

## Course Description

This Hands-On course covers the main concepts of Interior and Exterior Gateway protocols, OSPF and BGP4 and the fundamental BGP configuration as well as specific BGP issues such as creating a routing policy, building scalable BGP configurations, building a multi-homed network, getting an AS number and how to connect to an Internet exchange.

OSPF forms the most powerful Interior Gateway Protocol available for running routing inside an Enterprise or with an ISP. Interconnecting ISP requires Exterior Gateway protocols, and the current Internet requires BGP4.

This course will give attendees a very strong and comfortable foundation in the Real-World of OSPF and BGP.

## Students Will Learn

- **Describe The Structure Of The Internet**
- **Decide Which Routing Protocols To Use In Each Practical Circumstance**
- **Plan The Configuration Of OSPF**
- **Set-Up An Autonomous System**
- **Interconnect To Other Autonomous Systems And To ISPs With BGP4**
- **Administer BGP Routing Policies**
- **And more...**

## Target Audience

The course is targeted for people working with design, maintenance and configuration of routers in IP networks.

## Prerequisites

This course requires good TCP-IP knowledge as well as fundamental routing protocol knowledge.

## Course Outline

## **1: Internetworking using Routers**

- Role of the Router
- Structure of the Internet
- Subdividing IP Networks
- Subnet Masks
- Subnet Calculator
- Case Study in Subnetting

## **2: The function of routing protocols**

- Structure of a Routing Table
- Prefix length
- The function of routing protocols
- Route propagation
- Distance Vector vs. Link State protocols
- Metrics
- Hands-on Configuring OSPF

## **3: Link State Routing**

- Beyond the limitations of Distance Vector
- Authentication
- Topology Database
- Link State Routing
- Link State records
- Shortest Path
- Building a shortest path tree
- Multiple Paths to Destinations
- Assigning Metrics
- Hands-on Connecting OSPF Services

## **4: OSPF Protocols**

- OSPF (Open Shortest Path First Protocol)
- Hello
- Network Types
- Designated routers on broadcast networks
- Backup designated routers
- Non-Broadcast Networks
- Exchange Protocol
- Adjacencies
- Flooding Protocol
- Deploying OSPF over Frame Relay

- Sub-interfaces
- OSPF Demand Circuits
- Hands-on Monitoring OSPF Protocols

## 5: BGP4

- Routing Beyond The Enterprise
- Exterior gateway protocols
- Policy-based routing
- Classless InterDomain Routing (CIDR)
- Using CIDR
- Autonomous systems
- Connecting autonomous systems with BGP
- Holes in the address Space
- Longest Match Rule
- Aggregating Routes
- IBGP and EBGP
- IBGP Full Mesh
- Hands-on Building interconnected Autonomous Systems

## Evaluation and Review

## Delivery Method

Instructor-Led with Hands-On labs and exercises.

## Equipment Requirements

**(This apply's to our hands-on courses only)**

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

## Course Length

3 Days