

Total BGP for engineers

A 5 day **Hands on** training course



Description

A detailed study of the Border Gateway Protocol, from the basics of how it works through to advanced issues such as route reflectors, policy, filtering, route selection and routing registries. The course culminates with a study of an industrial strength BGP template illustrating important issues such as bogon filtering. Practical hands on with Cisco routers follow the major sessions to reinforce the theory. Juniper configurations are also explored in the theory sessions.



Key outcomes

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

- ✓ Connect enterprises to the internet, and ISPs to each other.
- ✓ Describe how BGP works.
- ✓ List, describe and configure the main BGP attributes.
- ✓ Implement and troubleshoot BGP.
- ✓ Work with route aggregation and calculate CIDR prefixes in seconds.
- ✓ Influence traffic paths with BGP.



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?

Those wishing to pass the network+ exam.

Prerequisites

TCP/IP Foundation for engineers.
Definitive IP routing for engineers.

Duration: 5 days

Customer rating: ★★★★★

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

Total BGP for engineers

Course content

Basic BGP

IGPs, EGPs, What's BGP? BGP RIB, in/out process, tables peers, adding routes. Hands on: Simple configuration and troubleshooting.

The Internet and peering

ASs, AS numbers, Internet structure, ISP types, ISP network design, IXs, peering vs. transit, public/private peering, bi/multi-lateral peering. Hands on: AS information gathering.

Peer relationships

IBGP, EBGP, next hop self, advertising routes into/out of BGP, synchronisation. Hands on: IBGP, troubleshooting a large BGP network.

How BGP works

Incremental updates, Path vector protocols, BGP protocol stack, the BGP header, message types, NLRI, withdrawn routes, soft reconfiguration and route refresh, route dampening. Hands on: More troubleshooting, packet analysis.

Route reflectors and confederations

Full mesh IBGP, Route reflectors, RR configuration and design, confederations, migration issues. Hands on: RR configuration.

BGPv4 aggregation

CIDR, benefits, techniques, shortcuts, configuring BGP aggregation, leaking routes. Hands on: Reducing routing table size.

BGP path selection

BGP attributes, attribute types, route selection order, Local preference, AS prepend, MEDs. Hands on: Influencing traffic with BGP.

BGP routing policies

What is policy? Examples, route filtering, AS filtering, regular expressions, applying preference selectively, peer groups. Hands on: Sophisticated policies.

Communities

What is a community? community names, communities for: peer types and geography. RFC 1998, setting local preference on other routers, default communities. Hands on: Configuring communities.

RIPE and routing registries

RIRs, Addressing services: Allocations and assignments, PI vs. PA, obtaining IP and AS numbers. RIPE database, objects, RPSL, whois, policy in the routing registry, IRRToolSet. Hands on: Querying the RIPE database.

BGP architectures

Stub vs. transit AS, when to use BGP, multihoming strategies and issues, default routes, sub dividing a large AS. Multihop EBGP, load balancing. Real world policies. Hands on: Multihoming.

BGP security

BGP attack trees, misconfigurations, securing BGP, Filtering, Bogons, TCP MD5, secure templates, NCAT, S-BGP, SoBGP.

MBGP

Multiprotocol routing, AFI, SAFI, MBGP and multicasts, IPv6, MPLS VPNs.

