

BGP and Peering 101

A 2 day training course



Description

A technical overview course exploring the Internet, BGP, and peering for engineers interested in comprehending network interconnection. The course provides a foundational insight into Internet structure, Internet Exchange (IX) architectures, and BGP routing principles. Participants will learn about routing tables, BGP metrics, and how traffic is routed across networks, along with what is needed to peer at an Internet exchange. The training combines theoretical sessions with practical demonstrations that delegates can follow along with, focusing on the technical fundamentals of peering and IX services.



Key outcomes

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

- ✓ Explain the difference between transit and peering.
- ✓ Describe how BGP works.
- ✓ Explain the methods BGP can use to influence Internet traffic.
- ✓ Use traceroute, peeringdb, route collectors and looking glasses to analyse traffic flows.
- ✓ Explain how IXs connect ISPs and the benefits of using IXs.



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.



Details

Who will benefit?

Engineers.

Prerequisites

Some knowledge of networking.

Duration: 2 days

Customer rating:

New course

Generic training



Generic training complements product specific courses covering the complete picture of all relevant devices including the protocols "on the wire".

"Friendly environment with expert teaching that teaches the why before the how."

G.C. Fasthosts

Small class sizes



We limit our maximum class size to 8 delegates; often we have less than this. This ensures optimal interactivity between delegates and instructor.

"Excellent course. The small class size was a great benefit.."

M.B. IBM

Hands On training



The majority of our courses use hands on sessions to reinforce the theory.

"Not many courses have practice added to it. Normally just the theoretical stuff is covered."

J.W. Vodafone

Our courseware



We write our own courses; courseware does not just consist of slides and our slides are diagrams not bullet point text.

"Comprehensive materials that made the course easy to follow and will be used as a reference point."

V.B. Rockwell Collins

Customise your course



Please contact us if you would like a course to be customised to meet your specific requirements. Have the course your way.

"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

The Internet

What is a network? Types of network, LANs, WANs, connecting networks together with IP and routers. What is the Internet? The cloud. How Kenya is connected to the rest of the world.

Hands on: ipconfig, ping and traceroute on the Internet.

Routers and routing tables

What is a router, routing tables, static routes, routing protocols. When an ISP uses static routes and when they use BGP. IP addresses, prefixes, groups of IP addresses. IPv6.

Hands on: Analysing Internet routing tables.

The Internet and peering

ASs, AS numbers, Internet structure, ISP types, Tier 1 ISPs, eyeballs, content providers, IXs, peering vs. transit, public/private peering. Peering policies. peeringdb. The importance of keeping peeringdb up to date.

Hands on: AS information gathering. Using peeringdb.

Basic BGP

What's BGP? BGP versus other routing protocols, ASs, AS numbers. AfriNIC database.

Hands on: Finding AS numbers. Showing simple BGP configuration and routing tables in an EVE-NG example.

How BGP works

Simple walk through of BGP incremental updates and how routes change when links go down.

Hands on: Showing packets and route changes when a link goes down/comes up.

BGP path selection

Transit, peering, routing policy and route filtering. Longest matching rule in routing tables, route selection order, Local preference, AS prepend, MEDs. IRRs.

Hands on: Seeing BGP influencing traffic. Looking at routing policies in AfriNIC .

IX architecture and services

Ethernet switching, data centres, redundancy. IPv4, IPv6 ports. Looking glass. DNS root servers. Private VLAN. Closed User groups. Cloud services, MAPS. DDOS protection and Remote Triggered Black Hole services.

Hands on: Looking glasses.

Connecting with an IX

Kit needed, Locations, Interface specifications. Link aggregation. The racks and space provided, access to the racks, connecting WANs into the IX. Allowed traffic. Port security. Preparing for peering, the peering template, setting up the peering, the AfriNIC database, contacts.

Peering configuration hints

Example Cisco BGP configuration, Example Juniper BGP configuration.

Route servers

What are route servers? route server policy control and communities, Bi and multi lateral peering. What are route collectors, Looking glasses. Template for peering with the route server.

Hands on: Seeing the LINX route server details in peeringdb, using a looking glass.

