

# Essentials of IPv6

*The key building block of the next generation Internet*

## Overview

The Internet Protocol has been deployed for coming close to 30 years in its current format, IP version 4. This version contains many legacy features that are not required any more, or need to be updated to meet the demands of next generation networks. IP version 6 is a new version of the protocol which addresses many of these issues, including support for security and mobility. The massive growth in both the internet and the use of IP was never anticipated or considered in the original design, so one problem that has surfaced is the rapid erosion of address space for IPv4. IPv6 increases this address space to provide a virtually inexhaustible supply of addresses. This course presents a simple overview of the key aspects of IPv6, addressing the issues with it with some practical examples of its use.

## Who can benefit

This program is designed to provide those working in the communications environment with an overview of issues and key aspects of IPv6. In particular it is useful for those who are the decision makers within the organization.

## Pre requisite knowledge

None

## Outline

### Introduction

- History of IPv4
- Why is IP so important for Telcos?
- IPv4 weaknesses
- We've run out of addresses!
- Can we reuse IPv4?
- Rationale for IPv6
- Key bodies & organizations: IETF, IANA/APNIC, IPv6 Forum, National regulators
- What are the strategies for migrating to IPv6?
- Where will IPv6 be used in Telco networks?
- Internet support for IPv6
- Is migration costly?
- How does it impact the customer?
- IPv6 global deployment status

### Review of IPv4

- The IPv4 protocol suite
- IP addressing & subnetting
- IPv4 applications to Telco environment
- Public, private addressing and address translation
- Key IPv4 applications

### Key IPv6 Features

- What does "more addresses" mean?
- What are the different types of address?
- IPv6 security framework
- Security caveats
- Quality of Service – improving customer experience
- Comparison with IPv4 features

## IPv6 Address Management

- How are addresses configured
- Differences between IPv4 and IPv6 address management
- Stateful autoconfiguration
- Stateless autoconfiguration
- DHCP Prefix Delegation
- No more NAT – what does it mean for applications & services

## IPv6 Deployment

- Operating system support
- IPv6 in Windows
- IPv6 in UNIX/Linux and MAC
- Mobile device support
- CPE device support
- Applications & IPv6: web & email
- Emerging applications for IPv6
- Domain Name System and IPv6

## IPv4 / IPv6 migration and coexistence

- What is dual Stacking IPv6 & IPv4
- Tunnelling mechanisms
- Translation methods
- 6rd and DS Lite
- Tunnel brokers
- Testing hardware and software
- IPv6 conformance guidelines
- Service providers IPv6 services
- Formulating a transition strategy
- Service provider case study

## IPv6 Demonstrations

- Showing your IPv6 address information
- Autoconfiguring with Windows – whether we want it or not!
- What's hidden?
- Using a tunnel
- IPv6 web access – is it any different?
- Video streaming with IPv6

DURATION 1 day

MAXIMUM CLASS SIZE 12