LET'S BUILD TOMORROW TODAY
Building Scalable, Flexible Enterprise Architectures with Cisco Meraki

Simon Tompson – Technical Evangelist – @merakisimon
BRKCRS-2101
Agenda

• Introduction
• Benefits of cloud managed networking
• Large scale, high density WiFi
• Resiliency and redundancy in the wired world
  • Enterprise class switching
  • Comprehensive UTM and VPN
• Leveraging the power of Cisco – ISE, Prime, IWAN
• Conclusion
Introduction
Cisco Meraki: 100% cloud-managed networking

Cisco Meraki: a complete cloud-managed networking solution
- Wireless, switching, security, and MDM, centrally managed over the web
- Built from the ground up for cloud management
- Integrated hardware, software, and cloud services

Leader in cloud-managed networking
- Tens of thousands of customers across all industries, over 100% annual growth
- Operating in the cloud since 2006

Recognized for innovation
- Gartner Magic Quadrant, InfoWorld Technology of the Year, CRN Coolest Technologies

Trusted by thousands of customers worldwide:
Bringing the cloud to enterprise networks

Meraki Wireless LAN
Meraki Security Appliances
Meraki Ethernet Switches
Meraki Mobile Device Management
Solving today’s IT challenges

- Billions of smart devices
- New business applications
- Video and rich media

- Integrated Device Management
- Turnkey Security and Guest Access
- Layer 7 Application QoS
Cloud Management increases IT efficiency

- Turnkey installation and management
- Integrated, always up to date features
- Scales from small branches to the campus
- Reduces operational costs
Cloud-managed networking architecture

- Network endpoints securely connected to the cloud
- Cloud-hosted centralized management platform
- Intuitive browser-based dashboard

Cloud Hosted Management

Campus / HQ
Branch Office
Retail Store
Teleworker

On premise hardware
Browser-based management
Brings the benefits of the cloud to enterprise networks

- Secure
  - No user traffic passes through cloud
  - Fully HIPAA / PCI compliant (level 1 certified)
  - 3rd party security audits, daily vulnerability testing
  - Automatic firmware and security updates (user-scheduled)

- Scalable
  - Unlimited throughput, no bottlenecks
  - Add devices or sites in minutes

- Reliable
  - Highly available cloud with multiple datacenters
  - Network functions even if connection to cloud is interrupted
  - 99.99% uptime SLA

Reliability and security information at meraki.cisco.com/trust
The Meraki backend

- Customers are partitioned across multiple ‘shards’ (geo and host provider redundant servers)
- Master shard demultiplexes and redirects network admin to their shard
- Shards form a mesh network, enabling efficient routing of management traffic
- Each shard capable of supporting up to ~10000 Meraki devices and 00’s of 000’s of client endpoints. Capacity to hold >1 year of network statistics
Keeping a Meraki network up-to-date

- Agile feature development

- Software/security update pushes
Large scale, high density WiFi
Cisco Meraki AP lineup for 2015

### Indoor APs

- **MR18**
  - 2 Stream Triple-Radio
  - 802.11a/b/g/n
  - 600 Mbit/s

- **MR26**
  - 3 Stream Triple-Radio
  - 802.11a/b/g/n
  - 900 Mbit/s

- **MR32**
  - 2 Stream Triple-Radio
  - 802.11ac
  - 1.2 Gbit/s

- **MR34**
  - 3 Stream Triple-Radio
  - 802.11ac
  - 1.75 Gbit/s

### Outdoor APs

- **MR62**
  - Single-Radio
  - 802.11b/g/n
  - 300 Mbit/s

- **MR66**
  - 2 Stream Dual-Radio
  - 802.11a/b/g/n
  - 600 Mbit/s

- **MR72**
  - 2 Stream Triple-Radio
  - 802.11ac
  - 1.2 Gbit/s
No longer about providing coverage

WiFi = default

Client density
Considerations for WiFi at Scale

• Ease of management
• Zero Touch deployment
• Templates
• Advanced roaming (L2 & L3) including 802.11k & r
• Maximum channel support (DFS)
• PCI reporting
Considerations for WiFi at High Density

- Channel width
- TPC
- Antenna options
The all-important site survey
Choosing which PHY to support

- 802.11b challenges
- 802.11n sweet spot
- 802.11ac premium
- Wave 1 vs Wave 2
- Band steering
- RF Spectrum
Authentication, Authorization & Accounting

Test connectivity to RADIUS server at 10.52.128.255:1812

Username: user
Password: ********

Begin test or cancel.

Cisco Identity Services Engine

Network Devices

Name | IP/Mask | Location | Type
-----|---------|----------|-----
MR26 | 192.168.128.251/32 | All Locations | All Device Types
MS220-8P | 192.168.128.252/32 | All Locations | All Device Types
Addressing and VLANs

- NAT vs Bridge
- VLAN bridging and the use of tags
- L3 roaming
- VPN Concentrator
- Bonjour Forwarding
Meraki Network Infrastructure Policies

- User
- Group
- Time
- Device
Wireless Security

• IDS/IPS - Air Marshal

• 3rd radio

• NAC

• Sentry

• Content Filtering

• SSID availability
Understanding client behavior

Location Heatmap

Location Analytics
Bluetooth Beacons at Work
Reengagement Example: Cart Checkout

How it works

1. Mobile app hears a Beacon
2. Checks abandoned cart and queries store inventory
3. Offers opportunity for immediate purchase
Motel 6: Lowering Operational Cost

10,000 AP wireless deployment with zero dedicated staff
- 70,000 room, 620 property network, 35k users each week
- Entire network managed through single dashboard
- Nationwide deployment completed in under five months

“Our customers depend on WiFi. With high speed 802.11n, our customers can count on performance.”

Jim Amorosia, CEO, Motel 6 and Studio 6
Enterprise Wireless Case Study
Resiliency and redundancy in the wired world
Switch fundamentals

- First cloud-managed
- 14 models
- PoE+
- High performance
Security Features

- 802.1x
- Port Isolation
- Sticky MAC
- IPv4 ACL
- Rogue DHCP server protection
Networking Features

- Switch cloning
- OSPF
- DHCP Server
- RSTP
- LAGs
- VRRP (Warm Spare)
- Virtual Stacking
- QoS
- Port mirroring
Troubleshooter’s dream come true

Remote Packet Capture

Cable tester

Warning: this test will disrupt traffic to 100 or 10 Mbit devices.

<table>
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<th>Port</th>
<th>Link speed</th>
<th>Length (± 3m)</th>
<th>Status</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
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</tr>
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</table>
Hardware redundancy

Redundant power supplies

Redundant Fans
Enterprise Switching Case Study
Protection for every LAN

• L3/L7 Firewall including VLAN Object based firewall rules
• Geo-based firewall
• Advanced Content Filtering
• Intrusion Detection & Prevention
• Antivirus/Antiphishing
Networking Features

- Configuration templates
- DHCP
- Rich traffic analytics
- Traffic Shaping
- L3 Routing
- Port Forwarding
- PAT & NAT: 1:1 & 1:Many
- Bonjour Forwarding
- Web Caching
MX Resiliency Features

- Dual WAN with link aggregation
- MPLS to VPN failover
- Cellular option
- Warm Spare
- IWAN
“Intelligent WAN” (IWAN) is a collection of Cisco technologies and products that enable transport independence, intelligent path control, application optimization, and secure connectivity for multi-site deployments.

**Transport Independence**
- IPSec overlay (Auto VPN)
- Scalable (Cloud Controller)
- Traffic distribution over multiple pathways (Internet, cellular, MPLS-to-VPN failover)

**Application Optimization**
- App visibility & control (Meraki dashboard, group-based policies, traffic analytics)
- Application QoS & bandwidth optimization (Traffic shaping)

**Intelligent Path Control**
- Uplink chosen by link latency, data loss, etc. (PfR, aka performance-based routing)
- Uplink assigned by traffic protocol, subnet, source, destination, etc. (PbR, aka policy-based routing)

**Secure Connectivity**
- Intuitive, automatic, scalable VPN solution to connect remote branch sites (Auto VPN)
VPN Features

- Auto VPN
- Active-Active VPN
- 3rd Party VPN
- IPSEC policy templates
- Client VPN
- Mesh/Hub & Spoke/Custom
Typical customer scenario: multi-site retailer

- PCI Level 1 cloud architecture
- Secure branch locations
- Dynamic retail analytics (MX64W)
- Branded, in-store connectivity
- Easy deployment & maintenance

Wired splash pages with Facebook Login enable intuitive guest access while promoting your brand.

Location analytics built into the MX64W measures key customer statistics over time.
Enterprise Security Case Study
Systems Manager

Manage endpoints

Enterprise network policy integration
A single policy solution for MDM with Cisco
Leveraging the power of Cisco – ISE, Prime
New: Cisco Enterprise + Meraki Architectural Integration
Meraki integration with Prime
Drilling down to a Particular Device Type
@MerakiSimon Dude - the Meraki/Prime integration made a large customer of mine very happy this week.

9:52 PM - 9 Apr 2015
ISE Integration with Meraki Systems Manager

Product integration between Meraki Systems Manager and ISE

Apply ISE policies to your mobile devices using ISE/Systems Manager integration

Support for full ISE MDM stack of advanced use-cases
- **Device registration** – onboarding into MDM
- **Remediation** – non-compliant devices restricted access
- **Compliance check** – periodic checks on posture
- **Remote actions** – e.g. remote wipe of devices

Unified policy management of networks and devices via ISE

- Available **today** on Meraki and Cisco ISE
Thank you
TOMORROW starts here.