Implementing & Configuring Cisco Meraki Solutions Workshops (ICCMS)

COURSE OVERVIEW

This 5-day boot camp provides students with the skills to configure, optimize, and troubleshoot all-important Cisco Meraki products like the security appliance platform (MX), the switching platform (MS), the wireless platform (MR), Meraki Cameras (MV), Meraki Sensors, and Meraki Insight Network Visibility & Traffic Analytics. Students will also gain detailed knowledge of the Meraki dashboard and will learn how to automate Meraki networks.

This workshop is based on real-world use cases and deployment experiences that will also be discussed with the students. We will point out real-life deployments whenever discussing topics or performing practical exercises. This will enable students to conduct POV / POC events to verify business cases after attending this workshop.

WHO WILL BENEFIT FROM THIS COURSE?

IT staff, network, and systems engineers interested in a comprehensive knowledge of all Meraki products and solutions.

PREREQUISITES

Before taking this course, you should have earned CCNA certification or be familiar with:

- Network Fundamentals
- IP Addressing and Subnets
- Routing and Switching Technology
- Wireless Networking Concepts and Terminology

COURSE OBJECTIVES

After completing this course, students will be able to:

- Understand various use cases and design the best solution for a given enterprise customer
- Conduct a related POV / POC to allow the customer to verify their particular business case
- Design, deploy, and monitor Cisco Meraki switches and wireless products
- Integrate with other Cisco solutions like Identity Service Engine (ISE), Cisco Umbrella, etc.
- Diagnose and resolve most user and network issues in enterprise-scale deployments

COURSE OUTLINE

Introduction to Meraki

- Why Cisco Meraki
  - The Meraki Mission
  - Cloud-Managed Networking Architecture

- o Benefits of a Cloud-Based Solution
- o The Meraki Full Stack: New and Unique Value Proposition
- o Meraki Deployment
- o Use Cases: Why Customers choose Meraki
- Meraki Product Overview
  - o Meraki MS Switches
  - o Meraki MR Wireless Access Points
  - o Meraki MX Security and SD-WAN Appliances
  - o Meraki MV Vision Security Cameras
  - o Meraki System Manager (SM)
  - o Meraki MT Sensors Access Points
  - o Cisco Meraki Insight
- Meraki API Overview
- Meraki Licensing and Support

Cloud Management with the Meraki Dashboard

- Overview of the Meraki Dashboard
  - o The Cisco Meraki Dashboard
  - o Dashboard: Organizational Structure
  - o Out-of-Band Cloud Management
  - o Loss of Connectivity to the Cisco Meraki Cloud
  - o Meraki Dashboard Logins
  - o Create Dashboard Accounts and Organization
  - o MSP Logins – Manage Multiple Organizations
  - o Modify an Organization
  - o View Organizations Health
  - o Meraki Dashboard Best Practices
  - o Dashboard Search
  - o Meraki Help
- Organization-Wide Settings
  - o Configuring Organizational-Wide Settings
  - o Using Configuration Sync to View and Copy Settings
  - o Administrators
  - o Configuring and Monitoring Licensing
  - o Creating Bulk Networks
  - o Creating and Managing Networks (Sites)
  - o Managing the Meraki Inventory
- Monitoring
  - o Change Log, Login Attempts
  - o Monitoring the Security Center
  - o Using Location Analytics
  - o Monitoring VPN Status
  - o Scheduling and Managing Firmware
  - o Using the Summary Report

- Creating and Managing Configuration Templates
  - Configuring Network-Wide 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

Meraki MX Security

- Meraki MX Overview
  - One Unified Platform
  - Complete Connectivity and Threat Management Solutions
  - Security Integrations / Interoperability
  - SD-WAN Solutions
  - MX Appliance Licensing
  - MX Sizing Guide
- Basic Settings
  - Configuring the Local Status Page
  - Adding the Appliance to the Network
  - Device Configuration
  - Device Tags and Notes
  - Configuring Addressing and VLANs
  - DHCP Server Configuration and Options
- Meraki Firewall Configuration
  - Firewall Basics
  - Layer 3 vs Layer 7 Firewall
  - Firewall Outbound Rules
  - Security Appliance Services
  - Layer 7 Firewall Rules
  - Content Filtering
  - Geo-IP Based Firewalling
  - Nat Configuration
- Meraki Site-to-Site VPN
- One-Arm VPN Concentrator Configuration
- SD-WAN and Traffic Shaping
- Meraki Client VPN
  - Enable Client VPN
  - Configure Client VPN

- o Client VPN Authentication Methods
- o VPN Clients
- o Enable the AnyConnect Client VPN
- o AnyConnect Client VPN Authentication Methods
- Meraki Active Directory Integration
- Meraki Threat Protection

Meraki MS Switching

- Overview and Features
  - o Avoiding Downtime, Client Disruption
  - o Cloud Managed from Access through Aggregation
  - o Ongoing Feature Updates Delivered from the Cloud
  - o MS Feature: Multigigabit Ethernet
  - o Integrated Event Logs, Alerts, and Anomaly Detection
  - o Advanced Network-Wide Security
- Meraki Switching Platforms
- Switch Configuration
  - o Using Tags to Search, Monitor, and Configure Meraki Switches
  - o Add a Switch to the Network
  - o Meraki Switch Settings
  - o VLAN Configuration
  - o Configuring Layer 2 and Layer 3
  - o Configuring Static Routing
  - o Configuring Access Control Lists (ACL)
  - o Configuring Access Policies (802.1X)
  - o Integrating Radius and ISE with Access Policies
- Switch Stacks
  - o Stacking Mechanisms and Availability
  - o Meraki Stacking: Virtual and Physical
  - o Cloud-Managed Physical Stacking
  - o Flexible Stacking
  - o Provisioning Switch Stacks
  - o Create the Switch Stack
  - o Delete the Switch Stack
  - o View the Stack
  - o Configuring Ports on a Stack Switch Ports
  - o Blink the Switch
  - o Add and Remove Members to the Stack
  - o Clone and Replace a Member of the Stack
- Port Configuration
  - o Configuring Ports on a Switch
  - o Configuring Ports using Ranges and Search Criteria
  - o Configure Link Aggregation on a Switch
  - o Configuring Port Schedules

- o Configuring Access Policies
- o Configure Port Mirroring
- Meraki Multicast Configuration
  - o How Does IP Multicast Work?
  - o Internet Group Management Protocol
  - o Enable Multicast Routing
  - o IGMP Snooping Querier
  - o Multicast Routing
- Open Shortest Path First (OSPF)
  - o OSPF Areas
  - o OSPF LSA Types
  - o Normal Area
  - o Stub Area
  - o Not-So-Stubby Areas (NSSA)
  - o Open Shortest Path First (OSPF) Routing
  - o Create OSPF Areas
  - o Configure Interfaces into OSPF Areas
  - o OSPF for Static Routes
  - o OSPF Timers
  - o OSPF Authentication
  - o View OSPF Routes and OSPF Neighbors
- Switch Monitoring
  - o Monitoring Switch Status
  - o Monitoring Switch Port Status
  - o Monitoring Real-time and Historical Data
  - o Monitoring DHCP on the Switch
  - o Monitoring Power
  - o Monitoring DHCP
  - o Monitoring Event Logs
- Firmware Upgrades

Meraki MR Wireless
- Overview and Features
  - o MR Wireless Access Points
  - o Meraki Built-In Location Analytics
  - 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
  - o Built-In Bluetooth Beacons
  - o Bluetooth Beacons
  - o Built-In Meraki Location Heatmap
  - o High-Density Support

- o ISE Integration
- o Guest Self-Registration
- o Cisco Umbrella and Cisco Meraki
- o DNS/Web-Layer Security
- o Zero Touch Provisioning
- o Meraki Application Program Interfaces (APIs)
- o Licensing and Support
- Meraki Product Portfolio
  - o Meraki MR Wireless Access Point Models Indoor
  - o Meraki MR Wireless Access Point Models Outdoor
  - o Directional Antennas
  - o AP Adapter Options
  - o Multi-Color LED Access Points
- Designing a Meraki Wireless Architecture
  - o Wireless Standards
  - o Meraki RF WLAN Design
  - o Site Survey / Site Survey Tools
  - o Mounting APs Best Practices
  - o Meraki Design Principles
  - o Meraki Roaming Design
  - o Switch Design for Meraki Wireless Networks
  - o Designing Meraki Network Services
  - o Organization and Network Design
  - o Migrating Cisco DNA APs to Meraki Dashboard
- Wireless Configuration
  - o Connecting Access Points to the Network
  - o Configuring Basic information including Tags
  - o Configuring Wireless RF Radio Settings
  - o Configuring Floor Plans
  - o Placing Access Points on the Floor Plans
  - o Configuring RF Channel and Power Settings
- SSID Configuration
  - o Provisioning SSIDs
  - o Open with Splash Pages
  - o Using Pre-Shared Keys with WPA2
  - o Using WPA2-Enterprise SSIDs with 802.1X
  - o Configuring Layer 3 Roaming
  - o Configuring ISE Integration with Access Policies
  - o Configuring Access Policies for Wireless
  - o MAC-Based Access Control Filtered SSIDs
  - o Firewall & Traffic Shaping Configuration
  - o Traffic Shaping Rules per SSID
- Bluetooth Settings

- Wireless Radio Settings
  - Radio Settings
  - Channel Planning
  - Auto RF - Channel Changes
  - RF Profile
  - Client Balancing
- Monitoring
  - Monitoring AP Status
  - Using Meraki Wireless Health
  - Monitoring Clients
  - Monitoring RF Metrics
  - Monitoring the RF Spectrum
  - Monitoring SSID Availability
- Troubleshooting
  - 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

Meraki MV Camera

- Meraki MV Security Cameras Product Family
  - Use Cases
  - Video Surveillance Solutions
  - Meraki Mobile App
  - Licensing
  - Architecture
  - Camera Video Display
  - Object Detection
  - Meraki Sense
  - Camera Intelligence Training
  - Cloud Archive
  - Secure Encrypted Video
- Meraki MV Camera Models
- Meraki MV Camera Accessory
- Network Wide Settings for NV Cameras
- Security Role Configuration for MV Cameras
- Switch Configuration for MV Cameras
- Monitoring MV Cameras
- Wireless Role Configuration for MV Cameras

- Viewing Video
  - Retroactive Video Search
  - Video Viewing
  - Motion Search
  - Export / Screen Shot
  - Video Analytics – People Count
  - Video Analytics – Motion Heatmaps
- MV Camera Intelligence Training
- MV Camera Initial Configuration
  - Camera Name
  - Analytics
  - Physical Address
  - Network Settings
  - Location Map
  - Video Settings
  - Quality and Retention
  - Low Light Mode
  - Motion Alerts
  - Wireless Profiles
- MV Video Access
- Meraki Export
- MV Video Wall
- Meraki Vision
- MV Cameras APIs
  - Use Cases
  - MV Sense
  - MV Sense Data Types
  - REST vs MQTT (MQ Telemetry Transport) APIs
  - Zones
  - Optimized Video Retention
  - Full Frame Snapshots via API
- Meraki Magic

Meraki Sensors
- What is - Meraki Sensors?
  - Meraki Sensors family
  - Physical Spaces
  - Use Cases - Consuming Telemetry at Scale
  - Connectivity
  - Device Security
  - Room Usage
  - Sensor Sight
  - Volatile Organic Compounds (VOC)
  - Particulate Matter (PM2.5)
  - Smart Automation Button

Meraki Insight Network Visibility & Traffic Analytics

- Meraki Insight Introduction
- Meraki Insight Licensing
- Meraki Insight Web App Health
  o Configure Web Application
  o Web Application Performance
  o WAN Health
  o VoIP Health
- Meraki Insight Alerting

Automating Meraki Networks

- Introducing Meraki Automation
  o Dashboard APIs
  o Setting up Postman for Meraki

Lab Exercises

Generic Configuration Tasks

- Creating a Dashboard Account
- Configure Organizational Settings
- Add Devices to Your Organization
- Create Networks
- Manage Network-Wide Settings
- Create Group Policies
- Manage Firmware Upgrades
- Create Templates
- Manage VLAN Templates
- Bind Templates to Networks

Configuring MX Appliances

- Basic Configuration Tasks
  o Viewing / Verifying License Information
  o Bootstrapping the Local Status Page
  o Creating a Network
  o Claiming / Adding Devices
  o General Settings
  o Ensuring WAN Connectivity using PING
  o Rebooting the Meraki Security Appliance and other useful Tools
- Configuring the MX Appliance
  o Configuring VLANs and Layer 3 Interfaces
  o Configuring Layer 3 Firewall Rules
  o Configuring Layer 7 Firewall Rules
  o Configuring Content Filtering
  o Configuring Traffic Shaping
  o Configuring SD-WAN Policies for Traffic Preference
  o Configuring Client VPN against Meraki Cloud Directory

- o Configuring Client VPN against Active Directory
- o Configuring Site-to-Site VPN
- o Integrating Meraki MX Appliance with Active Directory
- o Identity Based Group Policies
- o Create / Configure Splash Pages
- Content Filtering and Threat Protection
  - o Adult Content Filtering
  - o Gaming Content Filtering
  - o Social Site Content Filtering
  - o Threat Protection – AMP
  - o Threat Protection – IDS/IPS
- MX Verification and Troubleshooting
  - o Appliance Status
  - o Site-to-Site VPN
  - o Firewall Settings
  - o Routing Table
  - o Using Packet Capture

Configuring MS Switches
- Switch Configuration
  - o Basic Switch Settings
  - o Spanning Tree
  - o DHCP Servers and ARP
  - o Routing and DHCP Servers
  - o OSPF Routing
  - o Access Control List (ACL)
  - o Access Policies
  - o Packet Captures
  - o Port Policies
- Configure Switches Using a Network Template
- Configuring Ports
  - o Trunk Ports, Access Ports
  - o Link Aggregation
  - o Port Schedules
  - o Port Mirroring
- Switch Monitoring
  - o Switch Status, Port Status
  - o Real-Time and Historical Data
  - o DHCP and Routing
  - o Event Logs
- Troubleshooting Tools
  - o Packet Captures, Cable Tests, Port Reset
  - o Throughput
  - o ARP and Route Tables
  - o Ping and Traceroute

- Managing Firmware Upgrades

Configuring MR Wireless Devices

- Configuring Meraki Access Points
  - Claiming your Devices and adding Devices to your Organization
  - MR Access Point Management
  - Accessing Meraki MR Devices – Local Status Page
  - Troubleshooting the Local Status Page
  - Checking Status of Meraki MR Devices Health and Connectivity
  - Configuring Templates and Deploying / Managing Meraki MR Devices through Templates
  - Unbinding Networks from a Template
  - Deleting a Configuration Template
  - Configuring Access Point Tags
  - Organizing a Wireless Network with Multiple Access Points
  - VLAN Tagging on Specific Access Points
- Configuring SSIDs
  - Provisioning SSIDs
  - Open with Splash Pages
  - Using Pre-Shared Keys with WPA2
  - Using WPA2-Enterprise SSIDs with 802.1X
  - MAC-based Access Control Filtered SSIDs
- Firewall & Traffic Shaping Configuration for Wireless
  - Blocking the Local Network for Guests
  - Layer 3 Firewall Rules
  - Blocking Applications
  - Traffic Shaping Rules per SSID
  - Configuring Layer 3 Roaming
  - Configuring ISE Integration with Access Policies
  - Configuring Access Policies for Wireless
  - Configuring Wireless RF Radio Settings
  - 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 Access Points
  - Monitoring AP Status
  - Using Meraki Wireless Health
  - Monitoring Clients
  - Monitoring RF Metrics
  - 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 Throughput
  - o Checking PCI Compliance
  - o Using the Event Log for Troubleshooting

Automation using Meraki APIs

- Meraki Dashboard API with Postman
- Meraki Organization and Networks Import into Postman
- Meraki Devices into the appropriate Networks using APIs
- Troubleshooting Meraki using APIs

Meraki MV Cameras

- Adding Cameras to a dedicated Network
- Configuring Users and Admins
- Camera Settings
- View Camera Events
- Searching Videos for Events
- Creating / Configuring Video Wall Boards
- Troubleshooting Camera Connectivity

Meraki Insight

- Configuring Web Application Health
- Configuring Alert Management for WAN Packet Loss
- Configuring Alert Management for WAN Utilization
- Configuring Alert Management for Uplink Latency
- Monitor WAN Health

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