Meraki MR Wireless Installing, Configuring, Monitoring, and Troubleshooting v1.0 (MWA-ICMT)

This 3-day Cisco course provides students with the skills to configure, optimize, and troubleshoot a Cisco Meraki solution. Students will learn how to install and optimize Meraki MR Access Points. Students will also learn how to configure the Meraki Dashboard, troubleshoot and configure the Meraki environment and learn how to diagnose and resolve user and Network issues that may arise.

Why Attend with Current Technologies CLC

- Our Instructors are the top 10% rated by Cisco
- Our Lab has a dedicated 1 Gig Fiber Connection for our Labs
- Our Labs run up to Date Code for all our courses

Course Objectives

Following completion of this course, students will understand, Install, Configure, Monitor, and Troubleshoot the following:

- Navigate and Configure the Dashboard
- Add MX/MR/MS/MV devices to the Dashboard
- Understand and Configure Configuration Templates
- Understand and Configure Group Policies
- Manage/Configure/Integrate Users and Radius Policies
- Configure, Monitor, and Troubleshoot MR Access Points
- Monitor Meraki Network Health
- Troubleshoot devices and Connectivity

Who Should Attend

The primary audience for this course is as follows:

- IT Staff and Managers
- Network and Systems Personnel and Engineers
- Small to mid-sized organizations that require fundamental knowledge on networking terms/concepts and configuration guidance for Meraki equipment.
- This also includes organizations looking to implement remote sites, provide a guest wireless

Course Duration

3 day

Course Price

$3,495.00 or 35 CLCs

Methods of Delivery

- Instructor Led
- Virtual ILT
- On-Site

solution, and collect user analytics.

Outline

Module 0: Introduction

- Module Introduction
  - Topic List
- Lesson 1: Introductions
  - Course Goal
  - WebEx Basics
  - General Administration
  - Introductions
  - The Integrated Cisco Network
- Module Summary

Module 1: Introduction to Meraki

- Module Introduction
  - Topic List
- Lesson 1: Why Cisco Meraki?
  - Cloud Management
- Lesson 2: Meraki Product Overview
  - Meraki MS Switches
  - Meraki MR Wireless Access Points
  - Meraki MX Security and SD-WAN Appliances
  - Meraki MV Vision Security Cameras (MG and MT)
  - Meraki Systems Manager (SM)
  - Meraki MT Sensors Access Points
  - Cisco Meraki Insight
- Lesson 3: Meraki API Overview
- Lesson 4: Meraki Licensing and Support
  - Enterprise Support and Hardware Warranties
  - Cisco Meraki Documentations
- Module Summary

Module 2: Cloud Management with the Meraki Dashboard

- Module Introduction
  - Topic List
- Lesson 1: Overview of the Meraki Dashboard
  - The Cisco Meraki Dashboard
  - The Meraki Phone App
  - Dashboard: Organizational Structure
  - Meraki Dashboard Best Practices - Campus
  - Dashboard Compliance and Data Protection
  - Cloud Reliability
  - Loss of Connectivity to the Cisco Meraki Cloud
  - Safe Configuration

- o Meraki Dashboard Login (1)
- o Create Dashboard Account (1)
- o Create Dashboard Account and Organization
- o Verify Created Account
- o First Login to New Organization
- o Account Login with Multiple Assigned Organizations
- o Manage Multiple Organizations
- o View Health Status for Multiple Organizations (1)
- o Meraki Dashboard Best Practices - Multiple Locations
- o Dashboard Search
- o Logged in User Profile
- o Modify User Profile (1)
- o Announcements
- Lesson 2: Help & Support
  - o Meraki Help
  - o Dashboard - Help - Get Help (1)
  - o Dashboard - Help - Community
  - o Dashboard - Help - Marketplace
  - o Dashboard - Help - Cases
  - o Dashboard - Help - Data Protection Requests
  - o Dashboard - Help - New Features
  - o Dashboard - Help - Firewall Rules Info
  - o Dashboard - Help - API Docs
  - o Dashboard - Help - Hardware Replacement
  - o Dashboard - Give Your Feedback
- Lesson 3: Organizational Wide Configure Settings
  - o Organizational Menu Settings
  - o Settings - Org Name and Security Settings
  - o Settings - Authentication (1)
  - o Configuring SAML SSO with ADFS
  - o Configuring SAML SSO with OneLogin
  - o Settings - Administration Settings
  - o Settings - Privacy and Support Access Settings
  - o Settings - SNMP Configuration
  - o Settings - Threat Grid
  - o Settings - Dashboard API Access
  - o Settings - Delete This Organization
  - o Organization > CONFIGURE > Configuration Sync
  - o Configuration Sync
  - o Organization > CONFIGURE > MDM
  - o Organization > CONFIGURE > Administrator
  - o Create Administrator Account - Org Access
  - o Create Administrator Account - Network Access
  - o Create Administrator Account - Camera Access
  - o Create Administrator Account
  - o Verify Administrator Account
  - o Deleting an Administrator Account
  - o Organization > Configure > Camera Roles
  - o Organization > Configure > License Info
  - o License Information - Co-Termination
  - o Add Licenses to Organization - Co-Termination

- License History - Co-Termination
- Converting to PDL (Per Device Licensing) (1)
- Licensing & Inventory Page - PDL (1)
- Organization > CONFIGURE > Create Network
- Create Network - Setup Network
- Create Network - Select Devices from Inventory
- Create Network - Add Devices
- Finding Meraki Order Number
- Delete Networks
- Organization > Configure > Inventory
- Organization > Inventory - Searching for Devices
- Organization > Inventory - Claiming Devices
- Organization > Inventory - Unclaiming Devices
- Organization > Add a Device to a Network
- Recovering a Missing or Stolen Device
- Organization > Monitor > Overview > Networks
- Organization > Monitor > Overview > Networks Tags
- Organization > Monitor > Overview > Devices
- Organization > Monitor > Change Log
- Organization > Monitor > Login Attempts
- Organization > Monitor > Security Center (1)
- Organization > Monitor > Location Analytics (1)
- Organization > Monitor > VPN Status
- Organization > Monitor > Firmware Upgrades
- Firmware Upgrades - Scheduling Firmware Upgrades (1)
- Organization > Monitor > Firmware Upgrades (1)
- Organization > Firmware Upgrades > Overview
- Organization > Firmware Upgrades > Firmware Status
- Organization > Firmware Upgrades > Firmware Release Notes
- Organization > Firmware Upgrades > Firmware Roll Back (1)
- Firmware Upgrades Through APIs
- Organization > Monitor > Summary Report (1)
- Organization > Summary Report - Anomalies
- Organization > Summary Report - Clients with High Usage
- Organization > Summary Report - Usage stats
- Organization > Summary Report - Sessions
- Organization > Top SSIDs by Usage
- Organization > Summary Report - Top Devices
- Top Device Models by Usage
- Top Security Appliances by Utilization
- Summary Report - Port Utilization Graph
- Summary Report - Client Stats
- Summary Report -Top Clients by Usage
- Clients
- Organization -Top Client Device Manufacturers
- Organization -Top Operating Systems By Usage
- Organization - Top Application Categories
- Organization - Top Applications by Usage
- Organization - Power Details
- Lesson 4: Network-Wide Settings
  - Network-Wide

- Network-Wide > Configure > General (1)
  - Network-Wide > General > Traffic Analysis
  - Network-Wide > General > Location and Scanning
  - Network-Wide > General > SMS Auth with Twilio
  - Network-Wide > General > CloudShark
  - Network-Wide > Wireless Multicast to Unicast Conversion
  - Network-Wide > General > Device Configuration (1)
  - Network-Wide > General > Reporting > Syslog
  - Network-Wide > General > SNMP
  - Network-Wide > General > Reporting > Location
  - Network-Wide > General > NetFlow
  - Network-Wide > General > Firmware Upgrades
  - Network-Wide > General > Switch & Wireless Alternate Management Interface (1)
  - Network-Wide > General > Status & APIs
  - Network-Wide > General > Status
  - Network-Wide > General > Umbrella
- Network-Wide > Administration > Org Admins
- Network-Wide > Administration > Network Admin
- Network-Wide > Administration > Guest Ambassadors
- Network-Wide > Admin > Port Management Privileges
- Network-Wide > General > Camera-Only Admins
- Network-Wide > Users > Guest Access
  - Network-Wide > Users (1)
- Network-Wide > Group Policy
  - Network-Wide > Group Policy > New Group
  - Network-Wide > Group Policy > Schedule
  - Network-Wide > Group Policy > Bandwidth
  - Network-Wide > Group Policy > Hostname Visibility
  - Network-Wide > Group Policy > Firewall
  - Firewall - Layer 7 Rules
  - Network-Wide > Group Policy > Umbrella
  - Network-Wide > Group Policy > Traffic Shaping (1)
  - Network-Wide > Group Policy > Wireless Only
  - Network-Wide > Group Policy > Security Appliance Only
- Network-Wide > General > Add Devices
- Network Wide > Monitor > Clients (1)
- Searching for Clients
- Modifying Columns
- Network Wide > Monitor > Clients > Applications
- Network Wide > Monitor > Clients > Ports
- Network Wide > Monitor > Clients > HTTP Content
- Network Wide > Monitor > Clients > Custom Pie Chart
- Changing the Policies Applied to a Client
- Adding a Client
- Display Client Information - Overview (1)
- Display Client Information - Connections (1)
- Display Client Information - Performance (1)
- Display Client Information - Timeline
- Network-Wide > Monitor > Traffic Analytics (1)
- Network-wide > Monitor > Topology
- Topology - L2

- o Topology - L3
- Lesson 5: Packet Captures
  - o Packet Capture for Multiple Devices (1)
  - o Event log (1)
- Lesson 6: Location / Mapping Devices
  - o Maps & Floor Plans (1)
  - o Maps & Floor Plans - Drag & Drop Devices
  - o Maps & Floor Plans - Assign Devices to…
  - o Maps & Floor Plans - Geolocate Devices (1)
  - o Maps & Floor Plans (1)
- Lesson 7: Configuring Templates
  - o Organization > Monitor > Configuration Templates
  - o Templates
  - o Configuration Templates > Create New Template (1)
  - o Configuration Templates
  - o Unbinding Networks from a Template
  - o Splitting Configuration Templates
  - o Combining Configuration Templates
  - o Deleting a Configuration Template
  - o MR - Wireless Network Templates
  - o MX/Z3 - Template VLAN IP Address Range Allocations
  - o MX/Z3 - Template VLAN IP Address Range Allocations
  - o VLAN Templates
  - o Configuration Templates (1)
  - o MS Templates
  - o Switch Profiles
  - o Configuration Templates > Local Overrides (1)
  - o Configuration Templates > Local Overrides
- Module Summary

Module 3: Meraki MR Wireless

- Module Introduction
  - o Topic List
- Lesson 1: Wireless Features
  - o MR Wireless Access Points
  - o Meraki Location Analytics are Built-in
  - o Granular Control Over Bandwidth, Apps, and Client Devices
  - o MR Feature: Multigigabit Ethernet
  - o MR Feature: Mesh Routing
  - o MR Dedicated Scanning Radio
  - o Secure Guest Wireless in Seconds
  - o Built-in Bluetooth Beacons
  - o Bluetooth Beacons
  - o Meraki Location Heatmap is Built-in
  - o High Density Support
  - o ISE Integration
  - o Guest Self-Registration
  - o Cisco Umbrella and Cisco Meraki
  - o DNS/Web-layer Security - Solution Overview

- o Zero -Touch Provisioning
- o Meraki | Application Program Interfaces (APIs)
- o Licensing and Support
- Lesson 2: Wireless Standards
  - o IEEE 802.11 Wireless LANs
  - o 802.11b/g 2.4 GHz Spectrum
  - o 802.11b/g 2.4 GHz Channel Plan
  - o 802.11a/n/ac 5 GHz Channels
  - o 802.11a/ac 5 GHz Channels
  - o 802.11ac Standard
  - o 802.11ac Wave 1
  - o 802.11ac Wave 2
  - o 802.11ac Wave 1 vs Wave 2
  - o 802.11ax Wi-Fi 6
  - o Wi-Fi 6 Key Technologies
    - Wi-Fi 6 Key Technologies - Backwards Compatible
    - Wi-Fi 6 Key Technologies - Spatial Diversity and MU-MIMO
    - Wi-Fi 6 Key Technologies - Orthogonal Frequency Division Multiple Access (OFDMA)
    - Wi-Fi 6 Key Technologies - 1024 Quadrature Amplitude Modulation (QAM)
    - Wi-Fi 6 Key Technologies - BSS Color
    - Wi-Fi 6 Key Technologies - Target Wakeup Time (TWT) (1)
- Lesson 3: Site Survey
  - o Site Survey & Design
    - Capacity Planning
    - Types of Site Surveys - Passive Surveys
    - Types of Site Surveys - Active Surveys
    - Types of Site Surveys - Predictive Surveys
    - Site Survey Tools
  - o MR Internal AP 2.4 GHz Radiation Pattern
  - o MR Internal AP 5 GHz Radiation Pattern
  - o Mounting Meraki MR Wireless APs
  - o Identify Problematic Areas
  - o Signal Attenuation
- Lesson 4: Meraki MR Models
  - o Meraki MR Wireless AP Models Indoor
    - MR20 Indoor AP
    - MR30H Indoor AP
    - MR33 Indoor AP
    - MR42 Indoor AP
    - MR42E Indoor AP
    - MR52 Indoor AP
    - MR53 Indoor AP (M-Gig)
    - MR53E Indoor AP (M-Gig)
  - o Meraki MR Wireless AP Models Indoor
    - MR45 Indoor AP (M-Gig)
    - MR55 Indoor AP
    - MR36 Indoor AP
    - MR36H Indoor AP
    - MR44 Indoor AP (M-Gig)
    - MR46 Indoor AP (M-Gig)
    - MR46E Indoor AP (M-Gig)

- - - MR56 Indoor AP (M-gig)
  - o Meraki MR Access Point Models Outdoor
    - MR70 Outdoor AP
    - MR74 Outdoor AP
    - MR84 Outdoor AP
    - MR76 Outdoor AP
    - MR86 Outdoor AP
  - o Directional Antennas
    - External Antennas - Indoor Aps
    - External Antennas for Outdoor/Ruggedized APs
  - o AP Adapter Options
  - o Multi-Color LED Access Points
- Lesson 5: Wireless Configuration
  - o Wireless > Access Points > Access Point Status Page (1)
  - o Set the AP Name
  - o Set the AP Location
  - o Default SSID and Channel Selection
  - o Dynamic IP Addressing and VLAN Assignment for AP
  - o Static IP Addressing for AP
  - o LAN IPv6 Addressing
  - o Serial Number, Tags, and Notes
  - o Firmware, Config and Power
  - o Wireless > Monitor > Access Points > Summary
  - o Access Points > Summary > Current Clients
  - o SUMMARY > Radius and VLAN Request Status
  - o SUMMARY > Utilization on Current Channels (1)
  - o SUMMARY > Live Mesh Neighbors
  - o SUMMARY > Historical Data (1)
  - o Access Points > Event Log (1)
  - o Access Points > Full Event Log
  - o Access Points > Location > Map
  - o Access Points > Location > Satellite
  - o Access Points > Location > Photo
  - o Access Points > Location > Topology
  - o Access Points > Connections (1)
  - o Access Points > Performance (1)
  - o AP > Tools Tab > Ping
  - o AP > Tools Tab > Reboot Device
  - o AP > Tools Tab > Blink LEDs
  - o AP > Tools Tab > Dashboard Throughput
  - o AP > Tools Tab > Traceroute
  - o AP > Tools Tab > ARP Table
  - o AP > LAN Tab > Radius Request Status
  - o AP > LAN Tab > VLAN Request Status
- Lesson 6: SSID Configuration
  - o Configuring SSIDS
  - o Provision SSIDS
  - o Access Control
  - o Wireless Encryption and Authentication
  - o Access Control (1)
  - o Access Control > Open

- Access Control > Pre-Shared Keys
- Access Control WPA versions
- Access Control 802.11w
- Access Control > MAC-based Access Control
- Access Control > Enterprise with…
- Access Control > Supported EAP Types
- Enterprise with 802.1X Authentication
- Enterprise with Meraki Authentication - SM
- Enterprise with Meraki Authentication - Trusted Access (1)
- Enterprise with...
- Access Control > Identity PSK with Radius
- Access Control > Splash Page
  - Access Control > Splash Page > None
  - Access Control > Splash Page > Click-through
  - Access Control > Splash Page > Sponsored Guest Login
  - Access Control > Splash Page > Sign-on
  - Access Control > Splash Page > SMS Auth.
  - Access Control > Splash Page > ISE Splash Page (1)
  - Access Control > Splash Page > Systems Manager (1)
  - Access Control > Splash Page > Billing
- Access Control > Network Access Control
- Access Control > Assign Group Policies by Device Type
- Access Control > Captive Portal Strength
- Access Control > Walled Garden
- Access Control > Controller Disconnection Behavior
- Access Control > SSID Modes for Client IP Assignment (1)
- Distributed L3 Roaming in a Nutshell
- Access Control > SSID Modes for Client IP Assignment (1)
- Teleworker VPN / L3 Roaming
- Access Control > SSID Modes for Client IP Assignment (1)
- Access Control > Wireless Options
- Per SSID - Firewall & Traffic Shaping (1)
- Firewall & Traffic Shaping > Block IPs and Ports
- Firewall & Traffic Shaping > Layer 3 Firewall Rules (1)
- Firewall & Traffic Shaping > Block Applications
- Firewall & Traffic Shaping > DNS Layer Protection
- Firewall & Traffic Shaping > DNS Exclusion
- Firewall & Traffic Shaping > Traffic Shaping SSIDs
- Firewall & Traffic Shaping > Traffic Shaping Rules (1)
- Lesson 7: Splash Page
  - Customize Splash URL for Payment Vendors
  - Customize Splash Page (1)
  - Preview Splash Page - Modern
  - Preview Splash Page - Fluid
  - Create Custom Themed Splash Page
- Lesson 8: SSID Availability
  - SSID Availability (1)
- Lesson 9: Bluetooth Settings
  - Bluetooth Low Energy (BLE)
  - Bluetooth Settings > Enable Bluetooth Scanning
  - Wireless > Bluetooth Clients

- o Air Marshal > Other SSID
  - ▪ Air Marshal > Other SSID > Alerts
- o Air Marshal > Spoofs
- o Air Marshal > Malicious Broadcasts
- o Air Marshal > Packet Floods
- Lesson 13: Location Heatmap
  - o Location Heatmap (1)
- Lesson 14: PCI Compliance
  - o PCI Compliance (1)
  - o PCI Compliance > Run Report (1)
  - o PCI Compliance Report
  - o PCI Compliance Remediation
- Lesson 15: RF Spectrum
  - o RF Overview
    - ▪ RF Overview > 2.4 GHz Spectrograms
      - • RF Overview > 2.4 GHz Utilization
      - • RF Overview > 2.4 GHz Interfering APs
    - ▪ RF Overview > 5 GHz Spectrograms
      - • RF Overview > 5 GHz Utilization
      - • RF Overview > 5 GHz Interfering APs
- Lesson 15: Wireless Health
  - o Wireless Health - Run Diagnostics (1)
  - o Wireless Health - Health Tab (1)
  - o Wireless Health - Map Tab
  - o Wireless Health
  - o Some Additional Wireless Troubleshooting
- Module Summary

LAB OUTLINE

Lab 1: Configuring the Organization

- Configure Organizational Settings
- Add All Devices to Organization
- Create Networks
- Manage Network-Wide Settings
- Create group Policies
- Manage Firmware Upgrades
- Create Templates
- Manage VLAN Templates
- Bind Templates to Networks

Lab 2: Meraki MR Wireless

- Configuring Meraki APs
  - o Connecting APs to the Network
  - o Configuring Basic information including Tags
- Configuring SSIDs
  - o Provisioning SSIDs

- o Open with Splash Pages
  - Click-Through
  - Systems Manager Sign-in
  - Facebook Sign-in
  - Google Sign-in
  - SMS Authenticated
  - Billing Configuration for SSIDs
- o Using Preshared Keys with WPA2
- o Using WPA2-Enterprise SSIDs with 802.1X
  - Cisco ISE
- o MAC-based Access Control Filtered SSIDs
- Firewall & Traffic Shaping Configuration for Wireless
  - o Block local network for Guests
  - o Layer 3 Firewall Rules
  - o Block Applications
  - o Traffic Shaping Rules per SSID
  - o Configuring Layer 3 Roaming
  - o Configuring ISE Integration with Access Policies
  - o Configuring Access Policies for Wireless
  - o Configuring Wireless RF Radio Settings
    - Auto RF
    - Transmit Power Control
    - Channel Selection
    - Band Steering
    - Client Balancing
  - o Configuring Bluetooth for Analytics
  - o Guest Self-Registration
  - o Configuring Splash Pages
  - o Configuring Floor Plans
  - o Placing APs on the Floor Plans
  - o Configuring RF Channel and Power Settings
  - o Configure Air Marshall to Isolate Rogue APs and Clients
- Monitoring Meraki APs
  - o Monitoring AP Status
  - o Using Meraki Wireless Health
  - o Monitoring Clients
  - o Monitoring RF Metrics
  - o Monitoring the RF Spectrum
  - o Monitoring SSID Availability
- Troubleshooting
  - o Using Heatmaps to Troubleshoot RF Issues
  - o Identify Problematic Areas
  - o Signal Attenuation
  - o Ping and Traceroute
  - o Reboot Device
  - o Blink LEDs
  - o Throughput

- Checking PCI Compliance
- Using the Event Log for Troubleshooting