

# MikroTik MTCSWE Training Course

**Duration:** 3 days

**Outcomes:** By the end of this training session, the student will be familiar with RouterOS Layer 2 forwarding software and RouterBOARD hardware switch chip features and bridge features. The student will be able to configure and control Layer 2 forwarding using MikroTik networking solutions.

**Target audience:** Network engineers and technicians wanting to deploy and support Layer 2 based networks.

**Course prerequisites:** MTCNA certificate

**Suggested reading:** Search for 'Layer 2 networking', 'Bridging', 'Switching', 'VLAN'

## Module 1 (Introduction)

- Layer 2 forwarding concepts
- Unicast, multicast and broadcast traffic
- MAC learning in bridges and switches
- Interface settings
- RouterOS bridge overview
- RouterBOARD switch chip overview
- RouterBOARDS with basic switch chips
- Cloud Router Switch (CRS) series devices with advanced switch chips
- SwitchOS (SwOS) brief overview
- Module 1 laboratory

## Module 2 (MTU)

- MTU
- RouterOS bridge overview
- L2MTU
- Jumbo frames
- Potential MTU issues
- Module 2 laboratory

## Module 3 (VLAN)

- 802.1Q and 802.1ad VLAN overview and tagging concepts
- RouterOS VLAN interfaces
- Port based VLAN (VLAN bridging)
- Inter-VLAN routing ('router on a stick')
- VLANs in basic switch chips
- Port based VLAN
- VLANs in bridge interfaces
- Port based VLAN
- MAC based VLAN
- Protocol based VLAN
- QinQ (802.1ad)
- QinQ implementation with bridge VLAN filtering
- QinQ implementation with VLAN interfaces
- Module 3 laboratory



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## Module 4 (Spanning Tree Protocol)

- Spanning tree protocol (STP) concepts
- STP bridge priority
- STP port path cost
- STP and RSTP comparison
- Multiple Spanning tree (MSTP) concepts
- MSTP definition
- MSTP regions
- CST/CIST
- Bridge protocol data unit (BPDU)
- Spanning tree security
- Module 4 laboratory

## Module 5 (Link Aggregation)

- RouterOS bonding
- Bonding modes
- Compatibility with other static link aggregation
- Module 5 laboratory

## Module 6 (Port Isolation)

- RouterOS bridge horizon
- Switch port isolation
- Module 6 laboratory

## Module 7 (QoS)

- Layer 2 QoS (802.1p)
- RouterOS bridge filter priority
- CRS priority configuration
- Traffic shaping
- Bandwidth limiting in bridge with queues
- Bandwidth limiting in switch chip
- Module 7 laboratory

## Module 8 (Layer 2 Security)

- IGMP snooping
- DHCP snooping
- Loop protect
- Traffic storm control
- Layer 2 firewall
- RouterOS bridge filter features
- Switch access control list
- BPDU guard
- ARP modes
- Port security
- 802.1X
- Switch security
- Module 8 laboratory

## Module 9 (PoE)

- RouterOS PoE modes + compatibility
- RouterOS PoE priority settings
- RouterOS PoE monitoring
- Module 9 laboratory

## Module 10 (Tools)

- Layer2 diagnostic tools
- Port mirroring
- Module 10 laboratory

## Module 11 (SwOS)

- Introduction to SwOS
- RouterBOARD dual-boot compatibility
- Installing SwOS
- Managing SwOS
- Config of Layer 2 Features with SwOS
- VLANs
- (R)STP
- Port trunking
- QoS
- Layer 2 security
- Module 11 laboratory

**Still Have a MikroTik Training Question?**  
**Call Our Team on 01449 888000**

