Systems & Network Training

Definitive IP routing for engineers

A 5 day `Hands on` training course

⭐ Description

An intensive hands on IP routing course leading to LINX Accredited Internet Technician stage 2 focusing on routing in an IP environment. The course concentrates on OSPF and IS-IS but also covers STP and VLANS. Hands on sessions are used to reinforce the theory rather than teach specific manufacturer equipment.

A multiple choice exam, leading to the LAIT II certification, is included at the end of the course. The exam consists of 60 questions and lasts 2.0 hours.

👍 Key outcomes

By the end of the course delegates will be able to:

- ✔ Calculate subnet numbers in seconds.
- ✔ Configure and troubleshoot static routes.
- ✔ Explain how OSPF works.
- ✔ Build resilient networks with VRRP and OSPF.
- ✔ Implement and troubleshoot OSPF, IS-IS and VLANS.
- ✔ Evaluate and choose appropriate routing protocols for particular scenarios.

📖 Training approach

This structured course uses Instructor Led Training to provide the best possible learning experience. Small class sizes ensure students benefit from our engaging and interactive style of teaching with delegates encouraged to ask questions throughout the course. Quizzes follow each major section allowing checking of learning. Hands on sessions are used throughout to allow delegates to consolidate their new skills.

☰ Details

Who will benefit?
Network Engineers.

Prerequisites
TCP/IP foundation for engineers.

Duration: 5 days

Customer rating ⭐⭐⭐⭐⭐

Generic training	Small class sizes	Hands On training	Our courseware	Customise your course
Generic training compliments product specific courses covering the complete picture of all relevant devices including the protocols "on the wire".	We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor.	The majority of our courses use hands on sessions to reinforce the theory.	We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text.	Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way.
"Friendly environment with expert teaching that teaches the why before the how." G.C. Fasthosts	*"Excellent course. The small class size was a great benefit..."* M.B. IBM	*"Not many courses have practice added to it. Normally just the theoretical stuff is covered."* J.W. Vodafone	*"Comprehensive materials that made the course easy to follow and will be used as a reference point."* V.B. Rockwell Collins	*"I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on."* S.R. Qinetiq

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Course content

Basic routing
Review of LAIT I routing, reading routing tables.
Hands on: Setting up a routed network.

Static routes
Why use static routes? Default routes. Hands on:
Configuring static routes.

First hop redundancy
Default gateways, VRRP/HSRP/GBLP. Load sharing,
critical IP addresses. Hands on: VRRP.

OSPF
What is OSPF? Process IDs, passive interfaces.
Hands on: Simple OSPF.

Subnetting
Bit boundary subnetting, calculating network
numbers. Exercise: Subnetting.

OSPF
Metrics, convergence, DV vs. Link state, IGPs,
classless, OSPF features, load sharing, OSPF
authentication. Hands on: OSPF features.

OSPF within an area
How OSPF works, LSDB, LSAs, router IDs, hellos,
configuring hellos, exchange protocol. Hands on:
Investigating OSPF structures.

Areas
Scalability, why areas? Area IDs, area 0, ABRs, ABR
resilience, areas & LSDBs & LSAs, Type 3s, virtual
links. Hands on: Multi area OSPF.

Redistribution
Multiple routing protocols, common scenarios, routing
distance, External LSAs, E1 and E2. Type 4 LSAs.
OSPF and default routes. Hands on: Configuring
static route redistribution.

Route aggregation
Route summarisation. How to aggregate, ABR
summarisation, ASBR summarisation. Hands on:
OSPF address summarisation.

OSPF packet formats
OSPF packets, protocol stack, packet flows, OSPF
headers, neighbours, neighbour states, DRs,
adjacencies, BDRs, DR election. Hands on:
Analysing OSPF packets, troubleshooting.

OSPF stub areas
LSA types, area types, area architecture, stub areas,
default routes, benefits & disadvantages of stub
areas, TSSAs, NSSAs, Type 7 LSAs. Hands on:
Stub and TSSA configuration.

IS-IS
End systems, Intermediate systems, how IS-IS
works, IS-IS router ID, Level 1, Level 2, IS-IS
hierarchy. Hands on: Configuring IS-IS,
troubleshooting IS-IS.

Routing IPv6
Multiprotocol routing, IPv6 addressing, IPv6 routing
tables, IPv6 static routes, OSPFv3, IS-IS and IPv6.
Hands on: Routing IPv6.

VLANS
What are VLANs, tagging, 802.1Q, Inter VLAN
routing. Hands on: Inter VLAN routing.

STP and alternatives
STP, RSTP, TRILL, SPB. Hands on: RSTP.

EXAM

Appendix: EIGRP: How EIGRP works, DUAL.

Step back

TCP/IP foundation for engineers

Definitive IP routing for engineers

Step forward

Total BGP for engineers

Total IPv6 for engineers