EN Perfect Pitch
Developing a Digital Transformation Mobility Story

Mark Krischer
Topic: Wireless Everywhere
You are attending a Cisco event where CXOs are meeting with Cisco top executives. During break time, you happened to come across your Regional Manager (RM) who is speaking with a CTO of a regional company who is currently considering key technology investment Branch Networking technology.

**ASK:**

You have a 15 minute window to create a strong linkage to Cisco’s Wireless Everywhere solutions and to answer questions convincing the CTO of why now is the right time for them to make strategic investment.
Judging Criteria

We're looking for some key attributes from the winning pitch. What's most important is that you're able to realistically articulate Cisco's Wireless Everywhere solutions to Line Of Business Managers or C-Level executives.

15 minutes in duration and no more than 10 slides per sales pitch.

- Knowledge of LOB challenge (40%)
  - Understanding of Customer business problem
  - Articulate Cisco’s solution
  - Articulate Cisco’s differentiation
  - Vision for the Future

- Link Cisco Wireless solutions to resolve the LOB challenge: (40%)
  - Addressing the customer problem.
  - Creating a sense of urgency
  - Addressing likely customer concerns.
  - Addressing competitive tactics.
  - Provide comfort with cisco as a long term direction for customers.

- Creativity and Delivery (20%)
  - Creativity of message
  - Creativity of solution
  - Creativity of delivery
Perfect Pitch Enablement

• Part 1
  • Creating the Opportunity
    • Digitisation and Refresh

• Part 2
  • Developing the Solution
    • Differentiation and Simplification

• Part 3
  • Creating the Story
    • Innovation and Offers

• Cisco Live Melbourne
  • World of Solutions
  • Hyperlocation Demonstration
Differentiation Defends the Opportunities
The World’s Most Versatile Access Points

All The Benefits of 802.11ac Wave 2

- Higher Data Rate
- Wider Channels
- Simultaneous Data Delivery
- Better Battery Life

NEW: Cisco Aironet 2800
NEW: Cisco Aironet 3800

Plus Cisco Innovations for High Density Environments

Self-Optimizing Network

- New Flexible Radio Assignment
- New Multi-Gigabit Uplinks
- New Smart Antenna Port Expandability

Optimized Mobile User Experience

- Improved ClientLink
- Improved Turbo Performance
- Hyperlocation and Bluetooth*
- Optimized Roaming

*Future
Cisco High Density Experience

- **Turbo Performance**: Improves radio efficiency for higher throughput and client density
- **Optimised Roaming**: Intelligently determines the optimum time to roam
- **Cisco CleanAir® 160MHz**: Mitigates interference and improves channel capacity
- **Cisco ClientLink 4.0**: Improves legacy and 802.11ac Client performance
- **Dynamic BW Selection**: Extends DCA to automatically select ideal channel widths
- **AirTime Fairness**: Optimises medium access as allocation of airtime not bitrate
Greater Scalability

Turbo Performance

TCP Downlink Throughput 5GHz Multi-Client: 802.11ac Clients

5.9x faster than nearest competitor
Multi-Client Performance

![Graph of Multi-Client Performance](image1)

![Graph of Multi-Client Failed Clients](image2)

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Multi-User MIMO

Cisco 1850: Multi User MIMO Gain

Competitor: Multi User MIMO Gain

1.9x Gain

Throughput (Mbps)

0 1 2 3 4 5 6 7 8 9 10
MU MU MU MU MU MU MU MU MU
SU SU SU SU SU SU SU SU SU

SU-MIMO Clients
MU-MIMO Clients

10 9 8 7 6 5 4 3 2 1 0
SU SU SU SU SU SU SU SU SU

Competitor: Multi User MIMO Gain

.9x Loss

Throughput (Mbps)

0 1 2 3 4 5 6 7 8 9 10
MU MU MU MU MU MU MU MU MU
SU SU SU SU SU SU SU SU SU

SU-MIMO Clients
MU-MIMO Clients

SU SU SU SU SU SU SU SU SU

MU SU MU SU MU SU SU MU SU

SU SU SU SU SU SU SU SU SU
Cisco Air Time Fairness

Before
Rate limiting can only specify a bit rate (throughput) limit. There is no way to limit the duration that the bit rate will use.

After
Air time is allocated per SSID, per realm, per client. There is now better control over how air time is shared.

Gain the Ability to Meet SLAs

Improved Predictability and Performance
Cisco Dynamic Bandwidth Selection

Before
Complex configuration and inefficient use of spectrum

80 MHz Channel
52/56/60/64

Interference impacts 80 MHz... what can I use?

Radio Resource Management (RRM) selects channel only

Difficult to find non-overlapping channels

After
Automatic and intelligent use of spectrum

• 80-MHz channel 52/56/60/64
• Interference is impacting only channel 60
• 3x20 MHz channels still available or 1x40 MHz and 1x20 MHz

RRM selects channel and channel width

Automatic detection of non-overlapping channels
**Flexible Radio Assignment**

- Default operating mode
  - Serve Clients on both 2.4GHz and 5GHz

- Dual 5GHz Support, both radios serving clients on 5GHz
  - Maximum over the air data rate up to 5.2Gbps

- Wireless Security Monitoring
  - Scan both 2.4GHz and 5GHz for security threats
  - Serve Client of 5GHz

- Wireless Service Assurance*
  - Proactively monitors the network performance
  - Serve Client of 5GHz

- Enhanced Location*
  - Improves the client location accuracy
  - Serve Client of 5GHz

* Denotes feature availability post-FCS
Zero Impact Application Visibility and Control

Maintain Performance with Zero Impact AVC

Gain Visibility into the Network

Monitor Critical Applications

Control Application Performance
Cisco and Apple Together for a Better End-User Experience

- Improve device efficiency through joint tested standards-based functionality
- Analyze and prioritize Apple-based applications
- Minimize impact of Apple upgrades by accessing local instances on Cisco ASRs
- Display content from Apple devices Wirelessly
Meet Any Wi-Fi Use Case
Expandability and Investment Protection

- Bluetooth Beacon
- Adv. Security and Spectrum Analysis
- 3G and LTE Offload
- Future Wi-Fi Standard
- Video Surveillance
- 3rd Party Custom Application
- Potential Future Expandability

- Stadium Panel Antenna
- Directional Antennas
- Enhanced Location Antenna
- Self-Discover / Self-Configure
Cisco Wireless for 802.11ac Wave 2 and Beyond

Most Versatile Wireless in the World

- Understands and automatically adapts to changes in the environment

Innovation Beyond Latest Standard

- Designed form the ground up for the best network performance and highest user experience

Expand to Meet Any Use Case – Today and Tomorrow

- Add new functionality with minimal impact to operations and cost
Meraki Wireless and Beyond

MR42 Wireless Access-Point
- High end cloud-managed 802.11ac Wave 2 AP
  - 802.11ac wave 2 for large and dense environments
  - 3x3:3 radio
  - MU-MiMo, BLE
  - Dedicated Security radio

MS410 Aggregation & MS350 Access Switches
- Simple to manage and deploy Access and aggregation switches
  - MS 350: First cloud-managed physical stacking switch (Orderable today)
  - MS 410: Stackable, mid-range agg. Switch
  - Hot swappable power supplies and Fans

MX65, MX65W Security Appliances
- More flexible branch security appliance
  - Feature-rich UTM in a small design
  - 12 Ethernet ports and 2 POE+ ports
  - IWAN features for link optimization
  - Built-in 802.11ac wireless model

Systems Manager update – EMM update
- Enhanced Android, Windows 10, Mac OSX support
  - Android app containerization
  - Enhanced MDM capabilities with Windows 10 and Mac OSX
Simplification Enables the Opportunities
Five Wireless Designs

Consider the right solution based on customer requirements

Centralised
- 5520 WLC
- 8540 WLC
- Best in Class
- Distributed Network
- Fully Flexible
- Highly Scalable
- Advanced Solutions

Converged Access
- 3850 Catalyst
- 3650 Catalyst
- Simplified Campus/Branch
- Consistent Wired/Wireless
- Single GS
- Between 25 to 75 APs
- Controller-less

Mobility Express
- 1850 AP
- 1830 AP
- Low IT Footprint
- Fewer than 25 APs per site
- Few sites
- Controller-less

Flex Connect
- Flex 7500 WLC
- Virtual WLC
- Distributed Network
- Highly Scalable
- Data Centre Hosted

Cloud Managed
- MR Access Points
- MS Switches
- MX Security
- Meraki Dashboard
- Distributed Network
- Highly Scalable
- Low IT Footprint
Centralised

- The Centralised design remains the single most flexible deployment option
- AireOS controllers are the first platform for new feature innovation, and for any customer with an aggressive mobility strategy, leveraging advanced features, the Centralised design should be considered for any size wireless deployment
Converged Access

- Most typical office environment require fewer than 75 APs
- Mobility is becoming the primary access, but the access network is critical
  - PoE for phones and printers
- 3650 and 3850 stacks provide compelling value with NaaS/NaaE and high availability
- Converged Access is an additional value story reducing cost of wireless network, eliminating need for separate controller
- Should be lead offer for any deployment with 25-75 APs
- Tie in with mGig and 802.11ac Wave 2
Mobility Express

• Aggressively* compete against Aruba in any Aruba Instant deployment

• Simplified / Controller-less deployment for a small number of sites, each with fewer than 25 APs

• Easy migration to Flex as number or size of sites grow

• Limited to 25 APs and 500 clients
Top Industries for Mobility Express

Innovative Ways to Help Students Learn
Bring the Large School Experience to Smaller Sites
Meet New Mandates Quickly (Such as iSchool, Flip Learning or Digital Textbooks)

Service Customers Anywhere / Mobile Payments
Quickly Turn Up Networks with Minimal IT Support

Offer Revenue Generating Services without the IT Overhead
Enable Wi-Fi Connectivity Everywhere, Managed Centrally

K-12
Retail
Hotspot
Mobility Express: Use Cases and Details

- Sites with 500 clients or less where IT has limited span of control or reach
- Autonomous Mode implementations looking to refresh 802.11abgn to 802.11ac wave 2
- Companies or Sites looking to implement overlay / segmented Guest Access
- Companies or organization that need to quickly setup temporary Wi-Fi for events

<table>
<thead>
<tr>
<th>Key Features</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clients</td>
<td>500</td>
</tr>
<tr>
<td>Access Points</td>
<td>25</td>
</tr>
<tr>
<td>RF Management</td>
<td>Yes</td>
</tr>
<tr>
<td>Cisco Best Practices</td>
<td>Yes</td>
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<tr>
<td>Fast Secure Roaming</td>
<td>Yes – L2 Intra-controller</td>
</tr>
<tr>
<td>Rogue AP Detection</td>
<td>Yes</td>
</tr>
<tr>
<td>Application Visibility</td>
<td>Yes</td>
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<tr>
<td>Guest Network / Firewall</td>
<td>Yes</td>
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<tr>
<td>Device profiling</td>
<td>Yes</td>
</tr>
<tr>
<td>Mobile app</td>
<td>Yes</td>
</tr>
<tr>
<td>High Availability</td>
<td>Yes</td>
</tr>
<tr>
<td>Local Radius Server</td>
<td>Yes</td>
</tr>
<tr>
<td>Policies</td>
<td>AAA, ACL Over-ride, QOS Over-ride, ACL, Voice CAC</td>
</tr>
<tr>
<td>Interoperability</td>
<td>PI 3.0.1, CMX 10.2 (CMX Presence), ISE 1.4/2.0 (802.1x authentication)</td>
</tr>
</tbody>
</table>
FlexConnect

• Extends the Mobility Express solution where a controller per-site is viewed as cost-prohibitive

• Common for retail deployments

• 100 AP layer 2 roaming domain

• Can also be used to provide failover redundancy for a single controller on site

• Virtual Controller option lends itself well for customers with extensive Private Cloud infrastructure

• Partners with Cloud infrastructure can also consider virtual controller for wireless as a service
Meraki Cloud Managed

• Leverage Meraki as a disruptive play in competitive engagements, particularly where we have minimal existing network presence

• In existing Cisco deployments where the infrastructure has not been refreshed in a long time and/or minimal Cisco loyalty, Meraki can drive refresh opportunity, particularly if customer is a heavy user of SaaS applications / public cloud services

• Scales well from small to large deployments, single to multiple sites

• Exploit Meraki extended network play to access switching and UTM

• RF capabilities limited vs Cisco HDX, so consider the RF requirements of the environment first
Two Key Starting Questions

- Where are the apps?
  - Public Cloud SaaS
  - Private Cloud Data Centre

- What are the RF Characteristics and Environmental Requirements?
**MOBILITY REQUIREMENTS PRE-QUESTIONNAIRE**

### Project Overview & Goals

- **Estimated Project Timeline**
  - Start ______ / _______ - End ______ / _______.
- **Mobility Requirements**
  - Enterprise Wireless Network
  - BYOD/CYOD
  - Guest Access
  - Remote Access
  - Site Type
  - Standard Office
  - Next-Gen Workspace
  - Retail
  - Industrial
  - Outdoor
  - Complex
- **Strategy**
  - Greenfield
  - Brownfield + Migration
  - Wireless as Primary
  - Single Site
  - Multi-Site
  - Cloud
- **What classes of users are you looking to support?**
  - Internal Employees
  - Contractors | Consultants | Vendors
  - Customers and other External Guests
  - Expected Number of Users per Site
  - Mobility Requirements
  - Acceptable Level of Downtime
  - What level of availability is required for the wireless network?
  - Best Effort
  - Mission Critical
  - Acceptable Level of Downtime
  - Seconds
  - Minutes
  - Hours

### Network Infrastructure

- **Design Architecture**
  - 2-Tier (Collapsed Core)
  - 3-Tier (Traditional)
- **Access / Edge Layer**
  - Layer 2
  - Layer 3
  - 100M
  - 1G
  - 10G
  - PoE
  - PoE+
  - UPOE
  - CAT5
  - CAT5e
  - CAT6
- **Distribution / Aggregation**
  - 1G
  - 10G
  - 40G
  - 100G
  - Copper
  - Fiber
- **Core**
  - 1G
  - 10G
  - 40G
  - 100G
  - Copper
  - Fiber
- **WAN**
  - Physical or Virtual WAN router
  - MPLS
  - Direct Internet Access
  - IP Path Optimization (LISP | DNS | Site Selector)
  - WAN Acceleration and Optimisation
  - WAN Bandwidth

### Applications and Services

- **What applications do you offer today or plan to offer?**
  - Email | Calendaring
  - Voice | Video
  - Locally Hosted
  - Private Data Centre
  - Public Cloud
  - Low Latency
  - Other
  - Voice | Video | Collaboration
  - Hard Phone
  - Soft Phone
  - Video Conferencing
  - Telepresence
  - DLNA
  - AirPlay
  - Bonjour
- **Mobile Applications**
  - Voice/Video
  - Employee Applications
  - Video Conferencing
  - Customer Applications
  - Printing Services
  - Wired | Wireless
- **Physical Security**
  - Video Surveillance
  - Physical Access
  - Building Management and Physical Security Services
  - HVAC
  - Lighting

### Governance & Process

- **Security & L4-7 Services**
  - AAA / 802.1X
  - Wired | Wireless
  - Cisco Access Control Server
  - TACACS+
  - Cisco Identity Services Engine
  - Microsoft Active Directory
  - Forests
  - Device Profiling
  - Guest Access
  - Wireless | Wired
  - Firewalls
  - Router
  - Transparent
  - Mix Mode
  - Multi Context
  - Active | Standby
  - Clustering
  - Service Chaining
  - IPSec VPN Termination
  - Network Analysis
  - Data Encryption
  - Firewall Attachment Location
  - WAN Boundary
  - Data Center
  - IPS
  - Wired | Wireless
  - Compliancy Mandates
  - FIPS
  - PCI
  - HIPAA
  - OH&S

### Use Cases

- Enterprise
- Wireless
- BYOD/BYOA
- Consumerisation
- Remote Access
- Home Networking
- Business Continuity
- Partner / Contractor / Consultant Connectivity
- Customer Experiences

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**Elements of a Mobility Solution**

- Access Point
- Wireless LAN Controller
- AAA and MDM Services
- Mobility Services Engine
- Wireless Clients
- WLAN
- Cloud Services

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**The Journey to Next Generation Mobility**
TOMORROW starts here.