

---

# Contents

---

**NOTE:** This guide contains chapters 9 through 18 and the appendixes of the documentation for your HP 9304M, 9308M, or 6308M-SX routing switch. (For the 6208M-SX switch, only chapter 17, "Configuring VLANs", and the appendixes apply.) For Safety and EMC Regulatory Statements, and chapters 1 through 8, refer to *Book 1: Installation and Configuration Guide*, which was shipped with your HP product. (Both books are available on the CD shipped with your HP product and are also on the ProCurve website at <http://www.hp.com/go/procurve>; click on **Technical Support**, then **Manual**).

---

<b>CONFIGURING IP AND IP/RIP .....</b>	<b>9-1</b>
OVERVIEW OF IP/RIP .....	9-1
IP/RIP FEATURES .....	9-2
ICMP HOST UNREACHABLE MESSAGE FOR UNDELIVERABLE ARPs .....	9-3
CONFIGURING IP AND IP/RIP .....	9-3
DYNAMIC IP/RIP CONFIGURATION .....	9-3
ENABLING IP/RIP .....	9-4
ASSIGNING IP ADDRESSES .....	9-4
MODIFYING GLOBAL IP AND IP/RIP PARAMETERS (OPTIONAL) .....	9-5
DEFINING STATIC IP ROUTES .....	9-11
ASSIGNING STATIC ARP AND RARP ENTRIES (OPTIONAL) .....	9-12
ASSIGNING IP AND IP/RIP FILTERS .....	9-13
DEFINING IP ACCESS POLICIES .....	9-14
APPLYING IP ACCESS POLICIES TO PORTS .....	9-19
DEFINING IP/RIP ROUTE FILTERS .....	9-21
APPLYING IP/RIP ROUTE FILTERS TO PORTS .....	9-22
DEFINING IP/RIP NEIGHBOR FILTERS .....	9-23
DEFINING REDISTRIBUTION FILTERS .....	9-24
MODIFY IP AND IP/RIP INTERFACE PARAMETERS (OPTIONAL) .....	9-26
MODIFYING IP INTERFACE PARAMETERS .....	9-26
IP/RIP INTERFACE PARAMETERS .....	9-28
MODIFY GLOBAL IP/RIP PARAMETERS .....	9-29
ENABLING OR DISABLING REDISTRIBUTION .....	9-30
MODIFYING THE REDISTRIBUTION GLOBAL DEFAULT METRIC .....	9-31
MODIFYING THE DEFAULT ADMINISTRATIVE DISTANCE .....	9-31
ENABLING IP/RIP DEFAULT ROUTE LEARNING AND ADVERTISING .....	9-31
CONFIGURING UDP HELPER (OPTIONAL) .....	9-32
DISPLAYING IP AND RIP INFORMATION .....	9-34
DISPLAYING GLOBAL IP CONFIGURATION INFORMATION .....	9-35
DISPLAYING IP INTERFACE INFORMATION .....	9-40
DISPLAYING THE ARP CACHE .....	9-43

DISPLAYING THE IP HOST CACHE .....	9-45
DISPLAYING THE IP FORWARDING CACHE .....	9-48
DISPLAYING THE IP ROUTE TABLE .....	9-49
DISPLAYING IP TRAFFIC STATISTICS .....	9-50
DISPLAYING RIP FILTERS .....	9-59
<b>CONFIGURING OSPF .....</b>	<b>10-1</b>
OVERVIEW OF OSPF .....	10-1
DESIGNATED ROUTERS IN MULTI-ACCESS NETWORKS .....	10-3
DESIGNATED ROUTER ELECTION .....	10-4
OSPF RFC 1583 AND 2178 COMPLIANCE .....	10-5
DYNAMIC OSPF ACTIVATION AND CONFIGURATION .....	10-6
CONFIGURING OSPF .....	10-6
CONFIGURATION RULES .....	10-6
OSPF PARAMETERS .....	10-7
ENABLE OSPF ON THE ROUTING SWITCH .....	10-8
ASSIGN OSPF AREAS .....	10-8
ASSIGNING AN AREA RANGE (OPTIONAL) .....	10-9
ASSIGNING INTERFACES TO AN AREA .....	10-10
MODIFY PORT DEFAULTS .....	10-11
ASSIGN VIRTUAL LINKS .....	10-13
MODIFY VIRTUAL LINK PARAMETERS .....	10-15
DEFINE REDISTRIBUTION FILTERS .....	10-16
MODIFY DEFAULT METRIC FOR REDISTRIBUTION .....	10-19
ENABLE ROUTE REDISTRIBUTION .....	10-20
ENABLE LOAD SHARING .....	10-21
MODIFY REDISTRIBUTION METRIC TYPE .....	10-24
MODIFY THE MAXIMUM NUMBER OF ROUTES .....	10-24
MODIFY LSDB LIMITS .....	10-25
MODIFY EXIT OVERFLOW INTERVAL .....	10-25
MODIFY ADMINISTRATIVE DISTANCE .....	10-26
MODIFY OSPF TRAPS GENERATED .....	10-26
MODIFY OSPF STANDARD COMPLIANCE SETTING .....	10-28
DISPLAYING OSPF INFORMATION .....	10-29
DISPLAYING GENERAL OSPF CONFIGURATION INFORMATION .....	10-29
DISPLAYING GLOBAL OSPF STATISTICS .....	10-30
DISPLAYING OSPF AREA INFORMATION .....	10-30
DISPLAYING OSPF NEIGHBOR INFORMATION .....	10-31
DISPLAYING OSPF INTERFACE INFORMATION .....	10-34
DISPLAYING OSPF ROUTE INFORMATION .....	10-34
DISPLAYING OSPF EXTERNAL LINK STATE INFORMATION .....	10-36
DISPLAYING OSPF LINK STATE INFORMATION .....	10-37
DISPLAYING THE DATA IN AN LSA .....	10-38
DISPLAYING OSPF VIRTUAL NEIGHBOR INFORMATION .....	10-38
DISPLAYING OSPF VIRTUAL LINK INFORMATION .....	10-39
DISPLAYING OSPF ABR AND ASBR INFORMATION .....	10-39
DISPLAYING OSPF TRAP STATUS .....	10-40

---

<b>CONFIGURING IP MULTICAST PROTOCOLS.....</b>	<b>11-1</b>
OVERVIEW OF IP MULTICASTING .....	11-1
MULTICAST TERMS .....	11-1
CHANGING GLOBAL IP MULTICAST PARAMETERS .....	11-2
MODIFYING IGMP QUERY INTERVAL PERIOD .....	11-2
MODIFYING IGMP MEMBERSHIP TIME .....	11-3
MODIFYING IGMP MAXIMUM RESPONSE TIME .....	11-3
DISABLING IGMP QUERIES ON INDIVIDUAL PORTS .....	11-3
PIM OVERVIEW .....	11-4
INITIATING PIM MULTICASTS ON A NETWORK .....	11-4
PRUNING A MULTICAST TREE .....	11-4
GRAFTS TO A MULTICAST TREE .....	11-6
CONFIGURING PIM .....	11-7
ENABLING PIM ON THE ROUTING SWITCH AND AN INTERFACE .....	11-7
MODIFYING PIM GLOBAL PARAMETERS .....	11-8
MODIFYING PIM INTERFACE PARAMETERS .....	11-10
DVMRP OVERVIEW .....	11-11
INITIATING DVMRP MULTICASTS ON A NETWORK .....	11-11
PRUNING A MULTICAST TREE .....	11-12
GRAFTS TO A MULTICAST TREE .....	11-13
CONFIGURING DVMRP .....	11-14
ENABLING DVMRP ON THE ROUTING SWITCH AND INTERFACE .....	11-14
MODIFYING DVMRP GLOBAL PARAMETERS .....	11-15
MODIFYING DVMRP INTERFACE PARAMETERS .....	11-18
CONFIGURING AN IP TUNNEL .....	11-20
<b>CONFIGURING BGP4 .....</b>	<b>12-1</b>
OVERVIEW OF BGP4 .....	12-1
RELATIONSHIP BETWEEN THE BGP4 ROUTE TABLE AND THE IP ROUTE TABLE .....	12-2
HOW BGP4 SELECTS A PATH FOR A ROUTE .....	12-3
BGP4 MESSAGE TYPES .....	12-4
BASIC CONFIGURATION AND ACTIVATION FOR BGP4 .....	12-5
BGP4 PARAMETERS .....	12-6
WHEN PARAMETER CHANGES TAKE EFFECT .....	12-8
MEMORY CONSIDERATIONS .....	12-9
CONFIGURING BGP4 .....	12-10
BASIC CONFIGURATION TASKS .....	12-10
ENABLING BGP4 ON THE ROUTING SWITCH .....	12-10
CHANGING THE ROUTER ID .....	12-11
SETTING THE LOCAL AS NUMBER .....	12-12
ADDING A LOOPBACK INTERFACE .....	12-12
ADDING BGP4 NEIGHBORS .....	12-13
OPTIONAL CONFIGURATION TASKS .....	12-16
CHANGING THE KEEP ALIVE TIME AND HOLD TIME .....	12-16
DISABLING FAST EXTERNAL FALLOVER .....	12-17
CHANGING THE MAXIMUM NUMBER OF NEIGHBORS .....	12-17

---

CHANGING THE MAXIMUM NUMBER OF ROUTES .....	12-18
CHANGING THE MAXIMUM NUMBER OF ROUTE-ATTRIBUTE ENTRIES .....	12-18
SPECIFYING A LIST OF NETWORKS TO ADVERTISE .....	12-19
CHANGING THE DEFAULT LOCAL PREFERENCE .....	12-20
ADVERTISING THE DEFAULT INFORMATION ORIGINATE .....	12-21
CHANGING THE DEFAULT MED (METRIC) USED FOR ROUTE REDISTRIBUTION .....	12-21
CHANGING ADMINISTRATIVE DISTANCES .....	12-22
CONFIGURING THE ROUTING SWITCH TO ALWAYS COMPARE MULTI-EXIT DISCRIMINATORS (MEDS) ....	12-23
SYNCHRONIZING ROUTES .....	12-23
AUTOMATICALLY SUMMARIZING SUBNET ROUTES INTO CLASS A, B, OR C NETWORKS .....	12-24
CONFIGURING ROUTE REFLECTION PARAMETERS .....	12-24
AGGREGATING ROUTES ADVERTISED TO BGP4 NEIGHBORS .....	12-26
MODIFYING REDISTRIBUTION PARAMETERS .....	12-28
FILTERING SPECIFIC IP ADDRESSES .....	12-30
FILTERING AS-PATHS .....	12-32
FILTERING COMMUNITIES .....	12-35
DEFINING ROUTE MAPS .....	12-36
USING A TABLE MAP TO SET THE TAG VALUE .....	12-42
DISPLAYING BGP4 INFORMATION .....	12-43
DISPLAYING SUMMARY BGP4 INFORMATION .....	12-43
DISPLAYING BGP4 NEIGHBOR INFORMATION .....	12-46
DISPLAYING THE BGP4 ROUTE TABLE .....	12-52
DISPLAYING BGP4 ROUTE-ATTRIBUTE ENTRIES .....	12-55
DISPLAYING THE ROUTES BGP4 HAS PLACED IN THE IP ROUTE TABLE .....	12-57
CLEARING TRAFFIC COUNTERS .....	12-58
CLOSING OR RESETTING SESSIONS WITH NEIGHBORS .....	12-59
CLEARING DIAGNOSTIC BUFFERS .....	12-59
<b>CONFIGURING VRRP .....</b>	<b>13-1</b>
OVERVIEW OF VIRTUAL ROUTER REDUNDANCY PROTOCOL (VRRP) .....	13-2
VIRTUAL ROUTER ID (VRID) .....	13-3
VIRTUAL ROUTER MAC ADDRESS .....	13-4
VIRTUAL ROUTER IP ADDRESS .....	13-4
MASTER NEGOTIATION .....	13-4
ADVERTISEMENT MESSAGES .....	13-5
TRACK PORTS AND TRACK PRIORITY .....	13-5
SUPPRESSION OF RIP ADVERTISEMENTS FOR BACKED UP INTERFACES .....	13-6
AUTHENTICATION .....	13-6
INDEPENDENT OPERATION OF VRRP ALONGSIDE RIP, OSPF, AND BGP4 .....	13-6
DYNAMIC VRRP CONFIGURATION .....	13-6
DIFFERENCES BETWEEN VRRP AND SRP .....	13-6
CONFIGURING VRRP .....	13-7
CONFIGURATION RULES FOR VRRP .....	13-7
ENABLING VRRP .....	13-8
CONFIGURING A VIRTUAL ROUTER .....	13-9
MODIFYING VRRP PARAMETERS .....	13-13

---

DISPLAYING VRRP CONFIGURATION INFORMATION AND STATISTICS .....	13-16
DISPLAYING CONFIGURATION INFORMATION .....	13-16
DISPLAYING VRRP STATISTICS .....	13-18
CLEARING VRRP STATISTICS .....	13-20
<b>CONFIGURING SRP .....</b>	<b>14-1</b>
OVERVIEW OF STANDBY ROUTER PROTOCOL (SRP) .....	14-1
SRP SUPPORT ON VIRTUAL INTERFACES .....	14-3
ACTIVE AND STANDBY ROUTERS .....	14-3
TRACK PORTS .....	14-3
INDEPENDENT OPERATION OF RIP AND OSPF .....	14-5
DYNAMIC SRP CONFIGURATION .....	14-5
DIFFERENCES BETWEEN SRP AND VRRP .....	14-5
CONFIGURING SRP .....	14-6
CONFIGURATION RULES FOR SRP .....	14-6
ENABLE SRP ON THE ROUTING SWITCH .....	14-6
ASSIGN VIRTUAL ROUTER IP ADDRESSES .....	14-7
ASSIGN THE TRACK PORT(S) .....	14-8
ASSIGNING THE ACTIVE ROUTER .....	14-9
MODIFY PORT PARAMETERS (OPTIONAL) .....	14-9
CONFIGURING SRP ON VIRTUAL INTERFACES .....	14-12
<b>CONFIGURING IPX .....</b>	<b>15-1</b>
OVERVIEW OF IPX .....	15-1
MULTIPLE IPX FRAME TYPE SUPPORT PER INTERFACE .....	15-1
CONFIGURING IPX .....	15-2
DYNAMIC IPX CONFIGURATION .....	15-2
ENABLE IPX .....	15-2
ENABLE NETBIOS .....	15-3
ASSIGN IPX NETWORK NUMBER, FRAME TYPE, ENABLE NETBIOS ON AN INTERFACE .....	15-4
DEFINE AND ASSIGN A FORWARD FILTER AND GROUP .....	15-5
DEFINE AND ASSIGN AN IPX/RIP FILTER AND GROUP .....	15-8
DEFINE AND ASSIGN A SAP FILTER AND GROUP .....	15-10
MODIFY MAXIMUM SAP AND RIP ROUTE ENTRIES .....	15-12
MODIFY RIP AND SAP HOP COUNT INCREMENT .....	15-13
MODIFY THE RIP ADVERTISEMENT PACKET SIZE .....	15-14
MODIFY THE SAP ADVERTISEMENT PACKET SIZE .....	15-14
MODIFY THE RIP ADVERTISEMENT INTERVAL .....	15-15
MODIFY THE SAP ADVERTISEMENT INTERVAL .....	15-15
MODIFY THE AGE TIMER FOR LEARNED IPX ROUTES .....	15-16
MODIFY THE AGE TIMER FOR LEARNED SAP ENTRIES .....	15-16
DISPLAYING IPX CONFIGURATION INFORMATION AND STATISTICS .....	15-17
DISPLAYING GLOBAL IPX CONFIGURATION INFORMATION .....	15-17
DISPLAYING IPX INTERFACE INFORMATION .....	15-18
DISPLAYING THE IPX FORWARDING CACHE .....	15-20
DISPLAYING THE IPX ROUTE TABLE .....	15-21

---

DISPLAYING THE IPX SERVER TABLE .....	15-22
DISPLAYING IPX TRAFFIC STATISTICS .....	15-23
<b>CONFIGURING APPLE TALK.....</b>	<b>16-1</b>
OVERVIEW OF APPLE TALK .....	16-1
ADDRESS ASSIGNMENT .....	16-1
NETWORK COMPONENTS .....	16-1
ZONE FILTERING .....	16-2
NETWORK FILTERING .....	16-3
SEED AND NON-SEED ROUTERS .....	16-3
APPLE TALK COMPONENTS SUPPORTED ON THE 9304M, 9308M, AND	
6308M-SX ROUTING SWITCHES .....	16-3
SESSION LAYER SUPPORT .....	16-3
TRANSPORT LAYER SUPPORT .....	16-3
NETWORK LAYER SUPPORT .....	16-4
DATA LINK SUPPORT .....	16-4
DYNAMIC APPLE TALK ACTIVATION AND CONFIGURATION .....	16-4
CONFIGURING APPLE TALK ROUTING .....	16-4
ENABLE APPLE TALK .....	16-4
CONFIGURING A SEED APPLE TALK ROUTER .....	16-5
CONFIGURING A NON-SEED APPLE TALK ROUTER .....	16-8
ENABLING APPLE TALK ROUTING AT THE GLOBAL (SYSTEM) LEVEL .....	16-8
ENABLE APPLE TALK ROUTING ON AN INTERFACE .....	16-8
MODIFYING APPLE TALK INTERFACE CONFIGURATIONS .....	16-10
FILTERING APPLE TALK ZONES AND NETWORKS .....	16-11
DEFINING ZONE FILTERS .....	16-11
DEFINE ADDITIONAL ZONE FILTERS .....	16-13
NETWORK FILTERING .....	16-14
ROUTING BETWEEN APPLE TALK VLANs USING VIRTUAL INTERFACES .....	16-15
CONFIGURING THE VIRTUAL ROUTER INTERFACE .....	16-17
CONFIGURING A PHYSICAL INTERFACE FOR REMOTE ACCESS .....	16-18
CREATING APPLE TALK PROTOCOL VLANs .....	16-21
CONFIGURING THE ROUTER INTERFACES .....	16-22
CONFIGURING THE PHYSICAL INTERFACE FOR REMOTE ACCESS .....	16-23
MODIFYING APPLE TALK GLOBAL PARAMETERS .....	16-24
APPLE TALK ARP RETRANSMIT COUNT .....	16-24
APPLE TALK ARP RETRANSMIT INTERVAL .....	16-24
APPLE TALK GLEAN PACKETS .....	16-25
APPLE TALK QoS SOCKET .....	16-25
APPLE TALK RTMP UPDATE INTERVAL .....	16-25
APPLE TALK ZIP QUERY INTERVAL .....	16-26
DISPLAYING APPLE TALK INFORMATION .....	16-27
CLEARING APPLE TALK INFORMATION .....	16-28

---

<b>CONFIGURING VLANS .....</b>	<b>17-1</b>
OVERVIEW .....	17-1
TYPES OF VLANS .....	17-1
DEFAULT VLAN .....	17-5
802.1Q TAGGING .....	17-6
SPANNING TREE PROTOCOL (STP) .....	17-7
VIRTUAL INTERFACES .....	17-8
DYNAMIC, STATIC, AND EXCLUDED PORT MEMBERSHIP .....	17-9
TRUNK GROUP PORTS AND VLAN MEMBERSHIP .....	17-11
SUMMARY OF VLAN CONFIGURATION RULES .....	17-11
ROUTING BETWEEN VLANs (ROUTING SWITCHES ONLY) .....	17-12
VIRTUAL INTERFACES (ROUTING SWITCHES ONLY) .....	17-12
BRIDGING AND ROUTING THE SAME PROTOCOL SIMULTANEOUSLY ON THE SAME DEVICE (ROUTING SWITCHES ONLY) .....	17-12
ROUTING BETWEEN VLANs USING VIRTUAL INTERFACES (ROUTING SWITCHES ONLY) .....	17-12
ASSIGNING A DIFFERENT VLAN ID TO THE DEFAULT VLAN .....	17-13
ASSIGNING TRUNK GROUP PORTS .....	17-13
CONFIGURING PORT-BASED VLANs .....	17-13
MODIFYING A PORT-BASED VLAN .....	17-17
CONFIGURING IP SUB-NET, IPX NETWORK AND PROTOCOL-BASED VLANs .....	17-21
ROUTING BETWEEN VLANs USING VIRTUAL INTERFACES (ROUTING SWITCHES ONLY) .....	17-23
CONFIGURING APPLE TALK CABLE VLANs .....	17-32
CONFIGURATION GUIDELINES .....	17-32
CONFIGURATION EXAMPLE .....	17-33
CONFIGURING PROTOCOL VLANs WITH DYNAMIC PORTS .....	17-35
AGING OF DYNAMIC PORTS .....	17-36
CONFIGURATION GUIDELINES .....	17-36
CONFIGURING AN IP, IPX, OR APPLE TALK PROTOCOL VLAN WITH DYNAMIC PORTS .....	17-36
CONFIGURING AN IP SUB-NET VLAN WITH DYNAMIC PORTS .....	17-39
CONFIGURING AN IPX NETWORK VLAN WITH DYNAMIC PORTS .....	17-43
CONFIGURING THE SAME IP SUB-NET ADDRESS ON MULTIPLE PORT-BASED VLANs .....	17-44
DISPLAYING VLAN INFORMATION .....	17-47
DISPLAYING SYSTEM-WIDE VLAN INFORMATION .....	17-47
DISPLAYING VLAN INFORMATION FOR SPECIFIC PORTS .....	17-49
 <b>ROUTE HEALTH INJECTION.....</b>	 <b>18-1</b>
CONFIGURATION EXAMPLE .....	18-1
HTTP HEALTH CHECK ALGORITHM .....	18-3
CONFIGURATION CONSIDERATIONS .....	18-4
CLI SYNTAX .....	18-4
GLOBAL CONFIG LEVEL .....	18-4
REAL SERVER LEVEL .....	18-4
INTERFACE LEVEL .....	18-5

---

CONFIGURING THE HTTP HEALTH CHECK ON THE ROUTING SWITCH .....	18-5
CLI COMMANDS FOR 6308M-SX R1 .....	18-5
CLI COMMANDS FOR 9308M R2 .....	18-6
CLI COMMANDS FOR 6308M-SX R3 .....	18-6
DISPLAYING SERVER AND APPLICATION PORT INFORMATION .....	18-7
DISPLAYING SERVER INFORMATION .....	18-7
DISPLAYING KEEPALIVE INFORMATION .....	18-8
<b>NETWORK MONITORING .....</b>	<b>A-1</b>
MONITORING A SYSTEM .....	A-1
RMON .....	A-1
SNMP SYSTEM LOG .....	A-4
TRACE ROUTE AND STOP TRACE ROUTE .....	A-5
VIEWING SYSTEM SUMMARY INFORMATION .....	A-6
VIEWING SYSTEM INFORMATION .....	A-7
VIEWING CONFIGURATIONS .....	A-7
VIEWING PORT STATISTICS .....	A-10
VIEWING STP STATISTICS .....	A-11
CLEARING STATISTICS .....	A-13
<b>COMMAND LINE INTERFACE COMMANDS.....</b>	<b>B-1</b>
USING THE CLI .....	B-1
EXEC COMMANDS .....	B-5
USER LEVEL .....	B-5
PRIVILEGED LEVEL .....	B-6
CONFIG COMMANDS .....	B-8
GLOBAL LEVEL .....	B-9
INTERFACE LEVEL .....	B-16
IP TUNNEL LEVEL (ROUTING SWITCHES ONLY) .....	B-18
BROADCAST FILTER LEVEL .....	B-19
MULTICAST FILTER LEVEL .....	B-20
BGP LEVEL (ROUTING SWITCHES ONLY) .....	B-21
ROUTER DVMRP LEVEL (ROUTING SWITCHES ONLY) .....	B-23
ROUTER OSPF LEVEL (ROUTING SWITCHES ONLY) .....	B-24
ROUTER PIM LEVEL (ROUTING SWITCHES ONLY) .....	B-26
ROUTER RIP LEVEL (ROUTING SWITCHES ONLY) .....	B-27
REAL SERVER LEVEL (ROUTING SWITCHES ONLY) .....	B-28
APPLICATION PORT LEVEL (ROUTING SWITCHES ONLY) .....	B-29
ROUTE MAP LEVEL (ROUTING SWITCHES ONLY) .....	B-30
ROUTER VRRP LEVEL (ROUTING SWITCHES ONLY) .....	B-31
VLAN LEVEL .....	B-32
ACCESSING THE CLI .....	B-34
NAVIGATING AMONG COMMAND LEVELS .....	B-36
CLI COMMAND STRUCTURE .....	B-37
SYNTAX SHORTCUTS .....	B-38
SAVING CONFIGURATION CHANGES .....	B-38

---

MODIFY BOOT SEQUENCE .....	B-39
SUMMARY OF CLI COMMANDS .....	B-40
EXEC COMMANDS – USER LEVEL .....	B-40
EXEC COMMANDS – PRIVILEGED LEVEL .....	B-41
CONFIG COMMANDS – GLOBAL LEVEL .....	B-43
CONFIG COMMANDS – INTERFACE LEVEL.....	B-47
CONFIG INTERFACE COMMANDS – IP TUNNEL LEVEL .....	B-50
CONFIG COMMANDS – BGP LEVEL .....	B-51
CONFIG COMMANDS – BROADCAST FILTER LEVEL .....	B-52
CONFIG COMMANDS – MULTICAST FILTER LEVEL .....	B-53
CONFIG COMMANDS – DVMRP ROUTER LEVEL .....	B-54
CONFIG COMMANDS – OSPF ROUTER LEVEL.....	B-55
CONFIG COMMANDS – PIM ROUTER LEVEL .....	B-56
CONFIG COMMANDS – RIP (IP/RIP) ROUTER LEVEL.....	B-57
CONFIG COMMANDS – REAL SERVER LEVEL .....	B-58
CONFIG COMMANDS – APPLICATION PORT LEVEL .....	B-59
CONFIG COMMANDS – ROUTE MAP LEVEL .....	B-60
CONFIG COMMANDS – VLAN LEVEL.....	B-61
CONFIG COMMANDS – VRRP LEVEL .....	B-62
COMMANDS – ALL LEVELS.....	B-63
EXEC COMMANDS – USER LEVEL .....	B-66
EXEC COMMANDS – PRIVILEGED LEVEL .....	B-69
CONFIG COMMANDS – GLOBAL LEVEL .....	B-83
CONFIG COMMANDS – INTERFACE LEVEL .....	B-133
CONFIG COMMANDS – IP TUNNEL LEVEL .....	B-155
CONFIG COMMANDS – BROADCAST FILTER LEVEL .....	B-157
CONFIG COMMANDS – MULTICAST FILTER LEVEL .....	B-159
CONFIG COMMANDS – BGP ROUTER LEVEL .....	B-161
CONFIG COMMANDS – DVMRP ROUTER LEVEL .....	B-173
CONFIG COMMANDS – OSPF ROUTER LEVEL .....	B-177
CONFIG COMMANDS – PIM ROUTER LEVEL .....	B-185
CONFIG COMMANDS – IP/RIP ROUTER LEVEL .....	B-188
CONFIG COMMANDS – REAL SERVER LEVEL .....	B-193
CONFIG COMMANDS – APPLICATION PORT LEVEL .....	B-196
CONFIG COMMANDS – ROUTE MAP LEVEL .....	B-198
CONFIG COMMANDS – VLAN LEVEL .....	B-201
CONFIG COMMANDS – VRRP LEVEL .....	B-210
COMMANDS – ALL LEVELS .....	B-212
<b>QUALITY OF SERVICE ALGORITHM.....</b>	<b>C-1</b>
OVERVIEW OF QOS .....	C-1
QOS ALGORITHM .....	C-1
EXAMPLE QUEUE CYCLE .....	C-2

---

<b>POLICIES AND FILTERS .....</b>	<b>D-1</b>
SCOPE .....	D-2
DEFAULT FILTER ACTIONS .....	D-3
POLICY AND FILTER PRECEDENCE .....	D-4
QoS .....	D-4
PRECEDENCE AMONG FILTERS ON DIFFERENT LAYERS .....	D-4
PRECEDENCE AMONG FILTERS ON THE SAME LAYER .....	D-4
POLICIES .....	D-5
QUALITY-OF-SERVICE POLICIES .....	D-5
LAYER 3 POLICIES .....	D-6
LAYER 4 POLICIES .....	D-9
FILTERS .....	D-11
LAYER 2 FILTERS .....	D-12
LAYER 3 FILTERS .....	D-16
LAYER 4 FILTERS .....	D-28