

Index

Note to the reader: Throughout this index **boldfaced** page numbers indicate primary discussions of a topic. *Italicized* page numbers indicate illustrations.

Numbers

6to4 method, 71, 77, 78, 189, 530
 80/20 rule, for DHCP server, 208
 128-bit address space, for IPv6, 69–70
 802.X specification (IEEE), 7
 802.1X standard (IEEE), 355
 NAP and, 380
 802.11 specification (IEEE), changes, 339–340

A

AAAA (host) records, 72, **126**, 162, 535
 manually creating, 139–141
 Active Directory, 530
 account integration, 381, 530
 authorization of DHCP for, 178–179
 backups, 500–505
 DNS as requirement, 141
 printer in, 449
 publishing printer to, 429
 resource information in, 404
 user profiles in, 357
 for WSUS client configuration, 464, 466
 Active Directory DNS, 112
 Active Directory network, 24–26, 34
 Active Directory objects, availability to users, 402–404
 Active Directory–integrated DNS, 115–116, 161, 530
 ActiveX control, Reliability and Performance Monitor as, 471–472
 ad hoc mode, 340, 530
 Add A Port dialog box, for Windows Firewall, 382
 Add Counters dialog box, 473, 474
 Add Folder To Namespaces dialog box, 423
 Add IP Filter dialog box, 274, 274–275, 276, 276–277
 for server troubleshooting, 282
 Add New Quota Entry dialog box, 419
 Add Printer Wizard, 429–432
 Add Role Services Wizard, 422–424
 Add Roles Wizard
 for DHCP Server, 173–175
 for RRAS install, 245–247
 Add Scope dialog box, 173–175
 additive security, 411, 530
 Address Leases view, 210
 in DHCP snap-in, 178
 address pool, 530
 Address Pool view, in DHCP snap-in, 177
 Address Resolution Protocol (ARP), 38, 359
 address translation, 77
 adjacency, 240, 530
 Administrator account, restricting remote access for, 367
 Advanced Attributes dialog box, 410, *411*, 497, 497
 Advanced Encryption Standard (AES), 340
 Advanced Research Projects Agency (ARPA), 19
 Advanced Security Settings dialog box, 332–333
 Advanced Sharing dialog box, 409
 AES (Advanced Encryption Standard), 340
 alias records, 127, 162
 all-1s broadcast, IP address for, 44
 Allowed EAP Types attribute, for network access policy, 361
 ANI (automatic number identification), 356
 AnonymousAddress, 75, 530
 Anycast addresses, 74, 95, 189, 530
 vs. Unicast addresses, 76
 APIPA (Automatic Private IP Addressing), 228
 Apple, 14
 AppleTalk, 18
 dial-up connections, 301
 Application layer (OSI), 12, 12
 Application layer (TCP/IP), 38
 application programming interface (API), 22
 application servers, 400, 530
 applications, Task Manager to display running, 482, 483
 Archive bit, 497, 522
 area border routers, 241, 291, 530
 areas of OSPF networks, 240–241, 241
 ARP (Address Resolution Protocol), 38, 359
 Asynchronous Transfer Modem (ATM), 19
 au domain, 101
 authentication, 80–81
 IPSec, 83–84
 need for, 80
 troubleshooting, 384–385
 user, 354–355
 for user profile, 367
 using attributes for network access policies with, 363

548 authentication header (AH) – Class A network

authentication header (AH), 80, 531
 Authentication Methods dialog box, 378, 379
 authentication protocols, 336–338
 features, 338
 operating systems supporting, 338–339
 Authentication Type attribute, for network access policy, 361
 authenticator, 355
 authorization, 531
 autoconfiguration, in IPv6, 70
 automatic number identification (ANI), 356
 Automatic Private IP Addressing (APIPA), 228
 Automatic Updates, 455, 457–458, 458, 531
 autostatic update mode, 531
 for RIP, 240

B

backbones, 242, 531
 Background Intelligent Transfer Services (BITS), 457, 531
 background zone loading, 121–122, 531
 with Active Directory–integrated DNS, 116
 backup interval, for DHCP database, 214
 Backup Once Wizard, 502–505
 Backup Items page, 503
 Backup Options, 502
 Backup Progress page, 505
 Select Backup Location page, 504
 Select Items page, 503
 Specify Location Type page, 504
 Summary page, 505
 backups, 454, 495–509
 of Active Directory, 500–505
 exam essentials, 514
 importance of, 401
 of peer-to-peer network, 23
 reasons for, 495–496
 remote administration, 506
 restoring data, 499–500, 506–509
 scheduling, 499, 499
 types, 497–499
 Windows Server 2008 utility, 496, 496–500
 Bandwidth Allocation Control Protocol (BACP), 307
 Bandwidth Allocation Protocol (BAP), 18, 307
 user profile settings, 370
 Bandwidth Allocation Protocol (BAP) Settings control group, 370
 baseline, 479, 523
 Berkeley Internet Name Domain (BIND) software, 103
 BGP (Border Gateway Protocol), 292, 310, 531
 bidirectional support, for printer, 435

binding process, 35, 531
 and network protocols, 16–17
 BITS (Background Intelligent Transfer Services), 457, 531
 Boot Threshold, 350
 for relayed DHCP requests, 327
 BOOTP helper, 166, 228
 Border Gateway Protocol (BGP), 292, 310, 531
 border routing, 241–242, 531
 broadcast address, IP address for, 44
 broadcasting
 IPv6 and, 71
 router restrictions, 166
 browsers, 33
 burned-in address, 8

C

ca domain, 101
 cable modems, 299
 cache.dns file, obtaining current, 131
 caching, by DNS name server, 109
 caching-only DNS server, configuring, 131
 Callback Control Protocol (CBCP), 300, 356, 531
 Callback Options control group, 358, 396
 Called-Station-Id attribute, for network access policy, 361
 caller ID
 limitations for authentication, 356
 RRAS verification of, 358
 Calling-Station-ID attribute, for network access policy, 361
 canonical name (CNAME) record, 127
 CBCP (Callback Control Protocol), 300, 356, 531
 CCP (Compression Control Protocol), 300
 centralized administration, of Active Directory, 25
 centralized data storage, for Active Directory, 24
 certificates, 83
 machine, 312
 chained installation, 456, 531
 Challenge Handshake Authentication Protocol (CHAP), 299, 337, 531
 and routers, 254–255
 Chaosnet class, 124
 CHAP (Challenge Handshake Authentication Protocol), 299, 337, 398
 CIDR. *See* Classless Inter-Domain Routing (CIDR)
 circular logging, 480, 532
 Cisco, 81
 Class A network, 43, 45
 subnet masking, 64–65
 identifying characteristics, 67

- Class B network, 43, 45
 - subnet masking, 62–63
 - identifying characteristics, 67
- Class C network, 43, 45–46
 - subnetting, 57–62
 - calculating values for 8-subnet, 60–62
 - determining numbers for, 59–60
 - identifying characteristics, 66–67
- Class D address space, 242–243
- Class D network, 46
 - multicast addresses, 203
- Class E network, 46
- classes, 43–46
 - DHCP server configuration for, 200–201
 - options for DHCP, 199
 - for resource record, 124
- Classless Inter-Domain Routing (CIDR), 43, 65–68
 - identifying subnet characteristics with, 66–67
- clear text, password transmission in, 260–261
- Client-IP-Address attribute, for network access policy, 361
- client options for DHCP, 199
- Client (Respond Only) policy, 83
- Client-Vendor attribute, for network access policy, 361
- clients
 - for DHCP, problem solving, 217
 - in IPSec, 80
 - for PPP, 299
 - for WSUS
 - configuring, 464–469
 - requirements, 464
- CNAME (canonical name) record, 127
- com domain, 101
- communities, 494, 523
- Compression Control Protocol (CCP), 300
- compression of file, 410
- conditional forwarding, 111
- Configure Automatic Updates Properties dialog box, 467, 467
- Configure Device - WAN Miniport (PPTP) dialog box, 314, 315
- Configure Your Server Wizard, 129–130
- Connection Manager, 374, 532
- connection-oriented protocols, 17
- Connection Status dialog box, 217, 218
- connectionless protocols, 17
- connections between computers, 17
- copy backups, 498, 532
- costs, of routes, 235
- counter logs, 480, 532
- counters, 473
- Create Custom View dialog box, 489, 490
- cyclic redundancy check (CRC), 6, 532

D

- daily backups, 498, 532
- data
 - centralized storage, for Active Directory, 24
 - in packets, 16
- Data Collector Sets, 472
- Data-Link layer (OSI), 6, 6–7, 7, 14, 34
- database files for DHCP, 213–216
 - moving, 214–216
 - removing, 214
- Day-And-Time Restrictions attribute, for network access policy, 361
- decentralized administration, of Active Directory, 25
- DECnet, 18
- default gateway
 - IP address for, 44
 - for outbound traffic, 184
- default routes, 237, 532
- Default Routing and Remote Access class, 201
- default subnet mask, 51, 532
- delegation, 532
 - of Active Directory administration, 25
 - zones for DNS, 137–138
- deleting, superscope, 202
- demand-dial interface, 248
 - creating, 255–258
 - possible states, 250–251
- Demand-Dial Interface Wizard, 248, 253
 - Connection Type page, 254, 256
 - Destination Address page, 257
 - Dial-In Credentials page, 255
 - Dial-Out Credentials page, 255, 258
 - Interface Name page, 253, 256
 - Protocols And Security page, 254–255
 - Static Routes for Remote Networks page, 257
- demand-dial routing, 244, 532
- Deny permission, 411
- device drivers, and OSI model, 14–15
- DFS. *See* Distributed File System (DFS)
- DHCP. *See* Dynamic Host Configuration Protocol (DHCP)
- DHCP discover message, 532
- DHCP drift, 216
- DHCP Relay Agent
 - configuring, 324–327, 532
 - assigning to specific interfaces, 326
 - interface properties, 326, 326–327
 - installing, 324
- DHCP Relay Agent Properties dialog box, 324, 325
- DHCP request message, 533
- DHCP snap-in, 177–178, 178

550 DHCPACK message – Dynamic Host Configuration Protocol (DHCP)

- DHCPACK message, 165, 168–169, 533
 - DHCPDISCOVER message, 164, 167
 - dhcp.mdb database file, 213
 - DHCNACK message, 533
 - DHCPOFFER message, 165
 - DHCPREQUEST message, 165
 - dhcp.tmp file, 213
 - dial-up networking (DUN), 296–301
 - infrastructure, 298–299
 - Integrated Services Digital Network (ISDN), 298–299
 - plain old telephone service (POTS), 298
 - Point-to-Point Protocol (PPP), 299–301
 - restricting user profile for, 367
 - what it does, 297–298
 - differential backups, 498, 533
 - Diffie-Hellman key exchange, 82
 - directed broadcast, IP address for, 44
 - Directory Service log, in Event Viewer, 487
 - directory services model, 24, 25
 - disconnected network, WSUS configuration for, 463
 - discovery, in DHCP lease process, 167–168
 - disk quotas, 410, 450, 533
 - configuring, 417–419
 - distributed database, for DNS, 100
 - Distributed File System (DFS), 420–427, 450, 533
 - advantages, 420
 - configuring, 425–427
 - DFS replication, 420–421
 - management console, 424, 425
 - Namespace service, 421
 - installing, 421–424
 - DNS. *See* Domain Name System (DNS)
 - DNS Notify, 119, 533
 - “DNS request timed out” error message, 146
 - DNS scavenging, 533
 - DNS server, 103, 533
 - for DHCP, 184
 - Properties dialog box
 - Debug Logging tab, 143, 143
 - Root Hints tab, 131
 - DNS Server list, 104, 533
 - DNS suffix search order, 104, 533
 - DNS zone, 103
 - dnscmd command, 120
 - dnslint command, 148–149
 - documentation, of performance history, 471
 - domain, 533
 - domain controllers
 - fault tolerance, 506
 - read-only, 122
 - Domain Name System (DNS), 534
 - aging and scavenging, 110–111, 533
 - basics, 98–111
 - caching and time to live, 109
 - client, 104, 533
 - configuring, 129–141
 - caching-only server, 131
 - load balancing with round robin, 130
 - database zones, 111–120
 - delegating zones for, 137–138
 - dynamic DNS population of database, 106–107
 - exam essentials, 151–152
 - forwarding, 111, 533
 - hierarchy, 102
 - installing, 129–130
 - monitoring, with DNS snap-in, 142–144
 - port number, 41
 - process, 104–111
 - queries, 107–111, 108
 - records, 123–129, 162
 - alias records, 127
 - host records (A or AAAA), 126
 - mail exchanger (MX) records, 128
 - manually creating, 138–141
 - name server (NS) records, 125–126
 - pointer (PTR) records, 109, 127–128, 162, 541
 - service records, 128–129
 - start of authority (SOA) records, 124–125
 - Server Manager MMC for installing server, 112
 - simple testing, 143–144
 - troubleshooting, 144–150
 - with dnslint, 148–149
 - with ipconfig, 149
 - with nslookup, 144–148
 - in Windows Server 2008, 121–123
 - zone transfers and replication, 117–119
- domain names, 100
- domain namespace, 100
- domains, 24
- DSL, 299
- dual stack, 534
 - for IPv6 integration, 76, 77, 77
- DUN. *See* dial-up networking (DUN)
- dynamic, 534
- Dynamic Bandwidth Control, for RRAS server, 307
- dynamic DNS, 104–106, 534
 - integrating with IPv4 DHCP, 206–208
 - population of DNS database, 106–107
- Dynamic Host Configuration Protocol (DHCP), 164–173, 534
 - advantages, 165–166
 - authorization for Active Directory, 178–179
 - clients, problem solving, 217
 - database files, 213–216
 - removing, 214

- disadvantages, 166
- and DNS, 105
- DORA (Discover, Offer, Request, Acknowledge) process, 164–165
- exam essentials, 218–219
- installing, 173–177
- integrating IPv4 version with dynamic DNS, 206–208
- integrating RRAS with, 324–327
- lease process, 167–169
 - acknowledgment, 168–169
 - discovery, 167–168
 - offer, 168
 - selection, 168
- lease release, 169
 - with ipconfig, 170
- lease renewal, 169
 - with ipconfig, 170
- logging activity, 211–213
- vs. MADCAP, 203
- monitoring, 210–217
 - with Event Viewer, 213
 - leases, 210
- NAP and, 380
- and printing, 428
- scope, 171–173
 - address pool, 172
 - creating in IPv4, 180–188
 - exclusions, 171–172, 196–197
 - reconciling IPv4, 216–217
 - relay agent, 172–173, 228
 - reservations, 171–172, 197–198
- on segmented network, 166
- servers
 - multiple, 208
 - properties, 193–195
 - recovering broken, 217
 - rogue, 180
- dynamic routing, 237–241, 534
 - vs. static routing, 237
- dynamic updates, configuring zones for, 136–137

E

- EAP (Extensible Authentication Protocol), 303, 333, 355, 396, 534
- EAP-MD5 CHAP (Extensible Authentication Protocol-Message Digest 5 Challenge Handshake Authentication Protocol), 337
- EAP-RADIUS, 355, 534
- EAP-TLS (Extensible Authentication Protocol-Transport Level Security), 337, 355, 535
- EAP type, 355, 534
- edu domain, 101

- EIGRP, 292
- Encapsulating Security Payload (ESP), 80, 534
- encapsulation, 5, 301, 534
 - for VPNs, 304
- Encrypting File System (EFS), 410
- encryption, 80, 396
 - RAS client settings for, 333
 - for VPNs, 304
- end-to-end mode, 80
- ESP (Encapsulating Security Payload), 80, 534
- Ethernet, 6, 7, 16
- event log
 - DHCP server message to, 179
 - for remote access services, 323
- Event Properties dialog box, 487, 488
- Event Viewer, 486–489, 523, 534
 - application and services logs, 489, 489
 - custom views, 489
 - Directory Service log, 487
 - information, errors and warnings, 488
 - subscriptions, 489
 - viewing DHCP activity in, 213
- exclusions to DHCP scope, 171–172, 196–197, 534
- expired leases, DNS entries for, 207
- Extended User Interface 64-bit (EUI-64) format, 75, 534
- Extensible Authentication Protocol (EAP), 303, 333, 355, 396, 534
- Extensible Authentication Protocol-Message Digest 5 Challenge Handshake Authentication Protocol (EAP-MD5 CHAP), 337
- Extensible Authentication Protocol-Transport Level Security (EAP-TLS), 337, 355, 535
- extension headers, 535
- external forwarding, 111

F

- fault tolerance
 - with Active Directory–integrated DNS, 116
 - local DNS database and, 113
 - network design and, 506
 - secondary DNS zones for, 114
- file servers, 400–401, 450, 535
 - configuring, 401–406
 - shared folders, 401–402
 - exam essentials, 438–439
- File Sharing dialog box, 403, 403, 425
- File Transfer Protocol (FTP), 12, 38
 - port numbers, 41
- firewall, 381–383, 535
- flat addressing scheme, 42
- flexible host isolation, NAP and, 380

552 folder Properties dialog box – installing

folder Properties dialog box, Sharing tab, 415
 folders, permissions, 409–416
 forwarding DNS, 111
 Frame Relay, 17
 Framed-Protocol attribute, for network access policy, 362
 frames, 6, 34
 FreeRADIUS package (Linux), 385
 FTP (File Transfer Protocol), 12, 38
 port numbers, 41
 full backups, 497
 full zone transfers (AXFR), 117
 fully qualified domain name (FQDN), 101

G

gateway, 236
 General Properties dialog box
 Logging tab, 265–266, 266
 Preference Levels tab, 266–267, 267
 Generic Routing Encapsulation (GRE)
 protocol, 275
 header, 304, 535
 global unicast address, 74–75, 535
 GlobalName zones, 122–123
 gov domain, 101
 Graph view in Performance Monitor, 474, 475
 Group Policy, 22, 81
 firewall configuration on remote computers with, 383
 for wireless, 341
 for WSUS client configuration, 464
 Group Policy Management Console (GPMC)
 to configure offline folders, 406, 406
 for WSUS client configuration, 466–469
 Group Policy Objects (GPOs)
 default domain Password Policy, 379
 to setup offline folders, 405

H

hardware, device drivers for, 14
 hardware Ethernet address, 7, 33
 HCAP (Host Credential Authorization Protocol)
 User Groups attribute, for network access policy, 362
 headers
 adding to message, 13, 13
 for IPv6, 70
 of packets, 16, 33
 Hesoid class, 124
 hexadecimal, 535
 hierarchical address, 535

hierarchical organization, for Active Directory, 24
 Histogram view in Performance Monitor, 474, 475
 HKEY_LOCAL_MACHINE\SOFTWARE
 \Microsoft\DhcpServer \Configuration, 215
 \Policies\Microsoft
 \Windows\WindowsUpdate, 465
 \Windows\WindowsUpdate\AU, 464
 HKEY_LOCAL_MACHINE\SYSTEM
 \CurrentControlSet\Services
 \DHCPserver\Parameters, 214
 \Router\Interfaces\InterfaceName, 251
 Hobbes' Internet Timeline, 68
 home folders, 401, 450
 Hop-Count Threshold, 327, 351
 hop counts, RIP support of, 239
 host address, 43
 host names, resolving IP address to, 98
 host records (A or AAAA), 126, 162, 535
 manually creating, 139–141
 host routes, 237, 536
 hostmaster, 133
 HOSTS files, 98–99, 99
 hosts per subnet, 61
 determining quantities, 67–68
 HTTP (Hypertext Transfer Protocol), 12, 38
 port number, 41
 Hyper-V utility, 123, 208, 536
 hypervisor, 123, 208

I

IANA (Internet Assigned Numbers Authority), 39, 378
 IAS (Internet Authorization Service), 317
 IBM, Systems Network Architecture (SNA), 18
 ICANN (Internet Corporation for Assigned Names and Numbers), 102
 ICMP (Internet Control Message Protocol), 71
 ICS (Internet Connection Sharing), 341, 536
 IEEE 802.X specification, 7
 IEEE 802.1X standard, 355
 IEEE 802.11 specification, changes, 339–340
 IGMP (Internet Group Management Protocol), 244
 in-addr.arpa domain, 109
 Inbound Filters dialog box, 273, 273–274, 276, 277, 282
 incremental backups, 498, 536
 incremental zone transfers (IXFR), 117–118
 infrastructure mode, 340, 536
 installing
 DFS Namespace service, 421–424
 DHCP relay agent, 324

- DNS server, with Server Manager MMC, 112
- RIP, 267–268
- RRAS, 245–249
- Server Core, 209
- SNMP, 494
- VPN, 310–313
- Windows Server 2008 Backup utility, 500–501
- WSUS server, 460–462
- instances, monitoring, 473
- Institute of Electrical and Electronics Engineers (IEEE), 7
- int domain, 101
- Integrated Services Digital Network (ISDN), 244, 298–299
- interactive mode, for nslookup, 145
- internal routing, 241, 536
- International Organization for Standardization (ISO), 2
- Internet accounts, billing using RADIUS
 - accounting data, 376–377
- Internet Assigned Numbers Authority (IANA), 39, 378
- Internet Authorization Service (IAS), 317
- Internet class, 124
- Internet Connection Sharing (ICS), 341, 536
- Internet Control Message Protocol (ICMP), 71
- Internet Corporation for Assigned Names and Numbers (ICANN), 102
- Internet Explorer, 33
 - in Application layer, 12
- Internet Group Management Protocol (IGMP), 244
- Internet Key Exchange (IKE) protocol, 80
- Internet layer (TCP/IP), 38
- Internet multicast backbone, 244
- Internet Protocol (IP), 19–21, 292, 300, 536
- Internet Protocol next generation (IPng), 69, 536
- Internet Protocol Security, 536. *See also* IPSec
- Internet Protocol (TCP/IP) Properties dialog box, Obtain An IP Address Automatically, 170
- Internet Protocol version 4 (IPv4)
 - Add Exclusions dialog box, 197
 - creating multicast scopes, 203–205
 - reconciling DHCP scopes, 216–217
 - RRAS configuration for, 309
 - superscope creation for, 202–203
- Internet Protocol version 6 (IPv6), 68–79, 536
 - Add Exclusions dialog box, 197
 - address space known prefixes and addresses, 76
 - addressing concepts, 71–76
 - address format, 72–74
 - address types, 74–76
 - DHCP scope for, 188–192
 - dual stack, 77, 77
 - history and need, 68–69
 - information commands useful with, 79
 - integration/migration, 76–79
 - new and improved concepts, 69–71
 - Windows Server 2008 support for, 122
- Internet service provider, 241, 242
 - dial-up using, 297
- Internet Timeline (Hobbes'), 68
- internetwork, 234
- Intra-Site Automatic Tunnel Addressing Protocol (ISATAP), 71, 77, 78, 536
- inverse queries, 109
- IP addressing, 41–46
 - hierarchical scheme, 41–43
 - for multicasting, 242–243
 - reserved addresses, 44
 - resolving to host name, 98
 - structure, 42–43
- IP-based connections, configuring, 308–310
- IP Control Protocol (IPCP), 300
- IP datagram, 304, 536
- IP-in-IP interfaces, 244
- IP over IEEE 1394, 19
- IP protocol suite, 3
- IP routing
 - configuration, 250–272
 - interfaces management, 250–265
 - properties, 265–267
 - protocol management, 267–270
 - static routes, 270–272
 - managing, 278–283
 - troubleshooting, 281
 - example, 281–283
- IP Security Monitor, 82
- IP Security Policy Management snap-in, 83
- ipconfig command
 - /all option, 8, 79
 - for DNS troubleshooting, 149
 - lease options, 170
 - /setclassid option, 200
 - to view IP addresses, 74, 74
- IPCP (IP Control Protocol), 300
- IPSec, 536
 - authentication, 83–84
 - configuring, 79–84
 - fundamentals, 80–83
 - L2TP with, 306
 - NAP and, 380
 - and Windows Server 2008, 81–82
- IPSec Policy Agent, 81
- IPv4 Properties dialog box
 - Advanced tab, 194, 194
 - DNS tab, 207, 207
 - General tab, 193, 193–194
 - Network Access Protection tab, 194, 195
- IPv4 Static Routes dialog box, 271

554 IPv6 mobility – Microsoft Baseline Security Analyzer (MBSA)

IPv6 mobility, 537
 IPv6 Properties dialog box
 Advanced tab, 195, 196
 General tab, 194, 195
 ISATAP (Intra-Site Automatic Tunnel Addressing Protocol), 71, 77, 78, 536
 ISDN (Integrated Services Digital Network), 244, 298–299
 ISO (International Organization for Standardization), 2
 iterative queries, 107, 162

J

J50.chk file, 214
 J50.log file, 214
 jp domain, 101
 JPEG graphic format, 10

K

Kerberos, 83, 355, 396
 port number, 41

L

Layer 2 Tunneling Protocol (L2TP), 80, 302–303, 537
 avoiding pitfalls, 312
 packet filtering, 278
 tunneling, 305–306
 LCP (Link Control Protocol), 299
 lease, 165
 DHCP process, 167–169
 acknowledgment, 168–169
 discovery, 167–168
 offer, 168
 selection, 168
 DHCP release, 169
 with ipconfig, 170
 DHCP renewal, 169
 with ipconfig, 170
 DNS entries for expired, 207
 ipconfig options, 170
 monitoring, 210
 limited broadcast, IP address for, 44
 linear logging, 480, 537
 Link Control Protocol (LCP), 299, 307, 352
 Link layer (TCP/IP), 38
 link-local address, 75, 537
 “link-local” block, IP address for, 44
 Link-Local Multicast Name Resolution (LLMNR), 141, 537

link-state map, 240, 537
 LLC (Logical Link Control) layer, 7, 33, 537
 LMHOSTS file, 99, 537
 load balancing, 114, 537
 with round robin, 130
 load sharing, with DFS, 420
 Local Area Connection Properties dialog box, 282
 General tab, 252, 252–253
 Local Area Network Properties dialog box, General tab, 273
 local database, for primary DNS zones, 113–114
 Local File Logging dialog box
 Log File tab, 320, 321, 322, 322
 Settings tab, 319, 320
 Location Groups attribute, for network access policy, 362
 log files
 of DHCP activity, 211–213
 event codes, 211–213
 file format, 211
 for DNS server, 149
 Logical Link Control (LLC) layer, 7, 33, 537
 logs
 IP routing settings for, 265–266, 266
 of performance, 479–480
 of remote access services, 317–322
 properties, 318–319
 loopback testing, IP address for, 44

M

MAC address, conflicts and limitations, 8
 machine certificates, 312, 537
 MADCAP (Multicast Address Dynamic Client Allocation Protocol), 203
 mail exchanger (MX) records, 128, 162
 man-in-the-middle attack, 80
 masked, 537
 masked bits in subnet mask, 53
 MBone, 244
 MBSA. *See* Microsoft Baseline Security Analyzer (MBSA)
 mbsacli.exe utility, 492–494, 522
 Mean time between failure (MTBF), 495
 Media Access Control (MAC) address., 38, 538
 Media Access Control (MAC) Layer, 7, 33
 Meeting Space (Windows), 22, 34
 metrics, 538
 consistency in performance monitoring, 471
 for routes, 235
 Microsoft Baseline Security Analyzer (MBSA), 455, 491, 538
 GUI version, 491–492, 492
 mbsacli.exe utility, 492–494, 522

Microsoft Challenge Handshake Authentication Protocol . . . – network protocols 555

- Microsoft Challenge Handshake Authentication Protocol (MS-CHAP), 396, 538
 - and routers, 254–255
 - version 1, 336, 337
 - version 2, 337, 350, 355
 - Microsoft Personal Security Advisor (MPSA), 491
 - Microsoft Point-to-Point Encryption (MPPE)
 - algorithm, 305, 538
 - Microsoft Remote Installation Services (RIS)
 - clients, 166
 - Microsoft Support, 455
 - Microsoft TechNet, 455
 - Microsoft Vista. *See* Windows Vista
 - Microsoft website
 - downloading WSUS software from, 460
 - Help and Support page, 456
 - mil domain, 101
 - modem, 298
 - moving, DHCP database files, 214–216
 - MS-CHAP. *See* Microsoft Challenge Handshake Authentication Protocol (MS-CHAP)
 - MS-RAS Vendor attribute, for network access policy, 362
 - MTBF (Mean time between failure), 495
 - Multicast address, 75, 95, 189, 538
 - Multicast Address Dynamic Client Allocation Protocol (MADCAP), 203
 - multicast routing, 242–244, 538
 - Multicast Scope Properties dialog box
 - General tab, 205, 205
 - Lifetime tab, 205, 206
 - multicast scopes
 - creating IPv4, 203–205
 - properties, 205
 - multihomed computer, 292
 - as router, 243
 - Multilink Connections
 - for RRAS server, 307
 - incoming calls, 308
 - user profile settings, 370
 - multilink extensions, 538
 - to PPP, 301
 - multiplexing, 9
-
- N**
- name server, 538
 - name server (NS) records, 125–126, 538
 - Named Pipes, 10
 - NAP (Network Access Protection), 380
 - NAS-Identifier attribute, for network access policy, 362
 - NAS-IP-Address attribute, for network access policy, 362
 - NAS-Port-Type attribute, for network access policy, 362
 - NAT (Network Address Translation), 69, 82, 245, 539
 - NDIS (Network Driver Interface Specification), 14, 33, 539
 - negative cache TTL, 109
 - neighbor discovery, 71, 539
 - net domain, 101
 - net stop dhcpserver command, 215
 - NetBEUI, 292
 - NetBIOS, 10, 18
 - WINS to resolve names, 122–123
 - Netscape, 33
 - netsh command, 82
 - netsh set command, 79
 - NetWare, 18
 - Network Access Layer, 38
 - Network Access Permission control group, 358
 - network access policies, 359–366, 539
 - creating, 363–366
 - default, 396
 - for remote access user, 366–371
 - for VPNs, 371–374
 - creating, 372–374
 - granting and denying per-user access, 371
 - Network Access Protection (NAP), 380
 - network access servers (NASs), 297
 - network adapters
 - MAC layer communication with, 7
 - for VPNs, 312
 - network address, 539
 - vs. host addresses, 49
 - in IP address, 42
 - Network Address Translation (NAT), 69, 82, 245, 539
 - network classes. *See* classes
 - Network Driver Interface Specification (NDIS), 14, 33, 539
 - network drivers, 14
 - network interface, configuring DHCP Relay Agent on, 327
 - Network layer (OSI), 8–9, 9, 33
 - security for, 380
 - network masquerading, 245
 - Network Monitor, 385, 481–482, 523, 539
 - Network Monitor Agent, 481
 - network packets. *See* packets
 - Network Policy Server (NPS), 317, 539
 - console, 385
 - network printer, 428, 539
 - configuring sharing, 434
 - network protocols, 15–21
 - and binding, 16–17
 - how they work, 15
 - and Windows Server 2008, 18–19

556 network redirector – peer filters

network redirector, 10
network routes, 237, 539
New Interface For DHCP Relay Agent dialog box, 326
New Multicast Scope Wizard, 204, 204–205
New Network Policy Wizard, 360, 363–366
 Configure Authentication Methods page, 366
 Configure Constraints page, 366, 366
 Select Condition dialog box, 360, 361, 364
 Specify Access Permission page, 362, 365
 Specify Conditions page, 364
 Time Of Day Constraints dialog box, 360, 365
 for VPNs, 373–374
New Object - Shared Folder dialog box, 404
New Reservation dialog box, 197, 198
New Resource Record dialog box, 140
New Routing Protocol dialog box, 268
New Scope Wizard (IPv4), 181
 Activate Scope page, 186, 187
 Add Exclusions page, 182, 183
 Configure DHCP Options page, 184, 184
 Domain Name and DNS Servers, 185
 IP Address Range page, 182, 182
 Lease Duration page, 182, 183
 Router (Default Gateway), 185
 Scope Name page, 181
 WINS Servers page, 185–186, 186
New Scope Wizard (IPv6)
 Add Exclusions page, 190, 191
 Completing The New Scope Wizard page, 192, 192
 Scope Lease Duration page, 190, 191
 Scope Name page, 188, 189
 Scope Prefix page, 189, 190
New Superscope Wizard, 202
New Zone Wizard, 115
Next Generation TCP/IP protocol stack, 4
No Auto-Restart For Scheduled Automatic Updates Installations dialog box, 469, 469
node address, 539
 in IP address, 42
nodes, 21
nondynamic DNS (NDDNS), 104–106, 539
normal backups, 497, 539
Novell, 14
NPS (Network Policy Server), 317
nslookup, 144–148, 540
 interactive mode for, 145
 responses and error messages, 146–147
NTFS, 410–411, 540
 and shared permissions, 412–416
NTLMv2, 355
NWLink IPX/SPX/NetBIOS Compatible Transport Protocol, 19

O

octets, 41
ODI (Open Datalink Interface), 14
offline files, 449
offline folder, 540
 configuring, 404–409
Offline Settings dialog box, 409
one-time backup, scheduling, 502
Open Datalink Interface (ODI), 14, 540
Open Shortest Path First (OSPF) routing protocol, 19, 235, 238, 240–241, 292, 293, 540
Open Systems Interconnection (OSI) reference model, 2–13, 34, 540
 Application layer, 12, 12
 Data-Link layer, 6, 6–7, 7, 14, 34
 device drivers and, 14–15
 Network layer, 8–9, 9, 33
 security for, 380
 Physical layer, 5, 5–6, 33, 34
 Presentation layer, 10, 11, 34
 protocol stacks, 4–5, 5
 Session layer, 10, 11, 35
 Transport layer, 9–10, 10, 34
 and troubleshooting, 20
operating systems, authentication protocols supported by, 338–339
Optimize Backup Performance dialog box, 498, 498
option types, 171
org domain, 101
OSI. *See* Open Systems Interconnection (OSI) reference model

P

packet filtering, 244, 291, 540
 TCP/IP, 272–275
 VPN, 275–278
 L2TP, 278
 PPTP, 275–277
packet payload, 540
packet sniffer, 8, 34, 114, 540
packets, 15, 16, 16, 540
 components, 16
Password Authentication Protocol (PAP), 337, 354, 396, 540
 and routers, 254–255
passwords
 for RAS client, 331–332
 transmission in clear text, 260–261
PAT (Port Address Translation), 69
peer filters, 239, 540

- Peer Name Resolution Protocol (PNRP), 22
- peer-to-peer network, 21–24, 34
 - scenario, 22–24, 23
 - Windows Vista features, 22
- People Near Me Windows Vista feature, 22
- Performance Console, 474
- Performance Monitor, 472
- performance monitoring
 - with Event Viewer, 486–489
 - Directory Service log, 487
 - viewing DHCP activity in, 213
 - exam essentials, 514
 - with Microsoft Baseline Security Analyzer, 491
 - with Network Monitor, 481–482
 - real-world, 480–481
 - with Task Manager, 482–486
 - Networking tab, 484, 485
 - Performance tab, 484, 485
 - Services tab, 484, 484
 - Users tab, 484, 486
 - in Windows Server 2008, 469–471
- performance objects, monitoring, 473
- periodic update mode, 541
 - for RIP, 240
- permissions, 409–416, 451
 - individual vs. group, 411
 - shared, 412
 - and NTFS, 412–416
- Permissions dialog box, 415, 416
- persistent policies, 82
- persistent routes, 270, 541
- Physical layer (OSI), 5, 5–6, 33, 34
- Pick A Computer To Scan dialog box, 492, 493
- PICT graphic format, 10
- ping command, 20, 79, 141
- plain old telephone service (POTS), 298
- planning
 - for backups, 499
 - importance of, 470
 - VPN security, 375
- PNRP (Peer Name Resolution Protocol), 22
- Point-to-Point Protocol (PPP), 299–301, 541
 - negotiation process, 300
 - relationship between network protocols and, 301
- Point-to-Point Tunneling Protocol (PPTP), 244, 302, 311, 541
 - packet filtering, 275–277
 - tunneling, 305
- pointer (PTR) records, 109, 127–128, 162, 541
- poison-reverse algorithm, 240
- Policy Agent, 81
- pool of IP addresses, 164
- Port Address Translation (PAT), 69
 - port numbers, 39–41
 - assignment, 378
 - Port Status dialog box, 323, 323
 - ports
 - configuring VPN, 314–315
 - monitoring, 323
 - Ports Properties dialog box, 314, 314
 - Post Office Protocol v3 (POP3), port number, 41
 - POTS (plain old telephone service), 298
 - PPP frame, 304, 541
 - PPP (Point-to-Point Protocol), 299–301, 541
 - negotiation process, 300
 - relationship between network protocols and, 301
 - PPTP, 10. *See also* Point-to-Point Tunneling Protocol (PPTP)
 - preboot execution environment (PXE) client, 166
 - predefined options for DHCP, 199
 - prefix notation, 541
 - for IPv6 networks, 73
 - Presentation layer (OSI), 10, 11, 34
 - presheared keys, 84
 - for VPN server, 312
 - primary DNS zones, 112–114, 541
 - local database for, 113–114
 - print servers, 428, 541
 - migrating, 437–438
 - print spooling, 436
 - Printbrm.exe command, 438
 - Printer Migration Wizard, 438
 - Printer objects, 402
 - printer pool, 435, 450, 541
 - printer Properties dialog box
 - Advanced tab, 435–436, 436
 - Color Management tab, 436
 - General tab, 433, 433
 - Ports tab, 434–435, 435
 - Security tab, 437, 437
 - Sharing tab, 434, 434, 449
 - printers
 - bidirectional support for, 435
 - configuring, 433–437
 - controlling time available, 435
 - creating and publishing, 429–433
 - exam essentials, 438–439
 - printing, 428–438
 - priority, of printer job, 435
 - privacy protection, need for, 80
 - problem solving, techniques, 455
 - processes, displaying running with Task Manager, 482–483, 483
 - protocol stacks, 4–5, 5, 15, 541
 - communication between, 13, 13
 - protocols. *See* network protocols
 - proxy mode for IGMP, 244
 - pseudo-interface, 541

558 PTR records – RIP Properties dialog box

PTR records, 109, 127–128, 162, 541
 public-key certificates, 83
 publishing, 402, 541
 printers, 429–433

Q

quads, 41
 queries, 104, 107–111, 108

R

RADIUS (Remote Authentication Dial-In User Service), 317, 376, 542
 settings, 378
 troubleshooting server, 385
 RADIUS accounting, 376–377
 RAID (Redundant Array of Independent Disks), 481
 read-only domain controllers (RODC), 122
 Reconcile dialog box, 216, 216
 record types in DNS, 123–129
 alias records, 127, 162
 host records (A or AAAA), 126, 162, 535
 manually creating, 139–141
 mail exchanger (MX) records, 128, 162
 name server (NS) records, 125–126, 538
 pointer (PTR) records, 127–128, 162, 541
 service records, 128–129, 162
 start of authority (SOA) records, 124–125, 162
 Recovery Wizard, 507–509
 recursive queries, 107–109, 162
 Redundant Array of Independent Disks (RAID), 481
 Refresh Interval, for zone, 133
 regedit, 464
 registry
 for Automatic Updates configuration, 464–465
 risks in editing, 215
 relay agent, 166, 172–173
 Reliability and Performance Monitor, 471–484, 541
 decision on what to monitor, 473
 performance logs and alerts, 479–480
 properties, 476–479
 Appearance tab, 479, 479
 Data tab, 478, 478
 General tab, 476–477, 477
 Graph tab, 478, 478
 Source tab, 477, 477
 viewing performance information, 473–476
 Graph view, 474, 475
 Histogram view, 474, 475
 Report view, 476
 reliability of protocols, 17
 reliable, 542
 remote access profiles, 366–371, 542
 remote access security, 354–357
 access control, 356–357
 for connections, 356
 exam essentials, 386–387
 risk and liability analysis, 372
 user access configuration, 357–374
 user authentication, 354–355
 Remote Access Services (RAS), 296
 configuring, 306–310
 clients, 327–335
 IP-based connections, 308–310
 event log review, 323
 exam essentials, 342
 logs, 317–322
 properties, 318–319
 managing, 316–323
 with RADIUS server, 317
 Remote Authentication Dial-In User Service (RADIUS), 317, 376, 542
 settings, 378
 troubleshooting server, 385
 Remote Installation Services (RIS) clients, 166
 replay attack, 80
 Report view in Performance Monitor, 476
 Request for Comments (RFCs)
 950, on subnet addresses, 52
 2136, on Dynamic DNS (DDNS)
 standard, 105
 2235, on Hobbes' Internet Timeline, 68
 for DHCP, 164
 for DNS, 100
 for IPsec, 80
 “Request to Server timed-out” error message, 146
 Reschedule Automatic Updates Scheduled Installations dialog box, 468, 468
 reservations for DHCP process, 171–172, 197–198, 542
 for printer, 428
 Reservations view, in DHCP snap-in, 178
 resolvers, 104, 542
 set command to configure, 145–146
 resource records (RRs), 103, 542
 manually creating, 139–141
 restoring data from backups, 499–500, 506–509
 Resultant Set of Policy (RSOP), 82
 Retry Interval for zone, 133
 RIP. *See* Routing Information Protocol (RIP)
 RIP Properties dialog box, 269
 General tab, 269, 269
 Security tab, 269, 270

- RIP Properties - Local Area Connection
 - Properties dialog box
 - Advanced tab, 263–265, 264
 - General tab, 259, 259–260
 - Neighbors tab, 263, 263
 - Security tab, 261–262, 262
 - risk assessment, 260–261
 - root, in DNS, 100
 - root servers, 102, 103
 - round robin, 161
 - load balancing with, 130
 - route add command, 270, 291
 - route command, 79, 237
 - route filter, 542
 - route print command, 79, 271, 280, 291
 - router boundaries, DHCP messages impacted by, 166
 - router discovery, 238
 - router discovery message, 542
 - router mode for IGMP, 244
 - routers
 - configuring, 184, 185
 - vs. gateway, 236
 - multihomed computer as, 243
 - and sessions, 187
 - routing, 234–245. *See also* IP routing
 - border, 241–242
 - dynamic, 237–241
 - exam essentials, 283–284
 - how it works, 235–236
 - multicast, 242–244
 - preventing loops, 239–240
 - properties, 265–267
 - static, 237
 - managing, 270–272
 - what it does, 234–245
 - in Windows Server 2008, 244–245
 - Routing and Remote Access Service (RRAS)
 - DHCP relay agent installation on server, 325–326
 - enabling as VPN, 313
 - installing, 245–249
 - integrating with DHCP, 324–327
 - Server Status node, 317
 - Setup Wizard, 248–249
 - Routing And Remote Access snap-in
 - authentication and accounting methods, 375–376
 - to configure PPTP packet filters, 276–277
 - DHCP relay agent, 324
 - filters to screen out RIP updates, 239
 - IP Routing node, RIP node, 269
 - IPv4 node, General node, 252–253, 267–268
 - Launch NPS option, 360
 - to monitor routing status, 279
 - Network Interfaces node, 250, 251, 253
 - for ports monitoring, 323
 - Remote Access Logging and Policies
 - folder, 359
 - for remote access logging settings, 321–322
 - Static Routes node, 271
 - for VPN network access policy creation, 373
 - Routing Information Protocol (RIP), 235, 238, 239–240, 292, 542
 - filters to screen out updates, 239
 - installing, 267–268
 - interfaces
 - creating and removing, 258
 - properties, 258–265
 - v1 vs. v2, 239
 - routing tables, 236–237
 - route print command for dump of, 280
 - static, 237
 - subnetting and, 47
 - viewing, 79
 - RPC (Remote Procedure Call), 10
 - RRAS. *See* Routing and Remote Access Service (RRAS)
 - RRAS server Properties dialog box
 - IPv4 tab, 308, 309
 - IPv6 tab, 309, 310
 - PPP tab, 306–310, 307
 - RRs (resource records), 103, 542
 - manually creating, 139–141
 - RSoP (Resultant Set of Policy), 82
-
- ## S
- scalability
 - for Active Directory, 26
 - of peer-to-peer network, 23
 - scheduling backups, 499, 499
 - scope, 75, 542
 - for DHCP, 171–173
 - activating and deactivating, 201–202
 - changing properties, 192
 - configuring basic options, 184–187
 - creating, 188
 - default release time, 230
 - in IPv4, 180–188, 198–201
 - in IPv6, 188–192
 - options, 199
 - reconciling single, 216–217
 - Scope Options dialog box, 200, 200
 - Scope Options view, in DHCP snap-in, 178
 - scope Properties dialog box, General tab, 193
 - screen name, for DHCP scope, 181
 - secondary DNS servers, notification of zone changes, 119
 - secondary DNS zones, 114–115, 542

560 Secure HTTP (HTTPS) – subnet masking

- Secure HTTP (HTTPS), port number, 41
- Secure Server (Require Security) policy, 83
- security
 - for Active Directory, 25
 - of Active Directory–integrated DNS, 116
 - configuring, 374–383
 - for folders, with permissions, 409–416
 - in IPv6, 70–71
 - with Network Access Protection (NAP), 380
 - NTFS and, 411
 - for peer-to-peer network, 23
 - policies, 82–83
 - for VPNs, planning, 375
- segmented network, DHCP on, 166
- segments, 15
- Serial Line Interface Protocol (SLIP), 18
- “Server can’t find...” error message, 146
- Server Core, 123, 542
 - installing, 209
- Server Manager MMC
 - to add DFS, 421, 421–424
 - for installing Backup utility, 500–501
 - for installing DHCP Server, 173–177
 - for installing DNS server, 112
- server options for DHCP, 199
- server Properties dialog box, 306
 - Event Logging tab, 142, 142
 - General tab, 313, 313
 - Logging tab, 318–319, 319
 - Monitoring tab, 142, 143
 - Security tab, 375–376, 376
- Server (Request Security) policy, 83
- servers
 - in IPSec, 80
 - multiple types on one machine, 400–401
 - for PPP, 299
 - as remote access clients, 336
- service access points (SAPs), 7, 543
- service profile, 374, 543
- service records, 128–129, 162
- service set identifier (SSID), 341, 543
- service (SRV) record, 543
- Service-Type attribute, for network access
 - policy, 362
- Services for Macintosh (SFM), 19
- Session layer (OSI), 10, 11, 35
- sessions, 10
 - and routers, 187
- set command, to configure resolver, 145–146
- set type command, 146
- shadow copies, 509–512, 523, 543
 - configuring, 511–512
 - schedule for, 510
 - storage location for, 510, 511
- shared folders, 401–402, 543
 - configuring for offline access, 408–409
 - publishing, 402–404
 - shadow copies for protecting, 509
- Shared Folders objects, 402
- shared permissions, 412, 543
 - and NTFS, 412–416
- Shiva Password Authentication Protocol (SPAP), 336, 337, 398
- Silent RIP, 259
- slash notation, for IPv6 networks, 73
- SMTP (Simple Mail Transfer Protocol), 12, 38
 - port number, 41
- sniffer, 8, 34, 114
- SNMP (Simple Network Management Protocol), 494–495, 543
- Software Compression, for PPP, 307
- Software Update Services (SUS), 458
- source port, 40
- SPAP (Shiva Password Authentication Protocol), 336, 337, 398
- Specify Intranet Microsoft Update Service
 - Location Properties dialog box, 467, 468
- split-horizon algorithms, 240, 264
- spoofing, protection against, 80
- SQL, 10
- SQL Server, dedicated machine for, 401
- Start menu > Administrative Tools
 - > Backup, 506
 - > Computer Management, 472, 511
 - > DHCP, 177
 - > Event Viewer, 486
- Start menu, > Control Panel, > Printers > Add Printer, 429
- start of authority (SOA) records, 124–125, 162
- stateless autoconfiguration, 69, 70, 543
- static IP addresses
 - assignment, 172
 - for dial-in users, 396
 - exclusion from scope, 229
 - implementing DHCP in, 209
 - for remote access user, 359
- static routing, 237, 543
 - managing, 270–272
 - RRAS to create, 271–272
- stub zones, 116–117, 161
 - configuring transfers, 120
 - when to use, 118
- subdomains, 102
- subnet 0, 59
- subnet address, 46, 543
- subnet masking, 43, 92, 544
 - applying, 52
 - converting mask to decimal, 52
 - default, 51
 - determining quantities of subnets and hosts, 67–68

- easier way to apply, 53–57
 - exercises, 55–57
- ISP use of, 64
- traditional way of applying, 57–65
 - Class A network, 64–65
 - Class B network, 62–63
 - Class C network, 57–62
- using, 49–52, 50
- workstation with wrong, 60
- subnets, 543
 - calculating number of, 53
- subnetting network, 46–68
 - benefits, 47
 - implementing, 47–55
 - determining requirements, 48
 - sample, 48
- Subscriptions Properties dialog box, 489, 490
- subtasks, 4
- superscope, 171, 229, 544
 - activating and deactivating, 203
 - adding scope to, 202
 - creating, for IPv4, 202–203
 - deleting, 202
 - removing scope from, 203
- synchronization, 451
 - of folders with laptops, 405, 405
 - of WSUS server, 463
- System Stability index, 472
- Systems Network Architecture (SNA), 18

T

- tab-delimited text file, for lease information in scope, 210
- tampering, protection against, 80
- Task Manager, 482–486, 544
 - Applications tab, 482, 483
 - Networking tab, 484, 485
 - Performance tab, 484, 485
 - Processes tab, 482–483, 483
 - Services tab, 484, 484
 - Users tab, 484, 486
- TCP (Transmission Control Protocol), 10, 19, 38, 292
 - reliability, 17
- TCP/IP (Transmission Control Protocol/Internet Protocol), 18, 19–21, 35, 544
 - exam essentials, 84
 - model layers, 38, 39, 40
 - communication, 39
 - port numbers, 39–41
 - for Windows Server 2008, 19
- TCP/IP Information window, 279, 279
- TCP/IP packet filtering, 272–275

- TCP/IPv6 Properties window, 73
- TCPDump, 385
- Telnet, port number, 41
- templates, for quotas, 418
- Temporal Key Integrity Protocol (TKIP), 340, 544
- Teredo protocol, 71, 77, 78, 544
- test environment, 470
- TIFF graphic format, 10
- time and day restrictions, for network access, 363
- time to live (TTL)
 - appropriate values, 110
 - for DNS server, 109
 - for zone, 133
- TKIP (Temporal Key Integrity Protocol), 340, 544
- top-level domains (TLDs), 100
- tracert command, 79
- trailers, of packets, 16
- Transmission Control Protocol (TCP), 10, 19, 38, 292
 - reliability, 17
- Transport layer (OSI), 9–10, 10, 34
- Transport layer (TCP/IP), 38
- transport mode, 80
- trapping messages, SNMP for, 494
- triggered updates, for RIPv2 routers, 239
- Trivial File Transfer Protocol (TFTP), 38
- troubleshooting
 - DHCP client problems, 217
 - Domain Name System (DNS), 144–150
 - with dnslint, 148–149
 - with ipconfig, 149
 - with nslookup, 144–148
 - IP routing, 281
 - example, 281–283
 - and OSI model, 20
 - virtual private networks (VPNs), 315–316
- tunnel mode, 80
- Tunnel-Type attribute, for network access policy, 362
- tunneling, 77, 544
 - for IPv6 integration, 77–79
 - for L2TP, 305–306
 - for VPN, 302, 302

U

- UDP (User Datagram Protocol), 10, 17, 35
- uk domain, 101
- umbrella quota policy, 417
 - setup, 418
- unauthorized DHCP servers, 179
 - and Active Directory, 178

562 Unicast – Windows Server 2008

Unicast, 544
 Unicast addresses, 74, 95, 189
 vs. Anycast addresses, 76
 unicast routing, 544
 Unique local address, 75
 U. S. Department of Defense, Advanced Research
 Projects Agency, 19
 Unix, 161
 unmasked, 544
 unmasked bits in subnet mask, 53
 “unreachable”, 250
 unreliable, 545
 unreliable connection-oriented protocol, 17
 us domain, 101
 user access configuration, 357–374
 user authentication, 354–355
 User Datagram Protocol (UDP), 10, 17, 35,
 38, 545
 user profile Properties dialog box
 Constraints tab, 367, 368
 Dial-In tab, 371
 Settings tab, 368, 370
 Encryption pane, 370, 370–371
 IP Settings pane, 368, 369
 Multilink And Bandwidth Allocation
 Protocol pane, 368, 369
 user profiles, 357–359
 restricting for dial-in access, 367
 user Properties dialog box, Dial-In tab, 357, 358
 users
 Active Directory objects availability to,
 402–404
 disk quotas, 417–419
 home folders, 401

V

variable-length subnet masking (VLSM), 239
 virtual directories, for connecting to shared
 folders, 420
 virtual private networks (VPNs), 296,
 301–307, 545
 client configuration, 327–335
 configuring, 313–316
 ports, 314–315
 connection on Windows XP client, 334–335
 how it works, 311, 311–312
 how they work, 303–307
 encapsulation, 304, 305
 installing, 310–313
 NAP and, 380
 network access policies, 371–374
 network adapters for, 312
 packet filters, 275–278
 security, planning, 375

server-to-server, 336
 troubleshooting, 315–316
 what they do, 302, 302
 and Windows Server 2008, 302–303
 virus scanners, and WSUS server, 460
 Vista. *See* Windows Vista
 VLSM (variable-length subnet masking), 239
 volume Properties dialog box, Quotas tab,
 417, 418
 VPN Connection Properties dialog box, 328
 Advanced tab, 334, 335
 General tab, 328–329, 329
 Networking tab, 333–334, 334
 Options tab, 329–331, 330
 Security tab, 331–333, 332
 VPNs. *See* virtual private networks (VPNs)

W

“well known” port, 40
 WEP (Wired Equivalency Privacy), 340, 545
 Wi-Fi Protected Access (WPA), 340
 Wi-Fi Protected Access 2 (WPA2), 341, 545
 Windows Authentication, 376
 settings, 378–379
 Windows Firewall Settings dialog box
 Advanced tab, 383, 383
 Exceptions tab, 381–382, 382
 General tab, 381, 381
 Windows Firewall With Advanced Security MMC
 snap-in, 383, 384
 Windows-Groups attribute, for network access
 policy, 362
 Windows Internet Name Service (WINS),
 104–105, 545
 configuring DHCP for, 185–186
 Windows Meeting Space, 22, 34
 Windows NT 4 resources, publishing, 402
 Windows peer-to-peer network, 21–24
 scenario, 22–24, 23
 Windows Vista features, 22
 Windows Server 2000, 105
 Windows Server 2003
 802.11 wireless networking support, 340–341
 Internet Authorization Service (IAS), 317
 network protocol support, 18
 for WSUS server, 460
 Windows Server 2008
 802.11 wireless networking support, 340–341
 Active Directory network, 24–26
 Backup utility, 496, 496–500
 installing, 500–501
 remote administration, 506
 Connection Manager, 374
 dial-up connections, 297

- Domain Name System in, 121–123
- dynamic routing protocols, 238
- Hyper-V utility, 123, 208
- IEEE 802.11 specification changes, 339–340
- and IPSec, 81–82
- minimum hardware requirements, 480–481
- network access policies, 359–366
- and network protocols, 18–19
- performance monitoring, 469–471
- Reliability and Performance Monitor, 471–484
- as router, 243
- routing in, 244–245
- and virtual private networks (VPNs), 302–303
- for WSUS server, 460

Windows Server Update Services (WSUS), 454, 455–469, 545

- advantages, 459
- Automatic Updates, 457–458, 458
- clients
 - configuring, 464–469
 - requirements, 464
- exam essentials, 513–514
- server
 - configuring, 462–463
 - installing, 460–462
 - requirements, 459
 - using, 458–469
- Windows Update, 456, 457

Windows Update, 455, 456, 457, 545

- information collected by, 456

Windows Vista

- 802.11 wireless networking support, 340–341
- dial-up connections, 297
- IEEE 802.11 specification changes, 339–340
- IPv6 enabled, 68
- peer-to-peer network features, 22

Windows XP Professional

- 802.11 wireless networking support, 340–341

- dial-up connections, 297
- VPN connection, 334–335

WinDump, 385

WINS (Windows Internet Name Service), 104–105, 122–123

- servers, 99

Wired Equivalency Privacy (WEP), 340, 545

wireless access, 339–341

- configuring, 340–341

wireless network name, 341

workgroup, 21

WPA (Wi-Fi Protected Access), 340

WPA2 (Wi-Fi Protected Access 2), 341, 545

X

X.25 protocol, 18

Z

zone Properties dialog box, 132–136

- General tab, 132, 132–133
- Name Servers tab, 134, 135
- Start of Authority (SOA) tab, 133, 134
- WINS tab, 134
- Zone Transfers tab, 134, 135, 136

zone replication scope, configuring stub zone transfers with, 120

zones (DNS), 111–120

- configuring for dynamic updates, 136–137
- delegating for DNS, 137–138
- primary, 112–114
- secondary, 114–115
- stub zones, 116–117
 - configuring transfers, 120
 - when to use, 118
- troubleshooting transfers, 146