Certified Routing Engineer (MTCRE)

Training Course Outline

Duration:	2 Days
Target Audience:	Network engineers and technicians wanting to deploy and support static and/or dynamic routed networks
Prerequisites:	MTCNA Certificate (Valid or Expired)
Outcome:	By the end of this training session, students will be able to plan, implement, and debug routed MikroTik RouterOS network configurations

Course Content

Module 1: Static Routing

- More specific routes
- ECMP (Equal-Cost Multi-Path routing)
- How to force gateway over specific interface
- Gateway reachability check and route distance
- Routing mark and route policy
- Recursive next-hop and scope/target-scope usage
- Module 1 laboratory

Module 2: Point to Point Addressing

- Point to Point address configuration
- Module 2 laboratory

Module 3: VPN (Virtual Private Networks)

- What is VPN?
- Different types of VPN
- Site to site connectivity with tunnels
- IPIP, EoIP, PPTP, SSTP, L2TP, PPPoE protocols
- VLAN and its usage
- QinQ implementation
- VLAN and managed switch
- VLAN and switch chip configuration on RouterBOARDs
- Module 3 laboratory

Module 4: OSPF (Open Shortest Path First)

- What is OSPF?
- How OSPF protocol works
- Hello protocol
- Database distribution and LSA types explained
- OSPF network structure
- Areas
- Router types
- OSPF neighbors and neighbor states (DR and BDR election)
- External Route Distribution methods (type1, type2)
- Interface cost and interface types (broadcast, NBMA, etc.)
- SPT calculation algorithm
- OSPF and multicast (problems with NBMA)
- Stub, NSSA and area ranges (route aggregation)
- Virtual links, usage and limitations
- OSPF routing filters and limitations
- Module 4 laboratory

Training Format

This intensive 2-day course combines theoretical knowledge with extensive hands-on laboratory exercises. Each module includes dedicated lab time where students will configure and troubleshoot MikroTik RouterOS in real-world scenarios. Students will work with actual RouterBOARD hardware to gain practical experience with routing protocols and VPN technologies.