Mobility is the New Access
Digital Business in a Digital World
Technology Transitions Driving Digital Transformation

Enablers for Digitization

**Mobility**
- Mobile Traffic Will Exceed Wired Traffic by 2017

**IoT**
- IoT Devices Will Triple by 2020

**Analytics**
- 76% of Companies Are Planning to or Investing in Big Data

**Cloud**
- 80% of Organizations Will Use Primarily SaaS by 2018

The Network Connects, Secures, Automates, and Delivers Insights
Cisco Digital Network Architecture

Network-enabled Applications

Cloud Service Management
Policy | Orchestration

Open APIs | Developers Environment

Automation
Abstraction & Policy Control from Core to Edge

Analytics
Network Data, Contextual Insights

Open & Programmable | Standards-Based

Virtualization
Physical & Virtual Infrastructure | App Hosting

Cloud-enabled | Software-delivered

Insights & Experiences

Automation & Assurance

Security & Compliance
DNA based Campus Evolution

Services
- Mobility
- Collaboration
- Security

Orchestration and Policy

Infrastructure
- Endpoints
- Branch

Mobility
- Seamless roaming
- Elastic WLC

Collaboration
- Quality of Experience (QoE)
- Voice/Video performance

Security
- Identity, NAC, Encryption
- Device Onboarding
Mobility and Digital Transformation

- 69% believe Mobility affects organizations as much as the World Wide Web
- 72% of businesses view mobility as a strategic imperative
- 58% of business leaders are using mobility to change the way employees work
- 54% of business leaders agree mobility provides new ways of engaging customers
Implications of the Digital Business

MORE DEVICES, MORE APPLICATIONS


Higher Expectations for Peak Network Performance

Increased Velocity for Business Demands

Expanded Threat Landscape
Addressing Growth
802.11ac Wave 2

Highest Wi-Fi Performance Ever

- Higher data rate than previous standard
- Allows for more wireless data with wider channels

Better End Device Efficiency

- Simultaneously deliver data to multiple devices
- Conserve end-device battery

For Highly Demanding Environments
## Adoption of 802.11ac

<table>
<thead>
<tr>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>MacBook</td>
<td>iPhone 6, iPad Air 2</td>
<td>Galaxy 6S</td>
</tr>
<tr>
<td>Galaxy S5</td>
<td>802.11ac Wave 1 Smartphones</td>
<td>802.11ac Wave 2 Enterprise-class AP</td>
</tr>
<tr>
<td><strong>IEEE</strong></td>
<td><strong>IEEE</strong></td>
<td><strong>IEEE</strong></td>
</tr>
<tr>
<td>802.11ac IEEE Ratification</td>
<td>802.11ac Wave 2 WFA Certification</td>
<td>802.11ac Inflection point</td>
</tr>
</tbody>
</table>
Increasing Bandwidth
Simultaneous Data Delivery to Many Devices
Multi-User, Multi-In, Multi-Out

Single-User MIMO (SU-MIMO)

Devices get on and off the network quicker, allowing more devices to be served
Simultaneous Data Delivery to Many Devices
Multi-User, Multi-In, Multi-Out

Multi-User MIMO (MU-MIMO)

Devices get on and off the network quicker, allowing more devices to be served
Next-Generation 802.11ac Wave 2 Access Points

- Industry leading 4x4 MIMO:3 spatial streams (SS) **Wave 2** 802.11ac access points
- Dual radio, 802.11ac Wave 2, 160 MHz
- Combined Data Rate of 5.2Gbps
- 2 x 5 GHz: 4x4: 3SS supporting
  - SU-MIMO / MU-MIMO
  - Flexible Radio Assignment: 2.4GHz, 5GHz, Wireless Security Monitoring, Wireless Service Assurance, or Enhanced Location*
- 2 x Gigabit Ethernet
- HDX Technology
- Enhanced Location using External Antennas*
- USB 2.0
- Internal and external antenna models
- Smart Antenna Connector - 2nd Antenna Connector
- Modularity: Side Mount Modular (3800 only)

Cisco Aironet® 3800 and 2800 Series

Multi-Gigabit Wi-Fi has fully arrived.

* Post-FCS
Flexible Radio Assignment
Adjust radio bands to better serve the environment.

Zero Impact AVC
Hardware-based application visibility and control without impact to performance.

Multi-Gigabit Uplinks
Free up wireless with faster wired network offload.

Turbo Performance
Scales to support more devices running high bandwidth apps.

Cisco CleanAir®
Remediates device impacting interference.

Flex Dynamic Frequency Selection
Automatically adjusts so as not to interfere with other radio systems.

Optimized Roaming
Intelligently connects the proper Access point as people move.

Cisco ClientLink
Improves performance of Legacy and 802.11ac devices.

Expandability
Add functionality via module, Smart Antenna Port or USB Port.

Innovations Only Cisco Delivers
RF Excellence for a High-Density Experience
Dual 5GHz Improves Client Performance and Capacity

- Improves the Effective Spectrum Usage of the Cell
- Micro-Radio
  - 802.11ac Clients near the AP
  - High Performance Wi-Fi Clients at 802.11ac data rates
  - Excellent speed and performance
- Macro-Radio
  - All legacy Clients join macro-cell
  - Automatic Client Transitioning between cells (Load-balancing / steering)
- Future of wireless

Users have a better overall experience on a Dual 5GHz Access Point.
Dual 5GHz
2x the Coverage Area and Capacity

- Provide 2x the coverage area from a single Access Point
- Improve the total Network Performance
- Utilizes Smart Antenna Connector
- Mix and match all Cisco Supported Antennas
## Flexible Radio Assignment

<table>
<thead>
<tr>
<th>5GHz Serving</th>
<th>2.4GHz Serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default operating mode</td>
<td></td>
</tr>
<tr>
<td>Serve clients on both 2.4GHz and 5GHz</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5GHz Serving</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Dual 5GHz support, both radios serving clients on 5GHz</td>
<td></td>
</tr>
<tr>
<td>Maximum over the air data rate up to 5.2Gbps</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5GHz Serving</th>
<th>Wireless Security Monitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless security monitoring</td>
<td></td>
</tr>
<tr>
<td>Scan both 2.4GHz and 5GHz for security threats</td>
<td></td>
</tr>
<tr>
<td>Serve clients on 5GHz</td>
<td></td>
</tr>
</tbody>
</table>
Improve Connectivity to All Devices
Cisco ClientLink 4.0

Improves device performance

802.11ac Wave 2
Access Point: ClientLink

• 802.11a
• 802.11g
• 802.11n
• 802.11ac Wave 1
• 802.11ac Wave 2
Greater Scalability

Turbo Performance

TCP downlink throughput 5GHz Multi-Client: 802.11ac Clients

5.9x faster than nearest competitor

The rate at which Cisco outperforms the nearest competitor

Number of clients

Rate Cisco Out Performs Its Nearest Competitor

Based of Cisco Aironet X700 Products
The Solution – Cisco Multigigabit Technology Powered by NBASE-T

Delivers up to 5X Speeds in Enterprise without replacing Cabling Infrastructure
Zero Impact Application Visibility and Control

Maintain performance with zero-impact AVC

Gain visibility into the network  Monitor critical applications  Control application performance
# The World’s Most Versatile Access Points

## All The Benefits of 802.11ac Wave 2

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Wi-Fi Performance Ever</td>
<td>Higher Data Rate, Wider Channels</td>
</tr>
<tr>
<td>Better End Device Efficiency</td>
<td>Simultaneous Data Delivery, Better Battery Life</td>
</tr>
</tbody>
</table>

**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
- Improved Modularity

### Optimized Mobile User Experience
- Improved ClientLink
- New Smart Antenna Connector
- Improved Enhanced Location*

- Turbo Performance
- Optimized Roaming

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*Enhanced Location is a trademark of Apple Inc.*
## Continuous Innovation

<table>
<thead>
<tr>
<th>Year</th>
<th>Product</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Cisco AP3500 with <strong>CleanAir</strong> Technology</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>Cisco AP3700 <strong>Hyperlocation Module</strong></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>Cisco AP3800 and AP2800 <strong>Flexible Radio Assignment</strong></td>
<td></td>
</tr>
</tbody>
</table>
Meet Any Wi-Fi Use Case
Expandability and Investment Protection

- **Self-Discover / Self-Configure**
- **Coverage and Capacity**
  - Stadium Panel Antenna
  - Directional Antennas
  - Location Antennas

- **Potential Future Expandability**
  - SMART Antenna Port
  - Module Port
  - Bluetooth Beacon
  - System Services
  - 3G and LTE Small Cell Offload
  - Bluetooth Beaconsing
  - Location and Analytics
  - Custom Application Using Linux
  - Future Wi-Fi Standard
  - Video Surveillance
Cisco Aironet 1810w Series

- Target for Multi Dwelling Unit (MDU) Deployments seeking a high-performance in-room \textit{Wireless & Wired Access Device}:
  - Hospitality
  - Higher Education for dorm rooms
  - Healthcare (long-term care facilities or similar deployments)
- Simultaneous Dual Radio, \textbf{Dual Band 2x2:2 with 802.11ac Wave 2}, including MU-MIMO
- \textbf{Integrated Bluetooth Low Energy radio}*
- Designed for \textbf{ease of mounting} to numerous global wall junction standards. Accessories available to mount directly on a wall or have it desk mounted
- \textbf{Sleek design} in a small form factor: 165 x 114 x 41 mm
- \textbf{3 x Local GigE} Ethernet Ports + 1 x uplink GigE port + 1 x passive pass-through RJ45
- Powered over Ethernet (PoE) or with AC Adapter
- \textbf{PoE out} on LAN 3 port, up to 803.af Class 0 (depending on powering options)
- Minimal WLC software: 8.2 MR1
Cisco Aironet OEAP1810 Series

- Target for Teleworker or Micro-branch deployments, providing wired and wireless corporate access to remote workers
- Simultaneous Dual Radio, **Dual Band 2x2:2 with 802.11ac Wave 2**, including MU-MIMO
- Vertical mount to optimize wireless coverage with integrated antennas.
- Shipping with included **mounting cradle** purposefully designed for optimal mounting and cable management. Accessories available to mount onto a junction box or directly on a wall
- **3 x GigE** Ethernet Ports, 1 x uplink GigE port
  - Up to 2 ports can be tunneled back to Wireless LAN Controller
- Powered over Ethernet (PoE) or with included AC Adapter
- **PoE out** on LAN 3 port, up to 803.af Class 0 (depending on powering options)
- Minimal WLC software: 8.2 MR1
# Cisco Aironet Portfolio
Enabling the 802.11ac Wave 2 Transition

## Enterprise Class

<table>
<thead>
<tr>
<th>Model</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1810w</strong></td>
<td>2x2:2SS 80 MHz; 867 Mbps</td>
</tr>
<tr>
<td></td>
<td>Tx Beam Forming</td>
</tr>
<tr>
<td></td>
<td>1 GE Port uplink</td>
</tr>
<tr>
<td></td>
<td>3 GE Local Ports, including 1 PoE out</td>
</tr>
<tr>
<td></td>
<td>Local ports 802.1x ready</td>
</tr>
<tr>
<td><strong>OEAP1810</strong></td>
<td>2x2:2SS 80 MHz; 867 Mbps</td>
</tr>
<tr>
<td></td>
<td>3 GE Local Ports downlink, including 1 PoE out</td>
</tr>
<tr>
<td></td>
<td>One or Two Local Ports can be tunneled back to corporate</td>
</tr>
<tr>
<td></td>
<td>Spectrum Analysis*</td>
</tr>
<tr>
<td></td>
<td>Internal antenna</td>
</tr>
<tr>
<td></td>
<td>Tx Beam Forming</td>
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<td></td>
<td>1 GE Port</td>
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<tr>
<td></td>
<td>USB 2.0</td>
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<td>Centralized, FlexConnect and Mobility Express</td>
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## Mission Critical

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<th>Model</th>
<th>Features</th>
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<tr>
<td><strong>2800</strong></td>
<td>4x4:3SS 160 MHz; 5 Gbps</td>
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<tr>
<td></td>
<td>2.4, 5GHz or Dual 5GHz</td>
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<td></td>
<td>2 GE Ports</td>
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<td></td>
<td>Internal or External antenna</td>
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<td></td>
<td>Smart Antenna Connector</td>
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<td></td>
<td>Enhanced Location* (External Antenna)</td>
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<tr>
<td></td>
<td>CleanAir 160MHz</td>
</tr>
<tr>
<td></td>
<td>ClientLink 4.0</td>
</tr>
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<td></td>
<td>USB 2.0</td>
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## Best in Class

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<th>Model</th>
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<tr>
<td><strong>3800</strong></td>
<td>4x4:3SS 160 MHz; 5 Gbps</td>
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<td>2.4, 5GHz or Dual 5GHz</td>
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</table>

*Post-FCS
A Solution for Any Size Organization

Fast to Set-up, Simple to Manage
Access Points & Virtualized Controller

High-User Density and Customized Use Cases
Access Points, Controller Appliance(s), Centralized Policy & Lifecycle Management

Wireless control anywhere for operational and budget alignment

Mobility Express
From 500 Clients

Centralized / FlexConnect
Up to 64,000 Clients

Access Point
Cloud
Router
Switch
Appliance

Solution Grows with Your Organization
Why Cisco Wireless

Quickly adapts to new needs

Digital business foundation

- Broadest Portfolio
  - Optimizes cost for any use case

- Service Assurance Focused
  - Client-in Service Management

- High-Density Innovator
  - Built demanding environments

- Pre-defined Expertise
  - Built in for reliability and lower OPEX

- Leading device Partner
  - Device and networks work better together

Align to New Demands
- Automatically adapts to changes

Add New Applications
- Improves 1000+ Applications

Meet New Use Cases
- Expand functionality with minimal cost
THERE’S NEVER BEEN A BETTER TIME