



# MIKROTIK

## ACADEMY

# MTCUME outline

CERTIFIED USER MANAGEMENT ENGINEER



Duration: 2 days

Outcomes: This course is aimed at Network engineers and technicians wanting to deploy and support large-scale corporate networks. By the end of this training session, the student will be able to securely manage large-scale RouterOS based network with centralised user management. All participants who pass the exam will receive an official MikroTik MTCUME certification.

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Target Audience: Network engineers and technicians wanting to deploy and support large scale corporate networks with centralised user management.

Course prerequisites: A good working knowledge of TCP/IP Basics is required. You must be MikroTik MTCNA Certified (current or expired certificate is fine) to sit this course.

Title	Objective
<p><b>Module 1</b> PPP</p>	<ul style="list-style-type: none"> <li>• PPP Profile <ul style="list-style-type: none"> <li>• Local and remote addresses</li> <li>• Incoming and outgoing filters</li> <li>• Address list</li> <li>• Change TCP-MSS</li> <li>• Use encryption</li> <li>• Session timeout</li> <li>• Rate-limit configuration</li> <li>• Only-one setting</li> </ul> </li> <li>• PPP Secret <ul style="list-style-type: none"> <li>• Service and Profile</li> <li>• Local and Remote address</li> <li>• Routes configuration</li> <li>• Limit Bytes In/Limit Bytes Out configuration</li> </ul> </li> <li>• IP Pool <ul style="list-style-type: none"> <li>• Set addresses ranges</li> <li>• Next pool options</li> </ul> </li> <li>• <b>Module 1 laboratory</b></li> </ul>
<p><b>Module 2</b> PPTP, LT2P</p>	<ul style="list-style-type: none"> <li>• PPTP and L2TP <ul style="list-style-type: none"> <li>• Theory</li> <li>• Comparison</li> </ul> </li> <li>• PPTP Client configuration <ul style="list-style-type: none"> <li>• Client setup</li> <li>• Set profile</li> <li>• Dial on demand</li> <li>• Add default route and static routes</li> </ul> </li> <li>• PPTP Server configuration <ul style="list-style-type: none"> <li>• Enable server</li> <li>• Setup profiles</li> <li>• Add clients to PPP secret</li> <li>• Set static interfaces for clients</li> </ul> </li> <li>• L2TP Client configuration <ul style="list-style-type: none"> <li>• Client setup</li> <li>• Configure profile</li> <li>• Dial on demand</li> <li>• Add default route and static routes</li> </ul> </li> <li>• L2TP Server configuration <ul style="list-style-type: none"> <li>• Enable server</li> <li>• Set profiles</li> <li>• Add clients to PPP secret</li> <li>• Set Static interfaces for clients</li> </ul> </li> <li>• <b>Module 2 laboratory</b></li> </ul>

<p><b>Module 3</b> PPPoE</p>	<ul style="list-style-type: none"> <li>• PPPoE server and client <ul style="list-style-type: none"> <li>• Theory</li> <li>• Usage environment</li> <li>• Comparison to other PPP protocols</li> </ul> </li> <li>• PPPoE client configuration <ul style="list-style-type: none"> <li>• Client setup</li> <li>• Select interface</li> <li>• Service name</li> <li>• Configure profile</li> </ul> </li> <li>• PPPoE Server configuration <ul style="list-style-type: none"> <li>• Enable PPPoE server</li> <li>• Set profiles</li> <li>• Add clients to PPP secret</li> <li>• Add Static interfaces for clients</li> <li>• Secure server by removing any IP address from PPPoE server interface</li> </ul> </li> <li>• Encryption <ul style="list-style-type: none"> <li>• Set profile without encryption</li> <li>• Set profile with encryption</li> <li>• Configure PPPoE client without encryption</li> </ul> </li> <li>• Interface ECMP <ul style="list-style-type: none"> <li>• Set ECMP routes for PPP interfaces</li> </ul> </li> <li>• <b>Module 3 laboratory</b></li> </ul>
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<p><b>Module 4</b> Bridging</p>	<ul style="list-style-type: none"> <li>• L2TP and EoIP <ul style="list-style-type: none"> <li>• Set L2TP tunnel</li> <li>• Set EoIP tunnel</li> <li>• Create bridge and add necessary interfaces to ports</li> <li>• Confirm you have Ethernet connectivity between remote nodes</li> </ul> </li> <li>• L2TP and VPLS <ul style="list-style-type: none"> <li>• Set L2TP tunnel</li> <li>• Set VPLS tunnel</li> <li>• Create bridge and add necessary interfaces to ports</li> </ul> </li> <li>• L2TP and BCP <ul style="list-style-type: none"> <li>• Set L2TP tunnel</li> <li>• Use BCP to bridge PPP interface</li> <li>• Add to bridge necessary interface</li> </ul> </li> <li>• Multilink Protocol <ul style="list-style-type: none"> <li>• Enable multilink by specifying correct MRRU settings</li> <li>• Disable mangle rules for MSS adjustment</li> </ul> </li> <li>• MLPPP (optional) <ul style="list-style-type: none"> <li>• Setup client and specify multiple interfaces for one client</li> <li>• Set PPPoE server with MLPPP support</li> </ul> </li> <li>• <b>Module 4 laboratory</b></li> </ul>
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<p><b>Module 5</b> IPSec</p>	<ul style="list-style-type: none"><li>• Introduction<ul style="list-style-type: none"><li>• Theory and concepts</li><li>• Comparison to other VPN protocols</li></ul></li><li>• IPSec Peer<ul style="list-style-type: none"><li>• Use different authentication methods</li><li>• IPSec exchange modes</li><li>• Encryption and hash algorithms</li><li>• NAT-Traversal</li><li>• Lifetime and lifebytes</li><li>• DPD protocol</li></ul></li><li>• Policy<ul style="list-style-type: none"><li>• IPSec protocol and action</li><li>• Tunnels</li><li>• Generate dynamic Policy</li></ul></li><li>• Proposal<ul style="list-style-type: none"><li>• Encryption and authentication algorithms</li><li>• Lifetime</li><li>• PFS</li></ul></li><li>• Installed-SA<ul style="list-style-type: none"><li>• Flush SA</li></ul></li><li>• Create IPSec between two routers with NAT<ul style="list-style-type: none"><li>• Set peer</li><li>• Set policy</li><li>• Set NAT rules</li><li>• Confirm the secure link is established</li></ul></li><li>• <b>Module 5 laboratory</b></li></ul>
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<p><b>Module 6</b> HotSpot</p>	<ul style="list-style-type: none"> <li>• Introduction <ul style="list-style-type: none"> <li>• Concepts</li> <li>• Usage environments</li> <li>• Setup HotSpot with default settings</li> </ul> </li> <li>• HotSpot Login Methods <ul style="list-style-type: none"> <li>• HTTP CHAP/PAP</li> <li>• MAC</li> <li>• Cookie</li> <li>• HTTPS</li> <li>• Trial</li> <li>• RADIUS</li> </ul> </li> <li>• Users <ul style="list-style-type: none"> <li>• Add users</li> <li>• Set MAC-address for user</li> <li>• Set MAC-address for username</li> <li>• Limit Uptime and Limit Bytes In/Out</li> <li>• Reset limits for user</li> </ul> </li> <li>• Monitor Users <ul style="list-style-type: none"> <li>• Host Table</li> <li>• Active Table</li> <li>• SNMP for users</li> </ul> </li> <li>• Profile <ul style="list-style-type: none"> <li>• Keepalive timeout</li> <li>• Shared users</li> <li>• Rate-Limit</li> <li>• Address-list</li> <li>• Incoming/Outgoing filter</li> <li>• Incoming/Outgoing Packet Mark</li> </ul> </li> <li>• Bypass HotSpot <ul style="list-style-type: none"> <li>• Walled garden</li> <li>• Walled garden IP</li> <li>• IP binding</li> </ul> </li> <li>• Customize HotSpot <ul style="list-style-type: none"> <li>• Advertisement</li> <li>• Customize pages</li> </ul> </li> <li>• <b>Module 6 laboratory</b></li> </ul>
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<p><b>Module 7</b> RADIUS</p>	<ul style="list-style-type: none"><li>• RADIUS client<ul style="list-style-type: none"><li>• Add radius client</li><li>• Set service</li><li>• Use RADIUS for the specific service</li></ul></li><li>• RADIUS server</li><li>• User manager<ul style="list-style-type: none"><li>• Install the latest user-manager</li><li>• Add routers</li><li>• Add users</li><li>• Set profile</li></ul></li><li>• RADIUS incoming</li><li>• <b>Module 7 laboratory</b></li></ul>
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