

# Blue River Experts

Member of the Art of Innovation Network

## CISCO MERAKI WLAN SOLUTIONS

Installing, Configuring, and Troubleshooting  
Meraki Wireless Solutions

Version 2.4

## 1 Course Overview

This 3-day workshop provides students with the skills to configure, optimize, and troubleshoot a Cisco Meraki wireless networking solution. Students will learn how to install and optimize Meraki MR access points as well as how to configure the Meraki dashboard. Students will learn how to troubleshoot and configure the Meraki environment and learn how to diagnose and resolve user and network issues that may arise.

**Please note, this workshop is based on real-world use cases and deployment experiences that also will 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 for verifying business cases after attending this workshop.**

## 2 Who Should Attend

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

## 3 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

## 4 Why Attend a Blue River Experts Course

Our courses are not delivered by instructors but by consulting system engineers who have vast experience regarding real life design, deployment, and troubleshooting of actual customer installations. Besides delivering courses, our engineers usually design and deploy large enterprise solutions or perform real world POVs (proof of value) and POCs (proof of concept) for large customers. We are often requested and contracted by product vendors to help customers make buying decisions based on their particular use case. This allows us to discuss real world use cases, designs, and operational situations with our students.

If you would like to get educated by experts who will explain to you the whole life cycle from day 0 to day 2 as they have comprehensive knowledge from having written numerous business requirements documents, customer requirements documents, high level design and detailed design documents and having deployed and troubleshooted many customer installations then you should choose to attend one of our courses.

## 5 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 a Cisco Meraki WLAN solution
- Diagnose and resolve most user and network issues in enterprise scale deployments

## 6 Course Details

### 6.1 Introduction to Meraki

#### 6.1.1 Why Cisco Meraki

- The Meraki Mission
- Cloud Managed Networking Architecture
- Benefits of a Cloud Based Solution
- The Meraki Full Stack: New and Unique Value Proposition
- Meraki Deployment
- Use Cases: Why Customers choose Meraki

#### 6.1.2 Meraki Product Overview

- Meraki MS Switches
- Meraki MR Wireless Access Points
- Meraki MX Security and SD-WAN Appliances
- Meraki MV Vision Security Cameras
- Meraki System Manager (SM)
- Meraki MT Sensors Access Points
- Cisco Meraki Insight

#### 6.1.3 Meraki API Overview

#### 6.1.4 Meraki Licensing and Support

- Meraki Licensing
- Enterprise Support and Warranties
- Cisco Meraki Documentation

### 6.2 Cloud Management with the Meraki Dashboard

#### 6.2.1 Overview of the Meraki Dashboard

- The Cisco 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

#### 6.2.2 Organization-Wide Settings

- 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

### 6.2.3 Monitoring

- Overview
- Change Log, Login Attempts
- Monitoring the Security Center
- Using Location Analytics
- Monitoring VPN Status
- Scheduling and Managing Firmware
- Using the Summary Report

### 6.2.4 Creating and Managing Configuration Templates

- Understand Configuration Templates
- VLAN Templates

### 6.2.5 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

### 6.2.6 Monitoring Networks

- Clients, Traffic Analytics
- Displaying and exploring the Meraki Topology
- Performing Packet Captures
- Using the Event Log to Perform Troubleshooting

## 6.3 Meraki MR Wireless

### 6.3.1 Overview and Features

- MR Wireless Access Points
- Meraki Built-In Location Analytics
- Granular Control Over Bandwidth, Apps, and Client Devices
- MR Feature: Multigigabit Ethernet
- MR Feature: Mesh Routing
- MR Dedicated Scanning Radio
- Secure Guest Wireless
- Built-In Bluetooth Beacons
- Bluetooth Beacons
- Built-In Meraki Location Heatmap
- High Density Support
- ISE Integration
- Guest Self-Registration
- Cisco Umbrella and Cisco Meraki
- DNS/Web-Layer Security
- Zero Touch Provisioning
- Meraki Application Program Interfaces (APIs)
- Licensing and Support

### 6.3.2 Meraki Product Portfolio

- Meraki MR Wireless Access Point Models Indoor
- Meraki MR Wireless Access Point Models Outdoor
- Directional Antennas
- AP Adapter Options
- Multi-Color LED Access Points

### 6.3.3 Designing a Meraki Wireless Architecture

- Wireless Standards
- Meraki RF WLAN Design
- Site Survey / Site Survey Tools
- Mounting APs Best Practices
- Meraki Design Principles
- Meraki Roaming Design
- Switch Design for Meraki Wireless Networks
- Designing Meraki Network Services
- Organization and Network Design
- Migrating Cisco DNA APs to Meraki Dashboard

#### 6.3.4 Wireless Configuration

- Connecting Access Points to the Network
- Configuring Basic information including Tags
- Configuring Wireless RF Radio Settings
  - Auto RF
  - Transmit Power Control
  - Channel Selection
  - Band Steering
  - Client Balancing
- Configuring Floor Plans
- Placing Access Points on the Floor Plans
- Configuring RF Channel and Power Settings

#### 6.3.5 SSID Configuration

- 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 Pre-Shared Keys with WPA2
- Using WPA2-Enterprise SSIDs with 802.1X
  - RADIUS
  - Cisco ISE
- Configuring Layer 3 Roaming
- Configuring ISE Integration with Access Policies
- Configuring Access Policies for Wireless
- MAC-Based Access Control Filtered SSIDs
- Firewall & Traffic Shaping Configuration
  - Block Local Network for Guests
  - Layer 3 Firewall Rules
  - Block Applications
- Traffic Shaping Rules per SSID

#### 6.3.6 Bluetooth Settings

- Bluetooth Low Energy (BLE)
- Bluetooth Scanning
- Bluetooth Clients
- Bluetooth Beaconing
- Asset Tracking

#### 6.3.7 Wireless Radio Settings

- Radio Settings
- Channel Planning
- Auto RF - Channel Changes
- RF Profile
- Client Balancing

### 6.3.8 Monitoring

- Monitoring AP Status
- Using Meraki Wireless Health
- Monitoring Clients
- Monitoring RF Metrics
- Monitoring the RF Spectrum
- Monitoring SSID Availability

### 6.3.9 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

## 6.4 Automating Meraki Networks

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

## 7 Lab Exercises

### 7.1 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

### 7.2 Configuring MR Wireless Devices

#### 7.2.1 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

#### 7.2.2 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 Pre-Shared Keys with WPA2
- Using WPA2-Enterprise SSIDs with 802.1X
  - Cisco ISE
- MAC-based Access Control Filtered SSIDs



### 7.2.3 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

### 7.2.4 Monitoring Meraki Access Points

- Monitoring AP Status
- Using Meraki Wireless Health
- Monitoring Clients
- Monitoring RF Metrics
- Monitoring the RF Spectrum
- Monitoring SSID Availability

### 7.2.5 Troubleshooting

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

## 7.3 Automation using Meraki APIs

This part of the lab is delivered as an instructor demo. Granting students access to APIs would be very risky as mistakes could mess up the complete lab setup.

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