217, 253
    development of, 213
    Evolution, 215-217, 253, 747-748
    KMail, 219
    mail utility, 221-222
    Mozilla Mail, 219
    mutt, 222-224
    new client information websites, 224
    Pine, 222
    Sylpheed-claws, 224
    Thunderbird (Mozilla), 217
  Fedora installation, 44
  IM (instant messaging), 236
  newsgroups, 225
  newsreaders
    KNode news client, 228-229
    Mozilla news client, 229-231
    Pan news client, 226-228
    slrn news client, 226
    Thunderbird news client (Mozilla), 231
  video conferencing, GnomeMeeting application, 236-237
  web browsers
    Epiphany, 212
    Firefox (Mozilla), 210-211
    Konqueror, 212
    Mozilla Suite, 211-212
Internet coffee pot, 288
Internet Explorer (MS), Squid proxy server configuration for, 692
interpreters (Mono), 860
intranet websites, Apache Web server virtual hosting, 553
inventories
  hardware, 40-43
  managing, yum (Yellowdog Updater, Modified) command, 929-931
IP addresses, 458
  dotted quad IP addresses, 701
  gatekeepers, 237
  IP masquerading, 460
  limitations, 459-460
  netmasks, 459, 462-463
  network classes, 458-459
  Squid proxy server, 698
ipchains packet-filtering software, 882
IPP (Internet Printing Protocol), 299
iptables packet-filtering software, 882
IPv4 (IP version 4)
  IP masquerading, 460
  limitations, 459-460
  netmasks, 459, 462-463
  network classes, 458-459
IRC (Internet Relay Chat) clients, 234, 1009-1010
  cursing website, 235
  etiquette, 235
  IRCd servers, 236
  Perl resources, 788

  - root users, using as, 234
  - X-Chat, 234
- **irda files, 85**
- **iso9660 file systems, 945**
- **iso9660 file system/etc/fstab files, 956**
- **isolation (ACID), database compliance comparisons, 577**
- **isset() function, 834**
- **iteration statements**
  - break, 409
  - case, 407-408
  - exit, 409
  - for, 400-401
  - if, 405-406
  - repeat, 404
  - select, 404
  - shift, 405
  - until, 403-404
  - while, 401-403
- **iwconfig command, 504**
- **iwconfig tool, 487**
- **iwlist tool, 487**
- **iwpriv tool, 487**
- **iwspy tool, 487**

J

- **Jabber protocol, 236**
- **Jabber servers, 236**
- **Jargoogle web search page, 214**
- **Java**
  - enabling, 281
  - Mono versus, 860
- **jed (text editor), 147**
- **JFS (Journal File System), 18-19, 939, 944**
- **jfs modules, 936**
- **job numbers (batch tasks), viewing, 368-369**
- **job-control commands, 373-374**
- **joe (Joe's Own Editor), 148**
- **joining strings, Python, 794**
- **journal mode (ext3 disk file system), 942, 952**
- **journaling**
  - ext3 disk file system, 942, 952
  - JFS (Journal File System), 18-19, 939, 944
- **joystick*.rpm packages, 90**
- **joysticks, 90**
- **.jpg graphics file format, 294**
- **jumpers (hard drives), 959-960**

K

- **K Desktop Environment (KDE), 188**
- **kaboodle command, 282**
- **kamera command, 297**
- **kate (text editor), 148**
- **kbdrate command, 88**
- **kbd_mode command, 88**
- **kcoloredit command, 297**
- **kcontrol client, 179, 188**
- **kdat backup tool, 435**
- **KDE (K Desktop Environment), 179, 188**
  - ark backup tool, 435-437
  - C/C++ programming, 845, 853-854
  - kdat backup tool, 435
  - KDevelop, C/C++ programming, 853-854
  - KMail email client, 219
  - KNode news client, 228-229
  - KOffice, 255-258
  - Konqueror web browser, 212, 565, 667
    - configuring for Squid proxy server, 692
    - FTP sessions, 634-635
  - kppp client, serial-port modem configurations, 98
  - mailing lists, 1008
  - optimizing, 891
  - Qt Designer (Trolltech), C/C++ programming, 854
  - system monitoring tools, 422

kdetv command, 279
KDevelop, 853-854
kdevelop command, 857
kdf tool, 422
KDiskFree (KDE), mounting file systems, 957
kdm (KDE display manager), configuring, 179
kedit (text editor), 148
kernel
  #! (shebang lines), 380-381
  backups, 985
  booted kernel storage, 124
  compiling, 984, 987-988
    bzDisk directive, 986
    bzImage directive, 986
    retaining current kernel version, 985
    speeding up, 986
    troubleshooting, 993
    viewing compilation date, 17
    zImage directive, 986
  configuring
    make config utility, 987
    make menuconfig utility, 987-988
    make xconfig utility, 988-989
    RAM disk images, 992
    subsections of, 989-992
  development of, 974
  developmental releases, 981
  device drives, 976
  in-line kernels, 977
  init processes, 353
  modular kernels, 977
    cramfs modules, 936
    /etc/modprobe.conf files, 978-979
    ext3 modules, 936
    fat modules, 936
    file system supported modules, 936
    jfs modules, 936
    loading modules, 980
    managing, 978-979
    msdos modules, 936
    nfs modules, 936
    ntfs modules, 936
    reiserfs modules, 936
    removing modules, 979
    romfs modules, 936
    smbfs modules, 936
    udf modules, 936
    ufs modules, 936
    umsdos modules, 936
    vfat modules, 936
  modules
    loading, 470-471
    managing, 979
  monolithic kernels, 977
  multiple versions, compiling, 982
  numbering system for, 17
  oops, 994
  optimizing, 890
  overview of, 973-974
  patched kernels, 980, 983-984
  PID, 353
  precompiled kernels, 980
  recompiling, 980
  references, 995-996
  runtime errors, troubleshooting, 994
  SCSI disk drivers, 977
  security, 873
  source code in /usr/src/linux-2.6 directory, 976
  source trees, makefiles, 974
  sources, obtaining, 982
  stable kernels, 981
  symbolic links, changing, 982
  testing programs in /usr/src/linux-2.6 directory, 976
  type of, selecting, 977
  versions of, 981
kernel-parameters.txt files, 975
kernel-xen-guest package, 517
key-based logins, 511-512
Keyboard and Console HOWTO website, 133

keyboard files, 85
keyboards
  choosing for installation, 64
  configuring, 86, 89-90, 134
  KVM (keyboard video mouse) hardware, 94-95
  Linux support, 86
keys, 812
keys function, Perl hashes, 771
keywords
  C/C++, 846, 850
  reserved SQL keywords, 572
  substitutions (C/C++ programming), 850
kibitz command, 410
Kickstart Configurator dialog, Fedora installation, 49
kickstart installation method, 48-51
kiconedit command, 297
kill command, 415-416
kill-SIGHUP command, 697-698
kmail command, 688
KMail email client, 219
Kmid, 273, 282
Kmix sound mixer, 271
knode command, 763
KNode news client, 228-229
KOffice, 255-256, 258
Konqueror web browser (KDE), 212, 565, 667
  FTP sessions, 634-635
  Squid proxy server, configuration for, 692
kooka command, 297
Kooka scanners, 292
KOrganizer scheduling program (KOffice), 257-258
korn command, 688
KornShell 93, 379
koshell command, 259
kpaint command, 297
kppp client (KDE), serial-port modem configurations, 98-100
kppp command, 116
ks.cfg files, Fedora installation, 51
ksconfig command, Fedora installation, 49
ksh shell, 372
ksort() array function, 830-831
KSpread (KOffice), 257
kspread command, 259
ksysguard tool, 422
kudzu service, 84-86, 128
kuickshow command, 297
kview command, 297
KVM (keyboard video mouse) hardware, 94-95
KwikDisk (KDE), mounting file systems, 957
KWord (KOffice), 256-257
kwrite (text editor), 148

L

lame delegation, 729
lame servers, 729
LANG environment variable, 142
languages
  installation, choosing for, 64
  keyboards, selecting for, 87
LANs (Local Area Networks), enabling network printers, 608-611
laptops, Linux informational websites, 1006
large enterprise backup strategies, 427
last command, monitoring user logins/logouts, 335
last statements (Perl), 777
lastb command, monitoring failed logins/bad logins, 336
LBA (Logical Block Addressing), 959-960
LDAP (Lightweight Directory Access Protocol)
  adding people to, 744-746
  CN, 742, 745
  DN, 742-743
  email clients, 747-749
  functions of, 741

- ldapadd command, 746
- ldapsearch command, 746
- LDIF, 744
- nonspecific searches, 744
- OpenLDAP, 741
  - file permissions, 746
  - management tools, 749
- phpLDAPadmin administration tool, 749
- references, 749
- root users, 742-743
- server configuration, 742-744
- slappasswd tool, 743

ldapadd command, 746

ldapsearch command, 746

LDIF (LDAP Data Interchange Format), 744

LD_LIBRARY_PATH environment variable, 142

-le number comparison operators, 392

leaf node news servers, 752

legacy hardware, 34-35

less command, 139, 145
- plain-text files, reading, 24
- software package documentation, reading, 140

less shell command, 910-912

less than sign (>)
- > operators, 397
- => (less than or equal) operators, 397

Lightweight Directory Access Protocol. *See* LDAP

LILO, 353
- configuration, HOWTO document websites, 994
- Fedora support, 966

linkers, 844

links
- files, ln shell command, 912-913
- hard links, 912-913
- symlinks, 912-913

Linux. *See also* Fedora; kernel
- Enterprise Linux (Red Hat, Inc.)
  - overview of, 13
  - release cycles, 17
  - uses of, 20
- guides, 1003
- manual pages, 23-24
- PC tablets, 90
- success of, 14
- UNIX comparisons, 14
- viruses, security, 880
- websites
  - Linux Hardware HOWTO website, 37
  - Linux Laptop website, 1006
  - Linux Professional Institute website, 1002
  - Linux SMP HOWTO website, 40
  - Linux USB project website, 622
  - Linux-USB device over website, 36
  - LinuxPrinting.org website, 36

linux askmethod boot prompt option, 61

linux dd boot prompt option, 61

Linux Documentation Project, 1003

linux mediacheck boot prompt option, 61

linux nofb boot prompt option, 62

linux noprobe boot prompt option, 61

linux rescue boot prompt option, 61

linux resolution=width x height boot prompt option, 62

linux updates boot prompt option, 61

Linux Zaurus PDAs, 1006

Listen directive (httpd.conf files), 536

listing
- files in current directory via ls shell command, 914-916
- processes via ps shell command, 917

listings
- ftphosts configuration files, 661
- purging log files, 783
- xinetd configuration file for wu-ftpd, 641

Livna repository, 315

lm_sensors package, 103

ln command, 912-913
  Apache Web server source code, building, 528
  serial-port modem configurations, 98
loading
  kernel modules, 470-471
  modules, 980
loadkeys command, 88-89, 134
LOADLIN kernel size issues, 57
local caches, 708
local disk file systems, 938
  ext2, 939
    creating via mke2fs command, 951
    defragmentation, 941
    ext3 conversion, 965-967
    ext3 transitions, 941
  ext3, 939
    creating, 951-952
    defragmentation, 941
    development of, 940-941
    ext2 conversions, 965-967
    ext2 transitions, 941
    file/directory sizes, 941
    journaling options, 942, 952
    performance, 941
    structure of, 941
    verifying file integrity, 943
  FAT, 939, 945, 950
  reiserfs, 939, 944, 950-952
local news servers, 753
local printers, 305-311
local repositories (yum), creating, 932-934
localhost interfaces, 455-457
locate command, 145
locate shell command, 914
locking data, database comparisons, 576
LogFormat statement (Apache Web server), variables of, 553-554
logical comparisons (comparison of expression), 395-396, 399
login process, 131
  dial-up logins, 134
  overview of, 346-347
  sessions, 132
  remote computers, 135-137
  text-based console logins, 132
  via remote computers, 135-137
  virtual consoles, 132-133
logname command, 350
logs
  Apache Web server, 553-554
  BIND (Berkeley Internet Name Domain), 722-723
  purging (Perl coding example), 783
  system logs
    controlling, 386
    Perl, 768
logwatch command, configuring, 386
lokkit command, 504, 881, 884
long integers, Python, 792
lookups, forward/reverse, 709
loop blocks, Python, 799
loopback file systems, 962-964
loopback interface. *See* localhost interface
loops
  endless, 401-402
  foreach, Mono, 863
  Perl
    do, until loops, 778
    do, while loops, 778
    for loops, 776
    foreach loops, 776
    last statements, 777
    next statements, 777
    redo statements, 777-778
    until loops, 777
    while loops, 777
  PHP, 823-825
  Python
    break keyword, 800
    continue keyword, 800
    for loops, 798-799

        - infinite loops, 799
        - loop blocks, 799
        - multiline loops, 799
        - while loops, 799
- **losetup command, creating loopback file systems, 963**
- **losing data, reasons for, 424**
- **lp command, 304, 311, 614, 622**
- **lpadmin command, 303**
- **lpc command, 304, 311, 614-615, 622**
- **lpf command, 304**
- **lpq command, 311, 614-615, 622**
- **lpr command, 615**
- **lprm command, 304, 311, 614-615, 622**
- **LPRng, configuring Print service restrictions, 609**
- **lpstat command, 304, 311, 614, 616, 622**
- **ls command, 121, 153, 914-916**
    - Fedora installation, verifying, 51
    - software versions, tracking, 192
    - user account permissions, viewing, 326
- **lsmod command, 116**
    - modular kernel management, 978-979
    - pointer configuration, 91-92
- **lsraid command, 970**
- **lsusb command, 293**
- **-lt number comparison operators, 392**
- **LUG (Linux Users Groups), 1003**
- **lun (logical unit number), 263**
- **LVM (Logical Volume Management), 19, 66, 961-962**

M

- **m3u file format, 274**
- **MAC (media access control), 464**
- **MACHINE environment variable, 142**
- ***Maelstrom*, 314**
- **magic cookies, 653**
    - ftpshut command, 665
    - list of, 652
    - shutdown file magic cookies list, 658
- **mail command, 222, 688**
- **mail daemons, 686**
- **mail relaying, 677**
- **mail server options (Fetchmail), 682**
- **mail utility**
    - commands list, accessing, 222
    - email messages
        - reading, 221
        - responding to, 222
        - retrieving, 221
        - sending, 221
        - status indicators, 221
    - shell scripting, 222
- **mail. *See* email**
- **mailcmd parameter (innd.conf), 756**
- **maildir, 672**
- **mailing lists, 25, 1000, 1008-1009**
- **mailpost files, 754**
- **MailScanner, 686**
- **MAILTO lines (/etc/crontab files), 370**
- **Mail:Sendmail module (Perl), 782-783**
- **major numbers, 968**
- **major version section (kernel), 981**
- **make bzImage command, kernel compilation, 986**
- **make clean command, kernel compilation, 986**
- **make command, 846-848, 857, 995**
- **make config utility, kernel configuration, 987**
- **make dep command, kernel compilation, 986**
- **make install command, kernel compilation, 986**
- **make menuconfig utility, kernel configuration, 987-988**
- **make modules command, kernel compilation, 986**

make modules_install command, kernel compilation, 986

make utility, documentation website, 976

make xconfig utility, kernel configuration, 988-992

makedbz files, 754

makefiles, 846-848, 974

makehistory files, 754

malicious codes, trojan scripts, 380

man command, 24, 138, 916

man pages

- accessing, 138
- graphics file formats, 295-296
- searching, 138-139

managing

- adding new, 335
- files for character devices, block devices, and special devices, 967-969
- LDAP, 748-749
- modular kernels, 978-980
- print services, 303-305

manual pages, 23-24, 916

manual system services, starting/stopping, 366

manually restoring partition tables, 448-449

manually starting Apache Web server, 530-531

MARC (Mailing listARChives) website, troubleshooting kernel errors, 994

masquerading

- IP, 460
- Sendmail, 675

master nameservers, 708

master/slave jumpers (hard drives), 959-960

Math (OpenOffice.org), 242

math operators (Perl), 773

max clients setting (vsftpd server default settings), 645

max per ip setting (vsftpd server default settings), 645

maxconnections parameter (innd.conf), 756

mbox format, 672

MBR (Master Boot Record), 353, 448, 946

mc (Midnight Commander) command-line file management software

- copying files, 441
- file recovery, 446-447

mc command, 410

mcedit (text editor), 148

MDAs (Mail Delivery Agents), 673

- choosing, 684-685
- defining, 214
- FetchYahoo, 686
- Gotmail, 686
- Hotwayd, 686
- MailScanner, 686
- Procmail, 685
- Spamassassin, 685
- Squirrelmail, 685-686

memory

- free memory, displaying, 418
- local caches, 708
- PCs, testing via installer, 18

memtest86 boot prompt option, 61

metadata, defining, 935

methods, Python

- class methods, 801
- constructor methods, 803
- destructor methods, 803
- lists, 796
- string methods, 794

mformat command, 970

mget command, 626, 629-630

Microsoft Exchange Server, 687

middleware, database clients as, 588

MIDI mappers, 273

migration (Fedora), 30-31

mikmod command, 282

MIME (Multipurpose Internet Mail Extensions) Protocol, 214

mini-CD Linux distribution websites, 1004

minicom, 101, 497

minor numbers, 968

minor version section (kernel), 981

mirroring data, 429

mkbootdisk command, 995
mkdir shell command, 916-917
mkdosfs command, creating DOS file systems, 950-953
mke2fs command, 888, 951
mke2fs-S command, file recovery, 446
mkfs command, 970
mkfs.bfs command, 950
mkfs.ext2 command, 950
mkfs.ext3 command, 951-952
mkfs.minix command, 950
mkfs.msdos command, 950
mkfs.vfat command, 950
mkinitrd command, 966, 995
mkisofs command, 263-264, 282, 970
mknod command, 969
mkpasswd command, random password generation, 137
mkreiserfs command, 950-952, 970
mkswap command, 970
mnemonic characters, 152
.mng graphics file format, 294
Modem Configuration Wizard, 498-500
modems, 97. *See also* dial-up Internet access
  controllerless modems, 37-38
  fax modems, configuring, 101
  minicom script, 101
  serial modems, configuring, 98-100
  WinModems, configuring, 102
moderatormailer parameter (innd.conf), 756
moderators files, 754
modinfo command, modular kernel management, 978
modprobe command, 470-471, 978
modprobe.conf files, 85, 125, 469-470
modular kernels, 977
  cramfs modules, 936
  /etc/modprobe.conf files, 978-979
  ext3 modules, 936
  fat modules, 936
  file system supported modules, 936
  hfs modules, 936
  jfs modules, 936
  loading modules, 980
  managing, 978-979
  msdos modules, 936
  nfs modules, 936
  ntfs modules, 936
  reiserfs modules, 936
  removing modules, 979
  romfs modules, 936
  smbfs modules, 936
  udf modules, 936
  ufs modules, 936
  umsdos modules, 936
  vfat modules, 936
Module section (xorg.conf configuration files), 170
modules
  loading, 980
  Perl
    CPAN, installing/loading from, 780-782
    Mail:Sendmail, 782-783
    standard modules list, accessing, 780
  Python standard library modules, 806
  removing, 979
mod_access module (Apache Web server), 546
mod_alias module (Apache Web server), 546
mod_asis module (Apache Web server), 546
mod_auth module (Apache Web server), 547
mod_auth_anon module (Apache Web server), 547
mod_auth_dbm module (Apache Web server), 547
mod_auth_digest module (Apache Web server), 547
mod_autoindex module (Apache Web server), 548
mod_cgi module (Apache Web server), 548
mod_dir module (Apache Web server), 548

mod_env module (Apache Web server), 548

mod_expires module (Apache Web server), 548

mod_headers module (Apache Web server), 548

mod_include module (Apache Web server), 549

mod_info module (Apache Web server), 549

mod_log_config module (Apache Web server), 549

mod_mime module (Apache Web server), 549

mod_mime_magic module (Apache Web server), 549

mod_negotiation module (Apache Web server), 549

mod_proxy module (Apache Web server), 549

mod_rewrite module (Apache Web server), 549

mod_setenvif module (Apache Web server), 550

mod_speling module (Apache Web server), 550

mod_ssl module (Apache Web server), 550

mod_status module (Apache Web server), 550

mod_unique_id module (Apache Web server), 550

mod_userdir module (Apache Web server), 550

mod_usertrack module (Apache Web server), 550

mod_vhost_alias module (Apache Web server), 550

Monitor section (xorg.conf configuration files), 171-172

monitoring
- console-based monitoring, 413-415
- disk quotas, 418
- ethereal tool, 420
- free command, 418
- gnome-nettool tool, 420
- gnome-system-monitor tool, 420
- graphical process/system management tools, 419-420
- kill command, 415-416
- nice command, 416
- renice command, 416
- time command, 416
- top command, 417
- uptime command, 418
- user activity, 335-336
- vmstat command, 418
- vncviewer tool, 420
- watch command, 418
- xcpustate client, 420
- xosview client, 419

monitors
- changing, 173
- installation, choosing for, 64
- configuring, 60, 94-96, 175

Mono
- Application Output window, 861
- args, 863-864
- command line
  - C# program structures, 862
  - compilers, 860
  - error checking, 864
  - interpreters, 860
  - parameters, printing out, 863
  - variables, creating, 863
- .exe file extensions, 862
- foreach loops, 863
- installing, 860
- Java versus, 860
- libraries
  - Beagle, 865-867
  - Gtk#, 867-868
  - viewing, 860
- MonoDevelop, 861
- reasons for using, 859-860
- web resources, 869
- WriteLine(), 863

MonoDevelop
  BeagleTest, 865
  Console Project template, 861
  Designer button, 868
  GtkTest, 868
  GUI designer, accessing, 868
monolithic kernels, 977
MOTD (Message of the Day), 159
motd.news files, 754
motherboard-based hardware, 38-39
Motif Window Manager (mwm), 184
mound command, command-line options, 955
mount command, 602, 970
  components of, 954
  Fedora installation, 50
  usage examples, 954
mounting
  file systems, 953
    amd, 958
    defining, 938
    /etc/fstab files, 955-957
    Floppy Formatter (KDE), 957-958
    KDiskFree (KDE), 957
    KwikDisk (KDE), 957
    mount command, 954
    umount command, 955
    User Mount Tool (KDE), 957-958
    usermount graphical file system management client, 957
  initrd files, 967
  loopback file systems, 963-964
  partitions, relocating file systems, 960-961
  read-only partitions, 964-965
  Samba shares, 602-603
mouse devices
  button assignment, 133
  configuring, 90-94
  system reboots/shutdowns, 134
  three-button emulation, 134
  X Window System updates, 171
mouse files, 85
mouseconfig client, 188
mouseconfig command, 90-92, 116, 134
mouseconfig tool, 86
.mov file format, 278
moving files via mkdir shell command, 917
mozilla command, 763
Mozilla Mail email client, 219
Mozilla news client, 229, 231
Mozilla Suite web browser, 211-212
Mozilla web browser, Java plug-ins, 281-282
MP3 files, 272
mpage command, 304
MPEG files, 272-274, 278
MPlayer, 279
MPM (multiprocessing modules), Apache Web server configuration, 538-539
mput command, 626
msdos modules, 936
mta parameter (innd.conf), 756
MTAs (Mail Transport Agents), 670
  choosing, 672
  defining, 214
  Exim, 672
  maildir, 672
  Postfix, 671, 679-680
  Qmail, 671
  Sendmail, 670-671
    aliases, 677-678
    delivery intervals, 676
    email access rules, 678
    mail forwarding, 677-678
    mail relaying, 677
    masquerading, 675
    rejecting email from specified websites, 678-679
    sendmail.cf files, 674-677
    smart hosts, 675
MUAs (Mail User Agents), 213, 673-674
multi-session CDs, creating, 264
multicasting, 463
multidimensional arrays, 812

multimedia, 261
  CDs
    burning, 263-264, 267-269
    CD writers, installing, 262
    erasing, 264
    informational websites, 267
    lun (logical unit number), 263
    multi-session CDs, 264
    overburning, 264
    storage capacity, 264
    uses for, 262
  Cedega, 321-322
  Doom 3 installation, 315-316
  DVDs
    burning, 265-269
    DVD+RW, 266
    formats of, 265
    preformatted DVDs, 266
    storage capacity, 265
  hardware for, 277
  intellectual property rights, 261
  Java, enabling, 281
  Quake 4 installation, 318
  related commands, 282
  sound, 270
    formats, 271-273
    music players, 273
    recording, 271
    sound cards, 271
    streaming audio, 274-275
  TV/video
    DVD/video players, 281
    hardware, 275-277
    personal video recorders, 280
    video formats, 277-278
    viewing TV in Linux, 279-280
    viewing video in Linux, 278-279
  Unreal Tournament 2004 installation, 317-318
  video driver installation, 314-315
  websites, 283
  Wolfenstein: Enemy Territory installation, 319
multiple class inheritance, Python, 805-806
multiple files copying between servers, 511
multiple kernel versions
  compiling, 982
  patching, 983
multiple print queues, configuring, 310
multiple terminals, screen shell command, 922-924
music players, 273
music. *See* sound
mutability
  lists, 795
  Python dictionaries, 797
mutt command, 689
mutt email client, 222-224
mv command, 145, 917
mwm (Motif Window Manager), 184
myenv shell script, 378-380
MySQL
  access/permission issues, 586
  CONCAT() function, 574
  data directories, 578
  database clients
    command-line clients, 586
    graphical clients, 591
    local GUI database access, 587
    mysql command-line client, 588-590
    SSH database access, 586
    web database access, 588
  databases, creating, 579
  grant tables, initializing, 578
  installing, 578
  optimizing
    measuring key buffer usage, 893-894
    query caches, 894-896
    query optimization, 896-897
    read buffers, 896
    table caches, 896

- PostgreSQL comparisons, 575
  - ACID compliance, 577
  - data locking, 576
  - procedural languages, 578
  - speed, 576
  - SQL subqueries, 577
  - triggers, 578
- privileges, 580
- root user passwords, 579
- user accounts, adding, 580

mysql command (MySQL), 591
mysql command-line client, 588-590
mysqladmin command, 580, 591
mysqldump command (MySQL), 591
MySQLGUI website, 591
mysql_install_db command, MySQL configuration, 578-579
MythTV, 280

N

-n string expression operators, 391
name resolution. *See* DNS (Domain Name System)
name servers, configuring, 478
name-based virtual hosts, 552-553
named daemons, 724-725, 739
named.conf files, 717-719
nameservers
- authoritative nameservers, 707-708
- caching nameservers, 713-714
- serial number accuracy, 730

namespaces, structure of, 706
nano (text editor), 148
nano command, 410
NAS (Network Attached Storage), 431-432
NAT (network address translation), 459
Nautilus web browser (GNOME), 635, 667
navigating
- GNU command documentation, 139
- shells, 144-145

ncftp servers, 638, 667
NcFTPd servers, 637-638
-ne number comparison operators, 392
neat client, serial-port modem configurations, 98
nedit (text editor), 148
needs assessments (backups), 425-426
Nessus, system vulnerability assessments, 876
nested lists, 795
NetBoot, 353
netconfig command, 505
NetFilter. *See* iptables packet-filtering software
netmasks, 459, 462-463
netstat command, 475-476
network files, 478-479
networks, 455
- books, 506
- bridges, 468
- broadcasting, 463
- cable
  - fiber optic, 467
  - UTP (unshielded twisted pair), 464-467
- Class A, 458
- Class B, 459
- Class C, 459
- command summary, 504
- command-line network interface configuration
  - ifconfig, 472-474
  - netstat, 475-476
  - route, 474-475
- configuration, 70-71
- configuration files
  - /etc/hosts, 476-477
  - /etc/nsswitch.conf, 477-478
  - /etc/resolv.conf, 478
  - /etc/services, 477
  - /etc/sysconfig/network, 478-479
  - system-config-network tool, 479-481

DHCP (Dynamic Host Configuration Protocol), 481
  activating, 482-483
  dhclient installation, 483-484
  DHCP server installation/configuration, 484-486
  dhcpd.conf options, 487
disaster recovery plans, 883
dual-host no-NIC networks, 464
gateways (smart/dumb), 468
hubs, 467
installing Fedora from, 58-59
Internet connections, 490
  AOL, 491
  common configuration, 491-492
  dial-in PPP servers, 502-504
  dial-up access, 495-500
  DSL, 492-494
  troubleshooting, 501
  voice modem support, 503
localhost interface, 455-457
multicasting, 463
netmasks, 459, 462-463
news systems
  newsgroups, 225
  newsreaders, 226-231
  Pan, 228
NICs (network interface cards), 463-466
patches/upgrades, 505
printers, 608-613
routers, 468
security
  backups, 878
  bridges, 880
  firewalls, 881-882
  passwords, 877
  physical security, 877-878
  Tripwire security tool, 878-879
  updates, 884
storage, 431-432
subnets, 462
switches, 467
TCP/IP
  IP addresses, 458-460
  IP masquerading, 460
  netmasks, 459, 462-463
  ports, 461
troubleshooting, 467
unicast addressing, 463
uplink ports, 467
VPNs (Virtual Private Networks), telnet command, 137
websites, 505-506
wireless networks, 114-116, 487-490

newgroup command, 762

news clients
  KNode, 228-229
  Mozilla, 229-231
  Pan, 226, 228
  slrn, 226
  Thunderbird (Mozilla), 231

news servers. *See* INN (InterNetNews) package

news.daily files, 754

newsfeeds files, 754

newsgroups, 225, 1006-1008

newsgroups files (INN), 760-761

newsreaders
  KNode news client, 228-229
  Mozilla news client, 229-231
  Pan news client, 226-228
  slrn news client, 226
  Thunderbird news client (Mozilla), 231

newusers command, 341, 350

next statements (Perl), 777

NFS (Network File System)
  client configuration, 596-597
  Coda, 939
  Fedora installation, 44, 59
  installing, 594
  InterMezzo, 939
  server configuration, 594-596
  SMB, 939

  - starting/stopping, 594
  - uses of, 594
- **nfs modules, 936**
- **nice command, 416**
- **NICs (network interface cards), 463**
  - 10BASE-T, 464
  - 100BASE-T, 464-465
  - 1000BASE-T, 465
  - fiber optic, 465
  - initialization, 468-471
  - MAC (media access control), 464
  - Promiscuous mode, 879
  - token ring, 464
  - wireless, 465-466
- **Nmap, 876**
- **nmap command, 612**
- **nnrpd files, 754**
- **nnrpd.track files, 754**
- **NNTP (Network News Transfer Protocol), 225**
- **nntpget files, 754**
- **nntpsend files, 754**
- **nntpsend.ctl files, 754**
- **noatun command, 278, 282**
- **nohup command, running programs after logging out, 134**
- **noload mode, ext3 disk file system, 952**
- **nologin files, 346**
- **notebook monitors, 95**
- **NS records, 722**
- **nslookup command, 710-711**
- **nsswitch.conf files, 477-478, 703-704**
- **nsupdate command, 739**
- **ntfs modules, 936**
- **ntpbm-progs command, 297**
- **ntsysv command, 93, 116, 360-362, 367**
- **numbers**
  - comparisons (comparison of expression), 392-394, 397
  - lun (logical unit numbers), 263
  - type conversions, Python, 792
- **numbering system for kernels, 17**
- **numeric operators**
  - comparison operators list (Perl), 772
  - Python, 791

O

- **-o file comparison operators, 398**
- **-o logical comparison operators, 395**
- **object data type, 811**
- **object variables (class), Python, 802**
- **octal characters, 152**
- **of= values (dd command), 437**
- **office suites, 240**
  - GNOME office, 252-254
  - Hancom Office, 258
  - KOffice, 255-258
  - OpenOffice.org
    - Base, 242
    - Calc, 241, 247-252
    - configuring, 243-244
    - development of, 242-243
    - Dia, 242
    - Draw, 242
    - Impress, 242
    - installing, 243-244
    - Math, 242
    - Planner, 242
    - spelling/hyphenation dictionaries, 244
    - website, 243
    - Writer, 241, 244-247
  - related commands, 259
  - websites, 260
  - Windows applications, running with Wine, 259
- **OfficeJet Linux driver project (HP) website, 622**
- **ogg files, 272**
- **Ogg-Vorbis files, 272**
- **one-liner Perl code examples, 784-785**
- **oocalc command, 259**

ooimpress command, 259

OOP (Object Oriented Programming), Python
- classes
  - creating instances of, 802
  - definitions, 801
  - inheritance, 804-806
  - methods, 801
  - object variables, 802
- constructor/destructor methods, 803

oowriter command, 259

open command, 626

open source business development model, 14

OpenLDAP, 741
- file permissions, 746
- management tools, 749

OpenOffice.org, 241-242
- Base, 242
- Calc, 241, 247-252
- configuring, 243-244
- development of, 242-243
- Dia, 242
- Draw, 242
- Impress, 242
- installing, 243-244
- Math, 242
- Planner, 242
- spelling/hyphenation dictionaries, 244
- website, 243
- Writer, 241, 244-247

OpenSSH, 636
- servers. *See* SSH, servers
- tools, wireless network security, 877

operands, 817

operator overloading, 795

operators
- [ ] operators, 812
- < operators, 397
- > operators, 397
- bar (|) operators, 376
- overloading, 795
- Perl
  - comparison operators, 772
  - compound operators, 773
  - math operators, 773
  - miscellaneous operators, 773-774
- PHP, 819
  - execution operators, 821
  - list of, 817-818
  - ternary operators, 821
- plus sign (+) operators (Python), 794-795
- Python, 794

optimizing
- Apache web server, 891-892
- file systems, 888-890
- GNOME desktop environment, 891
- hard disks/drives, 885-890
- KDE desktop environment, 891
- Linux kernel, 890
- MySQL
  - measuring key buffer usage, 893-894
  - query caches, 894-896
  - query optimization, 896-897
  - read buffers, 896
  - table caches, 896
- references, 897
- SQL statements, 896-897

Options directive (Apache Web server), 540

options field (ftpconversions files), 660

OR statements (SQL), 575

ordered mode (ext3 disk file system), 942, 952

organization parameter (innd.conf), 756

OSS (Open Sound System) sound card drivers, 271

output redirection, 373-376

ovdb_recover files, 754

ovdb_upgrade files, 754

overburning CDs, 264

overclocking, 40

ovmethod parameter (innd.conf), 756

P

packages
  choosing, 74-76
  dvd+rw-tools, 265-266
  installating, 74-76
  installed packages, listing, 1001-1002
  joystick*.rpm, 90
  kernel-xen-guest, 517
  lm_sensors, 103
  software package documentation, 139-140
  vnc, 517
  xen, 517
packets
  browsing, 880
  filtering, 882
  writing, 266
paging through file output via less shell command, 910-912
PAM (Pluggable Authentication Modules), 339-340
pan command, 763
Pan news client, 226-228
parallel port cameras, documentation, 288
paravirtualization, 516
parted command, 970
  Fedora installation, 46
  partitions, editing, 950
partition tables
  creating, 947
  editing, 947-950
  manually restoring, 448-449
partitions
  creating, 66-68
  hard disks/drives, creating file systems, 950-952
  IDE partitions, fdisk command, 947
  mounting
    read-only, 964-965
    relocating file systems, 960-961
  planning, 55
  supported types, 938
  zip disks, 947
passive command, 644
passwd command, 155-157, 333, 350
passwd files, 125, 325-327, 336-338
passwd.nntp files, 754
passwords, 877
  batch password changes, 341
  bootloaders, 877
  brute-forcing, 511
  /etc/passwd files, 336-338
  FTP users, 639-640
  GRUB, 358
  LDAP root users, assigning to, 743
  MySQL root users, 579
  PostgreSQL database users, creating, 584
  root passwords, creating, 73-74
  selecting, 340-341
  shadow passwords, 338-339, 639-640
  system password policies, 336
pasting, 133
patch command, 857, 984
patched kernels, 980, 983-984
patches
  binary patching, 516
  networks, 505
PATH environment variable, 142-143
PATH lines (/etc/crontab files), 370
pathhost parameter (innd.conf), 756
pathnews parameter (innd.conf), 756
pattern-matching, 373-375. *See also* wildcard searches
pbm command, 304
.pbm graphics file format, 294
PCI (Peripheral Control Interface) devices, power-management configuration, 103
pci=biosirg command, hard disk optimization, 886
PCMCIA cards
  PCMCIA Card Services software, 107-108
  removing/inserting, 109
  troubleshooting, 108-109

pcmcia files, 86
PCRE (Perl-Compatible Regular Expressions) functions, 836
.pcx graphics file format, 294
PDF documents, reading, 24
pdksh (public domain Korn shell), 372, 379
  comparison of expression
    file comparisons, 394-395
    logical comparisons, 395-396
    number comparisons, 392-394
    string comparisons, 391-392
  select statements, 404
  test command, 391
    file comparisons, 394-395
    logical comparisons, 395-396
    number comparisons, 392-394
    string comparisons, 391-392
PEAR::DB (PHP), 838-840
performance tuning
  Apache web server, 891-892
  file systems, 888-890
  GNOME desktop environment, 891
  hard disks
    benchmarks, 885
    BIOS adjustments, 886
    file system adjustments, 888-890
    hdparm command, 886-887
  KDE desktop environment, 891
  Linux kernel, 890
  MySQL
    measuring key buffer usage, 893-894
    query caches, 894-896
    query optimization, 896-897
    read buffers, 896
    table caches, 896
  references, 897
  SQL statements, 896-897
peripherals, configuring, 128
Perl
  #! (she-bangs), 769
  appeal of, 767
  books about, 786
  code examples
    command-line processing, 785
    one-liners, 784-785
    posting to Usenet, 784
    purging logs, 783
    sending email, 781-783
  command-line errors, troubleshooting, 769
  conditional statements, 774-775
  development of, 767
  functions
    die, 783
    use, 780
  IRC resources, 788
  looping constructs, 776-778
  modules
    loading from CPAN, 780-782
    Mail::Sendmail, 782-783
    standard modules list, accessing, 780
  operators
    comparison operators, 772
    compound operators, 773
    math operators, 773
    miscellaneous operators, 773-774
  perldoc command, 770
  perlfunc document, accessing, 770
  regular expressions, 778-779
  related Fedora and Linux commands, 786
  sendmail command, 781
  shell access, 779-780
  simple programming example, 768-770
  string constants, 774
  system logging, 768
  Usetnet resources, 787
  variables
    arrays, 770-771
    hashes, 770-771
    scalars, 770
    special variables, 771
  versions of, 768
  website resources, 787
perldoc command, 770

perlfunc documents, 770

permission control directives (ftpaccess configuration files), Wu-FTPd server configuration, 655-657

permissions, 151, 327-328
- assigning, 152
- directory permissions, 153-154
- file access permissions, changing via chmod shell command, 905
- FTP users, assigning for, 639
- group permissions, 328-330
- OpenLDAP files, 746
- sgid (set group ID) permissions, 155-156
- suid (set user ID) permissions, 155-156

Personal Desktop, installing, 21

pgaccess command (PostgreSQL), 591

.pgm graphics file format, 294

pg_ctl command (PostgreSQL), 591

Photoshop (Adobe), 286

PHP (PHP Hypertext Preprocessor)
- Apache Web server, dynamic content in, 555
- array functions, 830-831
- arrays, 812-813
- backreferencing, 837
- comments, 815
- conditional statements, 819-821
- constants, 813-814
- development of, 809
- entering/exiting, 810
- escape sequences, 815-816
- file functions, 832-834
- functions, 834-836
- HTML forms, handling, 837-838
- include keyword, 826
- installation packages, location of, 809
- loops
  - actions, 824
  - conditions, 824
  - declarations, 824
  - do, while loops, 825
  - for loops, 824
  - foreach loops, 824-825
  - while loops, 823
- manual page URL, 837
- operators, 819
  - execution operators, 821
  - list of, 817-818
  - ternary operators, 821
- PCRE functions, 836
- PEAR::DB (PHP), 838-840
- references, 814, 840-841
- resources, 812
- strings
  - defining, 816
  - functions, 826-829
  - variable substitution, 817
- switch/case blocks, break statements, 822-823
- variables, 810
  - arrays, 812-813
  - resources, 812
  - setting and unsetting, 834
  - types of, 811
  - variable substitution, 817

phpLDAPadmin administration tool, 749

physical security, 877-878

PIDs (process IDs), 353, 414

pine command, 763

Pine email client, 222

ping command, testing localhost interfaces, 457

pipes (|), 373, 968
- | (bar) operators, 376
- || (double pipes)
  - number comparison operators, 399
  - string concatenation function, 574

plain text files, reading, 24

Planner (OpenOffice.org), 242

planner command, 259

Pluggable Authentication Modules (PAM), 339-340

plus sign (+) operators (Python), 794-795

pmake command, 857

.png graphics file format, 294

.pnm graphics file format, 294

pointers, configuring, 90-94

poisoning, 733

POP (Post Office Protocol), 214

ports, 461, 467

positional arguments, 382

positional parameters, 383-384

Postfix, 671, 679-680, 690

PostgreSQL
- || (double pipe) string concatenation function, 574
- access/permission issues, 586
- data directories, initializing, 582-583
- data locking website, 577
- databases
  - clients, 586-591
  - creating, 583
  - users, creating/deleting, 584-585
- installing, 581
- MySQL comparisons, 575-578
- postmaster program, 583
- privileges, granting/revoking, 585
- psql command-line client, 584
- RPM distribution, 581
- website, 581

PostScript documents, 24, 304

pound sign (#)
- # run-parts lines (/etc/crontab files), 370
- #! (she-bangs), 380-381, 769

power management, 102-104

PowerPC-based Linux distribution websites, 1005

PPC platforms, 22-23

.ppm graphics file format, 294

PPP (Point to Point Protocol)
- checking version of, 495
- dial-in PPP servers, 502-504

ppp-off files, 495

ppp-on files, 495

ppp-on-dialer files, 495

ppp.linkup configuration files, 676

pppd command, 495

PPPoE (Point-to-Point Protocol over Ethernet), 493-494

pr command, 304

precompiled kernels, 980

prefork MPM (multiprocessing module), Apache Web server configuration, 539

preformatted DVDs, 266

preg_match() PCRE function, 836

preg_match_all() PCRE function, 836

preg_replace() PCRE function, 836

preinstalled Linux system vendor websites, 33

prelogin banners, 650-651

preprocessors, 844

presentation programs. *See* Impress

primary nameservers, 708

print commands, 614-615

printcap files, 125

printenv command, 142

printenv directive (SSI), 560

Printer model dialog (system-config-printer tool), 306

printers, 305
- adding to system, 300
- all-in-one (print/fax/scan) devices, troubleshooting, 621
- commands, 622
- console print control
  - print commands, 614-615
  - print job management, 615-616
  - system-config-printer-tui tool, 613-614
- console-based printers, configuring, 303
- CUPS (Common UNIX Printing System), 616-620
- driver/printer support cross-reference websites, 308
- GUI-based printers, configuring, 302
- network printers
  - enabling on LANs, 608-611
  - network-attached printer configurations/printing, 612-613
  - session message block printing, 611

- print queues
  - creating, 306-308
  - multiple print queues, configuring, 310
- print services management, 303-305
- settings, editing, 310-311
- sharing, 600-601
- troubleshooting, 621-622
- websites, 623

printers.conf files, 300

printing, 608
- commands, 622
  - list of, 303-304
  - location of via top shell command, 920
- disk usage via du shell command, 906-907
- drivers, list of, 303-304
- file contents via cat shell command, 902-903
- IPP (Internet Printing Protocol), 299
- last lines of files via tail shell command, 918
- managing print services, 303-305
- overview of, 299-301
- references, 311-312
- resource usage via top shell command, 919-920
- troubleshooting, 621-622
- websites, 623

privileges
- MySQL, 580
- PostgreSQL, granting/revoking in, 585
- system administrator privileges, granting to users, 341-346

procedural languages, database comparisons, 578

processes
- hidden processes, viewing, 420
- killing, 415-416
- listing via ps shell command, 917
- PIDs (process IDs), 414
- priority scheduling, 416-417

Procmail, 673, 685

productivity suites, 239-240
- GNOME office, 252-254
- Hancom Office, 258
- KOffice, 255-256, 258
- OpenOffice.org
  - Base, 242
  - Calc, 241, 247-250, 252
  - configuring, 243-244
  - development of, 242-243
  - Dia, 242
  - Draw, 242
  - Impress, 242
  - installing, 243-244
  - Math, 242
  - Planner, 242
  - spelling/hyphenation dictionaries, 244
  - website, 243
  - Writer, 241, 244, 246-247
- related commands, 259
- websites, 260
- Windows applications, running with Wine, 259

Project Planner (GNOME Office), 254

Promiscuous mode, 879

prompt command, 626

prompts, interactive interpreter (Python), 790

protocols. *See* specific protocols

proxy servers
- defining, 691
- references, 700
- Squid
  - ACL, 693-697
  - client configuration, 692
  - configuration examples, 699-700
  - installing, 692
  - kill-SIGHUP command, 697-698
  - specifying client IP addresses, 698
- uses of, 691

prunehistory files, 754
ps command, 414, 917
PS101 print server adapter (NETGEAR), 612-613
psmandup command, 304
psql client program, PostgreSQL database creation, 584
psql command (PostgreSQL), 591
psql command-line client, 584, 590-591
PTR records, 722
pullnews files, 754
purging logs, Perl coding example, 783
put command, 627
PWD environment variable, 142
PXE, 353
Python
  * operator, 794
  + operator, 794-795
  conditional statements, 798
  dictionaries, 797
  functions, defining, 800-801
  installing, 789
  interactive interpreter, 790
  lists
    built-in methods, 796
    copying, 796
    mutability, 795
    nested lists, 795
    operator overloading, 795
  loops
    blocks, 799
    break keyword, 800
    continue keyword, 800
    for loops, 798-799
    infinite loops, 799
    multiline loops, 799
    while loops, 799
  number-handling, 791-792
  OOP
    classes, creating instances of, 802
    classes, definitions, 801
    classes, inheritance, 804-806
    classes, methods, 801
    classes, object variables, 802
    constructor/destructor methods, 803
  references, 807
  scripts, executing, 790
  standard library modules, 806
  strings
    assigning value to, 792
    built-in methods, 794
    concatenating, 794
    immutable sequences, 792
    indexing, 793
    repeating, 794
  unofficial scripts/add-ons websites, 807
  van Rossum, Guido, 789

Q

Qmail, 671
qt (QuickTime) file format, 278
Qt Designer (Trolltech), 854
QtVision, 279
***Quake 4*, installation, 318**
-qe number comparison operators, 392
-qt number comparison operators, 392
queries
  caches, MySQL optimization, 894-896
  controlling, 735-736
question mark (?), shell pattern-matching searches, 375
Queue Name dialog (system-config-printer tool), 306
Queue Type dialog (system-config-printer tool), 306
quota.user files, 348
quotacheck command, 349
quotaoff command, 348
quotaon command, 348-349

- **quotes (’)**
  - ” (double quotes), resolving variables in shell strings with embedded spaces, 388-389
  - maintaining shell strings with unexpanded variables, 389
- **qv client, reading documents with, 24**

R

- **-r file comparison operators, 394, 398**
- **RabbIT, 504**
- **RAID arrays, 19, 429**
- **RAM (random access memory)**
  - disk images (kernel), 992
  - Fedora installation on legacy hardware, 35
- **RARP (Reverse Address Resolution Protocol), 463**
- **raw files, 271**
- **rc.sysinit script, 354**
- **rcp command, SSH servers, 509**
- **RCS (Revision Control System), C/C++ programming, 849-850**
- **rcs command, 857**
- **RDBMS (Relational Database Management Systems), 569**
  - data storage, 569
  - SQL
    - commands, whitespace, 572
    - CREATE statements, 572
    - creating tables, 571-572
    - INSERT statements, 573
    - inserting data into tables, 573
    - reserved keywords, 572
    - retrieving data from databases, 573-575
    - SELECT statements, 573
  - table relations, 569-570
- **read-only partitions, mounting, 964-965**
- **readers.conf files, 755, 758-760**
- **reading**
  - email messages via mail utility, 221
  - HOWTO documents, 24
  - manual pages via man shell command, 916
  - PDF documents, 24
  - plain text files, 24
  - PostScript format documentation, 24
- **Real Player website, 274**
- **reboot command, 81**
- **rebooting system, 159**
- **Receiving Mail screen (Evolution email client), 217**
- **recompiling kernel, 980**
- **recording sound, 271**
- **records**
  - NS records, 722
  - PTR records, 722
  - RR (resource records), 706-707
  - SOA (Start of Authority) records, 721-722
  - TXT records, 722
- **recovering files, 446-447. *See also* deleting, files**
- **Recovery Facility (installation disc), system boots, 451-452**
- **recovery plans, 883**
- **Red Hat, Inc. *See also* Linux**
  - desktop development, 166
  - Enterprise Linux
    - overview of, 13
    - release cycles, 17
    - uses of, 20
  - Linux, distribution of, 13
  - mailing lists, 1009
  - overview of, 14
  - websites, 1002-1004
    - Certified Engineer program, 1002
    - Migration Center website, 29
- **redirection, 373-376**
- **redo statements (Perl), 777-778**
- **redundant file system descriptors, 937**
- **references. *See* websites**
- **registering domains, 728**

registrars, 728
regular expressions, 550, 778-779
regular user accounts
  occasionally granting root privileges, 343
  restricted shell control, 346
regular users, 326
reiserfs (Reiser file system) disk file system, 939, 944, 950-952
reiserfs modules, 936
reiserfsck command, 970
reject command, 304
rejecting email from specified websites, Sendmail, 678-679
relational databases. *See* RDBMS
relaying email via Sendmail, 677
Release Notes button (Anaconda installer), 63
relocating file systems
  disk formatting, 960
  hard drive installation, 959
  partition mounting/file transferal, 960-961
  partition table creation, 960
remote access
  key-based logins, 511-512
  references, 514
  SSH servers
    configuring, 508-509
    disabling SSH1, 509
    ftp command, 509
    rcp command, 509
    scp command, 510
    sftp command, 511
    ssh-keygen command, 511-512
  Telnet servers, configuring, 507-508
  VNC, 514
  XDMCP, 513
remote clients, X Window System support, 166
remote computers, logging in/out from, 135-137
remote files
  copying, 510
  serving. *See* FTP (File Transfer Protocol)
remote servers
  copying files to, 510
  security, 511-512
removable storage media
  CD-RW drives, 431
  DVD+RW/-RW drives, 431
  FireWire (IEEE-1394) drives, 431
  solid-state drives, 430
  USB drives, 430
  Zip drives, 430
removing. *See also* deleting
  modules, 979
  software with yum (Yellowdog Updater, Modified) command, 928
renice command, 416
repeat statements, 404
repeating strings, Python, 794
reporting Fedora problems, 25
repositories (yum), creating, 932-934
repquota command, 348
Request For Comment 959 website, 630
rescue disc (Fedora), 448-450
rescue mode boots (installer), 18
reserved SQL keywords, 572
resize_reiserfs command, 970
resolv.conf files, 478, 705
resolver configuration files, 703
resolvers, 701, 707, 723-724
resource data type, 811
resources, 999
  certification courses, 1002
  commercial support websites, 1002-1003
  documentation, 1003
  Fedora Project, 1004
  floppy-based Linux distribution websites, 1005
  Google, 1001
  Intel-based Linux distribution websites, 1005

- IRC (Internet Relay Chat), 1009-1010
- laptop/PDA resources, 1006
- Linux guides, 1003
- LUG (Linux Users Groups), 1003
- mailing lists, 1008-1009
- mini-CD Linux distribution websites, 1004
- PHP, 812
- PowerPC-based Linux distribution websites, 1005
- Red Hat Linux website, 1004
- usage of, printing via top shell command, 919-920
- Usenet newsgroups, 1006, 1008
- Web search tips, 1000-1001
- X Window System, 167, 1006

responding to email messages via mail utility, 222

restarting, 81

restoring
- files from backups, tar command-line backup software, 434-435
- MBR, 448
- partition tables, 448-449

restricted shells, 346

retrieving
- data from SQL databases, 573-575
- email messages via mail utility, 221

reverse lookups, 709

reverse zones, 727-728

REVOKE statements
- PostgreSQL, 585
- SQL, 581

revoking privileges
- MySQL, 580
- PostgreSQL, 585

RFC (Request For Comments) protocol, 214

.rgb graphics file format, 294

Rhythmbox, 273

rhythmbox command, 282

rm command, 145-146, 156, 918

rmdir command, 146

rmmod command, modular kernel management, 978

rndc command, 739

rndc.conf files, 717

rnews files, 754

romfs modules, 936

root accounts
- creating, 74
- remote server security, 512

root passwords, creating, 73-74

root privileges, granting on occasion, 343-345

root users, 156, 326
- accounts, IRC clients as, 342
- creating/deleting users, 157-158
- description of, 15
- LDAP
  - assigning passwords to, 743
  - defining, 742
- MySQL passwords, 579
- reading email, 678
- rebooting system, 159
- shutting down system, 158-159

route command, 474-475, 505

routers, 468

RPM (RPM Package Manager)
- Apache Web server, installing, 525-527
- binary software package distribution, 192
- cross-platform software construction, 192
- developer tools, 195
- development of, 191
- graphical package management, 198
- installation dependency verification, 192
- package organization, 197
- single file extraction, 198
- software tracking, 195
- upgrades, 17

rpm command, 147, 192, 208
- Apache Web server source code, building, 528
- command-line options, 193-194
- format of, 193

  - software
    - removal, 197
    - restores, 197
    - upgrades, 197
    - verifying installation, 195-196
  - yum command, 925

rpm packages, listing installed packages, 1001

rpm-i command versus rpm-u command, 981

rpmbuild command, 195, 208

RR (resource records), 706-707

.rs graphics file format, 294

rsh shell, 373

rsync command
  - copying files, 444-445
  - man pages, 444
  - yum command repositories, creating, 932

rtools, copying files, 442

rulesets, 882

run-control levels, 125

run-parts command, 370

runlevels, 125, 177, 352-354
  - changing, 364
  - default runlevels, booting to, 356-358
  - defining, 355
  - nondefault runlevels, booting to, 358-359
  - Runlevel 0, 355
  - Runlevel 1, 355
  - Runlevel 2, 355
  - Runlevel 3, 355
  - Runlevel 4, 355
  - Runlevel 5, 355
  - Runlevel 6, 355
  - troubleshooting, 365-366

***Running Qmail*, 690**

runtime errors (kernel), troubleshooting, 994

S

-s file comparison operators, 394

Samba
  - complexity of, 597
  - configuring with
    - /etc/samba/smb.conf files, 598-601
    - SWAT, 603-607
  - installing, 597
  - mounting/unmounting shares, 602-603
  - service command, 602
  - smbd daemon, starting, 601-602
  - testing with testparm command, 601

SANE (Scanner Access Now Easy), 292

sash shell, 373

sasl.conf files, 755

scalars (Perl), 770

scanlogs files, 754

scanners, 292-293, 621

schedulers, 300

scheduling
  - FTP server downtime, 664-665
  - tasks
    - at command, 367-369
    - batch command, 368-369
    - cron daemon, 369-372

Schwartzian Transforms, 785

scp command, 453
  - copying files, 442-443
  - SSH servers, 510

screen command, 95, 134

screen images, capturing, 296-297

Screen section (xorg.conf configuration files), 172-173

screen shell command, 922-924

screenrc files, user login process, 347

screenshot, 296

script kiddies, 874

ScriptAlias directive (Apache Web server), 555

scripts directory (/usr/src/linux-2.6 directory), 976

SCSI disk drivers, 977

searches
- Beagle, 865-867
- files
  - find shell command, 907-909
  - index searches via locate shell command, 914
- input strings, grep shell command, 909-910
- man pages, 138-139
- pattern-matching, 373-375
- shells, 144-145
- websites, 1000-1001

secondary nameservers, 708

security
- Apache Web server
  - Internet security, 541
  - security report websites, 526
- autohacking, 874
- backups, 878
- bootloaders, 877
- bridges, 880
- data integrity, database comparisons, 577
- data locking, database comparisons, 576
- disaster recovery plans, 883
- DNS (domain name systems)
  - (ACL) access control list, 734-735
  - controlling queries, 735-736
  - controlling zone transfers, 736
  - DNSSEC (DNS Security Extensions), 737-738
  - poisoning, 733
  - potential problem host alerts, 736-737
  - split DNS, 738-739
  - spoofing, 733
  - UNIX security considerations, 733-734
- DSL (digital subscriber line) access, 493
- external computer attacks, defining, 873-874
- Fedora deployment plans, 31
- file permissions, 327-328
- firewalls, 881-882
- FTP users, 639-640
- group permissions, 328-330
- internal computer attacks, defining, 873-875
- key-based logins, 511-512
- Linux
  - kernel, sysctl command, 873
  - virus protection, 880
- networks, physical security, 877-878
- NIC, Promiscuous mode, 879
- packet-filtering, 882
- passwords
  - batch password changes, 341
  - bootloaders, 877
  - brute-forcing, 511
  - /etc/passwd files, 336-338
  - FTP users, 639-640
  - MySQL root users, 579
  - PostgreSQL database user creation, 584
  - root passwords, 73-74
  - selecting, 340-341
  - shadow passwords, 338-339, 639-640
  - system password policies, 336
- references, 884
- remote servers, 511-512
- SYN flooding, 130
- system administrator privileges, granting to users
  - restricted shells, 346
  - root privileges, granting on occasion, 343-345
  - UIDs (user IDs), temporarily changing, 341-343
- tcpdump command, Promiscuous mode, 879
- Tripwire security tool, 878-879
- Trojan horses, 878
- updates, 138, 884
- virus scanners, 880
- vulnerability assessments, 875-876
- wireless networks, 876-877

sed (text editor), 148

select statements, 404, 573

SELinux, 79

Sendmail, 670-671, 690
  - aliases, 677-678
  - delivery intervals, 676
  - email access rules, 678
  - mail forwarding, 677-678
  - mail relaying, 677
  - masquerading, 675
  - rejecting email from specified websites, 678-679
  - sendmail.cf files, 674-677
  - smart hosts, 675

sendmail command, 689, 781

sendmail.cf files
  - building, 676-677
  - syntax of, 674-675

sensors command, 103-104, 116

sensors-detect command, 103

sequences, slices of, 793

serial modems, configuring, 98-100

serial-based mice, 90

server parameter (innd.conf), 756

ServerAdmin directive (httpd.conf files), 537

ServerLayout section (xorg.conf configuration files), 169

ServerName directive (httpd.conf files), 537

ServerRoot directive (httpd.conf files), 536

servers. *See also* INN (InterNetNews) package
  - blade servers, 515
  - DHCP servers, 484-486
  - dial-in PPP servers, 502-504
  - Exchange Server, 687
  - FTP servers
    - administration via Wu-FTP servers, 661-665
    - allowing/denying connections via ftphosts file commands, 661-662
    - anonymous servers, 636-637, 646
    - authenticated servers, 636-637
    - Bsdftpd-ssl servers, 638
    - configuring file backups, 646
    - configuring file-conversion actions, 658-661
    - editing server files, 646
    - NcFTPd servers, 637-638
    - quick installation, 641
    - vsftpd servers, 637, 642-645
    - Wu-FTPd servers, 641-642, 646-658
  - gpm (general purpose mouse) server, 133-134
  - LDAP, configuring, 742-744
  - nameservers,
    - authoritative nameservers, 707-708
    - caching nameservers, 713-714
  - NFS server configuration, 594-596
  - proxy servers
    - defining, 691
    - references, 700
    - Squid, 692-700
    - uses of, 691
  - remote servers, security, 511-512
  - SSH servers
    - compared to Telnet servers, 508
    - configuring, 508-509
    - disabling SSH1, 509
    - ftp command, 509
    - rcp command, 509
    - scp command, 510
    - sftp command, 511
    - ssh-keygen command, 511-512
  - Telnet servers, 507-508
  - Web servers. *See also* Apache Web server
    - Stronghold, 565
    - Sun Java System, 564
    - Zeus, 565
    - Zope, 565

service command, 361, 533

Service Configuration tool, controlling system service at boot, 362-363

Services dialog, 93

services files, 477

sessions, 132

- logging out of, 135
- managing, 182
- message block printing, 611
- writing, 265-266

set directive (SSI), 560
setleds command, 88
setserial command, 100, 116
setup command, 304, 367, 505
SFTP (SSH File Transfer Protocol), 443, 667
sftp command, SSH servers, 511
sgid (set group ID) permissions, 155-156
sh shell, 373
shadow passwords, 338-339, 639-640
shaped windows, 167
shar command, 410
shares (Samba), mounting/unmounting, 602-603
she-bangs (#!), 380-381, 769
SHELL environment variable, 142
SHELL lines (/etc/crontab files, 370
shells, 132

- ash, 372
- ash.static, 372
- backticks (`), replacing strings with output, 390
- bash (Bourne Again Shell), 141, 372
  - comparison of expression, 391
  - test command, 391-396
- basic commands list, 901-902
- break statements, 409
- case statements, 407-408
- cat command, 902-903
- cd command, 903-905
- changing, 141, 380
- chmod command, 905
- command line
  - background processing, 377
  - input/output redirection, 373-376
  - job-control commands, 374
  - pattern-matching, 373-375
  - pipes (|), 373, 376
  - positional parameters, 383-384
- commands, combining, 920-922
- cp command, 905
- csh, 372
- du command, 906-907
- endless loops, 401-402
- environment variables, 142-144
- escape characters, 390
- exit statements, 409
- features of, 140
- Fedora shells list, 372-373
- file compression/decompression, 146-147
- file management, 145-146
- find command, 907-909
- for statements, 400-401
- function of, 140
- grep command, 909-910
- if statements, 405-406
- job-control commands, 373
- KornShell 93, 379
- ksh, 372
- less command, 910-912
- ln command, 912-913
- locate command, 914
- ls command, 914-916
- man command, 916
- man pages, 373
- mkdir command, 916-917
- mv command, 917
- navigating, 144-145
- pdksh, 372, 379
  - comparison of expression, 391
  - select statements, 404
  - test command, 391-396
- Perl, accessing via, 779-780
- positional arguments, 382
- positional parameters, 383-384
- ps command, 917
- repeat statements, 404
- reasons for using, 900-901
- restricted, 346
- rm command, 918
- rsh, 373

sash, 373
screen command, 922-924
scripts
  #! (shebangs), 380-381
  assigning/accessing values to variables, 383
  built-in variables, 382, 387
  commands as, 377
  defining, 140
  environment variables, 382
  executing, 379
  functions, 409-410
  mail utility, 222
  positional parameters, 383-384
  reasons for using, 377
  special characters, list of, 387-388
  startx command, 377
  task automation, 384-386
  testing, 386
  trojan scripts, 380
  user variables, 382
  writing, 378
searching, 144-145
select statements, 404
sh, 373
shift statements, 405
SSH (Secure Shell)
  clients, remote computer logins, 135
  servers, 508-512
strings
  embedded spaces, resolving variables in, 388-389
  unexpanded variables, maintaining, 389
tail command, 918
tcsh, 373
  repeat statements, 404
  test command, 396-399
top command, 919-920
until statements, 403-404
which command, 920
  while statements, 401-403
  zsh, 373
shells files, 125
shift statements, 405
showkey command, 88
shred command, 913
shuffle() array function, 830
shutdown command, 134, 158-159, 658
shutdown files, 658
shutdown process, 81, 158-159
simple backup strategies, 428
single quotes (‘), maintaining shell strings with unexpanded variables, 389
skel files, 333
Skolnick, Cliff, Apache Web server development, 524
slappasswd tool, 743
slaptest command, 743
Slashdot.org website, 891
slashes (/)
  /bin directory, 123
  /bin/sh files, user login process, 347
  /boot directory, 124
  /configs subdirectory (/usr/src/linux-2.6 directory), 975
  /dev directory, 124
  /dev/modem, 98
  /dev/null devices, 969
  /dev/zero devices, 969
  /etc directory, 85, 124-126, 128
  /etc/at.allow files, 369
  /etc/at.deny files, 369
  /etc/crontab files, 370
  /etc/cups directory, 300
  /etc/exports files, 595
  /etc/fstab files
    implementing disk quotas, 348
    mounting file systems, 955-957
    options of, 594, 955-956
  /etc/group files, 329-330
  /etc/host.conf files, 478, 703
  /etc/hosts files, 456, 476-477, 704-705

/etc/inittab files, 177, 356

/etc/modprobe.conf files, 85, 469-470, 978-979

/etc/nologin files, user login process, 346

/etc/nsswitch.conf files, 477-478, 703-704

/etc/passwd files, 325-327
  GECO field, 336
  list of, 337-338
  system users, 337
  user login process, 347

/etc/pcmcia files, 86

/etc/ppp/ppp-off files, 495

/etc/ppp/ppp-on files, 495

/etc/ppp/ppp-on-dialer files, 495

/etc/printcap files, 300-301

/etc/rc.d/init.d/httpd script files, starting/stopping Apache Web server, 531-532

/etc/rc.d/rc.sysinit files, 354

/etc/resolv.conf files, 478, 705

/etc/samba/smb.conf files, 598
  [global] section, 599
  [homes] section, 599-600
  [printers] section, 600-601

/etc/services files, 477

/etc/shadow files, 338-339, 347

/etc/skel files, 333, 347

/etc/squid/squid.conf configuration files, 693

/etc/sudoers files, 343-344

/etc/sysconfig/apmd files, 85

/etc/sysconfig/clock files, 85

/etc/sysconfig/hwconf files, 85

/etc/sysconfig/irda files, 85

/etc/sysconfig/keyboard files, 85

/etc/sysconfig/mouse files, 85

/etc/sysconfig/network files, 478-479

/etc/syslog.conf files, controlling system logging, 386

/etc/usertty files, user login process, 346

/etc/vsftpd.banned emails configuration files, 644

/etc/vsftpd.chroot list configuration files, 644

/etc/vsftpd.user list configuration files, 644

/etc/xen files, 520

/etc/xinetd.conf files, 363-364

/home directory, 47, 129

/opt directory, Linux file system hosting, 48

/proc directory, 129-130

/sbin directory, 123

/sbin/ifconfig, 472-474

/sbin/netstat, 475-476

/sbin/route, 474-475

/tmp directory, 48, 131

/usr directory, 131
  Linux file system hosting, 48
  subdirectories list, 167-168

/usr/bin directory, 167

/usr/include directory, 167

/usr/lib directory, 167

/usr/lib/modules directory, 168

/usr/lib/X11 directory, 168

/usr/sbin/ftpshut files, scheduling FTP server downtime, 664-665

/usr/sbin/smbd command. *See* smbd daemon, starting

/usr/share/doc directory, software package documentation, 139-140

/usr/src/linux-2.6 directory
  arch directory, 976
  /configs subdirectory, 975
  Documentation directory, 975
  kernel source code, 976
  kernel testing programs, 976
  scripts directory, 976
  sound card documentation, 271

/usr/src/linux-2.6/configs directory, 985

/usr/X11/man directory, 168

/var directory, 48, 131

/var/log/vsftpd.log configuration files, 644

/var/log/wtmp files, monitoring user logins/logouts, 335

- /var/log/xferlog files
  - fields, list of, 666-667
  - FTP servers, viewing server transaction logs, 666-667
- /var/spool/cron directories, 371

slave nameservers, 708
slave/master jumpers (hard drives), 959-960
slices (:), 793, 796
slrn command, 763
slrn news client, 226
sm files, 754
small enterprise backup strategies, 427
small office backup strategies, 427
smart gateways, 468
smart hosts (Sendmail), 675
SMB (Server Message Block) network file system, 939
smb.conf files, 598-601
smbclient, 667
smbclient command, 304, 602
smbd daemons, 601-602
smbfs modules, 936
smbmount command, 603
smbprint command, 304
smbspool command, 304
smbstatus command, 602
SMTP (Simple Mail Transfer Protocol), 214, 461, 669-670, 673. *See also* AMTP email protocol
sndconfig command, 90, 116
sniffing, 880
SOA (Start of Authority) records, 720-722
soft links. *See* symlinks
software

- backups
  - afio, 439
  - Amanda backup application, 438
  - ark, 435-437
  - cdbackup, 439
  - File Roller, 435-436
  - flexbackup, 439
  - free software websites, 439
  - kdat, 435
  - tar, 433-435
- choosing, 74-76
- FTP software, 638-639
- GNOME office, 252-254
- groupware, 254
- Hancom Office, 258
- HOWTO documents, 24
- installing, 74-76
  - all on CD-ROM, 54
  - choosing installation options, 54-55
  - FTP software, 638-639
  - listing installed packages, 1001-1002
- inventory management via yum (Yellowdog Updater, Modified) command, 929-931
- KOffice, 255-258
- managing
  - CheckInstall program, 207-208
  - compiling from source code, 203
  - installing, 201
  - references, 208
  - RPM. *See* RPM
  - rpms file creation, 203-204
  - source RPM files, 204-206
  - tarballs, 206-207
- OpenOffice.org
  - Base, 242
  - Calc, 241, 247-252
  - configuring, 243-244
  - development of, 242-243
  - Dia, 242
  - Draw, 242
  - Impress, 242
  - installing, 243-244
  - Math, 242
  - Planner, 242
  - spelling/hyphenation dictionaries, 244
  - website, 243
  - Writer, 241, 244-247

  - removing with yum (Yellowdog Updater, Modified) command, 928
  - software packages documentation, 139-140
  - Windows applications, running with Wine, 259

solid-state drives, 430

sound, 270
  - formats, 271-273
  - music players, 273
  - recording, 271
  - sound cards, 271
  - sound devices, configuring, 96-97
  - streaming audio, 274-275

Sound Juicer, 269

sound-juicer command, 282

source code (kernel) in /usr/src/linux-2.6 directory, 976

source tree (kernel), makefiles, 974

sox command, 272-273, 282

spam filtering, 763

Spamassassin, 673, 685

.spec files (RPM file), 204

special devices, managing files for
  - mknod command, 969
  - overview of, 967-968

speed, database comparisons, 576

SPF (Sender Policy Framework), TXT records, 722

splint command, 850-851, 857

split DNS, 738-739

split() method, Python lists, 797

spoofing, 733

spreadsheet programs
  - Calc, 241, 247-252
  - Gnumeric, 253
  - KSpread, 257

SQL (Structured Query Language)
  - != (is not equal) symbol, 575
  - AND statements, 575
  - commands, whitespace in, 572
  - CREATE statements, 572
  - databases, retrieving data from, 573-575
  - INSERT statements, 573
  - optimizing statements, 896-897
  - OR statements, 575
  - reserved keywords, 572
  - SELECT statements, 573
  - subqueries, database comparisons, 577
  - tables
    - creating, 571-572
    - inserting data, 573
  - WHERE statements, 574

Squid proxy server
  - ACL, 693-697
  - client configuration, 692
  - client IP addresses, specifying, 698
  - configuration examples, 699-700
  - installing, 692
  - kill-SIGHUP command, 697-698

Squirrelmail, 685-686

ssh command, 505, 884

SSH (Secure Shell)
  - clients, remote computer logins, 135
  - servers
    - compared to Telnet servers, 508
    - configuring, 508-509
    - database access, 586
    - ftp command, 509
    - rcp command, 509
    - scp command, 510
    - sftp command, 511
    - ssh-keygen command, 511-512
    - SSH1, disabling, 509

SSI (Server Side Includes)
  - Apache Web server dynamic content, 556
  - directives, 557-560

stable kernels versus kernel development releases, 981

standard FTP servers. *See* authenticated FTP servers

standard users, 327

Start of Authority (SOA) records, 720-722

starting/stopping
  Apache Web server
    chkconfig command (Red Hat), 533-534
    /etc/rc.d/init.d/httpd script, 531-532
    manually starting, 530-531
    service command (Red Hat), 533
    system-config-services client (Red Hat), 534
  NFS (Network File System), 594
  postmaster program (PostgreSQL), 583
  smbd daemon, 601-602
  startx command, 180-181
  system services
    manually, 366
    System V method, 354
  vsftpd servers, 642-643
  X Window System, 177-181
startx command, 180-181, 189, 377
stat command, 970
static links, 123
statserial command, serial-port modem configurations, 99
status parameter (innd.conf), 756
storage devices
  disks as, 946
  viewing, 124
storage.conf files, 755-758
storing
  data in RDBMS, 569
  shell scripts for system-wide access, 380
str replace() string function, 827
streaming audio, 274-275
streaming mode (webcams), 287
Strict RFC1179 Compliance option (remote UNIX printers), 610
strings
  comparisons (comparison of expression), 391-392, 396
  data types, 811
  Perl
    comparison operators list, 772
    constants, 774
  PHP
    defining, 816
    functions, 826-827
    variable substitution, 817
  Python
    assigning value to in, 792
    built-in methods, 794
    concatenating in, 794
    immutable sequences in, 792
    indexing in, 793
    repeating in, 794
    searches via grep shell command, 909-910
strip prefixes/postfixes, 659
strlen() string function, 826
Stronghold Web server, 565
strpos() string function, 829
su command, 81, 156, 350
sublevel number section (kernel), 981
submount command, 970
subnet masks (netmasks), 459, 462-463
subqueries (SQL), database comparisons, 577
subscriptions files, 755
substr() string function, 828
sudo command, 157, 350
suid (set user ID) permissions, 155-156
summarizing data with Calc, 250-252
Sun Java System Web server, 564
super-users. ***See also*** **system administrator privileges**
  accounts, granting privileges, 326
  description of, 15
superblocks, 937
SuperRescue CD, 452
surveillance cameras, 287
.svg graphics file format, 294
swapoff command, 970
swapon command, 970
SWAT (Samba Web Administration Tool), 603-607

switch/case blocks (PHP), break statements, 822-823
switchdesk client, 182-183
switches, 467
Sylpheed-claws email client, 224
symbolic debuggers, 851-852
symbolic links, 85, 982
symlinks, 912-913
SYN flooding, 130
SYN Stealth scans (Nmap), 876
sync command, 888, 970
sysconfig directories, 125
sysconfig directory, 125-128
sysctl command, 873, 890, 995
sysrq.txt files, 975
system administrator privileges, granting to users, 341-346. *See also* super-user accounts
system and peripheral inventory checklist (Fedora installation), 41-43
system boots
  Fedora rescue disc, 449-450
  generic floppy disks, GRUB, 450
  Recovery Facility (installation disc), 451-452
system jobs, editing, 370-371
system logging, 386
  directives (ftpaccess configuration files), Wu-FTPd server configuration, 654-655
  Perl, 768
System Monitor, Process Listing view, 420
system monitoring tools
  console-based monitoring, 413-415
  disk quotas, 418
  ethereal tool, 420
  free command, 418
  gnome-nettool tool, 420
  gnome-system-monitor tool, 420
  graphical process/system management tools, 419-420
  KDE, 422
  kill command, 415-416
  nice command, 416
  renice command, 416
  time command, 416
  top command, 417
  uptime command, 418
  vmstat command, 418
  vncviewer tool, 420
  watch command, 418
  websites, 422
  xcpustate client, 420
  xosview client, 419
system password policies, 336
system rescue
  BusyBox, 452
  chroot command, 452
  Fedora rescue disc, 448-460
  MBR backups, 448
  partition tables, manually restoring, 448-449
  SuperRescue CD, 452
system services
  bootup, operation at, 352, 361-363
    booting to default runlevel, 356-358
    booting to nondefault runlevel, 358-359
    booting to runlevel, 354
    init scripts, 359-360
    initiating boot loading process, 352-353
    loading Linux kernel, 353-354
  runlevels
    changing, 364
    troubleshooting, 365-366
  starting/stopping
    manually starting/stopping, 366
    System V method, 354
  xinetd daemon, running through, 363-364
system state, 125
system users, 327
System V system services starting/stopping method, 354
system-config-bind BIND configuration tool, 731-732

system-config-bind command, 739
system-config-date command, 106-107, 116
system-config-display client
  Display Settings main screen, 174
  Dual head tab, 176
  Hardware tab, 174, 176
  Video Card dialog, 175
  X Window System configuration, 174-176
system-config-display command, 116
system-config-display tool, 95
system-config-httpd graphical Web server configuration tool, 565
system-config-keyboard command, 116
system-config-keyboard tool, 86-90
system-config-mouse client, 128, 189
system-config-mouse command, 116
system-config-mouse tool, 86
system-config-network command, 116, 505
system-config-network tool, 99-100, 479-481
system-config-nfs command, 505
system-config-nfs graphical client, NFS server configuration, 595
system-config-packages, upgrading, 17
system-config-packages command, 198-200, 208
system-config-printer tool, 622
  Add a New Print Queue configuration dialog, 306
  Finish and Create New Print Queue dialog, 308
  launching, 305
  local printers, editing settings, 310-311
  overview of, 299-300
  print queue creation/configuration, 306-310
  Printer model dialog, 306
  Queue Name dialog, 306
  Queue Type dialog, 306
system-config-printer utility, 302
system-config-printer-gui program, 301
system-config-printer-tui program, 301-303
system-config-printer-tui tool, 311, 613-614, 622
system-config-securitylevel command, 505, 881, 884
system-config-securitylevel configuration client, firewall configuration, 881
system-config-securitylevel tool, 734
system-config-services, 534, 667
system-config-services command, 360, 367
system-config-soundcard command, 116, 282
system-config-soundcard tool, 97, 271
system-config-users command, 350, 410
system-switch-mail, 680
sytem-config-display client, 188

T

Tab Window Manager (twm), 183-184
table caches, MySQL optimization, 896
table-level privileges (MySQL), 580
tables
  caches, MySQL optimization, 896
  partition tables, 947-950
  RDBMS, relations in, 569-570
  SQL tables, 571-573
tail shell command, 918
tape drive backups, 432
tar command, 146-147, 432-434, 453, 657
tar command-line backup software
  backups
    full backups, 433
    incremental backups, 433
    restoring files from, 434-435
  compressing directories, 440
  copying
    directory structures, 440
    files, 439-440
  find command, 433
  options, 433

tar streams, 440
task automation
  scheduling tasks
    at command, 367-369
    batch command, 368-369
    cron daemon, 369-372
  shell scripts, 385-386
    #! (shebang lines), 380-381
    built-in variables, 382, 387
    commands as, 377
    environment variables, 382
    executing, 379
    positional parameters, 383-384
    reasons for using, 377
    special characters list, 387-388
    storing for system-wide access, 380
    testing, 386
    trojan scripts, 380
    user variables, 382
    variables, assigning/accessing values, 382-383
    writing, 378
  shells
    background processing, 377
    backslashes (\ ) as escape characters, 390
    backticks (`), replacing strings with output, 390
    changing, 380
    Fedora shells list, 372-373
    input/output redirection, 373-376
    job-control commands, 373-374
    maintaining shell strings with unexpanded variables, 389
    man pages, 373
    pattern-matching, 373-375
    pipes (|), 373, 376
    positional parameters, 383-384
    resolving variables in strings with embedded spaces, 388-389
    shell command line, 373-377, 383-384
  system services
    changing runlevels, 364
    controlling at boot, 360-363
    manually starting/stopping, 366
    operation at bootup, 352-360
    running through xinetd daemon, 363-364
    troubleshooting runlevels, 365-366
  websites, 410-411
Taylor, David, 270
TCP/IP (Transmission Control Protocol/Internet Protocol), 458-459
  IP addresses
    IP masquerading, 460
    limitations, 459-460
    netmasks, 459, 462-463
    network classes, 458-459
  ports, 461
tcpdump command, Promiscuous mode, 879
tcsh shell, 373
  comparison of expression
    file comparisons, 398-399
    logical comparisons, 399
    number comparisons, 397
    string comparisons, 396
  repeat statements, 404
  test command
    file comparisons, 398-399
    logical comparisons, 399
    number comparisons, 397
    string comparisons, 396
telinit command, 364, 367
telnet command, 136-137
Telnet servers, 507-508
TERM environment variable, 142
terminals
  clients, 168
  multiple terminals, screen shell command, 922-924
  multiplexers. *See* screen shell command
ternary operators (PHP), 821

test command, 391
  file comparisons, 394-395, 398-399
  logical comparisons, 395-396, 399
  number comparisons, 392-394, 397
  string comparisons, 391-392, 396
test file systems
  creating, blank image file creation, 962
  mounting, 963-964
testing
  beta releases, 25
  installation media via installer, 18
  kernel programs in /usr/src/linux-2.6 directory, 976
  PC memory via installer, 18
  Samba with testparm command, 601
  shell scripts, 386
testparm command, 601
text editors, 147
  commands, 150
  emacs, 149-151
  vi, 148-149
text wrapping, shell scripts, 378
text-based console logins, 132
text-based installations, 60
thinkjettopbm command, 304
third-party DNS services, 714-715
threads (newsgroups), 225
three-button emulation (mouse devices), 134
Thunderbird (Mozilla)
  email client, 217, 748
  news client, 231
.tif graphics file format, 294
tilde (~), 145
time command, controlling processes, 416
time hashed spool article storage method (news servers), 758
time zones, setting, 71-72
time/date, configuring, 105-107
timer parameter (innd.conf), 756
timewarps, 335
Timidity, 273
TiVo, 280
token ring networks, 464
Tools screen (Evolution email client), 217
top command, 417, 919-920
Torvalds, Linus, Linux kernel development, 974
touch command, 151
trackballs, Linux support, 90
training websites, 31
transaction logs (FTP server), viewing, 666-667
transferring files via
  curl command, 632
  lftp command, 631-632
  wget command, 632-633
TransGaming Technologies, 321
transition costs (Fedora migration), 30
Transmission Control Protocol/Internet Protocol. *See* TCP/IP
tree command, 121-123
triggers, database comparisons, 578
trim() string function, 827
Tripwire security tool, 878-879
Trojan horses, 878
trojan scripts, 380
troubleshooting
  all-in-one (print/fax/scan) devices, 621
  configuration problems, 83-84
  DNS (domain name system)
    delegation, 729
    informational websites, 728
    reverse resolution, 729-730
    slave nameserver serial number accuracy, 730
    system-config-bind BIND configuration tool, 731-732
    troubleshooting tools, 731
    zone files, 730-731
  Fedora, reporting problems, 25
  Internet connections, 501

- kernel
  - compilation, 993
  - runtime errors, 994
- networks, 467
- PCMCIA cards, 108-109
- Perl command-line errors, 769
- printers, 621-622
- runlevels, 365-366
- X11 configurations, 96

tune2fs command, 889, 965, 970

Tuxmobil-Mobile Unix, 1006

TV
- DVD/video players, 281
- hardware, 275-277
- personal video recorders, 280
- video formats, 277-278
- viewing in Linux, 278-280

tvtime command, 279-282

Tweedie, Stephen C., 18

TWiki interactive collaboration tool, 233-234

twm (Tab Window Manager), 183-184

TXT records (zone files), 722

typecasting, Python number type conversion, 792

types field (ftpconversions files), 660

U

UDF (Universal Disk Format) file system, 945

udf modules, 936

ufs modules, 936

UIDs (User IDs), 327, 341-343

umask command, 151

umount command, 955, 970
- floppy disks, unmounting, 51
- remote file systems, removing, 597

umsdos modules, 936

uname command, viewing Linux kernel compilation date, 17

undeleting files, 446-447.*See also* deleting, files

unexpanded variables (shells), 389

unicast addressing, 463

UNIX
- backup levels, 428
- DNS (domain name system) security, 733-734
- Linux comparisons, 14

unknown image files, identifying, 295

unless conditional statements (Perl), 775

unmounting Samba shares, 602-603

unprivileged domains, 517

***Unreal Tournament 2004*, installation, 317-318**

unrecoverable file system errors, 446

unset() function, 834

unshar command, 146

unshielded twisted pair (UTP) cables, 464-467

until loops (Perl), 777

until statements, 403-404

up2date command, building Apache Web server source code, 527

updates
- installers, 18
- network security, 884

upgrading
- Apache Web server, file locations, 527
- BIND (Berkeley Internet Name Domain), 715
- networks, 505
- release cycles, 17

uplink ports, 467

uptime command, 418

USB devices, 38
- drives, 430
- Linux support, 92
- printers, troubleshooting, 622
- scanners, 292-293

use function (Perl), 780

Usenet
  newsgroups, 225, 1006, 1008
  Perl resources, 787
  posts to (Perl coding example), 784
user accounts
  chgrp command, 328
  chmod command, 328
  chown command, 328
  command-line tools, 332-333, 349-350
  disk quotas, 348-349
  /etc/passwd files, 325
  /etc/skel files, 333
  Fetchmail, 682-684
  file ownership, 326
  file permissions, 327-328
  GIDs (group IDs), 327
  granting system administrator privileges to
    restricted shells, 346
    root privileges, granting on occasion, 343-345
    UIDs (user IDs), temporarily changing, 341-343
  login process, overview of, 346
  MySQL, adding to, 580
  PAM (Pluggable Authentication Modules), 339-340
  passwords
    batch password changes, 341
    /etc/passwd files, 336-338
    selecting, 340-341
    shadow passwords, 338-339
    system password policies, 336
  users
    adding, 334-335
    locking out of, 333
    monitoring activity, 335-336
    regular users, 326
    root users, 326
    standard users, 327
    stereotypes, 328
    super-users, 326
    system users, 327
    UIDs (User IDs), 327, 341-343
    usernames, creating, 335
  viewing, 326
  websites, 350
User directive (httpd.conf files), 537
USER environment variable, 142
user information directives (ftpaccess configuration files), Wu-FTPd server configuration
  displaying
    administrator email address, 653
    files, 651-653
    prelogin banners, 650-651
  last modification date notifications, 654
user jobs, 370-371
User Mount Tool (KDE), mounting file systems, 957-958
user variables (shell scripts), 382
useradd command, 157-158, 350
  group management, 331
  user management, 332-334
userdel command, user management, 333
UserDir directive (httpd.conf files), 538
userinfo command, 350
usermod command, 331-333, 350
usermount command, 970
usermount graphical file system management client, mounting file systems, 957
usernames
  assigning, 137
  creating, 335
  format of, 137
userpasswd command, 350
users
  creating, 157-158
  deleting, 158
  FTP users
    assigning permissions, 639
    passwords, 639-640
  root accounts, creating, 74
  root users, 156-159

- types of, 120
- user information, verifying/changing, 137-138
- usernames, 137

usertty files, 346

***UT2004* (*Unreal Tournament 2004*), installation, 317-318**

UTC (Universal Coordinated Time), 72

UTF-8 language encoding, 262

UTP (unshielded twisted pair) cables, 464-467

uucp (Unix-to-Unix copy program), copying files, 442

V

values function, Perl hashes, 771

van Rossum, Guido, Python, 789

var dump() function, 835-836

variables
- environment variables, 142-144
- Perl variables, 770-771
- PHP variables, 810
  - arrays, 812-813
  - resources, 812
  - setting and unsetting, 834
  - substitution, 817
  - types of, 811
- Python
  - class object variables, 802
  - interactive interpreter, 790
- shell scripts
  - assigning/accessing values, 382-383
  - built-in, 382, 387
  - environment, 382
  - unexpanded variables, 389
  - user, 382

Vaults of Parnassus website, 807

Vepstas' Linux Enterprise Computing pages website, 31

version numbers, 17

vfat modules, 936

vi (text editor), 148-149

vi command, 410, 786

Vidal, Seth, 927

video
- conferencing, GNomeMeeting Internet application, 236-237
- drivers, installation, 314-315
- DVD/video players, 281
- formats, 277-278
- hardware, 275-277
- Linux, viewing in, 278-280
- personal video recorders, 280
- recorders, 280

Video Card dialog (system-config-display client), 175

video cards
- configuring via system-config-display client, 175
- X Window System updates, 172

VideoLAN HOWTO, 281

viewing
- batch job numbers, 368-369
- built-in variables, 387
- file systems, 940
- FTP server transaction logs, 666-667
- Postscript documents, 304

vim (text editor), 148

vimtutor command, 149

virtual consoles, 132-133, 181

virtual desktops, X Window System window managers, 181

virtual file systems, 129

virtual hosts, Apache Web server, 551-553

virtualization, Xen, 515-517

viruses, 686, 880

visudo command, 157, 345

VMs (virtual machines), 516

vmstat command, 418

VMware, 516

VNC (Virtual Network Computing), 514

vnc package, 517

vncviewer command, 520

vncviewer tool, 420

voice modem support, 503

VoIP (Voice over IP) protocol, 236-237

vorbis-tools command, 282

VPNs (Virtual Private Networks), telnet command, 137

vsftpd (Very Secure FTP) servers, 637, 642-644, 667

vulnerability assessments (security), 875-876

W

w command, 374

-w file comparison operators, 394, 398

Wal-Mart website, preinstalled Linux systems, 33

war driving, 877

watch command, 418

wav files, 272

weaknesses, assessing (security), 875-876

web browsers

- Epiphany, 212
- Firefox (Mozilla), 210-211
- Konqueror (KDE), 212, 565, 667
  - FTP sessions, 634-635
  - Squid proxy server, configuration for, 692
- Mozilla, Java plug-ins, 281-282
- Mozilla Suite, 211-212
- Nautilus (GNOME), 635, 667

web searches, tips for, 1000-1001

web servers

- Apache
  - development of, 524
  - documentation websites, 524
  - downloading, 525-526
  - dynamic content, 555-556, 561
  - file system, access control, 541-542, 545
  - file system, authentication, 542-544
  - graphic interface configuration, 561-564
  - installing, 525-529
  - Internet security, 541
  - logging, 553-554
  - mod_access module, 546
  - mod_alias module, 546
  - mod_asis module, 546
  - mod_auth module, 547
  - mod_auth_anon module, 547
  - mod_auth_dbm module, 547
  - mod_auth_digest module, 547
  - mod_autoindex module, 548
  - mod_cgi module, 548
  - mod_dir module, 548
  - mod_env module, 548
  - mod_expires module, 548
  - mod_headers module, 548
  - mod_include module, 549
  - mod_info module, 549
  - mod_log_config module, 549
  - mod_mime module, 549
  - mod_mime_magic module, 549
  - mod_negotiation module, 549
  - mod_proxy module, 549
  - mod_rewrite module, 549
  - mod_setenvif module, 550
  - mod_sll module, 550
  - mod_speling module, 550
  - mod_status module, 550
  - mod_unique_id module, 550
  - mod_userdir module, 550
  - mod_usertrack module, 550
  - mod_vhost_alias module, 550
  - optimizing, 891-892
  - quick start guide, 529-530
  - runtime configuration, 535-541
  - security report websites, 526
  - source code, building, 527-528
  - starting/stopping, 529-534
  - upgrading, file locations, 527

    - usage statistics, 523
    - version information, 525
    - virtual hosting, 551-553
    - websites, 566
  - Stronghold, 565
  - Sun Java System, 564
  - Zeus, 565
  - Zope, 565

webcams, 287-288, 667

websites, 999-1000
  - Apache server resources, 566
  - backup references, 453-454
  - C/C++ references, 858
  - certification courses, 1002
  - command-line references, 924
  - commercial support, 1002-1003
  - database references, 592
  - DNS resources, 739
  - documentation, 23, 1003
  - downloading for offline reading, 633
  - email clients, 238
  - email resources, 689
  - Fedora, 13
  - Fedora references, 26
  - Fedora installation references, 51-52, 82
  - Fedora Project, 1004
  - Fedora Project Developer's Guide, 25
  - file system references, 970-972
  - floppy-based Linux distribution websites, 1005
  - FTP (File Transfer Protocol) references, 667-668
  - game references, 322
  - Google, 1001
  - graphics resources, 297-298
  - INN (InterNetNews) references, 763
  - Intel-based Linux distribution websites, 1005
  - kernel references, 995-996
  - laptop/PDA resources, 1006
  - LDAP references, 749
  - mailing lists, 25
  - mini-CD Linux distribution websites, 1004
  - multimedia resources, 283
  - networking references, 505-506
  - performance tuning references, 897
  - Perl resources, 787
  - PHP references, 840-841
  - post-installation configuration resources, 117-118
  - PowerPC-based Linux distribution websites, 1005
  - printing references, 623
  - productivity suites, 260
  - proxy server references, 700
  - Python references, 807
  - Red Hat Linux, 1004
  - Red Hat's Migration Center, 29
  - remote access references, 514
  - search tips, 1000-1001
  - security references, 884
  - system monitoring tools, 422
  - task automation, 410-411
  - user account references, 350
  - X Window System, 189-190, 1006
  - Xen references, 520
  - yum resources, 934

welcome.msg files, 653

wget command, 632-633

whatis command, 145

WHERE statements (SQL), 573-574

whereis command, 139, 143-145

which shell command, 920

while loops, 823
  - Perl, 777
  - Python, 799

while statements, 401-403

whitespace in SQL commands, 572

whois command, 711-713

wildcard searches, 146, 662. *See also* pattern-matching

window managers (X Window System), 168, 181
  drag and drop features, 182
  mwm, 184
  switchdesk client, 182-183
  twm, 183-184
  via switchdesk client, 182
Windows
  applications, running with Wine, 259
  games, playing with Cedega, 322
Wine, 259
WineX (Cedega), 314
WinModems, configuring, 102
wireless networks, 465-466
  advantages of, 489
  cellular networking, 488-489
  configuring, 114-116
  iwconfig tool, 487
  iwlist tool, 487
  iwpriv tool, 487
  iwspy tool, 487
  security, 876-877
  standards, 489-490
  war driving, 877
wish command, 381
WITH PASSWORD segment (CREATE USER statement), 584
***Wolfenstein: Enemy Territory*, installation, 319**
word processing
  AbiWord, 252-253
  KWord, 256-257
  Writer, 241, 244-247
worker MPM (multiprocessing module), Apache Web server configuration, 539
writeback mode (ext3 disk file system), 942, 952
WriteLine(), Mono, 863
Writer (OpenOffice.org), 241, 244-247
writing
  documentation, 25
  init scripts, 360
  shell scripts, 378
wtmp files, monitoring user logins/logouts, 335
Wu-FTP servers
  configuring via ftpaccess configuration files, 646
    access control directives, 647-650
    cdpath directed commands, 657-658
    permission control directives, 655-657
    shutdown file structures, 658
    system logging directives, 654-655
    user information directives, 650-654
  FTP server administration
    counting number of connections, 664
    displaying connected user information, 662-664
    scheduling server downtime, 664-665
    viewing server transaction logs, 666-667

X

X Display Manager Control Protocol (XDMCP), 513
-x file comparison operators, 394, 398
X protocol, 166
X Window System
  clients, 165-168
  components of, 168
  configuring, 173
    manual configuration, 176-177
    system-config-display client, 174-176
  development of, 165
  display managers, 167, 177-180
  distributed processing, 166
  distribution components, 167
  features of, 167
  GNOME (GNU Network Object Model Environment) desktop environment), 186
  hard drive requirements, 167
  KDE (K Desktop Environment), 188

- keyboards, 88
- KVM (keyboard video mouse) hardware, 95
- networking capabilities, 167
- references, 189-190
- starting, 177-181
- subdirectories list, 167-168
- types of users, 167
- websites, 1006
- window managers, 168, 181-184
- X protocol, 166
- xorg.conf configuration files
  - components list, 168-169
  - Device section, 172
  - Files section, 169-170
  - InputDevice section, 170-171
  - location of, 168
  - Module section, 170
  - Monitor section, 171-172
  - Screen section, 172-173
  - ServerLayout section, 169

X-CD-Roast, 268-269

X-Chat IRC client, 234

x-x, shell pattern-matching searches, 375

X11. *See* X Window System

xbiff command, 689

XBitHack directive (Apache Web server), 556

.xbm graphics file format, 294

xcdroast command, 282

Xclients-default files, user login process, 347

xcpustate client, 420

Xdefaults files, user login process, 347

xdm display manager, configuring, 180

XDMCP (X Display Manager Control Protocol), 513

Xen

- /etc/xen files, 520
- advantages of, 515-516
- compared to paravirtualization, 516
- dom0, 517
- domU, 517
- guest operating systems, setting up, 518-519
- installing, 517-518
- references, 520
- related commands, 520
- runtime configuration, 519-520
- system requirements, 517
- xend daemon, 518, 520

xend daemon, 518-520

xenguest-install.py script, 518-520

Xfce desktop, 891

xfig command, 297

XFree86 Project, Inc. website, 35

XFS file system, 939, 944

Ximian

- desktop environment, 186-187
- Evolution email client, 215-217

Xine, 279

xine command, 282

Xinerama, X Window System configuration, 176

xinetd daemons, 363-364, 641-642

.xinitrc files, 180

xkbcomp command, 88

xkbprint command, 88

xm command, 519-520

xm console yourvm. command, 519

xm destroy yourvm command, 519

xm mem-set command, 519

xm shutdown yourvm command, 519

xminicom script, 101

xmkmf command, 857

xmms command, 282

Xmms music player, 273

xmodmap command, 88

xorg.conf configuration files, 188

- backups, 96
- components list, 168-169
- Device section, 172
- Files section, 169-170
- InputDevice section, 170-171
- location of, 168

- Module section, 170
- Monitor section, 171-172
- Screen section, 172-173
- ServerLayout section, 169
- X Window System configuration, 176-177

xosview client, 419

xpdf client, reading document with, 24

.xpm graphics file format, 294

Xsane scanners, 292

xsane command, 297

xset command, 88

xsri client, 189

xwd tool, 296

xxx, shell pattern-matching searches, 375

Y

yum (Yellowdog Updater Modified)
- installing, 202
- updating, 17

yum command, 925
- configuring, 931-932
- development of, 927
- installed packages, listing, 1001
- local repositories, creating, 932-934
- mailing list, 927
- maintenance, 928-929
- partial updates, 927
- references, 934
- running noninteractively, 927-928
- software
  - deleting, 928
  - installation, 926
  - inventory management, 929-931
  - updates, 926-927
- updates/bug fixes, 1000
- verifying availability, 926

yum install command, 202

yum list command, 202

yum list installed command, 202

yum list updates command, 202

yum remove command, 202

yum update command, 202

yum upgrade command, 202

Z

-z file comparison operators, 398

-z string expression operators, 391

Zapping, 280

Zeus Web server, 565

zImage directive, kernel compilation, 986

zip disk partitions, 947

Zip drives, 430

Ziproxy, 504

zless command, reading compressed HOWTO document files, 24

zone files, 719
- NS records, 722
- PTR records, 722
- SOA records, 720-722
- troubleshooting, 730-731
- TXT records, 722

zone transfers (DNS), controlling, 736

zones
- forward zones, 725-727
- reverse zones, 727-728

Zope Web server, 565

zsh shell, 373