



# FIREFLY

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## Implementing and Configuring Meraki Technologies

DURATION: 5 DAYS

COURSE CODE: ICMT

FORMAT: HANDS-ON TRAINING

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### COURSE DESCRIPTION

This course provides students with the skills to configure, optimize, and troubleshoot a Cisco Meraki solution. Students will learn how to install and optimize Meraki MX Firewalls, Meraki MS Switches, Meraki MR Access Points, and Meraki MV Cameras. Students will also learn how to configure the Meraki Dashboard, Meraki Insight and Meraki Systems Manager (EMM/MDM). Student will troubleshoot and configure the Meraki environment and learn how to diagnose and resolve user and Network issues that may arise.

### WHY FIREFLY

The best instructors: networking gurus who are among the top 10% as rated by Cisco

The best labs: code is updated frequently so you are always working on the latest recommended releases

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### WHO SHOULD ATTEND

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

Organizations looking to implement remote sites, provide a guest wireless solution, and collect user analytics

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### LEARNING OBJECTIVES

Navigate and configure the dashboard

Add MX/MR/MS/MV devices to the Dashboard

Configure Configuration Templates

Configure Group Policies

Manage, configure, and integrate users and RADIUS policies

Configure, monitor, and troubleshoot MX Firewalls

Configure, monitor, and troubleshoot MS Switches

Configure, monitor, and troubleshoot MR Access Points

Configure, monitor, and troubleshoot MV Cameras

Configure Systems Manager (EMM/MDM)

Use Meraki Insight to monitor network health

Troubleshoot devices and connectivity

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## COURSE OUTLINE

### 1. Introduction to Meraki

- The Meraki Mission
- Cisco Meraki: Bringing the Cloud to Enterprise Networks
- Cloud-Managed Networking Architecture
- Benefits of a Cloud-Based Solution
- The Meraki Full Stack: New and Unique Value Proposition
- Meraki Deployment – How it works
- Why Customers Choose Meraki
- Meraki MS Switches Overview
- Meraki MX Security Appliances Overview
- Meraki SD-WAN Overview
- Meraki MR Wireless Access Points Overview
- Cisco Meraki Systems Manager Overview
- Cisco Meraki MV Vision Security Cameras Overview
- Meraki API Overview
- Meraki Licensing
- Enterprise Support
- Cisco Meraki Documentation

### 2. Cloud Management with the Meraki Dashboard

- The Meraki Dashboard
- Dashboard: Organizational Structure
- Out-of-band Cloud Management
- Loss of Connectivity to the Cisco Meraki Cloud
- Meraki Dashboard Logins
- Create Dashboard Accounts and Organization
- MSP Logins - Manage Multiple Organizations
- Modify an Organization
- View Organizations Health
- Meraki Dashboard Best Practices
- Dashboard Search
- Meraki Help
- Organizational Wide Settings
  - Configure
    - Configuring Organizational Wide Settings
    - Using Configuration Sync to View and Copy Settings
  - Administrators
  - Configuring and Monitoring Licensing
  - Creating Bulk Networks
  - Creating and Managing Networks (sites)
  - Managing the Meraki Inventory

### Monitor

- Overview
- Monitoring the Change log
- Monitoring Login Attempts
- Monitoring the Security Center
- Using Location Analytics
- Monitoring VPN Status
- Scheduling and Managing Firmware
- Using the Summary Report
- Create and Manage Configuration Templates
- Understand Configuration Templates
- VLAN Templates
- Attach Network to Configuration Templates

### Network-Wide Settings

#### Configure

- Configuring Network Wide General Settings
- Traffic Analysis
- Location and Scanning
- Configuring CloudShark for Capturing Traffic
- Manage the Local Status Page
- Manage Syslog, SNMP, Location, and NetFlow Services
- Managing Network Admins and Guest Ambassadors
- Managing Network Users
- Managing Port Management Privileges
- Configuring Group Policies
- Adding Devices to the Network

#### Monitoring Networks

- Monitoring Clients
- Monitoring Traffic Analytics
- Displaying and Exploring the Meraki Topology
- Performing Packet Captures
- Using the event Log to Perform Troubleshooting

### 3. Meraki MX Security

- Benefits of a Cloud Managed Security Solution
- Threat Management Solution
- Advanced Security Licenses
- Reliable, Cost Effective Connectivity with Meraki SD-WAN
- Site-to-Site VPN (Auto VPN)
- High Availability and Path Redundancy
- Application-Aware Intelligent Path Control
- Traffic Monitoring and Analytics

## COURSE OUTLINE

### 3. Meraki MX Security (Continued)

- Integrating Active Directory
- Cisco Meraki MX Models and Features
  - MX 64/65/84/100/200/250/400/600 Models
  - Virtual MX for Amazon Web Services & Microsoft Azure
  - Teleworker Z1/Z3
- Configuring the Local Status Page
- Adding Appliance to Network
- Device Configuration
- Configuring the Warm Spare Feature
- Device Tags & Notes
- Configuring Addressing & VLANs
  - Pass-Through or VPN Concentrator Mode vs NAT Mode
  - Creating VLANs
  - Creating Layer 3 Interfaces
  - Creating Static Routes
  - Using Dynamic Routing Protocols
    - OSPF and BGP
- DHCP Server Configuration and Options
- Meraki Firewall Configuration
  - Firewall Basics
  - Layer 3 vs Layer 7 Firewall
  - Firewall Outbound Rules
  - Cellular Firewall Failover Rules
  - Security Appliance Services
  - Layer 7 Firewall Rules
  - Content Filtering
    - Adult Content Filtering
    - Gaming Content Filtering
    - Social Site Content Filtering
  - Geo-IP Based Firewalling
  - Nat Configuration
  - Bonjour Forwarding
- Meraki Site-to-Site VPN
  - What is VPN
  - Site-to-Site Hub Configuration
    - Hub Configuration
      - Hub Configuration with an Exit Hub
    - Spoke Configuration
      - Split Tunnel vs Full Tunnel
  - Non-Meraki VPN Peers
  - VPN Firewall Rules
  - Monitor VPN Status

- One Arm VPN Concentrator Configuration
  - OSPF Configuration
  - BGP Configuration
- Meraki Client VPN
  - Enable Client VPN
  - Configure Client VPN
  - Client VPN Authentication Methods
  - VPN Clients
- Meraki Active Directory Integration
  - Active Directory Authentication
  - Active Directory integration with Group Policy
- Meraki Access Control
  - Radius (2)
  - Facebook
  - Third Party (Google)
- Meraki Splash Page Configuration
- Configuring Access Policies
- Teleworker VPN / L3 Roaming

### 4. Meraki Switching

- MS Switch Platforms and Features
- MS Feature: Multi-gigabit Ethernet
- Cisco Meraki MS Access Switches
  - Meraki MS 120/220 Switch Family
  - Meraki MS 210/225 Switch Family
  - Meraki MS 210/225 Switch Family
  - Meraki MS 350/350X Switch Family
- Cisco Meraki MS Aggregation Switches
  - Meraki MS 410 Switch Family
  - Meraki MS 425 10 GB Switch Family
- Using Tags to search, monitor and configure Meraki Switches
- Meraki Switch Configuration
  - Add a Switch to the Network
  - Configuring Switch Stacks
  - Configuring Warm Spare and VRRP
  - VLAN Configuration
  - Configuring Layer 2 and Layer 3
    - Configuring Static Routing
    - Configuring OSPF
  - Configuring Access Control Lists (ACL)

## COURSE OUTLINE

### 4. Meraki Switching (Continued)

- Configuring Access Policies (802.1X)
    - Integrating Radius and ISE with Access Policies
  - Configuring DHCP Servers on Switches
  - Configuring Spanning Tree
  - Configuring Quality of Service
  - Configuring Switch MTU
  - Configuring Multicast Routing
    - Internet Group Management Protocol
  - Port Configuration
    - Configuring Ports on a Switch
    - Configuring Ports using Ranges and Search Criteria
    - Configuring Ports on a Switch Stack
    - Configure Link Aggregation on a Switch
    - Configuring Port Schedules
    - Configuring Access Policies
    - Configure Port Mirroring
  - Meraki Switch Monitoring
    - Monitoring Switch Status
    - Monitoring Switch Port Status
    - Monitoring Real-time and Historical Data
    - Monitoring DHCP on the Switch
    - Monitoring Power
    - Monitoring DHCP and Routing
    - Monitoring Event Logs
    - Summary Reports
  - Troubleshooting Tools
    - Turn on Switch Blinking for Switch Identification
    - Performing Packet Captures
    - Performing Cable Tests
    - Performing Port Reset
    - Performing Throughput Tests
    - Performing device Reboots
    - Using ARP and Route Tables for Troubleshooting
    - Troubleshoot using Ping and Traceroutes
  - Managing Firmware Upgrades
- ### 5. Meraki MR Wireless
- Meraki MR Wireless Overview
  - Meraki 2.5G Multigigabit (MGig) Wireless
  - Meraki Mesh Routing
  - Meraki's solution for RF Environments
  - Securing Guest Wireless
  - Bluetooth Integrated Analytics

- Meraki Location Heatmap
- High Density Wireless
- Zero-Touch Provisioning for Wireless
- Dedicated Scanning Radio for Rouges and Interference
- Mounting indoor and Outdoor Antennas
- Meraki MR Licensing
- IEEE 802.11 Wireless LAN Standards
  - 802.11b/g 2.4 Spectrum
  - 802.11b/g 2.4 Channel Plan
  - 802.11a/ac 5 GHz
- Site Survey & Design for ensuring connectivity and user experience
  - Channel Planning
- Meraki AP Models Overview
  - Meraki Legacy APs
  - Meraki Indoor APs, Antennas, and Radiation Patterns
  - Meraki Outdoor APs, Antennas, and Radiation Patterns
  - Meraki MGig APs
  - Meraki AP External Power options
- Configuring Meraki APs
  - Connecting APs to the Network
  - Configuring Basic information including Tags
  - Configuring Layer 3 Roaming
  - Configuring ISE Integration with Access Policies
  - Configuring Access Policies for Wireless
  - Configuring Wireless RF Radio Settings
    - Auto RF
    - Transmit Power Control
    - Channel Selection
    - Band Steering
    - Client Balancing
  - Configuring Bluetooth for Analytics
  - Guest Self-Registration
  - Configuring Splash Pages
  - Configuring Floor Plans
  - Placing APs on the FloorPlans
  - Configuring RF Channel and Power Settings
  - Configure Air Marshall to Isolate Rouge APs and Clients
- Configuring SSIDs
  - Provisioning SSIDs

## COURSE OUTLINE

### 5. Meraki MR Wireless

- Open with Splash Pages
  - Click-Through
  - Systems Manager Sign-in
  - Facebook Sign-in
  - Google Sign-in
  - SMS Authenticated
  - Billing Configuration for SSIDs
- Using Preshared Keys with WPA2
- Using WPA2-Enterprise SSIDs with 802.1X
  - RADIUS
  - Cisco ISE
- MAC-based Access Control Filtered SSIDs
- Firewall & Traffic Shaping Configuration for Wireless
  - Block local network for Guests
  - Layer 3 Firewall Rules
  - Block Applications
  - Traffic Shaping Rules per SSID
- Monitoring Meraki APs
  - Monitoring AP Status
  - Using Meraki Wireless Health
  - Monitoring Clients
  - Monitoring RF Metrics
  - Monitoring the RF Spectrum
  - Monitoring SSID Availability
- Trouble Shooting
  - Using Heatmaps to Troubleshoot RF Issues
  - Identify Problematic Areas
  - Signal Attenuation
  - Ping and Traceroute
  - Reboot Device
  - Blink LEDs
  - Throughput
  - Checking PCI Compliance
  - Using the Event Log for Troubleshooting

### 6. Meraki System Manager

- Device Management Overview
- Mobile Device Management
- Mobile Application Management
- Mobile Identity
- Meraki Sentry
- Deployment Considerations
- Systems Manager Licensing

- SM Supported Devices
- Meraki SM Features
- Creating a Network for Systems Manager
- Setup device Enrollment
  - Apple Device Enrollment with Certificates
  - Android for Work Enrollment
  - Chrome OS Device Enrollment
  - Windows Enrollment
- Cisco ISE Integration
- SM Profiles
  - Settings Restrictions
  - Active Sync
  - Setting Passcodes on Devices
  - Setting Backgrounds
  - Setting Wireless Settings
  - Setting VPN Settings
- Managing Clients
- Monitoring Clients

### 7. Meraki MV Camera

- Meraki MV Security Cameras Product Family
  - Indoor Cameras
    - MV12
    - MV21
  - Outdoor Cameras
    - MV71
- MV Camera Warranty
- MV Camera Licensing
- MV Camera Video Encryption
- MV Video and Audio Recording
- Configuring User/admin Security
- Configuring Camera Settings
  - Configuring Video Settings
  - Configuring Camera Analytics
  - Configuring MV NightMode
  - Create Recording Schedule
  - Motion Based Recording
  - Configuring Camera Retention
- View Camera Events
  - Cloud Proxy Viewing
  - Direct Streaming
- Searching Video for Events
- Creating Configuring Video Wall Boards
- Troubleshooting Camera Connectivity
- Using the Event Log for Camera Events

## DISCOVERY LABS

### 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

### 2: Configuring MX Appliances and Z3 Teleworker Devices

- Configure MX Appliance and Configure Z3 Appliance
  - Setup VLANs and Layer 3 Interfaces
  - Setup a VPN Concentrator
  - Setup and Manage DHCP Settings
  - Configure Layer 3 Firewall Settings
  - Configure Layer 7 Firewall Settings
  - Configure Content Filtering
  - Configure Traffic Shaping
  - Configure SDWAN Feature and traffic Distribution
  - Configure Site-to-site VPN
  - Configure Client VPN
  - Integrate Active Directory with Group Policy Settings
  - Create Traffic Shaping Policies
  - Configure Access control with Radius and ISE
  - Create and Configure Splash Pages
- MX Appliances and Z3 Verification and Troubleshooting
  - Verify and Trouble Shoot Appliance Status
  - Verify and Trouble Shoot Site to Site VPN
  - Verify and Trouble Shoot Firewall Settings
  - Check the Routing Table
  - Use the Tools
  - Trouble shooting with Packet Capture

### 3: Configuring MS Switches

- Switch Configuration
  - Configure Basic Switch Settings
  - Configure Switch Stack
  - Configure Spanning Tree
  - Create Layer 3 Interfaces
  - Configure DHCP server
  - Create a Static Route
  - Configure OSPF Routing
  - Configure ACLs
  - Create Access Policies

- Configure Packet Captures

- Configure Port Policies

- Configure Switch Using a Network Template

- Configure Spanning Tree

- Create Layer 3 Interfaces

- Create a Static Route

- Configure OSPF Routing

- Configure ACLs

- Create Access Policies

- Configuring Ports

- Configure Trunk Ports

- Configure Access Ports

- Set VLAN on Multiple Ports

- Configure Link Aggregation

- Configure Port Schedules

- Configure Port Mirroring

- Meraki Switch Monitoring

- Monitoring Switch Status

- Monitoring Switch Port Status

- Monitoring Real-time and Historical Data

- Monitoring DHCP on the Switch

- Monitoring Power

- Monitoring DHCP and Routing

- Monitoring Event Logs

- Summary Reports

- Troubleshooting Tools

- Turn on Switch Blinking for Switch Identification

- Performing Packet Captures

- Performing Cable Tests

- Performing Port Reset

- Performing Throughput Tests

- Performing device Reboots

- Using ARP and Route Tables for Troubleshooting

- Troubleshoot using Ping and Traceroutes

- Managing Firmware Upgrades

### 4: Meraki MR Wireless

- Configuring Meraki APs

- Connecting APs to the Network

- Configuring Basic information including Tags

## DISCOVERY LABS

## 4: Meraki MR Wireless (Continued)

- Configuring SSIDs
  - Provisioning SSIDs
  - Open with Splash Pages
    - Click-Through
    - Systems Manager Sign-in
    - Facebook Sign-in
    - Google Sign-in
    - SMS Authenticated
    - Billing Configuration for SSIDs
  - Using Preshared Keys with WPA2
  - Using WPA2-Enterprise SSIDs with 802.1X
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    - Channel Selection
    - Band Steering
    - Client Balancing
  - Configuring Bluetooth for Analytics
  - Guest Self-Registration
  - Configuring Splash Pages
  - Configuring Floor Plans
  - Placing APs on the Floor Plans
  - Configuring RF Channel and Power Settings
  - Configure Air Marshall to Isolate Rogue APs and Clients
- Monitoring Meraki APs
  - Monitoring AP Status
  - Using Meraki Wireless Health
  - Monitoring Clients
  - Monitoring RF Metrics
  - Monitoring the RF Spectrum
  - Monitoring SSID Availability

## Trouble Shooting

- Using Heatmaps to Troubleshoot RF Issues
- Identify Problematic Areas
- Signal Attenuation
- Ping and Traceroute
- Reboot Device
- Blink LEDs
- Throughput
- Checking PCI Compliance
- Using the Event Log for Troubleshooting

## 5: Meraki MV Cameras

- Adding Cameras to a dedicated Network
  - Connecting APs to the Network
  - Configuring Basic information including Tags
- Configuring Users
- Configure admins
- Configuring Camera Settings
  - Configuring Video Settings
  - Configuring Camera Analytics
  - Configuring MV NightMode
  - Create Recording Schedule
  - Motion Based Recording
  - Configuring Camera Retention
- View Camera Events
  - Cloud Proxy Viewing
  - Direct Streaming
- Searching Video for Events
- Creating Configuring Video Wall Boards
- Troubleshooting Camera Connectivity
- Using the Event Log for Camera Events
- Configure Wall Boards