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ENG-405 - TCP/IP Networks: Routing

Description

A 3-day hands-on Training Program to provide participants with the tools required to design and build a routed network. This Training Program delves into the nuts and bolts of the technologies and protocols that help erect today's corporate and service provider networks.

Through practical hands-on activities, the participant will learn about different ways to carry out routing within an autonomous system.

Prerequisite

To fully appreciate the contents of this Training Program, the participant should have attended the following Training Program or have acquired the equivalent experience in the subject matter:

- ENG-401E Introduction to Data Networks & TCP/IP

Objectives

- Describe the challenges in designing a routed network
- Explain the fundamental characteristics of routing
- Provide methods to manage the use of Internet Protocol (IP) addresses
- Define the characteristics and the operation of Interior Gateway Protocols (IGP), such as Routing Information Protocol (RIP) and Open Shortest Path First (OSPF)
- Identify the main concepts of Border Gateway Protocol (BGP): the Exterior Gateway Protocol (EGP) of the Internet
- Explain how to install routers and configure various routing protocols and features, such as static routes, RIP, OSPF and relay agents
- Present how to analyze network traffic
- Explain how to design and configure a small scale routed network within an autonomous system

Topics

Network design goals

- Design goals
- Reliability
- Resiliency
- Manageability
- Scalability

Fundamental routing concepts

- Routing definition
- Inside the router: the control and forwarding planes
- Static routing
- Dynamic routing and routing protocols
- Administrative distance
- Routing metric
- Neighbour relationships
- Autonomous systems
- Interior vs. exterior routing protocols
- Routing protocol selection

Management of IP address use

- Network Address Translation (NAT)
- Route summarization
- Classless Inter-Domain Routing (CIDR)
- Relay agents

RIP: an interior routing protocol

- RIP description, terminology and concepts
- Distance-vector routing algorithm
- Limitations and problems associated with RIP and how to tackle them
- RIP versions: message formats and features
- RIP configuration and analysis

OSPF: an interior routing protocol

- OSPF description, terminology and concepts
- Link-state routing algorithm
- OSPF basic topology
- OSPF hierarchical topology: the concept of areas and router roles
- OSPF message types and formats

- OSPF configuration and analysis

Synopsis of other interior routing protocols

- IGP
- Enhanced Interior Gateway Routing Protocol (EIGRP)
- Intermediate System to Intermediate System (IS-IS)

BGP: the Exterior Routing Protocol (ERP)

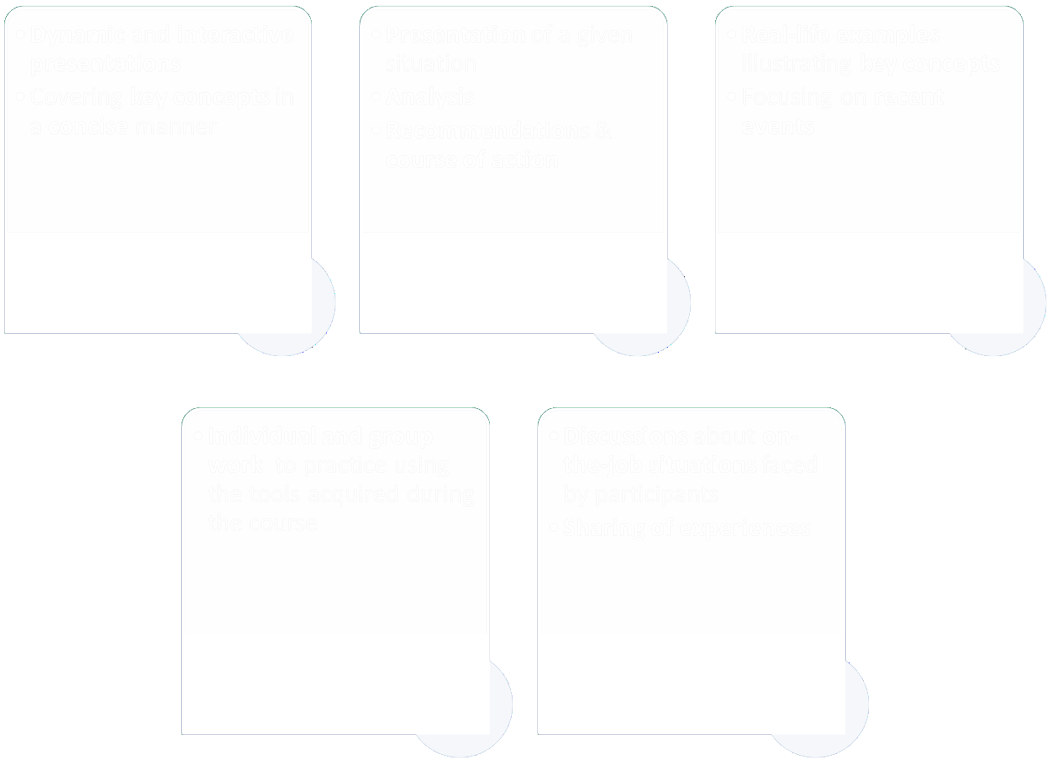
- BGP description, terminology and concepts
- BGP operation
- Overview of more advanced topics, such as route reflectors, policy control and prefix lists

Target Audience

- Technical personnel in engineering or operations, with a basic understanding of data networks, interested in or needing to learn how to design routed networks

Methodology

A combination of engaging activities and dynamic presentations to stimulate and maximize participants' learning.



Location

A selection of Neotelis' training courses is held in various cities around the world. Please contact us at training@neotelis.com for the complete Yearly Training Calendar.

Neotelis can also deliver in-house sessions of this course specifically for your organization. Please contact us at training@neotelis.com for more information and a Proposal.

About Neotelis

Neotelis provides training, consulting, conferences and publications to the telecommunications industry worldwide. Its team of senior experts has trained thousands of executives and managers working for operators, regulators, policy-makers and governments in over 120 countries around the world.

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