



Certified IPv6 Engineer (MTCIPv6E)

Training outline

Duration:	2 days
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: <ul style="list-style-type: none">• Corporate networks• Client CPEs (WISPs and ISPs)
Course prerequisites:	MTCNA certificate

Title	Objective
<p>Module 1 Introduction to IPv6</p>	<ul style="list-style-type: none"> • IPv6 address <ul style="list-style-type: none"> • Differences between IPv4 and IPv6 • Address distribution • Address notation <ul style="list-style-type: none"> • SLAAC IPv6 address creation (EUI-64) • Subnetting • Address types <ul style="list-style-type: none"> • Link-local • Global • Multicast • Anycast • Unique local • Special addresses • Reserved IPv6 addresses • Module 1 laboratory
<p>Module 2 IPv6 Protocol</p>	<ul style="list-style-type: none"> • Address configuration <ul style="list-style-type: none"> • Auto-configuration • Stateless – SLAAC, DHCPv6 • Stateful – DHCPv6 • Neighbor discovery protocol • IPv6 routing basics <ul style="list-style-type: none"> • IPv6 prefix • Module 2 laboratory
<p>Module 3 IPv6 Packet</p>	<ul style="list-style-type: none"> • IPv6 header <ul style="list-style-type: none"> • Header field description • Next header (daisy chaining) • Fragmentation • Path MTU discovery • Module 3 laboratory

<p>Module 4 IPv6 Security</p>	<ul style="list-style-type: none">• ICMPv6• Neighbor discovery protocol<ul style="list-style-type: none">• Router solicitation• Router advertisement• Neighbor solicitation<ul style="list-style-type: none">• Duplicate address detection• Neighbor unreachability detection• Neighbor advertisement<ul style="list-style-type: none">• 'Managed address configuration' flag• 'Other configuration' flag• Redirect• MLD (Multicast Listener Discovery)• Temporary addresses• Firewall• IPsec<ul style="list-style-type: none">• Header only encryption (AH)• Data only encryption (ESP)• Header and data encryption (AH+ESP)• Module 4 laboratory
<p>Module 5 Transition Mechanisms</p>	<ul style="list-style-type: none">• Dual stack (RIPE recommended)• 6to4• 6RD• Teredo• DS-lite (Dual stack lite)• Module 5 laboratory

<p>Module 6 Interoperability</p>	<ul style="list-style-type: none">• IPv6 pool• DHCP<ul style="list-style-type: none">• DHCP PD server• DHCP PD client• DHCPv6 client• IPv6 tunnels<ul style="list-style-type: none">• IPIPv6• EoIPv6• GRE6• IP version agnostic<ul style="list-style-type: none">• DNS• Reverse DNS• NTP• PPP IPv6 support• Routing<ul style="list-style-type: none">• Using global addresses as in IPv4• Using link-local addresses as in IPv6• RouterOS features not yet available for IPv6<ul style="list-style-type: none">• NAT• HotSpot• RADIUS integration• Policy routing• DHCPv6 server• Tools<ul style="list-style-type: none">• Ping• Traceroute• Torch• Traffic generator• Email• Netwatch• Traffic flow• Module 6 laboratory
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