



Preface 1

Obtain Documentation and Submit a Service Request 1-4
1-4

New and Changed Information 5

CHAPTER 1

Overview 1-1

Information About Layer 3 Unicast Routing 1-1

- Routing Fundamentals 1-2
- Packet Switching 1-2
- Routing Metrics 1-3
 - Path Length 1-4
 - Reliability 1-4
 - Routing Delay 1-4
 - Bandwidth 1-4
 - Load 1-4
 - Communication Cost 1-4
- Router IDs 1-5
- Autonomous Systems 1-5
- Convergence 1-6
- Load Balancing and Equal Cost Multipath 1-6
- Route Redistribution 1-6
- Administrative Distance 1-7
- Stub Routing 1-7

Routing Algorithms 1-8

- Static Routes and Dynamic Routing Protocols 1-8
- Interior and Exterior Gateway Protocols 1-8
- Distance Vector Protocols 1-9
- Link-State Protocols 1-9

Layer 3 Virtualization 1-10

- Cisco NX-OS Forwarding Architecture 1-10
 - Unicast RIB 1-10
 - Adjacency Manager 1-11
 - Unicast Forwarding Distribution Module 1-11
 - FIB 1-11

- Hardware Forwarding 1-12
- Software Forwarding 1-12
- Summary of Layer 3 Unicast Routing Features 1-12
- IPv4 and IPv6 1-13
 - OSPF 1-13
 - EIGRP 1-13
 - BGP 1-13
 - RIP 1-13
 - Static Routing 1-13
 - Layer 3 Virtualization 1-14
 - Route Policy Manager 1-14
- First-Hop Redundancy Protocols 1-14
- Object Tracking 1-14
- Related Topics 1-14

CHAPTER 2

Configuring IPv4 2-1

- Information About IPv4 2-1
 - Multiple IPv4 Addresses 2-2
 - Address Resolution Protocol 2-3
 - ARP Caching 2-3
 - Static and Dynamic Entries in the ARP Cache 2-4
 - Devices That Do Not Use ARP 2-4
 - Reverse ARP 2-4
 - Proxy ARP 2-5
 - Local Proxy ARP 2-5
 - Gratuitous ARP 2-5
 - ACLs for IP Directed Broadcast 2-6
 - Glean Throttling 2-6
 - ICMP 2-6
 - Virtualization Support 2-6
- Licensing Requirements for IPv4 2-6
- Prerequisites for IPv4 2-7
- Guidelines and Limitations 2-7
- Default Settings 2-7
- Configuring IPv4 2-7
 - Configuring IPv4 Addressing 2-8
 - Configuring Multiple IP Addresses 2-9
 - Configuring a Static ARP Entry 2-10
 - Configuring Proxy ARP 2-11

Configuring Local Proxy ARP	2-12
Configuring Gratuitous ARP	2-13
Configuring IP Directed Broadcasts	2-14
Configuring IP Glean Throttling	2-15
Configuring the Hardware IP Glean Throttle Maximum	2-16
Configuring a Hardware IP Glean Throttle Timeout	2-17
Verifying the IPv4 Configuration	2-18
Configuration Examples for IPv4	2-18
Additional References	2-18
Related Documents	2-19
Standards	2-19

CHAPTER 3**Configuring IPv6 3-1**

Information About IPv6	3-1
IPv6 Address Formats	3-2
IPv6 Unicast Addresses	3-3
Aggregatable Global Addresses	3-3
Link-Local Addresses	3-5
IPv4-Compatible IPv6 Addresses	3-5
Unique Local Addresses	3-6
Site-Local Address	3-6
IPv6 Anycast Addresses	3-6
IPv6 Multicast Addresses	3-7
IPv4 Packet Header	3-9
Simplified IPv6 Packet Header	3-10
Path MTU Discovery for IPv6	3-12
CDP IPv6 Address Support	3-12
ICMP for IPv6	3-13
IPv6 Neighbor Discovery	3-13
IPv6 Neighbor Solicitation Message	3-14
IPv6 Router Advertisement Message	3-15
IPv6 Neighbor Redirect Message	3-16
Virtualization Support	3-17
Licensing Requirements for IPv6	3-17
Prerequisites for IPv6	3-18
Guidelines and Limitations for IPv6	3-18
Default Settings	3-18
Configuring IPv6	3-18
Configuring IPv6 Addressing	3-19

- Configuring IPv6 Neighbor Discovery 3-21
- Optional IPv6 Neighbor Discovery 3-23
- 3-24
- Verifying the IPv6 Configuration 3-24
- Configuration Examples for IPv6 3-24
- Additional References 3-25
 - Related Documents 3-25
 - Standards 3-25

CHAPTER 4

- Configuring WCCPv2 4-1**
 - Information About WCCPv2 4-1
 - WCCPv2 Overview 4-2
 - WCCPv2 Service Types 4-2
 - Service Groups 4-2
 - Service Group Lists 4-3
 - WCCPv2 Designated Cache Engine 4-4
 - Redirection 4-4
 - WCCPv2 Authentication 4-5
 - Redirection Method 4-5
 - WPacket Return Method 4-6
 - Virtualization Support for WCCPv2 4-7
 - WCCPv2 Error Handling for SPM Operations 4-7
 - Support for Configurable Service Group Timers 4-7
 - Licensing Requirements for WCCPv2 4-8
 - Prerequisites for WCCPv2 4-8
 - Guidelines and Limitations for WCCPv2 4-8
 - Default Settings 4-8
 - Configuring WCCPv2 4-9
 - Enabling WCCPv2 4-9
 - Configuring a WCCPv2 Service Group 4-10
 - Applying WCCPv2 Redirection to an Interface 4-12
 - Configuring WCCPv2 in a VRF 4-12
 - Verifying the WCCPv2 Configuration 4-14
 - Configuration Examples for WCCPv2 4-14
 - Additional References 4-15
 - Related Documents 4-15
 - Standards 4-15

CHAPTER 5**Configuring OSPFv2 5-1**

Information About OSPFv2	5-1
Hello Packet	5-2
Neighbors	5-2
Adjacency	5-3
Designated Routers	5-3
Areas	5-4
Link-State Advertisements	5-5
LSA Types	5-5
Link Cost	5-6
Flooding and LSA Group Pacing	5-6
Link-State Database	5-7
Opaque LSAs	5-7
OSPFv2 and the Unicast RIB	5-7
Authentication	5-7
Simple Password Authentication	5-8
MD5 Authentication	5-8
Advanced Features	5-8
Stub Area	5-8
Not-So-Stubby Area	5-9
Virtual Links	5-9
Route Redistribution	5-10
Route Summarization	5-10
OSPFv2 Stub Router Advertisements	5-11
Multiple OSPFv2 Instances	5-11
SPF Optimization	5-11
BFD	5-11
Virtualization Support	5-12
Licensing Requirements for OSPFv2	5-12
Prerequisites for OSPFv2	5-12
Guidelines and Limitations	5-12
Default Settings	5-13
Configuring Basic OSPFv2	5-13
Enabling the OSPFv2 Feature	5-13
Creating an OSPFv2 Instance	5-14
Configuring Optional Parameters on an OSPFv2 Instance	5-15
Configuring Networks in OSPFv2	5-16
Configuring Authentication for an Area	5-18
Configuring Authentication for an Interface	5-20

- Configuring Advanced OSPFv2 5-22
 - Configuring Filter Lists for Border Routers 5-23
 - Configuring Stub Areas 5-24
 - Configuring a Totally Stubby Area 5-25
 - Configuring NSSA 5-26
 - Configuring Virtual Links 5-28
 - Configuring Redistribution 5-30
 - Limiting the Number of Redistributed Routes 5-32
 - Configuring Route Summarization 5-34
 - Configuring Stub Route Advertisements 5-35
 - Modifying the Default Timers 5-36
 - Restarting an OSPFv2 Instance 5-39
 - Configuring OSPFv2 with Virtualization 5-39
- Verifying the OSPFv2 Configuration 5-41
- Displaying OSPFv2 Statistics 5-42
- Configuration Examples for OSPFv2 5-42
- Additional References 5-43
 - Related Documents 5-43
 - MIBs 5-43

CHAPTER 6

Configuring OSPFv3 6-1

- Information About OSPFv3 6-1
 - Comparison of OSPFv3 and OSPFv2 6-2
 - Hello Packet 6-2
 - Neighbors 6-3
 - Adjacency 6-3
 - Designated Routers 6-4
 - Areas 6-5
 - Link-State Advertisement 6-5
 - LSA Types 6-6
 - Link Cost 6-6
 - Flooding and LSA Group Pacing 6-7
 - Link-State Database 6-7
 - Multi-Area Adjacency 6-7
 - OSPFv3 and the IPv6 Unicast RIB 6-8
 - Address Family Support 6-8
 - Advanced Features 6-8
 - Stub Area 6-9
 - Not-So-Stubby Area 6-9

Virtual Links	6-10
Route Redistribution	6-10
Route Summarization	6-10
Multiple OSPFv3 Instances	6-11
SPF Optimization	6-11
Virtualization Support	6-11
Licensing Requirements for OSPFv3	6-11
Prerequisites for OSPFv3	6-12
Guidelines and Limitations for OSPFv3	6-12
Default Settings	6-12
Configuring Basic OSPFv3	6-13
Enabling OSPFv3	6-13
Creating an OSPFv3 Instance	6-14
Configuring Networks in OSPFv3	6-17
Configuring Advanced OSPFv3	6-19
Configuring Filter Lists for Border Routers	6-20
Configuring Stub Areas	6-21
Configuring a Totally Stubby Area	6-22
Configuring NSSA	6-23
Configuring Multi-Area Adjacency	6-25
Configuring Virtual Links	6-26
Configuring Redistribution	6-28
Limiting the Number of Redistributed Routes	6-30
Configuring Route Summarization	6-32
Modifying the Default Timers	6-34
Configuring Graceful Restart	6-36
Restarting an OSPFv3 Instance	6-37
Configuring OSPFv3 with Virtualization	6-38
Verifying the OSPFv3 Configuration	6-40
Monitoring OSPFv3	6-40
Configuration Examples for OSPFv3	6-41
Related Topics	6-41
Additional References	6-41
Related Documents	6-42

CHAPTER 7**Configuring EIGRP 7-1**

Information About EIGRP	7-1
EIGRP Components	7-2

- Reliable Transport Protocol 7-2
- Neighbor Discovery and Recovery 7-2
- Diffusing Update Algorithm 7-2
- EIGRP Route Updates 7-3
 - Internal Route Metrics 7-3
 - External Route Metrics 7-4
 - EIGRP and the Unicast RIB 7-4
- Advanced EIGRP 7-4
 - Address Families 7-4
 - Authentication 7-5
 - Stub Routers 7-5
 - Route Summarization 7-6
 - Route Redistribution 7-6
 - Load Balancing 7-6
 - Split Horizon 7-6
 - BFD 7-7
 - Virtualization Support 7-7
- Licensing Requirements for EIGRP 7-7
- Prerequisites for EIGRP 7-7
- Guidelines and Limitations 7-7
- Default Settings 7-8
- Configuring Basic EIGRP 7-9
 - Enabling the EIGRP Feature 7-9
 - Creating an EIGRP Instance 7-10
 - Restarting an EIGRP Instance 7-12
 - Shutting Down an EIGRP Instance 7-12
 - Configuring a Passive Interface for EIGRP 7-13
 - Shutting Down EIGRP on an Interface 7-13
- Configuring Advanced EIGRP 7-13
 - Configuring Authentication in EIGRP 7-14
 - Configuring EIGRP Stub Routing 7-16
 - Configuring a Summary Address for EIGRP 7-17
 - Redistributing Routes into EIGRP 7-17
 - Limiting the Number of Redistributed Routes 7-19
 - Configuring Load Balancing in EIGRP 7-21
 - Adjusting the Interval Between Hello Packets and the Hold Time 7-22
 - Disabling Split Horizon 7-23
 - Tuning EIGRP 7-23
 - Configuring the Administrative Distance of Routes 7-25

Configuring Virtualization for EIGRP	7-26
Verifying the EIGRP Configuration	7-28
Displaying EIGRP Statistics	7-28
Configuration Examples for EIGRP	7-29
Related Topics	7-29
Additional References	7-29
Related Documents	7-29
MIBs	7-29

CHAPTER 8**Configuring Basic BGP 8-1**

Information About Basic BGP	8-1
BGP Autonomous Systems	8-2
4-Byte AS Number Support	8-2
Administrative Distance	8-2
BGP Peers	8-3
BGP Sessions	8-3
Dynamic AS Numbers for Prefix Peers	8-3
BGP Router Identifier	8-3
BGP Path Selection	8-4
Step 1—Comparing Pairs of Paths	8-4
Step 2—Determining the Order of Comparisons	8-6
Step 3—Determining the Best-Path Change Suppression	8-6
BGP and the Unicast RIB	8-7
BGP Virtualization	8-7
Licensing Requirements for Basic BGP	8-7
Prerequisites for BGP	8-7
Guidelines and Limitations for BGP	8-7
Default Settings	8-8
CLI Configuration Modes	8-8
Global Configuration Mode	8-9
Address Family Configuration Mode	8-9
Neighbor Configuration Mode	8-9
Neighbor Address Family Configuration Mode	8-10
Configuring Basic BGP	8-10
Enabling the BGP Feature	8-10
Creating a BGP Instance	8-11
Restarting a BGP Instance	8-13
Shutting Down BGP	8-13

- Configuring BGP Peers 8-13
- Configuring Dynamic AS Numbers for Prefix Peers 8-15
- Clearing BGP Information 8-17
- Verifying the Basic BGP Configuration 8-20
- Displaying BGP Statistics 8-22
- Configuration Examples for Basic BGP 8-22
- Related Topics 8-22
- Where to Go Next 8-22
- Additional References 8-23
 - Related Documents 8-23
 - MIBs 8-23

CHAPTER 9

Configuring Advanced BGP 9-1

- Information About Advanced BGP 9-1
 - Peer Templates 9-2
 - Authentication 9-2
 - Route Policies and Resetting BGP Sessions 9-3
 - eBGP 9-3
 - iBGP 9-3
 - AS Confederations 9-4
 - Route Reflector 9-5
 - Capabilities Negotiation 9-5
 - Route Dampening 9-6
 - Load Sharing and Multipath 9-6
 - BGP Additional Paths 9-7
 - Route Aggregation 9-8
 - BGP Conditional Advertisement 9-8
 - BGP Next-Hop Address Tracking 9-8
 - Route Redistribution 9-9
 - BFD 9-9
 - Tuning BGP 9-10
 - BGP Timers 9-10
 - Tuning the Best-Path Algorithm 9-10
 - Multiprotocol BGP 9-10
 - Virtualization Support 9-10
- Licensing Requirements for Advanced BGP 9-10
- Prerequisites for BGP 9-11
- Guidelines and Limitations for BGP 9-11

Default Settings	9-12
Configuring Advanced BGP	9-12
Configuring BGP Session Templates	9-13
Configuring BGP Peer-Policy Templates	9-15
Configuring BGP Peer Templates	9-17
Configuring Prefix Peering	9-20
Configuring BGP Authentication	9-21
Resetting a BGP Session	9-21
Modifying the Next-Hop Address	9-22
Configuring BGP Next-Hop Address Tracking	9-22
Configuring Next-Hop Filtering	9-23
Disabling Capabilities Negotiation	9-23
BGP Additional Paths	9-23
Configuring Sending and Receiving of Additional Paths	9-23
Advertising the Capability of Sending and Receiving Additional Paths	9-25
Configuring Advertised Paths	9-26
Configuring Additional Path Selection	9-27
Configuring eBGP	9-28
Disabling eBGP Single-Hop Checking	9-28
Configuring eBGP Multihop	9-29
Disabling a Fast External Failover	9-29
Configuring Local AS Support	9-29
Limiting the AS-path Attribute	9-30
Configuring AS Confederations	9-30
Configuring Route Reflector	9-31
Configuring Route Dampening	9-33
Configuring Load Sharing and ECMP	9-33
Configuring Maximum Prefixes	9-34
Configuring Dynamic Capability	9-34
Configuring Aggregate Addresses	9-34
Configuring BGP Conditional Advertisement	9-35
Configuring Route Redistribution	9-37
Tuning BGP	9-38
Configuring Virtualization	9-41
Configuring Policy-Based Administrative Distance	9-43
Verifying the Advanced BGP Configuration	9-44
Displaying BGP Statistics	9-45
Related Topics	9-46
Additional References	9-46

Related Documents 9-46
MIBs 9-46

CHAPTER 10

Configuring RIP 10-1

Information About RIP 10-1
RIP Overview 10-2
RIPv2 Authentication 10-2
Split Horizon 10-2
Route Filtering 10-3
Route Summarization 10-3
Route Redistribution 10-3
Load Balancing 10-3
Virtualization Support 10-4
Licensing Requirements for RIP 10-4
Prerequisites for RIP 10-4
Guidelines and Limitations 10-4
Default Settings 10-4
Configuring RIP 10-5
Enabling the RIP Feature 10-5
Creating a RIP Instance 10-6
Restarting a RIP Instance 10-8
Configuring RIP on an Interface 10-8
Configuring RIP Authentication 10-9
Configuring a Passive Interface 10-11
Configuring Split Horizon with Poison Reverse 10-11
Configuring Route Summarization 10-11
Configuring Route Redistribution 10-12
Configuring Virtualization 10-13
Tuning RIP 10-16
Verifying the RIP Configuration 10-17
Displaying RIP Statistics 10-17
Configuration Examples for RIP 10-18
Related Topics 10-18
Additional References 10-18
Related Documents 10-19
Standards 10-19

CHAPTER 11**Configuring Static Routing 11-1**

- Information About Static Routing 11-1
 - Administrative Distance 11-2
 - Directly Connected Static Routes 11-2
 - Fully Specified Static Routes 11-2
 - Floating Static Routes 11-2
 - Remote Next Hops for Static Routes 11-3
 - BFD 11-3
- Virtualization Support 11-3
- Licensing Requirements for Static Routing 11-3
- Prerequisites for Static Routing 11-3
- Guidelines and Limitations 11-3
- Default Settings 11-4
- Configuring Static Routing 11-4
 - Configuring a Static Route 11-4
 - Configuring Virtualization 11-5
- Verifying the Static Routing Configuration 11-6
- Configuration Examples for Static Routing 11-6
- Additional References 11-6
 - Related Documents 11-7

11-7

CHAPTER 12**Configuring Layer 3 Virtualization 12-1**

- Layer 3 Virtualization 12-1
 - Overview of Layer 3 Virtualization 12-1
 - VRF and Routing 12-2
 - VRF-Lite 12-2
 - VRF-Aware Services 12-3
 - Reachability 12-4
 - Filtering 12-4
 - Combining Reachability and Filtering 12-4
- Licensing Requirements for VRFs 12-5
- Guidelines and Limitations 12-5
- Default Settings 12-6
- Configuring VRFs 12-6
 - Creating a VRF 12-6
 - Assigning VRF Membership to an Interface 12-8

- Configuring VRF Parameters for a Routing Protocol 12-9
- Configuring a VRF-Aware Service 12-11
- Setting the VRF Scope 12-12
- Verifying the VRF Configuration 12-13
- Configuration Examples for VRF 12-13
- Related Topics 12-14
- Additional References 12-14
 - Related Documents 12-14
 - Standards 12-14

CHAPTER 13

Managing the Unicast RIB and FIB 13-1

- Information About the Unicast RIB and FIB 13-1
 - FIB Tables 13-2
- Licensing Requirements for the Unicast RIB and FIB 13-2
- Managing the Unicast RIB and FIB 13-2
 - Displaying Module FIB Information 13-3
 - Configuring Load Sharing in the Unicast FIB 13-3
 - Displaying Routing and Adjacency Information 13-4
 - Clearing Forwarding Information in the FIB 13-5
 - Estimating Memory Requirements for Routes 13-6
 - Clearing Routes in the Unicast RIB 13-6
- Verifying the Unicast RIB and FIB Configuration 13-7
- Additional References 13-8
 - Related Documents 13-8

CHAPTER 14

Configuring Route Policy Manager 14-1

- Information About Route Policy Manager 14-1
 - Prefix Lists 14-1
 - MAC Lists 14-2
 - Route Maps 14-2
 - Match Criteria 14-2
 - Set Changes 14-3
 - Access Lists 14-3
 - AS Numbers for BGP 14-3
 - AS-path Lists for BGP 14-3
 - Community Lists for BGP 14-4
 - Extended Community Lists for BGP 14-4
 - Route Redistribution and Route Maps 14-4

Licensing Requirements for Route Policy Manager	14-5
Guidelines and Limitations	14-5
Default Settings	14-5
Configuring Route Policy Manager	14-6
Configuring IP Prefix Lists	14-6
Configuring MAC Lists	14-8
Configuring AS-path Lists	14-8
Configuring Community Lists	14-9
Configuring Extended Community Lists	14-11
Configuring Route Maps	14-12
Verifying the Route Policy Manager Configuration	14-17
Configuration Examples for Route Policy Manager	14-18
Related Topics	14-18
Additional References	14-18
Related Documents	14-19
Standards	14-19
	14-19

CHAPTER 15

Configuring Policy Based Routing	15-1
Information About Policy Based Routing	15-1
Policy Route Maps	15-2
Set Criteria for Policy-Based Routing	15-2
Licensing Requirements for Policy-Based Routing	15-2
Prerequisites for Policy-Based Routing	15-2
Guidelines and Limitations for Policy-Based Routing	15-3
Default Settings	15-3
Configuring Policy-Based Routing	15-3
Enabling the Policy-Based Routing Feature	15-3
Configuring a Route Policy	15-4
Verifying the Policy-Based Routing Configuration	15-6
Configuration Examples for Policy-Based Routing	15-7
Related Topics	15-7
Additional References	15-7
Related Documents	15-8
Standards	15-8

CHAPTER 16

Configuring IS-IS 16-1

- Information About IS-IS 16-1
 - IS-IS Overview 16-2
 - IS-IS Areas 16-2
 - NET and System ID 16-3
 - Designated Intermediate System 16-3
 - IS-IS Authentication 16-3
 - Mesh Groups 16-4
 - Overload Bit 16-4
 - Route Summarization 16-4
 - Route Redistribution 16-5
 - Administrative Distance 16-5
 - Load Balancing 16-5
 - High Availability and Graceful Restart 16-5
 - Multiple IS-IS Instances 16-6
- Licensing Requirements for IS-IS 16-7
- Guidelines and Limitations for IS-IS 16-7
- Default Settings 16-7
- Configuring IS-IS 16-7
 - IS-IS Configuration Modes 16-8
 - Router Configuration Mode 16-9
 - Router Address Family Configuration Mode 16-9
 - Creating an IS-IS Instance 16-9
 - Restarting an IS-IS Instance 16-12
 - Shutting Down IS-IS 16-12
 - Configuring IS-IS on an Interface 16-12
 - Shutting Down IS-IS on an Interface 16-14
 - Configuring Default Passive Interfaces 16-14
 - Configuring IS-IS Authentication in an Area 16-16
 - Configuring IS-IS Authentication on an Interface 16-17
 - Configuring a Mesh Group 16-18
 - Configuring a Designated Intermediate System 16-18
 - Configuring Dynamic Host Exchange 16-18
 - Setting the Overload Bit 16-19
 - Configuring the Attached Bit 16-19
 - Configuring the Transient Mode for Hello Padding 16-19
 - Configuring a Summary Address 16-20
 - Configuring Redistribution 16-21
 - Limiting the Number of Redistributed Routes 16-23

Configuring the Administrative Distance of Routes	16-24
Disabling Strict Adjacency Mode	16-25
Configuring a Graceful Restart	16-26
Configuring Virtualization	16-28
Tuning IS-IS	16-30
Verifying the IS-IS Configuration	16-32
Monitoring IS-IS	16-33
Configuration Examples for IS-IS	16-33
Related Topics	16-34
Additional References	16-34
Related Documents	16-34
Standards	16-34

CHAPTER 17

Configuring HSRP	17-1
Information About HSRP	17-1
HSRP Overview	17-2
HSRP for IPv4	17-3
HSRP IPv6 Addresses	17-4
HSRP Versions	17-5
HSRP Authentication	17-5
HSRP Messages	17-5
HSRP Load Sharing	17-6
BFD	17-7
vPC and HSRP	17-7
vPC Peer Gateway and HSRP	17-7
Virtualization Support	17-7
VIP HSRP Enhancement	17-8
Licensing Requirements for HSRP	17-8
Prerequisites for HSRP	17-8
Guidelines and Limitations	17-8
Default Settings	17-9
Configuring HSRP	17-10
Enabling the HSRP Feature	17-10
Configuring the HSRP Version	17-11
Configuring an HSRP Group for IPv4	17-11
Configuring an HSRP Group for IPv6	17-13
Configuring the HSRP Virtual MAC Address	17-15
Authenticating HSRP	17-15

- Configuring the HSRP Priority 17-17
- Customizing HSRP 17-18
- Enabling DHCP Relay Agent Using VIP 17-19
- Verifying the HSRP Configuration 17-20
- Configuration Examples for HSRP 17-20
- Additional References 17-21
 - Related Documents 17-21
 - MIBs 17-21

CHAPTER 18

Configuring VRRP 18-1

- Information About VRRP 18-1
 - VRRP Operation 18-2
 - VRRP Benefits 18-3
 - Multiple VRRP Groups 18-3
 - VRRP Router Priority and Preemption 18-4
 - BFD 18-5
 - vPC and VRRP 18-5
 - vPC and VRRP 18-5
 - VRRP Advertisements 18-6
 - VRRP Authentication 18-6
 - Restrictions 18-6
 - VRRP Tracking 18-6
 - VRRPv3 and VRRS 18-7
 - Virtualization Support 18-7
- Licensing Requirements for VRRP 18-8
- Guidelines and Limitations 18-8
- Default Settings 18-9
- Configuring VRRP 18-9
 - Enabling the VRRP Feature 18-10
 - Configuring VRRP Groups 18-10
 - Configuring VRRP Priority 18-12
 - Configuring VRRP Authentication 18-14
 - Configuring Time Intervals for Advertisement Packets 18-15
 - Disabling Preemption 18-17
 - Configuring VRRP Interface State Tracking 18-18
 - Enabling VRRPv3 feature 18-20
 - Configuring VRRPv3 Groups 18-20
 - Configuring VRRPv3 Control Group 18-22
 - Configuring VRRS Pathways 18-23

Verifying the VRRP Configuration	18-24
Displaying VRRP Statistics	18-25
Configuration Examples for VRRP	18-25
Additional References	18-26
Related Documents	18-27

CHAPTER 19

Configuring Object Tracking	19-1
Information About Object Tracking	19-1
Object Tracking Overview	19-1
Object Track List	19-2
Virtualization Support	19-2
Licensing Requirements for Object Tracking	19-3
Guidelines and Limitations	19-3
Default Settings	19-3
Configuring Object Tracking	19-3
Configuring Object Tracking for an Interface	19-4
Configuring Object Tracking for Route Reachability	19-5
Configuring an Object Track List with a Boolean Expression	19-6
Configuring an Object Track List with a Percentage Threshold	19-7
Configuring an Object Track List with a Weight Threshold	19-8
Configuring an Object Tracking Delay	19-10
Configuring Object Tracking for a Nondefault VRF	19-12
Verifying the Object Tracking Configuration	19-13
Configuration Examples for Object Tracking	19-13
Related Topics	19-13
Additional References	19-13
Related Documents	19-14
Standards	19-14
IETF RFCs supported by Cisco NX-OS Unicast Features, Release 6.x	1-1
BGP RFCs	1-1
First-Hop Redundancy Protocols RFCs	1-1
IP Services RFCs	1-2
IPv6 RFCs	1-2
OSPF RFCs	1-2
RIP RFCs	1-3

GLOSSARY**INDEX**

