

# IPv6 for Software Developers (4 days)

Understanding and developing software using the Next Generation Internet Protocol

## Relevant Platforms:

- Linux
- Unix
- Windows
- C, C++

## You will learn how to

- Configure basic IPv6 networking and services
- Implement new networking software and devices to support IPv6
- Use IPv6 addressing
- Implement network security using IPSec.
- Write code using the new socket calls and data structures required for IPv6
- Plan and manage the upgrade of networking software from IPv4 to IPv6
- Use tools to migrate code to IPv6.
- Test software on IPv6 networks

## 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 course, you will learn how the IPv6 protocols differ from IPv4. How your organisation will need to migrate to IPv6. The changes that have been made to networking API's and system calls. How to migrate software to IPv6. This course provides extensive hands-on sessions and in-depth technical analysis.

## Who Should Attend

This course is ideal for Unix and Windows software developers working in C and C++, who use the sockets interface.

A good knowledge of general networking concepts is assumed. IPv4 is reviewed as it is compared and contrasted with IPv6, but experience of IPv4 is very useful.

(We can provide a one-day IPv4 refresher course for those who require it.)

## Course Contents

### Introduction

The problems with IPv4  
Internet growth  
The solution - IPv6  
What does this mean for us?

### The IPv6 Protocol Basics

The aims  
IPv6 datagram header  
IPv6 Addressing  
Optional headers  
Changes to higher layers

### Autoconfiguration

Stateless & Stateful  
DHCPv6  
Link-Local Addresses  
Duplicate Addresses  
Neighbour Discovery  
Router Discovery

### Routing and Internetworking

Network Addressing  
Routing Protocols  
Fragmentation

### IPv6 Security

IPSec  
API changes

### Transport Layer

Changes to TCP & UDP  
Implications for coding

### Name Services

DNS and IPv6  
BIND on Unix and Linux  
DNS on Windows  
New resolver API

### Application Changes

Basic Internet commands  
Ping, telnet, FTP  
Mail and Web-Servers

### The Programming Interface

Sockets library

Winsock library  
Overview of Perl and other languages

### Migrating code to IPv6

Migration tools  
Testing

### IPv6 new features and coding

Overview of new features  
Coding to use security  
Coding to use Quality of Service  
Mobile IPv6 issues

## Practicals

During the course there will be many opportunities for hands-on work. Each module has detailed exercises associated with it. Every delegate has at least one server provided for his or her own use during the course.

Practicals are run on a mixture of Linux, and Windows. Delegates will have the opportunity to choose their preferred platform or platforms.

Hands-On includes:

- Upgrading to IPv6
- Basic IPv6 Configuration
- Writing simple IPv6 networking applications
- Analysis of code to convert from IPv4 to IPv6
- Writing code to use security features of IPv6
- Writing code to use quality of service features 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

<http://www.erion.co.uk/>

