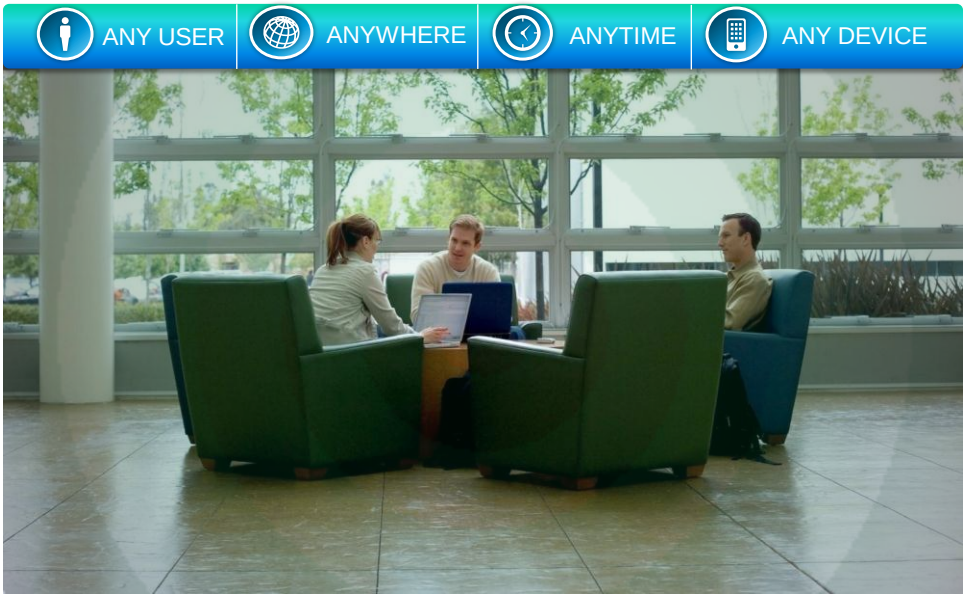
Cisco's BYOD / Mobility

- **CONTROL** and **VISIBILITY** for IT
- **DEVICE CHOICE** and **PREDICTABILITY** for Users
- **BALANCE** between the number of wired ports and wireless radios

Agenda – BYOD / Mobility

- Drivers
- Assumptions
- Key Functionality
- Portfolio
- Innovations
- Why Cisco

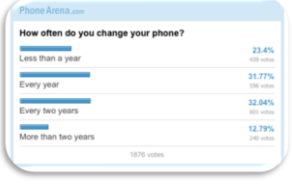
What is BYOD / Mobility?



BYOD / Mobility

Drivers and Assumptions

Drivers



- Majority of new network devices have no wired port
- Users will change devices more frequently than in the past
- Mobile devices have become an extension of our personality
- Guest access with accountability has become a mandatory business need

Assumptions

- Guests must be isolated and their activity accounted for
- Users will have 1 wired and 2 or more wireless devices moving forward
- The wireless network must be secure and as predictable as the wired network
- There can be no unmanaged devices any more – only managed and semi-managed

BYOD / Mobility
Use Cases

Basic Mobility

- Guest Wi-Fi
- Corporate Wi-Fi
- Mobile Mail only

Basic BYOD

- Guest Wi-Fi
- Corporate Wi-Fi
- Personnel Mobile Device with Profiling

Advanced BYOD

- Guest Wi-Fi
- Corporate Wi-Fi
- Personnel Mobile Device with Profiling and Provisioning
- VPN Access
- Wired BYOD
- MDM / VDI
- Voice / Video Everywhere

BYOD / Mobility
Key Functionality and Success

Key Functionality

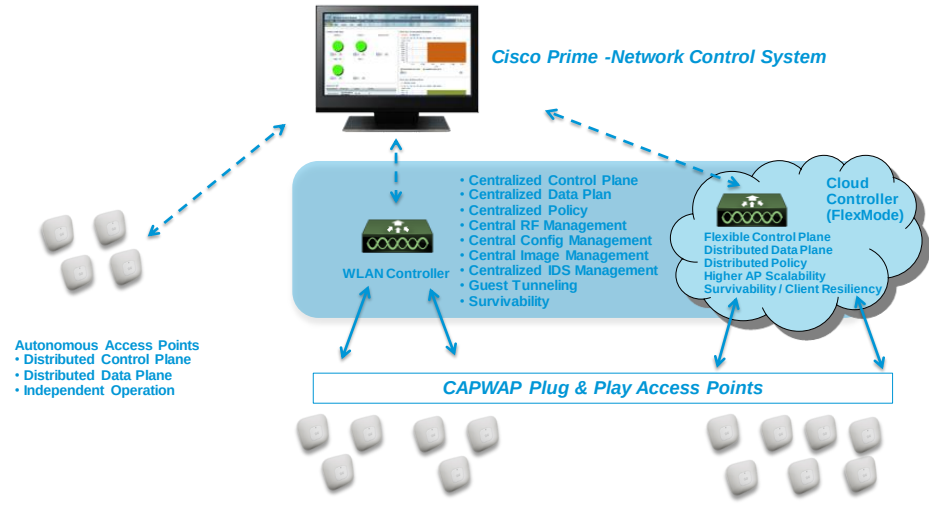
- Unified wired and wireless network with centralized policy management
- Sponsored guest and contractor access management that is isolated and accountable
- "AAA" (Authentication, Authorization, and Accounting) to determine "who" accesses your network
- "PP" (Profiling and Provisioning) to simplify onboarding of personal devices and enforce the "what, where, when, and how" users access your network

What is success?

- A well designed Mobility / Unified Access Network provides:
- **CONTROL** (ISE) and **VISIBILITY** (Prime) for IT
- **DEVICE CHOICE** and **PREDICTABILITY** (CleanAir, ClientLink, VideoStream) for Users
- **BALANCE** between the number of wired ports (1:1 ratio) and wireless radios (25:1 ratio)

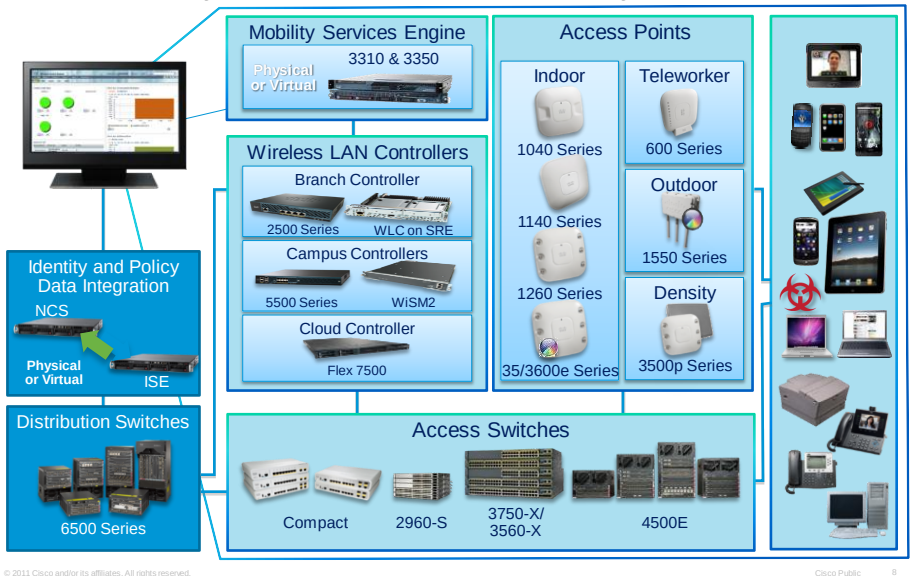
Cisco's BYOD / Mobility Architectures

Choice and Flexibility for IT



Cisco's BYOD / Mobility Portfolio

Control and Visibility for IT / Device Choice and Predictability for Users



Cisco's BYOD / Mobility Innovations

Cisco's Unified Policy Management / Guest Access

Industry's first context-based Wired+Wireless+VPN policy/guest management

BEFORE
Separate policy and guest management

Wired | VPN | Wireless

AFTER
Unified context-based policy management
for employees and guests across the network

AAA + PP = Secure BYOD
Simple | Unified | Automated

Cisco ISE – Provides Unparalleled **Control**

Cisco's Unified Policy Management / Guest Access

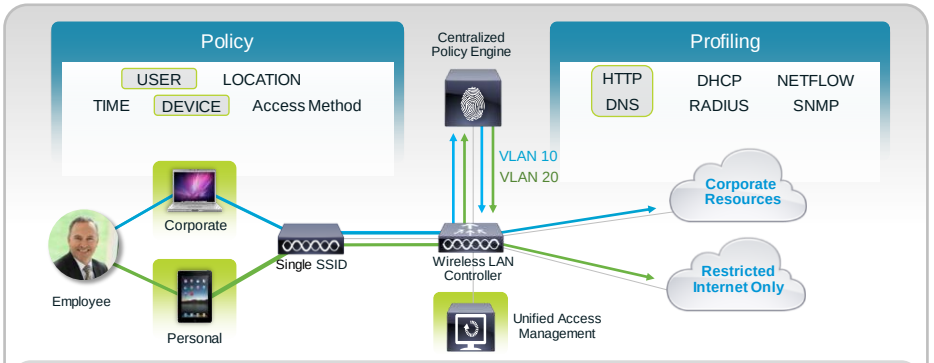
Example of BYOD / Mobility Policy Table

User	Device	Access Method	Location	Time	Policy
Guest	Personal Laptop Personal Device	Wireless	Conference Rooms	M – S 8 am -6 pm	Captive Portal DMZ Guest Tunnel Guest VLAN
Contractor	Contractor Computer Personal Device	Wireless Wired	Anywhere Anywhere	Anytime M – S 8 am -6 pm	Contractor VLAN Contractor ACL
Employee	Corporate Computer Personal Device	Wired Wireless VPN	Anywhere Anywhere Anywhere	Anytime Anytime Anytime	Employee VLAN Employee ACL

IF $Identity AND $Device AND $Access AND $Location AND $Time THEN $Permission

Cisco's Unified Policy Management / Guest Access

Example BYOD / Mobility Implementation

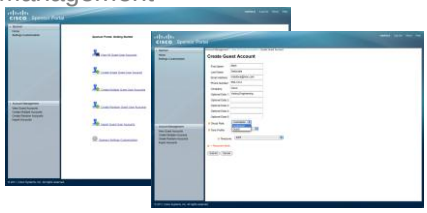


Corporate Issued Device
1. User Authentication and Authorization
2. Profiling to identify device
3. Policy decision
4. Policy enforce to “VLAN 10” on same SSID
5. Full access granted
6. Full device visibility

PERSONAL Device
1. User Authentication and Authorization
2. Profiling to identify device
3. Policy decision
4. Policy enforce to “VLAN 10 or 20” on same SSID
5. Full or Restricted access granted
6. Full device visibility

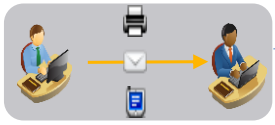
Cisco's Unified Policy Management / Guest Access

Example of Sponsored Guest Management



Account Sponsorship

Approved sponsor creates account.



Identity Services Engine

Account Notification

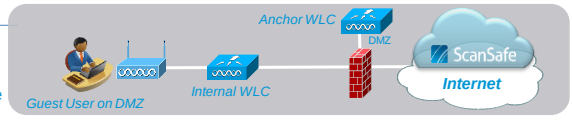
Credentials automatically provided to guest via eMail, SMS, or Printed Receipt

Captive Portal

Web browser redirects to login screen
User can manage access for their own device – ISE 1.1mr1

Access Granted

Successful Authentication
- Isolated Guest Network on DMZ
- Role Based Policy Applied
- User and Company Protected by ScanSafe

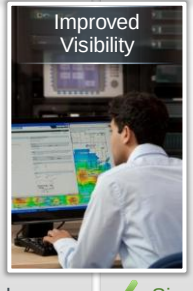


Cisco's Unified Network Management

Single pane of glass view and management of Wired+Wireless+Identity

BEFORE
Separated management

Wireless
Wired
Identity



- Siloed Inefficient Operational Model
- Repetitive Manual correlation of data
- Error Prone Consumes time and resources

AFTER
Comprehensive user and access visibility with advanced troubleshooting

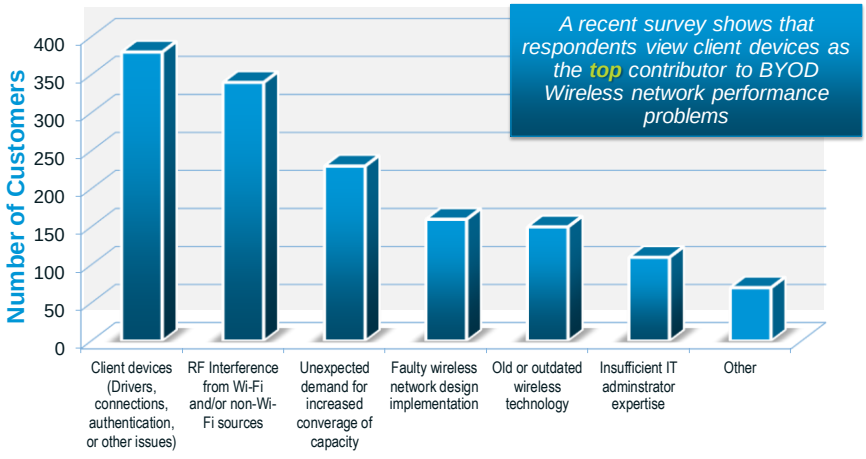
Wireless
Wired
Identity

- Simple Improves IT efficiency
- Unified Single view of all user access data
- Advanced Troubleshooting Less time and resources consumed

Cisco Prime NCS – Provides Unparalleled **Visibility**

Cisco's Unified Network Management

Top BYOD Wireless Issues



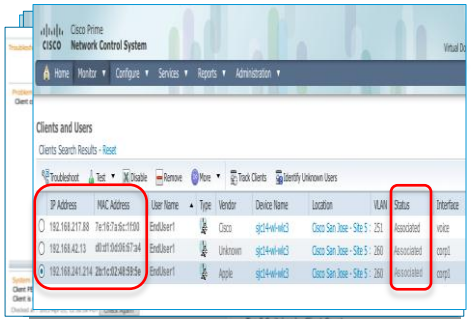
Cisco's Unified Network Management

Troubleshoot BYOD Wireless and Wired devices

USE CASE: User calls in to help center because they cannot get access to financial data on the network. IT determines if they are authorized to access this area.

Cisco Prime Network Control System (NCS)

1. Search on user name
2. Identify wired and wireless devices associated with the user
3. Display associated and disassociated devices
4. Use automated client troubleshooting workflow to resolve the issue
5. Issue resolved



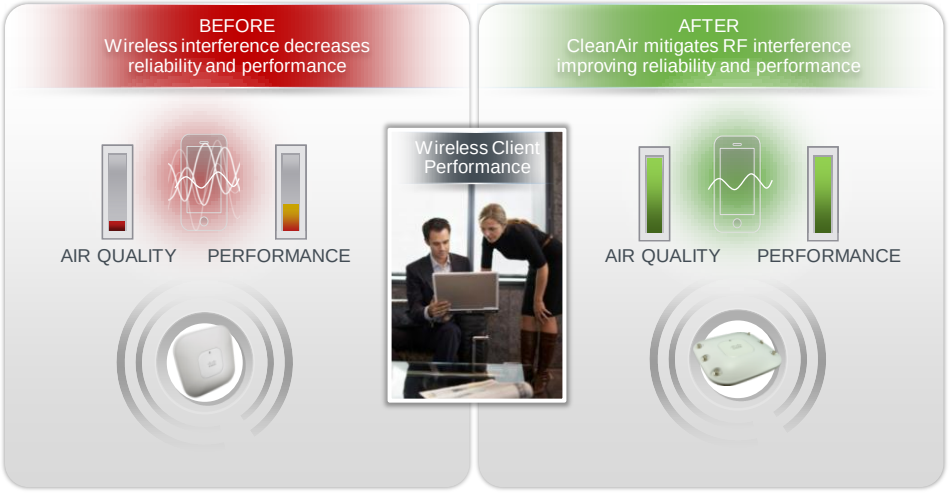
Cisco Prime NCS = Provides Unparalleled **Visibility**

Cisco's Unified Network Management

Unified Network and Policy Management	• Extends visibility beyond the edge to both wired and wireless users • Unifies wired, wireless and security visibility into a single view • Aligns to how networks and organizations are evolving for efficient operations and faster troubleshooting
Comprehensive Wireless Lifecycle Management	• Comprehensive lifecycle management of 802.11n and 802.11a/b/g enterprise-class indoor and outdoor wireless networks • Delivers a wide array of tools and resources for effective planning, deployment, monitoring and troubleshooting, remediation, and optimization
Integration with Cisco Identity Services Engine	• Cisco Prime NCS retrieves information directly from clients: Wired, wireless and authenticated, unauthenticated • Enables client posture status and client profiled views • Directly links from Cisco Prime NCS to ISE
Highly Scalable	• Monitor thousands of switches and Manage hundreds of Cisco wireless LAN controllers and thousand of Aironet access points • Seamlessly integrates with Cisco context-aware software, Adaptive Wireless Intrusion Protections System (AWIPS), CleanAir, and the Cisco Integrated Services Router

Cisco's CleanAir Technology

Industry's first chip level proactive and automatic interference protection



Cisco CleanAir – Improves Performance and Predictability

Why is Cisco's CleanAir Technology so Unique?

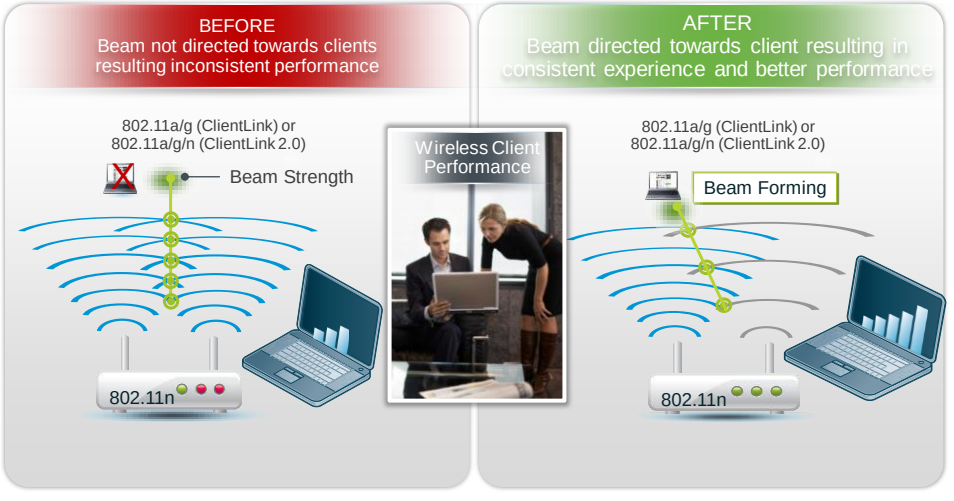
High resolution interference detection, classification, and mitigation at chip level

- CleanAir Radio ASIC
- Detect Wi-Fi and non-Wi-Fi interference sources
- Assess impact to Wi-Fi performance
- Proactively change channels when interference occurs
- Monitor air quality

Detect | Classify | Locate | Mitigate

Cisco's ClientLink / ClientLink 2.0 Technology

Advanced beam forming technology improves wireless client performance



Cisco ClientLink - Improves Predictability and Performance

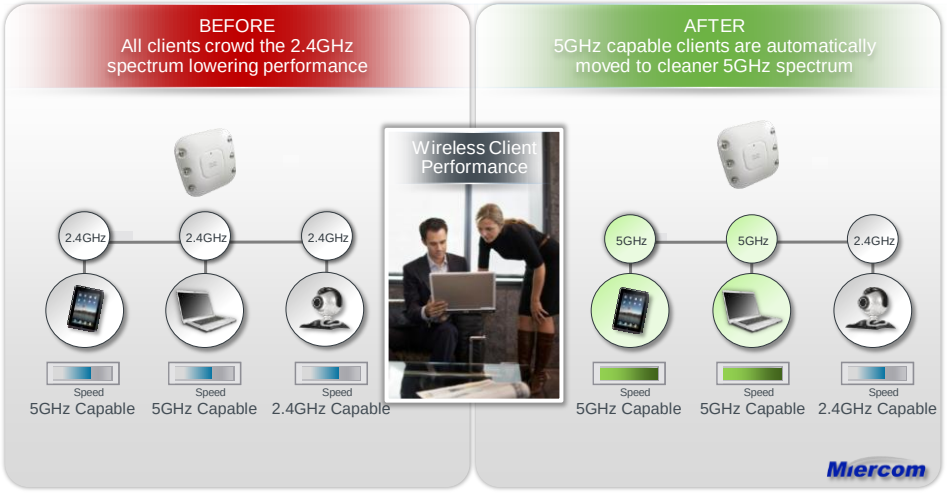
Why is Cisco's ClientLink so Unique?

Reduces coverage holes / improves client predictability and performance

Cisco ClientLink - Improves Predictability and Performance

Cisco BandSelect Technology

Automatic band steering and selection for 5GHz capable devices



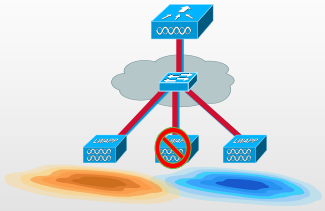
Cisco BandSelect - Improves Predictability and Performance

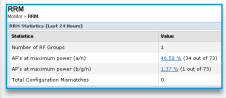
Cisco's Radio Resource Management

Simplify IT operations with automatic / dynamic RF management

BEFORE
Manual RF management

AFTER
Dynamic RF management





Channels

Power

Coverage

- Manual Channel Assignment
- Manual Transmit Power Adjustment
- Manual Coverage Hole Detection/Mitigation

- Dynamic Channel Assignment
- Dynamic Transmit Power Adjustment
- Dynamic Coverage Hole Detection/Mitigation

Cisco RRM - Improves Predictability and Performance

Why is Cisco's RRM Technology so Unique?

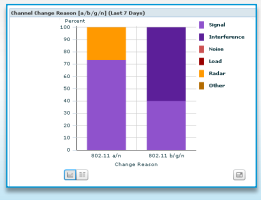
High resolution interference detection, classification, and mitigation at chip level

- DCA - Dynamic Channel Assignment

  Changes in "channel / air quality" are monitored, and Access Point channel assignment is changed when deemed appropriate to preserve predictability

- TPC - Transmit Power Control

  Transmit Power is adjusted down or up based on radio to radio pathloss calculation when deemed appropriate to preserve predictability



- CHDM - Coverage Hole Detection and Mitigation

  Transmit Power is adjusted up on Access Points when coverage holes are detected and deemed appropriate to preserve predictability

Cisco VideoStream Technology

Wired-like video delivery over wireless

Cisco VideoStream – Improves Predictability and Performance

Why Is Cisco's VideoStream so Unique?

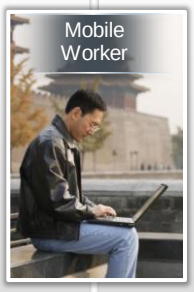
We optimize end-to-end starting at the Access Point

Tested for 30X Less Bandwidth Consumed and Double the Performance of Competitors

Cisco AnyConnect Technology

Industry's first context-based and persistent VPN Connectivity

BEFORE
Unmanaged devices
— risk of data loss and lack of access



AFTER
Always-on VPN connectivity

- Acceptable Use
- Access Control
- Data Loss Prevention

Cisco AnyConnect = Always On VPN Connectivity

Thank you.