

**DEPARTMENT OF INFRASTRUCTURE AND ENERGY*****Technical Aspects of Setting up, Operating and Administering Internet Exchange Points (IXPs)*****DAY 1 “IP Resources and Routing Basics”****08:00 – 08:30****Registration**

08:30 – 10:30

Introduction to Internet Protocol (IP) and Number Resources*Facilitator:*

- Introduction to IPv4 and IPv6
- Internet Number Resources

10:30 – 11:00**Coffee Break**

11:00 – 13:00

Introduction to Routing*Facilitator:*

- Routing Basics

13:00 – 14:00**Networking & Lunch**

14:00 – 16:00

Introduction to Internal Gateway Protocols (IGPs)*Facilitator:*

- Introduction to OSPF v2
- OSPF Deployment for ISPs

16:00 – 16:30**Coffee break**

16:30 – 18:00

- OSPF Lab Exercises
- Basic OSPF (Module 01a. IPv4 + OSPFv2)

*Facilitator:***DAY 2 “Introduction to BGP”****08:00 – 08:30**

08:30 – 10:30

Introduction to Exterior Gateway Protocol (EGPs)*Facilitator:*

- Introduction to BGP

10:30 – 11:00**Coffee Break**

	<i>BGP Hands-on Lab Exercise</i>	<i>Facilitator:</i>
11:00 – 13:00	iBGP Lab Exercise (Module 1c. IPv4+OSPFv2 + iBGP)	
13:00 – 14:00	Networking & Lunch	
14:00 – 16:00	<i>BGP Attributes and Scaling Techniques</i>	<i>Facilitator:</i>
	- BGP Scaling Techniques - BGP Attributes	
16:00 – 16:30	Coffee break	
	<i>BGP Hands-on Lab Exercise</i>	<i>Facilitator:</i>
16:30 – 18:00	eBGP Lab Exercise (Module 6a. IPv4+OSPFv2 + iBGP + eBGP)	

DAY 3
“BGP Policy Control and Multihoming”

<i>08:00 – 08:30</i>	<i>Registration</i>	
08:30 – 10:30	<i>BGP Policy and Best Practices</i>	<i>Facilitator:</i>
	- Implementing BGP Policy Controls - BGP Best Practices for ISPs	
10:30 – 11:00	Coffee Break	
	<i>BGP Policy Control Hands-on Lab Exercise</i>	<i>Facilitator:</i>
11:00 – 13:00	BGP Filtering Exercise (Module 7 IPv4 +OSPF+ iBGP + eBGP + Prefix-Lists and ASN Path)	
13:00 – 14:00	Networking & Lunch	
14:00 – 16:00	- BGP Filtering Exercise (Module 7 IPv4 +OSPF+ iBGP + eBGP + BGP Communities)	<i>Facilitator:</i>
16:00 – 16:30	Coffee break	
	<i>Introduction to Multi-homing</i>	
16:30 – 18:00	- Simple Multi-homing - Advanced Multi-homing Techniques	<i>Facilitator:</i>

DAY 4 “Introduction to Internet Exchange Points”		
08:00 – 08:30	Registration	
08:30 – 10:30	- Multi-homing Hands-on Lab Exercise - BGP Local Preference Exercise (Module 8. IPv4 + OSPF+iBGP+eBGP+PrefixList+LocalPref)	Facilitator:
10:30 – 11:00	Coffee Break	
11:00 – 13:00	- Multi-homing Hands-on Lab Exercise - BGP Local Preference Exercise (Module 8. IPv4 + OSPF+iBGP+eBGP+PrefixList+AS Path-Prepend)	Facilitator:
	Scalable Network Design ISP Network Design	
13:00 – 14:00	Networking & Lunch	
14:00 – 16:00	Introduction to Internet Exchange Points (IXPs) - Value of Peering - IXP Network Design	Facilitator:
16:00 – 16:30	Coffee break	
16:30 – 18:00	IXP Hands-on Lab Exercise Advanced IXP Lab Exercise (Module 16a OSPF+iBGP+eBGP+IXP+Transit)	Facilitator:

DAY 5 “IXP and Traffic Monitoring”		
08:00 – 08:30	Registration	
08:30 – 10:30	IXP Hands-on Lab Exercise Advanced IXP Lab Exercise (Module 16a OSPF+iBGP+eBGP+IXP+Transit)	Facilitator:
10:30 – 11:00	Coffee Break	
11:00 – 13:00	IXP Hands-on Lab Exercise Advanced IXP Lab Exercise (Module 16a OSPF+iBGP+eBGP+IXP+Transit)	Facilitator:
13:00 – 14:00	Networking & Lunch	
14:00 – 16:00	Network Monitoring & Value Added Services - Traffic Monitoring and Flow Analysis - Selecting an IXP - PeeringDB and Role of Peering Coordinator	Facilitator:
16:00 – 16:30	Coffee break	
16:30 – 18:00	Way Forward and Certificate Ceremony	