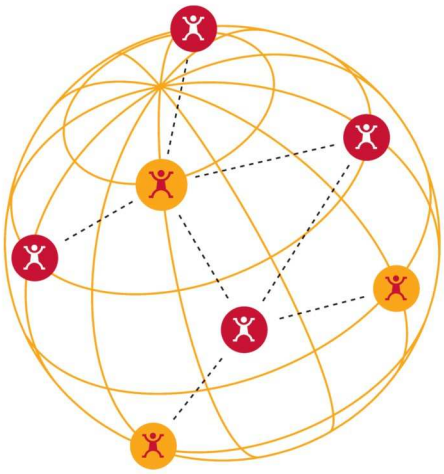

ENG-405E
TCP/IP NETWORKS: ROUTING

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

Our Training Programs combine expert presentations, workshops, case studies and discussions on real-life situations faced by participants. Complete training material is provided to all participants for future reference and follow-up action plans.

LOCATION

Our Training Programs are held at regular intervals in selected cities around the world. Upon request, our expert trainers can lead Training Programs at the location of your choice. If interested, please contact us at neotelis.training@neotelis.com.

EXPERTISE

Neotelis provides consulting and training services to organizations worldwide. Its team of experts has trained thousands of individuals in technical, managerial and executive roles, who are working for operators, regulators, policy-makers, governments and private sector corporations in over 100 countries around the world.