

**Course Duration: 2 days**

# Multi-Protocol Label Switching

**BY NEIL WILSON**

## Course Description:

IP has almost universally been adopted as the network protocol of choice in both public and private networks. It is a simple and robust protocol but its connectionless nature makes traffic engineering and quality of service difficult to provide in pure IP backbones. In the past the solution to the problem has been to carry IP packets over ATM backbones. Now Multi-Protocol Label Switching (MPLS) offers an alternative backbone technology. By placing IP packets inside MPLS frames, implementers hope to reap the benefits of ATM connection oriented service while maintaining the simplicity of connection less IP and reducing the perceived overhead of ATM. MPLS is also being applied beyond IP applications to also become an infrastructure for layer-2 services such as Metro-Ethernet.

This 2-day session is targeted at planners, implementers and advanced users who need to make decisions regarding this versatile networking tool.

## Course Objectives, Issues and Topics Covered:

- *Introduce the concept of label switching*
- *Detail MPLS features and benefits*
- *Examine applications for MPLS technology to IP networks*
- *Applying MPLS technology as a layer-2 service platform*

**7–8 June 2011, Frankfurt**

## Course Outline

### IP Routing without MPLS

- How we got here
- Connectionless (stateless) Operation
- Hop by Hop Forwarding
- Resilience & Scalability

### Multi-Protocol Label Switching Concepts

- A new paradigm for IP Routing
- Connection Oriented IP
- Performance Benefits
- Traffic Engineering Benefits
- Security Benefits
- MPLS Terminology

### Labels Instead of Addresses

- Logical Labels versus End Point Addresses
- Nested Labels
- Label Scalability

### Label Assignment Protocols

- Label Distribution Protocol (LDP)
- Constraint Based LDP (CR-LDP)
- LDP CR-LDP Inter-working
- RSVP-TE and Modified BGP

### Providing IP VPN Service over an MPLS Backbone

- IP Tunnelling
- MPLS Tunnelling
- Comparing MPLS Tunnelling to IPSec

### Providing Layer-2 Services over an MPLS Backbone

- Point-to-Point connectivity services
- Virtual Private LAN service (VPLS)
- Metro Ethernet service over MPLS

### Traffic Engineering over an MPLS Backbone

- IP Quality of Service
- Managing Congestion
- MPLS and Differentiated Service

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## Leader's Profile

**N**eil Wilson holds an honors degree in electronics from the University of London and has been working in the telecommunication industry for 35 years.

He spent 14 years developing microcomputer and communication technologies at a major industry research and development lab in the UK. There he did early work in the application of microprocessors in first generation digit PBXs. He went on to develop high reliability distributed microcomputer architectures for real time control application. This led to application of LAN and early IP networks technology. He was involved in the development and early application of FDDI, the first high speed fiber optic LAN standard. In the 1980s he contributed to several European Commission sponsored RACE projects focusing on developing ATM technology.

Since 1989 Neil has been an architect and designer for a major global financial messaging and network service provider. He has been responsible for ensuring the highest level of security and reliability of networking solution for the global banking community. Over the last 4 years Neil was the lead architect in the design and implementation of a global MPLS backbone replacing a highly successful and trusted ATM solution that was end of life.

Neil has a history of promoting advanced technologies and educating managers and engineers within the organization in which he has worked.

## Why you should attend

*By attending this seminar you will learn:*

- What new features MPLS offers to IP based networks
- What the major applications for MPLS are
- Why network providers are interested in MPLS as a revenue source
- What traffic engineering capabilities MPLS provides
- How IP VPNs are provided over MPLS backbones
- How MPLS backbones support layer-2 services

The seminar notes have been written to minimize the student's need to take notes and are useful long after the class.

Questions encouraged, discussed, answered

## REGISTRATION DETAILS

To retain the information overleaf, please photocopy this form before completing and returning it by mail or facsimile to: HM Training Solutions, Falkenstraße 6, D-63820 Elsenfeld. – Telephone +49 (60 22) 50 82 00, Facsimile +49 (60 22) 5 08 99 99

### Three ways to Register

- By post –** Please complete and return the registration form below.
- By fax –** You may fax the registration form to:  
HM Training Solutions +49 (60 22) 5 08 99 99.
- By e-mail –** Info@hmtrainingsolutions.com

### Registration fees

The seminar must be paid before attendance.  
€ 1270 +19% VAT

### Joining instructions

Your booking will be confirmed by dispatch of a letter containing full event and location details. Lunch, Coffee breaks and the seminar documentation are included in the seminar price.

### Change of Terms

It may be necessary for reasons beyond our control to alter the venue, timetable or content of this seminar. Fees will be refunded should any event be cancelled by HM Training Solutions. We accept no liability for any other cost.

### Cancellations

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### Accommodation

Hotel information will be sent to you with our letter of confirmation upon receipt of your registration.

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**The number of delegates is limited.  
Therefore please immediately return  
this booking form!**

## REGISTRATION FORM

### Multi-Protocol Label Switching

(M 38) 7–8 June 2011, Frankfurt

- Please reserve \_\_\_\_\_ places at a cost of  
€ 1270 +19% VAT

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