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Mohammed M. Alani

Guide to Cisco Routers Configuration

Becoming a Router Geek

Mohammed M. Alani
Department of Computing
Middle-East College of Info. Tech.
Al Rusayl
Muscat 124
Oman

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Foreword

When accessing your Facebook account, sending an email, or downloading a YouTube video, the network traffic that you just created will travel from your computer, smart phone, or tablet through the Internet to a server that might be thousands of kilometers away. The Internet is composed of many interconnected networks connected together through routers and switches. According to an ACG research report published in November 2011, when it comes to the routing and switching market, Cisco is by far the market leader with a market share of 54 % compared with 18 % to its closest competitor.

This book is a practical hands-on introduction to administering Cisco routers. This book is divided into seven stand-alone chapters. [Chapter 1](#) of this book covers the basics of how to connect to a Cisco router to perform basic configurations. Then the book covers more advanced topics including routing protocols, WANs, router security, upgrades, and backups.

The book assumes basic understanding of network concepts. No prior knowledge or experience dealing with routers is assumed. Access to a Cisco router (physical or remote access) or a Cisco router emulator/simulator is needed to conduct the hands-on portion of the book. This book can be used as a text book to introduce student to the basics of routing using Cisco routers, or can be used with a theoretical book in an advanced undergraduate networking class. Professionals interested in the field of computer networking and its implementation using Cisco routers can use this book as a self-study, or use it as a reference to the most common tasks performed on a Cisco router.

What I really like about this book is its practical approach. It covers the most common tasks that a network administrator needs to do to manage a cisco network. The author not only gives you the commands necessary to perform a task, but also explains in detail what is being accomplished by these commands. Before presenting the task, the author gives an explanation why this task is important and what situation would require the user to perform this task.

I congratulate the author on a well-written book that provides the reader with an easy and fun way into the wonderful world of Cisco routers.

PA, USA

Assoc. Prof. Mahdi Nasereddin

Preface

It has become clear to all people involved in the field of computer networks that Cisco Systems has taken the lead in networking equipments market. This was not unexpected. Cisco's equipments have proved high quality from low-end to high-end sophisticated equipments.

You might be familiar with the title of this brief through the website holding the same name. This project started as a website a few years ago and kept piling up until it took the shape that is in your hands currently. The journey of this project from a website into a brief has been nothing less than joyful.

This brief provides a simplified step-by-step guide to configuring Cisco routers. This guide does not get the reader into the implications of theoretical aspects of networking. It simply shows the reader how to get things done in a clear, simple, and yet comprehensive way.

This guide starts from connecting the router through console port all the way up to complicated tasks, such as site-to-site VPNs and multiple-area OSPF.

Since this is a configuration guide, I assume that the reader is familiar with basic networking operation such as addressing, and routing protocols.

This guide covers basic and advanced configuration procedures as well. Basic procedures start from setting the hostname, passwords, and IP addresses of the router, configuring dynamic routing protocols, and password recovery procedures. The guide also includes advanced routing topics such as single- and multiple-area OSPF configuration, and integrated IS-IS configuration. The guide includes a chapter for domestic configurations that are currently considered essential duties of a router, such as DHCP, NAT, and inter-VLAN routing. The guide also includes a chapter dedicated to the configuration of different wide area network technologies ranging from ADSL to ISDN and frame-relay, along with PPP.

A chapter was dedicated to various security procedures to cope with the growing security requirements in modern networks. This chapter includes procedures to configure site-to-site VPN and SSH and Telnet access protection.

The largest chapter in this brief is concerned with maintaining the router configuration and operating system. This chapter includes multiple procedures to upgrade, backup, and restore the router IOS. It also provides simple steps to

backing up and restoring router configuration. The brief is finalized with a collection of hints and tips that can be useful to anyone configuring Cisco routers for learning or in real-life situations.

Inteded Audience of the Guide:

- field network engineers engaging Cisco routers;
- students working on Cisco routers in their labs;
- lab instructors;
- Cisco certification seekers;
- Cisco networking academy students;
- everyone working with or wanting to learn about Cisco routers configuration.

How to Use this Guide:

To make guide easier to use, different parts of the text were formatted differently. The meanings of these formats:

- courier new font (small letters) is used for output of the router;
- **courier new bold font (small letters)** is used for commands input to the router;
- **courier new bold font (CAPITAL LETTERS)** is used for commands parameters that the reader have to choose.

Finally, I would like to express my sincere thanks to my editors Wayne Wheeler and Simon Rees for making this project possible. I would also like to extend my thanks to all the website visitors who helped me with their queries and comments, all have participated in producing this guide in the form it is in today.

Muscat, Oman, 24 February 2012

Mohammed M. Alani

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