IP Routing on Cisco IOS, IOS XE, and IOS XR: An Essential Guide to Understanding and Implementing IP Routing Protocols (Networking Technology)

By Brad Edgeworth, Aaron Foss, Ramiro Garza Rios

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An Essential Guide to Understanding and Implementing IP Routing Protocols

Cisco's authoritative single-source guide to IP routing protocols for enterprise and service provider environments

Service providers and large enterprises are converging on a common IP infrastructure that supports rapid deployment of high-value services. Demand is soaring for highly skilled IP network engineers who can implement and run these infrastructures. Now, one source combines reliable knowledge about contemporary IP routing protocols and expert hands-on guidance for using them with Cisco IOS, IOS XE, and IOS XR operating systems.

After concisely reviewing the basics, three Cisco experts fully explain static routing, EIGRP, OSPF, IS-IS, and BGP routing protocols. Next, they introduce advanced routing with policies and redistribution, sophisticated BGP-based traffic engineering, and multicast. They present comprehensive coverage of IPv6, from its multicast implementation to its completely revamped address structure. Finally, they discuss advanced high availability techniques, including fast routing convergence.

IP Routing on Cisco IOS, IOS XE, and IOS XR presents each protocol conceptually, with intuitive illustrations, realistic configurations, and appropriate output. To help IOS users master IOS XE and IOS XR, differences in operating systems are explicitly identified, and side-by-side feature command references are presented.

All content fully aligns with Learning@Cisco, providing efficient self-study for multiple Cisco Career Certifications, including CCNA®/CCNP®/CCIE® Service Provider, CCIE Routing & Switching, Cisco IOS XR Specialist Certification, and the routing components of several additional Cisco Certifications.

Brad Edgeworth, CCIE No. 31574 (R&S & SP) has been with Cisco since 2011 as Systems Engineer and Technical Leader. Formerly a network architect

and consultant for various Fortune® 500 companies, his 18 years of IT experience includes extensive architectural and operational work in enterprise and service provider environments. He is a Cisco Live distinguished speaker presenting on IOS XR.

Aaron Foss, CCIE No. 18761 (R&S & SP), a High Touch Engineer with the Cisco Focused Technical Support (FTS) organization, works with large service providers to troubleshoot MPLS, QoS, and IP routing issues. He has more than 15 years of experience designing, deploying, and troubleshooting IP networks.

Ramiro Garza Rios, CCIE No. 15469 (R&S, SP, and Security), Senior Network Consulting Engineer with Cisco Advanced Services, plans, designs, implements, and optimizes next-generation service provider networks. Before joining Cisco in 2005, he was Network Consulting and Presales Engineer for a Cisco Gold Partner in Mexico, where he planned and deployed both enterprise and service provider networks.

Foreword by Norm Dunn, Senior Product Manager, Learning@Cisco Global Product Management, Service Provider Portfolio

- Understand how IOS®, IOS XE, and IOS XR operating systems compare
- Master IPv4 concepts, addressing structure, and subnetting
- Learn how routers and routing protocols work, and how connected networks and static routes behave from the router's perspective
- Work with EIGRP and distance vector routing
- Deploy basic and advanced OSPF, including powerful techniques for organizing routing domains, path selection, and optimization
- Compare IS-IS with OSPF, and implement advanced IS-IS multilevel routing, optimization, and path selection
- Make the most of BGP and route manipulation, including IOS/IOS XE route maps and IOS XR's highly scalable Route Policy Language
- Use advanced policy-based route manipulation and filtering
- Implement route redistribution: rules, potential problems, and solutions
- Leverage BGP communities, summaries, and other router conservation techniques
- Discover how IPv6 changes IP address and command structure
- Establish highly efficient multicast routing in IPv4 and IPv6 environments
- Systematically improve network availability and operational uptime through event driven detection and fast routing convergence

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Editorial Review

From the Author
This book is relevant to network engineers, consultants or students in various stages of their career that want to understand the concepts and theory of EIGRP, OSPF, IS-IS, BGP, and multicast routing protocols on Cisco IOS, IOS XE, and IOS XR operating systems.

The content was created in alignment with Learning@Cisco to address the demand for more efficient self-study content for the Cisco Career Service Provider Certifications. It encompasses content spread across multiple sources and presents them in a different perspective while covering updated standards and features that are found in *Enterprise* and *Service Provider* networks.

Every topic assumes minimal knowledge and explains the protocol from a ground-up perspective. In alignment with the saying "*a picture is worth a thousand words*", multiple illustrations are included in the chapters to explain the various concepts. All protocols are presented conceptually, with applicable illustrations, configurations, and appropriate output.

About the Author
Brad Edgeworth, CCIE No.31574 (R&S & SP) has been with Cisco since 2011 working as a Systems Engineer and a Technical Leader. Brad is a distinguished speaker at Cisco Live where he has presented on IOS XR. Before joining Cisco, Brad worked as a network architect and consultant for various Fortune 500 companies. Brad's other certifications include Cisco Certified Design Professional (CCDP), and Microsoft Certified Systems Engineer (MCSE). Brad has been working in the IT field for the past 18 years with an emphasis on enterprise and service provider environments from an architectural and operational perspective. Brad holds a Bachelor of Arts degree in Computer Systems Management from St. Edward's University in Austin, TX.

Aaron Foss, CCIE No. 18761 (R&S & SP), is a High Touch Engineer with Cisco's Focused Technical Support (FTS) organization. He works with large service providers to troubleshoot issues relating to MPLS, QoS, and IP routing protocols. Aaron has more than 15 years of experience designing, deploying, and troubleshooting IP networks. He holds a Bachelor of Science degree in Management Information Systems from Rochester Institute of Technology.

Ramiro Garza Rios, CCIE No. 15469 (R&S, SP and Security) is a Senior Network Consulting Engineer with Cisco Advanced Services. His current role consists of planning, designing, implementing and optimizing NGN Service Provider networks in the US. He has been with Cisco for over 8 years and has 14 years of networking industry experience. Prior to joining Cisco, Ramiro was a Network Consulting and Presales Engineer for a Cisco Gold Partner in Mexico, where he was involved in the planning, design and implementation of many Enterprise and Service Provider networks. He holds a Bachelor of Science degree in Electronic Engineering from the Insituto Tecnologico de Reynosa and lives with his wife and three children in Cary, North Carolina.

Users Review

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Maria Huffman:

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Pablo Cowart:

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Christopher Palmer:

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Henry Stanton:

The book untitled IP Routing on Cisco IOS, IOS XE, and IOS XR: An Essential Guide to Understanding and Implementing IP Routing Protocols (Networking Technology) contain a lot of information on the item. The writer explains her idea with easy approach. The language is very clear to see all the people, so do not really worry, you can easy to read the idea. The book was published by famous author. The author brings you in the new era of literary works. You can read this book because you can read on your smart phone, or product, so you can read the book with anywhere and anytime. If you want to buy the e-book, you can open up their official web-site and also order it. Have a nice examine.

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