



# **AFRICAN ADVANCED LEVEL TELECOMMUNICATIONS INSTITUTE (AFRALTI)**

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## **Intermediate IP Networking for Service Providers**

### **COURSE CONTEXT AND OVERVIEW**

With the ubiquity of the Internet Protocol (IP), telephone companies are converting their transmission backbones to IP. Telephone switch manufacturers are converting their products to IP softswitches. Voice quality obtained by Voice over IP even over the Internet has reached levels comparable to circuit switching. In-building LANs have increased in capacity to a point where they can easily handle voice traffic along with data. IP network access services to residences, such as DSL and cable modem provide sufficient capacity for Voice over IP. All current indications are that this IP wave has gained sufficient momentum to warrant telecommunications operators to start making serious preparations: and a significant number has already implemented changes towards an IP platform.

This course builds on telecommunications knowledge and general training to focus on IP networking. People who are familiar with traditional telephony, DS0s, T1s, e.t.c need to take this class. Data communications engineers would also benefit from the intermediate concepts that the course deals with. Organizations contemplating technologies such as VoIP, MPLS, Qos and IP security would benefit tremendously from this foundational course.

The course starts with basic concepts in IP networking and develops them to an intermediate level. It provides foundational knowledge and practical experience in the Internet Protocol (IP) as it relates to Local Area Networks, Wide Area Networks, Switching and Routing.

### **WHO SHOULD ATTEND?**

This workshop targets staff in telecom operators (fixed and mobile), service providers, and regulatory authorities, and any other organizations that have implemented, or are intending to implement enterprise level IP networking solutions.



In particular, it targets:

- Switching Technicians/ Engineers
- Transmission Technicians/Engineers
- Data communications Technicians / Engineers
- Network Administrators
- Telecommunications management personnel seeking basic IP knowledge

### **PREREQUISITES**

Participants should have gone through training in traditional telecommunications systems and not necessarily IP networking.

### **DURATION**

The course shall be conducted for duration of ten days.

### **OBJECTIVES OF THE WORKSHOP**

The workshop aims to assist participants to gain a sound, blended theoretical and practical understanding of IP networking and data communications. In particular, the participants should be able to do the following:

- ❑ Setup a simple peer-to-peer network
- ❑ Explain the OSI reference model and TCP/IP model
- ❑ Design Local Area Networks and Wide Area Networks
- ❑ Design an IP Addressing structure to suit various network requirements
- ❑ Explain various switching technologies and design and configure VLANs
- ❑ Design and Configure RIP and basic EIGRP and single area OSPF routing
- ❑ Explain design considerations made when selecting routing protocols
- ❑ Explain the need for Spanning Tree protocol and perform configurations
- ❑ Implement basic security using access control lists
- ❑ Perform basic configurations for WAN technologies such as Frame Relay, ISDN, ATM, DSL
- ❑ Setup a basic IEEE-802.11 LANs



## **CONTENTS**

- ❑ Networking fundamentals
- ❑ Cabling LANs and WANs
- ❑ Ethernet Technologies & Switching
- ❑ TCP/IP and Addressing
- ❑ IP addressing, Planning, subnetting, VLSM
- ❑ Router configuration
- ❑ Management of Router operating system software
- ❑ IP routing – distance vector and link state routing
- ❑ IP Routing Protocols (RIP, EIGRP)
- ❑ Classless Routing
- ❑ Basic Access control with routers
- ❑ Switching concepts and configurations
- ❑ Spanning-Tree Protocol
- ❑ Virtual LAN Technology
- ❑ Scaling Networks with NAT ,PAT and DHCP
- ❑ Introduction to WANS (Frame Relay, ISDN, ATM DSL)
- ❑ Wi-fi – IEEE 802.11 LANS

## **LABORATORY EXERCISES**

The course will be a mixture of lectures and practical exercises based on Cisco routers and switches.

## **OTHER COURSES**

This course prepares students for the following courses:

- ❑ IP Networking for Service Provider – Advanced

**[Register Now!!](#)**

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