

Definitive VPNs for engineers

A 3 day **Hands on** training course



Description

A hands on course covering VPNs from the basics of benefits and Internet vs. Intranet VPNs through to detailed analysis of the technologies involved in IP VPNs. All the major VPN protocols are covered including PPPoE, L2TP, SSL, IPsec and dynamic VPNs. MPLS L3 VPNs are also covered.



Key outcomes

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

- ✓ Describe what a VPN is and explain the difference between different VPN types.
- ✓ Recognise the design and implementation issues involved in implementing a VPN.
- ✓ Explain how the various technologies involved in a VPN work.
- ✓ Describe and implement: L2TP, IPsec, SSL, MPLS L3 VPNs.
- ✓ Evaluate VPN technologies.



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 personnel.

Prerequisites
IP Security foundation for engineers.

Duration: 3 days

Customer rating: ★★★★★

Generic training	Small class sizes	Hands On training	Our courseware	Customise your course
Generic training complements 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.
<i>"Friendly environment with expert teaching that teaches the why before the how."</i> G.C. Fasthosts	<i>"Excellent course. The small class size was a great benefit..."</i> M.B. IBM	<i>"Not many courses have practice added to it. Normally just the theoretical stuff is covered."</i> J.W. Vodafone	<i>"Comprehensive materials that made the course easy to follow and will be used as a reference point."</i> V.B. Rockwell Collins	<i>"I was very impressed by the combination of practical and theory. Very informative. Friendly approachable environment, lots of hands on."</i> S.R. Qinetiq

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Course content

VPN overview

What is a VPN? What is an IP VPN? VPNs vs. Private Data Networks, Internet VPNs, Intranet VPNs, Remote access VPNs, Site to site VPNs, VPN benefits and disadvantages.

VPN Tunnelling

VPN components, VPN tunnels, tunnel sources, tunnel end points, hardware based VPNs, Firewall based VPNs, software based VPNs, tunnelling topologies, tunnelling protocols, which tunnelling protocol should you use? requirements of tunnels.

VPN security components

Critical VPN security requirements, Encryption and authentication, Diffie Hellman, DES, 3DES, AES, PKI, Ca server types, pre shared keys versus certificates, Enrolling with a CA, RADIUS in VPNs.

PPP

Encapsulation, operation, authentication. Hands on: Setting up PPPoE and analysing PPP packets.

L2TP

Overview, components, how it works, security, packet authentication, L2TP/IPsec, L2TP/PPP, Layer 2 versus layer 3 tunnelling. Hands on: Implementing a L2TP tunnel.

IPsec

AH, HMAC, ESP, transport and tunnel modes, Security Association, use of encryption and authentication algorithms, manual vs automated key exchange, NAT and other issues. Hands on: Implementing an IPsec VPN.

SSL VPNs

Layer 4 VPNs, advantages, disadvantages. SSL. TLS. TLS negotiation, TLS authentication. TLS and certificates. Hands on: Implementing a SSL VPN.

GRE and mGRE

When should GRE be used? Point to point GRE tunnels, Hub and spoke multipoint GRE, NHRP. Encrypting GRE tunnels. Hands on: Implementing a GRE tunnel.

MPLS VPNs

Introduction to MPLS, why use MPLS, Headers, architecture, label switching, LDP, MPLS VPNs, L2 versus L3 VPNs. Point to point versus multipoint MPLS VPNs. MBGP and VRFs and their use in MPLS VPNs. Hands on: Implementing a MPLS L3 VPN.

VPN products and services

PE and CPE, management, various VPN products, SD-WAN.

VPN issues and architectures

VPN architectures: terminate VPN before/on/ after/in parallel with firewall, resilience issues, VRRP, performance issues, QoS and VPNs.

