# IP Routing

**IPC_113d | On-Demand | Transport | Express**
**Course Duration:** 2 hours

As the communications industry transitions to wireless and wireline converged networks to support voice, video, data and mobile services over IP, an understanding of IP and its role in networking is essential. IP is to data transfer as a dial tone is to a wireline telephone. A fundamental knowledge of IPv4 and IPv6 networking along with use of routing is a must for all telecom professionals. A solid foundation in IP and routing has become a basic job requirement in the carrier world. Understanding of IP routing protocols is an important part of building this foundation. Starting with a basic definition, the course provides a focused base level introduction to the fundamentals of IP routing and associated protocols like OSPF, BGP, and VRRP.

## Intended Audience

This course is intended for those seeking a basic level introduction to IP routing and the common associated protocols.

## Objectives

After completing this course, the student will be able to:

- Define the differences between IP routing and forwarding
- Distinguish between Interior Gateway Protocols and Exterior Gateway Protocols
- Explain Open Shortest Path First (OSPF) and how it is used
- List the main types of Link State Advertisements in OSPF
- Describe Border Gateway Protocol (BGP) and how it is used
- Show how route reflectors simplify network configuration and reduce routing overhead
- Explain how PING can be used to verify end-to-end connectivity in an IP Network
- Describe how Traceroute can be used to track down routing errors in a network

## Course Prerequisites

No Prerequisites

## Outline

1. What is IP routing?
1.1 IP routing basics
1.2 Routing and forwarding
1.3 Routing protocols

2. Open Shortest Path First (OSPF)
2.1 OSPF basics
2.2 A closer look at OSPF

3. Border Gateway Protocol (BGP)
3.1 BGP basics
3.2 A closer look at BGP
3.3 Scaling BGP

4. Redundancy Protocols
4.1 Introduction
4.2 VRRP
4.3 GLBP

5. Debugging Tools and Utilities
5.1 PING
5.2 Traceroute

6. Summary

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