

#### INDEX

# Symbols

^z command, 92

# **Numerics**

3DES (Triple Data Encryption Standard), 164

# A

AAA (authentication, authorization, and accounting), 8, 259-262 configuration, 276-300 Floodguard, 320 servers identifying, 276-279 specifying, 275 support, 28 troubleshooting, 303-306 aaa accounting command, 277 aaa authentication command, 277 aaa authentication console command, 282 aaa authorization command, 277 aaa-server command, 276-277 access AAA, 259–262 attacks, 5 authentication console, 282 inbound configuration, 112-118 lists, 115-118 modes, 92 NAS, 260 networks security, 3 threats, 4 types of attacks, 4-6 vulnerabilities, 3 object grouping, 119-122 PDM requirements, 212 remote, 48-50 SSH, 49-50 Telnet, 48-49 rules, 385 **VPN**, 161 access control list. See ACL Access Control Server (ACS), 28 access list entries (ACEs), 115 access-group command, 177, 385 access-list command, 173 accounting. See also AAA configuration, 295-299 troubleshooting, 305 viewing, 297 ACEs (access list entries), 115 ACL (access control list), 15 downloading, 300-302 TurboACL, 118-119

ACS (Access Control Server), 28 activation keys license, 163 upgrading, 51-53 ActiveX, filtering, 248 Adaptive Security Algorithm (ASA), 17, 25-26 addresses command, 55 IP global, 382, 384 mapping, 381 static port translation, 113-114 translation, 29, 71-79 bidirectional, 79 commands, 73 configuring multiple, 77-78 NAT, 74 PAT, 75 static, 75-76 troubleshooting, 79-82 advanced protocol handling, 123-124 aggressive mode (IKE), 164 AH (Authentication Header), 163 algorithms ASA, 17, 25-26 SHA-1, 164 transform sets, 175 alias command, 319 applets, filtering, 246-247 applications AVVID, 9-10 multimedia H.323, 315–317 RTSP, 315 support, 314-317 threats, 4 types of attacks, 4-6 vulnerabilities, 3 architecture AVVID, 9-10 point-to-point architecture, 7, 26-27, 31-41, 68-76, 117, selecting, 7, 26-34, 36-41, 68-78, 84-85 Architecture for Voice, Video, and Integrated Data. See AVVID arguments, crypto maps, 178 ASA (Adaptive Security Algorithm), 17, 25-26 assigning users to groups, 288 attacks guards, 317-321 Syslog, 130-132 threats, 4 types of, 4-6 access, 5-6 DoS,6 reconnaissance, 5 vulnerabilities, 3 authentication. See also AAA CAs, 167 configuration, 279-287, 385 cut-through proxy, 18, 26-27 HMAC, 164 IPSec, 162-164

prompts, 285 services, 283 timeout, 286 troubleshooting, 304 X.509 certificate support, 28 Authentication Header (AH), 163 authentication telnet console command, 49 authentication, authorization, and accounting. See AAA authorization. See also AAA configuration, 287-295 CSACS, 288 cut-through proxy, 18, 26–27 rules for groups, 291 troubleshooting, 305 Auto Update, 57 AVVID (Architecture for Voice, Video, and Integrated Data), 9-10

## В

basic configuration, 380–384 bidirectional network address translation, 79 block scans, 5 blocking applets, 246–247 boothelper disk, creating, 56–57

# С

cables, Crossover Ethernet, 149 caches no url-cache command, 250 show url-cache command, 251 url-cache command, 250 CAs (Certification Authorities), 167 certificate revocation lists (CRLs), 102 certificates, X.509 support, 28 cgi-truncate parameter, 251 CIFS (Common Internet File System), 71 Cisco PIX Firewall ASA, 17, 25-26 models Cisco PIX 501 Firewall, 30-31 Cisco PIX 506 Firewall, 27, 31 Cisco PIX 515 Firewall, 28, 33-35 Cisco PIX 520 Firewall, 28, 35-38 Cisco PIX 525 Firewall, 28, 38-39 Cisco PIX 535 Firewall, 28, 39-41 Cisco Secure Access Control Server. See CSACS Cisco Secure Intrusion Detection Sensor, 28 Cisco Secure Policy Manager (CSPM), 29 Cisco Secure Scanner, 8 clear command, 182 clear ntp command, 103 clear xlate command, 79 CLI (command-line interface), 29, 49 clients DHCP, 102 HTTP, 56 VPN, 184-187 clock summer-time command, 104 command-line interface (CLI), 29, 49

commands ^z, 92 aaa accounting, 277 aaa authentication, 277 aaa authentication console, 282 aaa authorization, 277 aaa-server, 276-277 access modes, 92 access-group, 177, 385 access-list, 115-118, 173 address, 55 alias, 319 authentication telnet, 49 auth-prompt, 285 auto-update server, 57 clear, 182 clear ntp, 103 clear xlate, 79 clock summer-time, 104 conduit, 118 configuration, 92-100, 105-107 global, 96-97 interface, 93-94 ip address, 95-96 nameif, 94 nat, 96 configure terminal, 92 copy tftp flash, 53-54 crypto ipsec transform-set, 177 crypto-map, 176 debug, 99, 182, 395 debug aaa accounting, 305 debug aaa authorization, 305 disable, 92 enable, 92 enable password, 49 exit, 92 file, 55 filter activex, 248 filter java, 246 filter url, 249 fixup, 122-123 fixup protocol, 314 fixup protocol h323, 317 floodguard disable, 321 gateway, 55 interface, 54 ip audit, 322 ip verify reverse-path, 324-325 isakmp policy, 169 logging, 132-135 logging facility facility, 131 match-address, 178 nameif, 67, 83 nat 0, 115 no fixup protocol ftp, 124 no url-cache, 250 ntp, 103 ntp authenticate, 103 ntp authentication, 103 ntp trusted-key, 103 passwd, 48 permit any any, 173 ping, 55, 99 server, 55

show, 172, 181, 304, 395 show aaa-server, 304 show accounting, 305 show activation-key, 52 show perfmon, 252 show url-cache, 251 show url-server stats, 252 show version, 51 show xlate, 79 shun, 324 ssh, 49 static.77 sysopt connection permit-ipsec, 180 sysopt security fragguard, 317 sysopt uauth allow-http-cache, 281 telnet, 48 timeout uauth, 286 translation, 73 url-cache, 250 url-server, 248 virtual telnet, 283 vpdn, 185-187 VPN groups, 185 write memory, 49, 100 write standby, 147 Common Internet File System (CIFS), 71 communications (VPN), 161 CAs. 167 clients, 184-187 configuration, 168-180 IKE, 164-167 IPSec, 162-164 scalability, 187 troubleshooting, 180-184 components, AAA, 259-262, 275 conduit command, 118 configuration, 105-107 AAA, 276-300 troubleshooting, 303-306 access rules, 385 accounting, 295-299 authentication, 279-287, 385 authorization, 287-295 Auto Update, 57 basic, 380-384 commands, 92-100 global, 96-97 interface, 93-94 ip address, 95-96 nameif, 94 nat, 96 **RIP**, 98 route, 98 Console, 134 crypto maps, 176 CSACS, 288 cut-through proxy, 300 DHCP, 100-102 clients, 102 servers, 101 DNS support, 82 downloadable PIX ACLs, 300-302 failover, 150-154, 395-397 filters policies, 249 viewing, 251 IKE, 169-173

inbound access, 112-118 interfaces, 382-383 intrusion detection, 322-323 IPSec, 173-180 logging, 386 multiple translation types, 77-78 object grouping, 119-122 PDM, 210, 213-226 configuration, 213-226 requirements, 211-213 viewing logging, 133 VPN. 227-238 preshared keys, 171 redundancy, 18 replication, 147 routing, 382, 384 SA lifetimes, 175 saving, 100 SNMP requests/traps, 136 Syslog, 30, 132-136 testing, 99 time settings, 102-104 transform sets, 175 troubleshooting, 398-406 TurboACL, 119 VPN, 168-180, 386-389 troubleshooting, 394-395 tunneling, 389-394 configure terminal command, 92 connections Cisco Secure PIX 501, 30-31 Cisco Secure PIX 506, 31 Cisco Secure PIX 515, 33-35 Cisco Secure PIX 520, 35-38 Cisco Secure PIX 525, 38-39 Cisco Secure PIX 535, 39–41 cut-through proxy, 18, 26–27, 260 embryonic (half-open), 70 filters ActiveX, 248 Java applets, 246-247 URLs, 248-252 LAN failover, 149 security, 3 stateful failover, 148 Telnet, 48 threats, 4 troubleshooting, 79-82 types of attacks, 4-6 vulnerabilities, 3 Console, 134, 282 copy tftp flash command, 53-54 CRLs (certificate revocation lists), 102 Crossover Ethernet cables, 149 crypto access lists, creating, 173 crypto ipsec transform-set command, 177 crypto maps arguments/options, 178 configuration, 176 crypto-map command, 176 CSACS (Cisco Secure Access Control Server), 262–268, 273 authorization, 288 downloadable PIX ACLs, 300-302 users, 288 verifying, 306 CSPM (Cisco Secure Policy Manager), 29 cut-through proxy, 18, 26-27, 260, 300

# D

Data Encryption Standard (DES), 164, 211 DDoS (distributed denial of service) attacks, 6 debug aaa accounting command, 305 debug aaa authorization command, 305 debug command, 99, 182 default security policies, 67 demilitarized zone (DMZ) segment, 77 denial of service (DoS) attacks, 6 deny keyword, 173 DES (Data Encryption Standard), 164, 211 design, security, 8 devices (PDM), 210-226 configuration, 213-226 requirements, 211-213 DHCP (Dynamic Host Configuration Protocol) clients, 102 servers, 101 disable command, 92 disabling Syslog messages, 138-139 distributed denial of service (DDoS) attacks, 6 DMZ (demilitarized zone) segment, 77 DNS (Domain Name Service), 318-319 support, 82 queries, 5 DoS (denial of service) attacks, 6 downloadable PIX ACLs, 300-302 dynamic shunning, 323

## Ε

embedding, secure real-time embedded systems, 17 embryonic (half-open) connections, 70 enable command, 92 enable password command, 49 Encapsulating Security Payload (ESP), 162 encapsulation of upper-level data, 68 encryption 3DES, 164 DES, 164, 211 X.509 certificate support, 28 environments, ROBO, 31 ESP (Encapsulating Security Payload), 162 Ethernet, PPPoE, 188 events failover, 146-147 Syslog, 30, 130-132 exit command, 92

## F

fabrication, access attacks, 6 failover configuration, 147, 150–154, 395–397 event monitoring, 146–147 LAN, 149 redundancy, 18 stateful, 148 features, PIX Firewalls, 27–28 file command, 55 File Transfer Protocol (FTP), 123-124 filter activex command, 248 filter java command, 246 filter url command, 249 filters ActiveX, 248 Java applets, 246-247 packets, 15-16 policies, 249 URLs, 248-252 viewing, 251 firewalls, 15-16 basic configuration, 380-384 managing, 29 packet filtering, 15-16 PIX, 17–18 ASA, 17, 25-26 Cisco 501, 30-31 Cisco 506, 31 Cisco 515, 33-35 Cisco 520, 35-38 Cisco 525, 38-39 Cisco 535, 39-41 models, 27-28 proxy servers, 16 stateful inspection, 16 troubleshooting, 398-406 fixup command, 122-123 fixup protocol command, 314 fixup protocol h323 command, 317 Flood Defender, 320 Floodguard, 320 floodguard disable command, 321 formatting boothelper disk, 56-57 crypto access lists, 173 fragmentation guard, 317 frames, 67 FTP (File Transfer Protocol), 123-124

# G

gateways command, 55 VPNs, 30 clients, 184-187 configuration, 168-180 scalability, 187 troubleshooting, 180-184 global command, 96-97 global information, recording, 380 global IP addresses, 382, 384 grouping objects, 119-122 rules, 291 users, 288 VPN, 185 guards, 318-319 attack, 317-321 DNS, 318-319 fragmentation, 317 mail, 319-320

# Η

H.323 collection of protocols, 315–317 handling protocols, 123–124 hardware, CSACS, 262 headers, AH, 163 HMAC (Keyed-Hash Message Authentication Code), 164 horizontal scans, 5 HTML (Hypertext Markup Language), ActiveX filters, 248 HTTP (Hypertext Transfer Protocol) clients, 56 Virtual, 285

ICMP object groups, 121 identifying filters, 248 servers, 276-279 IKE (Internet Key Exchange) configuration, 169-173 Policy Panel, 229 VPN, 164-167 implementation security designs, 8 troubleshooting, 398-406 inbound access configuration, 112-118 inbound connections, cut-through proxy, 18, 26-27 information security, 3 inspection advanced protocol handling, 123-124 FTP, 123-124 installation CSACS, 263-268 operating systems, 50-53 PDM, 213-226 integrated data, AVVID, 9-10 integrity, X.509 certificate support, 28 Intel Internet Video Phone, 124 interception, 5, 114-115 interface command, 54, 93-94 interfaces. See also access CLI, 29, 49 configuration, 382-383 failover, 146-147 PDM, 210-226 configuration, 213-226 requirements, 211-213 static NAT, 112-113 Intranet VPNs, 161 intrusion detection, 28, 321-324 configuration, 322-323 dynamic shunning, 323 optimizing, 8 IP (Internet Protocol) addresses global, 382, 384 mapping, 381 fragmentation guard, 317 ip address command, 95-96 ip audit command, 322 ip verify reverse-path command, 324-325

IPSec (Internet Protocol Security) configuration, 173–180 VPN, 162–164 isakmp policy command, 169

#### J

Java applets, filtering, 246-247

## K

Keyed-Hash Message Authentication Code (HMAC), 164 keywords deny, 173 permit, 173

#### L

L2TP (Layer 2 Tunneling Protocol), 185-187 LAN failover, 149 Layer 2 Tunneling Protocol (L2TP), 185-187 levels of security (Syslog), 67, 131-132 lifetimes, SA, 175 Linux, PDM requirements, 213 lists access, 115-118 ACL, 15 CRLs, 102 logging configuration, 386 facilities, 131 Syslog, 130-132 viewing, 133 long URLs, filtering, 251 longurl-truncate parameter, 251

### Μ

mail guard, 319-320 main mode (IKE), 164 management firewalls, 29 PDM. 210-226 configuration, 213-226 requirements, 211-213 mapping static IP addresses, 381 static NAT, 112-113 match address command, 178 MD5 (Message Digest 5), 164 memory requirements, 50 Message Digest 5 (MD5), 164 messages digest, 164 HMAC, 164 Syslog, 130-132 Console, 134 disabling, 138-139 organizing, 137

reading, 138 viewing, 134 Microsoft NetMeeting, 124, 283 Microsoft Netshow, 124 models, PIX Firewalls, 27-28 modes access, 92 LAN failover, 149 monitor, 54-56 stateful failover, 148 modification access attacks, 5 activation keys, 51-53 monitor mode, 54-56 monitoring failover events, 146-147 networks, 8 Syslog, 130-132 multimedia H.323, 315–317 RTSP, 315 support, 124, 314-317

# Ν

N2H2, 248 nameif command, 67, 83, 94 NAS (Network Access Server), 260, 275-279 NAT (Network Address Translation), 74 bidirectional, 79 static, 112-113 nat 0 access-list address translation rule, 112 nat 0 command, 115 nat command, 96 nat/global command, 67 NDG (Network Device Group), 294 negotiation, IKE, 164-167 nesting object groups, 122 NetBIOS Domain Name System, 71 NetMeeting, 283 Network Access Server (NAS), 260, 275-279 Network Address Translation. See NAT network architecture point-to-point architecture, 7, 26-34, 36-41, 68-78, 84-85 selecting, 7, 26-34, 36-41, 68-78, 84-85 Network Device Group (NDG), 294 network object group, 120 Network Time Protocol (NTP), 102-103 networks address translation, 29 firewalls, 15-16 packet filtering, 15-16 PIX, 17–18 proxy servers, 16 stateful inspection, 16 monitoring, 8 **SAFE**, 10 security policies, 3-8 threats, 4 types of attacks, 4-6 VPN, 161 CAs, 167

certificates. 28 clients, 184-187 configuration, 168-180, 386-389 groups, 185 IKE, 164–167 IPSec, 162-164 scalability, 187 troubleshooting, 180-184, 394-395 tunneling, 30, 389-394 vulnerabilities, 3 no fixup protocol ftp command, 124 no url-cache command, 250 node communication, 69 nonce values, 165 NTP (Network Time Protocol), 102-103 ntp authenticate command, 103 ntp authentication command, 103 ntp trusted-key command, 103

## 0

objectives of network security policies, 7–8 objects, grouping, 119–122 Open System Interconnection (OSI), 15 operating systems CSACS, 262 installing, 50–53 PDM requirements, 212 upgrading, 53–56 optimizing security, 8 options crypto maps, 178 VPN groups, 185 organization, Syslog messages, 137 OSI (Open System Interconnection), 15 outbound connections, cut-through proxy, 18, 26–27

#### Ρ

packets, 67 ActiveX filters, 248 failover, 146-147 filtering, 15-16 parameters AAA authentication, 280 access-list, 173 cgi-truncate, 251 isakmp policy, 170 longurl-truncate, 251 passwd command, 48 password recovery, 58-59 PAT (Port Address Translation), 72, 75 patches, 4. See also vulnerabilities PDM (PIX Device Manager), 29, 210-226, 282, 324 configuration, 213-226 logging, 133 requirements, 211-213 VPN configuration, 227-238 perimeter security packet filtering, 15-16 PIX, 17–18 proxy servers, 16 stateful inspection, 16

permit any any command, 173 permit keyword, 173 PFSS (PIX Firewall Syslog Server), 130, 136 phase 1 negotiation, 164 physical security, AAA, 259-262 physical site surveys, performing, 7, 26–34, 36–41, 68–78, 84-85 ping command, 55, 99 ping sweeps, 5 pipes, 131 PIX Device Manager. See PDM PIX Firewall Syslog Server (PFSS), 130, 136 PIX Firewalls, 17–18 Cisco 501, 30-31 Cisco 506, 31 Cisco 515, 33-35 Cisco 520, 35-38 Cisco 525, 38-39 Cisco 535, 39-41 models, 27-28 point-to-point architecture, 7, 26-34, 36-41, 68-78, 84-85 Point-to-Point Protocol over Ethernet (PPPoE), 188 Point-to-Point Tunneling Protocol (PPTP), 185-187 policies filtering, 249 security, 7-8, 67 Port Address Translation (PAT), 72 ports address translation, 29 fixup command, 122-123 redirection, 77 static address translation, 113-114 PPPoE (Point-to-Point Protocol over Ethernet), 188 PPTP (Point-to-Point Tunneling Protocol), 185-187 preshared keys, 165, 171 processes, security, 7 prompts, authentication, 285 protocols advanced handling, 123-124 Auto Update, 57 FTP, 123–124 H.323 collection of, 315-317 L2TP, 185-187 NTP. 102-103 object-type, 121 PPTP, 185–187 RTSP, 315 SCEP, 29 SNMP.29 TCP, 68, 114-115 transport, 67-71 UDP, 68 proxy servers, 16 public address translation, 29 public keys, CAs, 167

### Q

queries, DNS, 5

# R

RADIUS (Remote Authentication Dial-In User Service), 262 reading Syslog messages, 138 RealNetworks RealAudio and RealVideo, 124 Real-Time Streaming Protocol (RTSP), 315 reconnaissance attacks, 5 recording global information, 380 recovery, passwords, 58-59 redirection, ports, 77 redundancy, 18 remote access, 48-50. See also access SSH, 49-50 Telnet, 48-49 VPN, 161 Remote Authentication Dial-In User Service (RADIUS), 262 remote office/branch office (ROBO), 31 remote procedure calls (RPC), 71 replication, configuration, 147 reports, Syslog, 130-132 requests, SNMP, 136 requirements memory, 50 PDM, 211-213 resources modification access attacks, 5 unauthorized access to, 5 Restricted Bundle, 41 RIP command, 98 ROBO (remote office/branch office), 31 route command, 98 routing, configuration, 380, 382, 384 RPC (remote procedure call), 71 RTSP (Real-Time Streaming Protocol), 315 rules access, 385 groups, 291

## S

SA (security association), 162, 175 SAFE (Secure Blueprint for Enterprise Networks), 10 saving configuration, 100 scalability, VPN, 187 scanning block, 5 Cisco Secure Scanner, 8 horizontal, 5 vertical scans, 5 SCEP (Simple Certificate Enrollment Protocol), 29 searching TurboACL, 118-119 Secure Blueprint for Enterprise Networks (SAFE), 10 Secure Hash Algorithm 1 (SHA-1), 164 Secure Intrusion Detection Sensor, 28 secure real-time embedded systems, 17 Secure Shell (SSH) remote access, 49-50 security ÅAA, 259-262 ASA, 17, 25-26 attack guards, 317-321 design, 8 firewalls, 15-16

packet filtering, 15-16 PIX, 17–18 proxy servers, 16 stateful inspection, 16 intrusion detection, 321-324 configuration, 322-323 dynamic shunning, 323 IPSec, 162-164 levels, 131-132 networks, 3 optimizing, 8 policies, 7-8, 67 process, 7 static NAT, 112-113 testing, 8 threats, 4 traffic levels, 67 transport protocols, 67-71 types of attacks, 4-6 vulnerabilities, 3 security association (SA), 162 segments, 67, 77 selecting VPN configuration, 168 sending Syslog messages, 134 server command, 55 servers AAA configuration, 276-300 identifying, 276-279 specifying, 275 ACS, 28 Auto Update, 57 CSACS, 262-268, 273 authorization, 288 installing, 263-268 users, 288 verifying, 306 DHCP configuration, 101 filters, 248 NAS, 260, 275-279 NetMeeting, 284 PFSS, 130, 136 proxy, 16 Syslog configuration, 135–136 services authentication, 283 fixup command, 122-123 object-type, 121 SHA-1 (Secure Hash Algorithm), 164 show aaa-server command, 304 show accounting command, 305 show activation-key command, 52 show command, 172, 181, 304, 395 show perfmon command, 252 show url-cache command, 251 show url-server stats command, 252 show version command, 51 show xlate command, 79 shun command, 324 Simple Certificate Enrollment Protocol (SCEP), 29 Simple Network Management Protocol. See SNMP site surveys, performing, 7, 26–34, 36–41, 68–78, 84–85 Site to Site VPN, 161, 227 SNMP (Simple Network Management Protocol), 29 requests, 136 traps, 136

specifying AAA servers, 275 spoofing, 15 SSH (Secure Shell) remote access, 49–50 standby unit, configuration replication, 147 state tables, 17, 25-26 stateful failover, 18, 148 stateful inspection, 16 static command, 77 static IP address mapping, 381 static NAT, 112-113 static port address translation, 113-114 static translation, 72, 75-76 statistics show url-server stats command, 252 viewing filters, 251 structured threats, 4 Sun Solaris, PDM requirements, 213 support AAA, 28 DNS, 82 multimedia, 124, 314-317 H.323, 315-317 RTSP, 315 PPPoE, 188 Syslog, 30 X.509 certificates, 28 Syslog, 130-132 configuration, 132-135 messages disabling, 138-139 organizing, 137 reading, 138 security levels, 131-132 servers, 135-136 support, 30 sysopt connection permit-ipsec command, 180 sysopt security fragguard command, 317 sysopt uauth allow-http-cache command, 281 system clock, 104 system requirements, CSACS, 262

### Т

tables, state, 17, 25-26 TACACS+ (Terminal Access Controller Access Control System), 262 TCP (Transmission Control Protocol), 68, 114-115 technologies, VPN, 161 Telnet, 48-49 messages, 134 Virtual Telnet, 283 Terminal Access Controller Access Control System (TACACS+), 262 testing configuration, 99 security, 8 threats, 4 time settings configuration, 102-104 NTP, 102-103 system clock, 104 timeout uauth command, 286 tokens, X.509 certificate support, 28 traffic cut-through proxy, 260

firewalls, 15-16 packet filtering, 15-16 PIX, 17–18 proxy servers, 16 stateful inspection, 16 security levels, 67 transport protocols, 67-71 Transform Set Panel, 229 transform sets configuration, 175 crypto ipsec transform-set command, 177 translation addresses, 29, 71-79 commands, 73 NAT, 74 PAT, 75 static, 75-76 troubleshooting, 79-82 bidirectional, 79 multiple configuration, 77-78 slots, 70 static port addresses, 113-114 transport protocols, 67-71 traps, SNMP, 136 Triple Data Encryption Standard (3DES), 164 Trojan horses, 6 troubleshooting AAA, 303-306 accounting, 305 address translation, 79-82 authentication, 304 authorization, 305 basic configuration, 398-406 boothelper disk, 56-57 object grouping, 119-122 security, 8 Syslog, 130–132 VPN, 180-184, 394-395 tunneling, VPN, 389-394 TurboACL, 118-119 types of attacks, 4-6 access, 5-6 DoS,6 reconnaissance, 5

# U

UDP (User Datagram Protocol), 68 unauthorized access, 5 Unicast RPF (Unicast Reverse Path Forwarding), 324-325 unstructured threats, 4 updating, Auto Update, 57 upgrading activation keys, 51-53 operating systems, 53-56 upper-level data encapsulation, 68 url-cache command, 250 URLs (Uniform Resource Locators), filtering, 248-252 url-server command, 248 users accounting, 295-299 authentication, 279-287 authorization, 287-295

## V

VDOnet VDOLive, 124 verification **CSACS**, 306 IKE configuration, 172 VPN, 394-395 X.509 certificate support, 28 vertical scans, 5 video, AVVID, 9-10 viewing accounting, 297 filters, 251 logging, 133 messages, 134 virtual circuits, 68 Virtual HTTP, 285 virtual private networks. See VPNs virtual reassembly, 317 virtual service authentication, 283 viruses, 6 Virtual Telnet, 283 VocalTech, 124 voice, AVVID, 9-10 vpdn commands, 185-187 VPN (Virtual Private Network) CAs, 167 certificates, 28 clients, 184-187 configuration, 168-180, 386-389 troubleshooting, 394–395 tunneling, 389-394 gateways, 30 groups, 185 IKE, 164–167 IPSec, 162-164 PDM configuration, 227-238 scalability, 187 technologies, 161 troubleshooting, 180-184 vulnerabilities, 3 VXtreme WebTheatre, 124

## W

Websense, 248 White Pine CuSeeMe, 124 White Pine Meeting Point, 124 Windows 2000 CSACS, 263–268 PDM requirements, 212 Windows NT CSACS, 263–268 PDM requirements, 212 worms, 6 write memory command, 49, 100 write standby command, 147

## X-Z

X.509 certificates support, 28 Xing StreamWorks, 124