IPv6 Essentials for IT Professionals Course

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Overview

Tachyon Dynamics has produced a quick, in-depth and multifaceted IPv6 training course for IT professionals in the industry. It includes hands-on content for executive level managers, network engineers, server and systems engineers, enterprise architects and Information Assurance engineers.

This two-day (8 hour) course is hosted on client's site with a mobile IPv6 training lab.

Content

Tachyon Dynamics' course provides IPv6 essentials for varying levels of IT professionals in one single class. These modules are constructed in the following syllabus:

- **IPv6 Overview**: The content represented in blue provides basic to highly technical protocol information and familiarity in IPv6. See Course Description below.

- **IPv6 for Network Engineers**: The content represented in green provides detailed technical knowledge and hands-on lab work for network engineers focused in a Cisco routing and switching environment. See Course Description below.

- **IPv6 for Server/Systems Engineers:** The content represented in red provides basic to highly technical knowledge and hands-on lab work for systems and server engineers focused in a Microsoft Active Directory and Server 2008 environment. See Course Description below.

- **IPv6 for Information Assurance (IA) and Cyber Security Professionals**: The content represented in purple provides basic to highly technical knowledge and hands-on lab work for IA professionals focused on IPv6 threats/vulnerabilities and DoD-specific IPv6 content. See Course Description below.

IPv6 Essentials for IT Professionals Course Descriptions

Module 1: IPv6 Overview

This is the course for your technical managers, engineers, architects, and IA technicians - the individuals that have to answer the tough questions. In this case, the question is "What is IPv6?" and "Where did IPv5 go?" Building upon this information on the basics, this course expands on:

- History of IPv6 – Discover the standards maturity IPv6 took from SIPP to IPng and finally IPv6. Ever wonder why the address is 128-bits and not 64 or 160-bits?

- Basic IPv6 Intro – Ever wonder what all the headers fields and extension headers were for and what they looked like? This intro will get the student very familiar with the IPv6 packet.

- IPv6 addressing – Lear what the differences are with IPv4 and what is it used for. Also, lean what each address type does and how it is obtained.

- Key drivers for IPv6 – Learn what the advantages and different scenarios that IPv6 will bring to a network from multicasting and IPsec.

Module 2: IPv6 for Network Engineers

This is the course for network engineers and architects. We explore how IPv6 works at Layer 3, how routing and switching are affected, and how Cisco implements IPv6 in configuration.

- IPv6 Routing Protocols – Learn OSPFv3 and BGP-MP. Discuss IS-IS and RIPv2.

- Basic IPv6 Cisco Configurations – Understand how to configure some basic and advanced configurations on a Cisco router (host interface/RA, ACLs, OSPFv3, HSRPv2, etc.)

- Advanced ICMPv6 – Basic and advanced instruction on how ICMPv6 is used at layer 3 from Router Advertisements, Neighbour Discovery, Path MTU Discovery, etc. Lab exercises with common Cisco "show" commands.

- Multicast Listener Discovery (MLD) and MLD Routing – From basic MLD instruction to learning how MLDv2 routing works and how it's used in conjunction with PIM and enhanced Rendezvous Points (eRP).

Module 3: IPv6 for Server and Systems Engineers

This is the course for your server, systems and virtualization/cloud engineers and architects. We explore how IPv6 works at Layers 4-7 and how each function in the Microsoft Windows Server 2008 Active Directory realm is affected from DNS, DHCPv6 and Kerberos with plenty of practical application and hands-on instruction building upon the lab configurations in the

IPv6 for Network Engineers.

- IPv6 and Microsoft Windows Server 2008 – Explore the new TCP/IP and TCP/IPv6 stacks in Server 2008, how to enable and disable key functions in the "net sh" shell, and learn how interdependent IPv6 is in Server 2008.

- IPv6 and Microsoft Windows Vista/7– Explore the new TCP/IP and TCP/IPv6 stacks in Windows 7, how to enable and disable key functions in the "net sh" shell, explore Stateless Address Autoconfiguration (SLAAC) and DHCPv6 client functions, and learn how interdependent IPv6 is in Windows Vista/7.

- Advanced ICMPv6 – Build on how ICMPv6 is used at layer 3 from Router Advertisements, Neighbour Discovery, Path MTU Discovery, etc. Lab exercises with common Cisco "show" commands.

- IPv6 Active Directory and DNS – Learn detailed technical configurations (hands-on instruction) with best practice AD and DNS implementation with IPv6.

- DHCPv6 Configuration – This module explores the detailed configurations needed for DHCPv6 to function correctly with DHCPv6 relays, DHCPv6 scope configurations, reservations, and dynamic DNS integration with Active Directory.

Module 4: IPv6 for IA and Cyber Security Professionals

This is the course for IA and security professionals. We explore how IPv6 affects security, what precautions to take, and how to harden the protocol in networking and server environments. Some hands-on demonstrations with various IPv6 attack tools (penetration tools).

- Top IPv6 Security Vulnerabilities – Learn how exploitable IPv6 is today and how to secure it by discussing proper hardening procedures.

- IPv6 Penetration Testing – Explore some of the available tools to attack and evaluate and IPv6-enabled network. A CD of tools will be available at the conclusion of the course.

- IPv6 in the DoD – Learn how IPv6 is spelled out in the current DIACAP (DoD Information Assurance Certification and Accreditation Process). Explore the various Security and Technical Evaluation Guidance (STIGs) and where IPv6 fits into each before, during and after transition. See how the DoD IPv6 IA Milestone Objective Guidance documents 1,2 and 3 are being used.

Course Prerequisites and Student Equipment

It is recommended that students attending the detailed technical courses have a mid-level familiarity commensurate within their field. For example, a network engineer should at least have the work equivalence to a CCNA and server engineers should hold at least an MCSA.

Each student will receive a copy of Sylvia Hagen's book IPv6 Essentials, Second Edition as part of the course package.

For the hands on instruction, student workstations **are not provided** so each student must be in class prepared with the following:

- a Windows Vista/7 laptop

- have Wireshark installed [1]

- have IPv6 enabled [1]

- have an SSH client installed (i.e. Putty)

- have the capability to dis-join and join the workstation to another domain [1]

Costs and Fees

The following costs are based on 5-10 students two 8-hour classes covering the above content. Please get in touch with us for a customized training plan and pricing.

Contact

For any questions, concerns or to speak to someone at Tachyon Dynamics regarding special needs or custom training content please email Training@tachyondynamics.com.

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[1]   We recommend the laptops are not government or DoD-issued as this may provide a security issue