Introduction to **IPv6** (1 day)

A technical overview of the Next Generation Internet Protocol – IPv6

Relevant Platforms:
- **Cisco IOS**
- **Linux (all distributions)**
- **Unix**
  - **AIX**
  - **HP-UX**
  - **Solaris**
- **FreeBSD**
- **Windows**
  - **Windows Server 2008 R2**
  - **Windows 7**
  - **Windows Vista**
  - **Windows XP**
  - **Windows Server 2003**
  - **Windows 2000**

You will learn:
- What IPv6 is
- The reasons that IPv6 is important to your business
- The differences between IPv4 and IPv6
- How IPv6 works
- The new features of IPv6, including Quality of Service and Security
- In what way IPv6 can benefit businesses and change the way they use their network.
- The current status of IPv6 Development
- Changes to common network services with IPv6
- Auto-configuration features of IPv6
- What is involved in migrating to IPv6

Course Benefits
IPv6 is the result of many years of research and activity by the international Internet community. IPv6 provides increased addressing space, improved routing, better security and support for new applications.

The implementation of IPv6 is inevitable and will impact on all companies that maintain, implement or use IP networks.

In this short course, you will learn about the main features of IPv6 and how it will affect IP networks. Enabling you to determine how IPv6 will impact your organisation, and helping you to plan a migration strategy.

Demonstrations will show how IPv6 works, how to implement IPv6 and IPv6 network services and applications.

Who Should Attend
This course is ideal for IT managers and directors, strategists, network consultants, development managers and anyone who requires a brief overview of IPv6.

Some knowledge of general networking concepts is assumed. IPv4 is reviewed as it is compared and contrasted with IPv6, so only limited technical knowledge is necessary.

Course Contents

Introduction - The Need for IPv6
- History of IP
- The problems with IPv4
- Address space
- Functionality
- Comparison of IPv4 and IPv6

IPv6 Protocol Basics
- IPv6 datagram header
- IPv6 protocol features
- IPv6 addressing & prefixes
- Extension headers in IPv6
- ICMPv6

Autoconfiguration of IPv6
- IPv6 Auto-configuration methods
- IPv6 Link-Local Addresses
- Neighbour Discovery in IPv6
- Router Discovery in IPv6
- DHCPv6
- IPv6 Router Renumbering

Internetworking IPv6
- IPv6 Routing Tables
- IPv6 path MTU discovery
- Neighbour reachability in IPv6
- IPv6 dynamic routing
- Router renumbering with IPv6

IPv6 Security QoS and Mobility
- What is network security?
- IPv6 security threats
- IPv6 security features
- IPv6 IPSec
- IPSec AH & ESP headers
- Transport and tunnel modes
- IPSec security associations
- What is quality of service?
- Traffic class
- IPv6 flow label
- DiffServ, IntServ & RSVP
- ISAKMP & IKE
- The need for mobile IPv6
- Link layer mobility
- Mobile IPv4 vs mobile IPv6
- Mobile IPv6 in operation

Transport Layer and IPv6
- Operation of TCP and UDP
- Ports and sockets
- Changes to TCP & UDP

IPv6 and DNS
- AAAA, PTR, A6 & DNAME RRs
- ip6.arpa. & ip6.int.
- IPv6 in BIND and MS DNS servers

The Programming Interface
- IPv6 programming basics
- IPv4 socket API vs IPv6 socket API
- Changes to the socket API
- Porting to IPv6
- Sockets & winsock APIs
- IPv6 support in Perl, Java, C# etc

Migrating to IPv6
- IPv4 and IPv6 compatibility
- Overview of transition mechanisms
- Dual stacks
- Compatibility addresses
- 6to4 & 6over4
- ISATAP, Teredo & DSTM
- Tunnel brokers
- Protocol translators
- BIS and BIA
- Compatibility and DNS
- Windows/Active Directory and IPv6
- What when and how to migrate
- Reasons to Migrate
- The current status of IPv6
- Predictions

Demonstrations
During the course there will be a number of short demonstrations.

Demonstrations will be on the major operating systems (Windows, Unix and Linux) as well as Cisco IOS.

The demonstrations will show:
- Basic IPv6 configuration
- Auto-configuration of IPv6
- IPv6 Router configuration
- Security configuration
- IPv6 DNS operation
- Network monitoring of IPv6

The Trainers
All our trainers are practising network consultants with extensive experience with IPv6 networking on Unix and Windows in large commercial environments. They are ideally suited to bringing you the highest quality of training.

The Company
For further information about the training and our company see our web-site at www.erion.co.uk