

Certified IPv6 Engineer (MTCIPv6E)



OUTCOMES

By the end of this training session, the student will be familiar with IPv6 protocol and be capable to implement IPv6 network.

TARGET AUDIENCE

Network engineers and technicians wanting to deploy and support IPv6 based:

- Corporate networks
- Client CPEs (WISPs and ISPs)

DURATION

2 days

COURSE PREREQUISITES

MTCNA certificate

CURRICULAR CONTENT



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Module 1 Introduction to IPv6

- IPv6 address
 - Differences between IPv4 and IPv6
- Address distribution
- Address notation
 - SLAAC IPv6 address creation (EUI-64)
- Subnetting
- Address types
 - Link-local
 - Global
 - Multicast
 - Anycast
 - Unique local
 - Special addresses
- Reserved IPv6 addresses
- Module 1 laboratory

Module 2 IPv6 Protocol

- Address configuration
 - Auto-configuration
 - Stateless – SLAAC, DHCPv6
 - Stateful – DHCPv6
- Neighbor discovery protocol
- IPv6 routing basics
 - IPv6 prefix
- Module 2 laboratory

Module 3 IPv6 Packet

- IPv6 header
 - Header field description
 - Next header (daisy chaining)
 - Fragmentation
- Path MTU discovery
- Module 3 laboratory

Module 4 IPv6 Security

- ICMPv6
- Neighbor discovery protocol
 - Router solicitation
 - Router advertisement
 - Neighbor solicitation
 - Duplicate address detection
 - Neighbor unreachability detection
 - Neighbor advertisement
 - 'Managed address configuration' flag
 - 'Other configuration' flag
 - Redirect
- MLD (Multicast Listener Discovery)
- Temporary addresses
- Firewall
- IPsec
 - Header only encryption (AH)
 - Data only encryption (ESP)
 - Header and data encryption (AH+ESP)
- Module 4 laboratory

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Module 5 Transition Mechanisms

- Dual stack (RIPE recommended)
- 6to4
- 6RD
- Teredo
- DS-lite (Dual stack lite)
- Module 5 laboratory

Module 6 Interoperability

- IPv6 pool
- DHCP
 - DHCP PD server
 - DHCP PD client
 - DHCPv6 client
- IPv6 tunnels
 - IPIPv6
 - EoIPv6
 - GRE6
- IP version agnostic
 - DNS
 - Reverse DNS
 - NTP
 - PPP IPv6 support
- Routing
 - Using global addresses as in IPv4
 - Using link-local addresses as in IPv6
- RouterOS features not yet available for IPv6
 - NAT
 - HotSpot
 - RADIUS integration
 - Policy routing
 - DHCPv6 server
- Tools
 - Ping
 - Traceroute
 - Torch
 - Traffic generator
 - Email
 - Netwatch
 - Traffic flow
- Module 6 laboratory