Hands-On
BGP Routing

Course Description

This Hands-On course on BGP Routing (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. This course covers BGP routing in depth, from basics to important issues such as graded dampening and filtering. Practical Hands-On labs configurations are also incorporated to your specific equipment and configurations.

This course is a must for anyone looking for Practical knowledge and experience with BGP routing. This course is not geared to any specific exam, pre-study and or testing questions. This course just sets focus on today's support and use of BGP Routing.

Students Will Learn

- **Connect enterprises to the Internet, and ISP's to each other.**
- **Describe how BGP works.**
- **List, describe and configure the main BGP attributes.**
- **Configure policy control and filtering.**
- **Work with route aggregation and recognize the effects it has on BGP.**
- **Configure BGP features such as**
- **&9702Peer groups**
- **&9702Route reflectors**
- **&9702Route dampening**
- **And much more...**

Target Audience

Anyone who will be working with BGP Routing.

Prerequisites

A basic understanding of Computers and a strong TCP/IP Foundation.

Course Outline

Module I: Basic BGP

?IGPs
EGPs
What is BGP
BGP RIB
Simple configuration and troubleshooting.

Module II: The Internet and Peering

?AS's
AS numbers
Internet structure
ISP types
ISP network design
IXs
peering vs. transit
public/private peering
bi/multi-lateral peering

Module III: Peer Relationships

?IBGP differences from EBGP
next-hop-self
BGP relationship with IGPs
redistribution
adding routes into BGP
synchronisation.

Module VI: How BGP works

?Incremental updates
Path vector protocols
BGP and the seven layer model
the BGP header, message types
NLRI, withdrawn routes
Soft reconfiguration and route refresh, route dampening

Module V: Route Reflectors and Confederations

?Full mesh IBGP, Route reflectors
Route Reflector configuration and design
Confederations
Migration issues

Module VI: BGPv4 Aggregation?

CIDR
Benefits
Techniques
Shortcuts
Configuring BGP aggregation
Leaking routes

Module VII: BGP Path Selection?

BGP attributes
attribute types
route selection order
Local preference
AS prepend
MEDs

Module VIII: Policies?

What is policy?
Examples
Route filtering,
AS filtering
Regular expressions
Applying preference selectively
Peer groups

Module IX: Communities?

What is a community
Community names
Communities for: peer types and geography.
RFC 1998
Setting local preference on other routers
Default communities

Module X: RIPE and routing registries?

RIRs
Addressing services
Allocations and assignments
PI vs. PA addressing
Obtaining IP and AS numbers
The RIPE database objects
RPSL
Whois
Looking glasses
Specifying policy in the routing registry
IRRToolSet

Module XI: 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

Module XII: BGP Security

?BGP attack trees
Misconfigurations
Securing BGP
Filtering
Bogons
TCP MD5
Secure templates
NCAT, S-BGP
SoBGP

Module XIII: MBGP?

Multiprotocol routing
AFI
SAFI
MBGP and multicasts
IPv6
MPLS
VPNs

Delivery Method

Instructor-Led with numerous hands-on labs and exercises.

Equipment Requirements
(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

Course Length

4 Days