



# WLAN @ Cisco ImPuls

Gerhard Jäggle  
Consulting SE

[gjaeggle@cisco.com](mailto:gjaeggle@cisco.com)

Heiko Gruber  
Product Sales Specialist

[hgruber@cisco.com](mailto:hgruber@cisco.com)

München, 13. Februar 2017

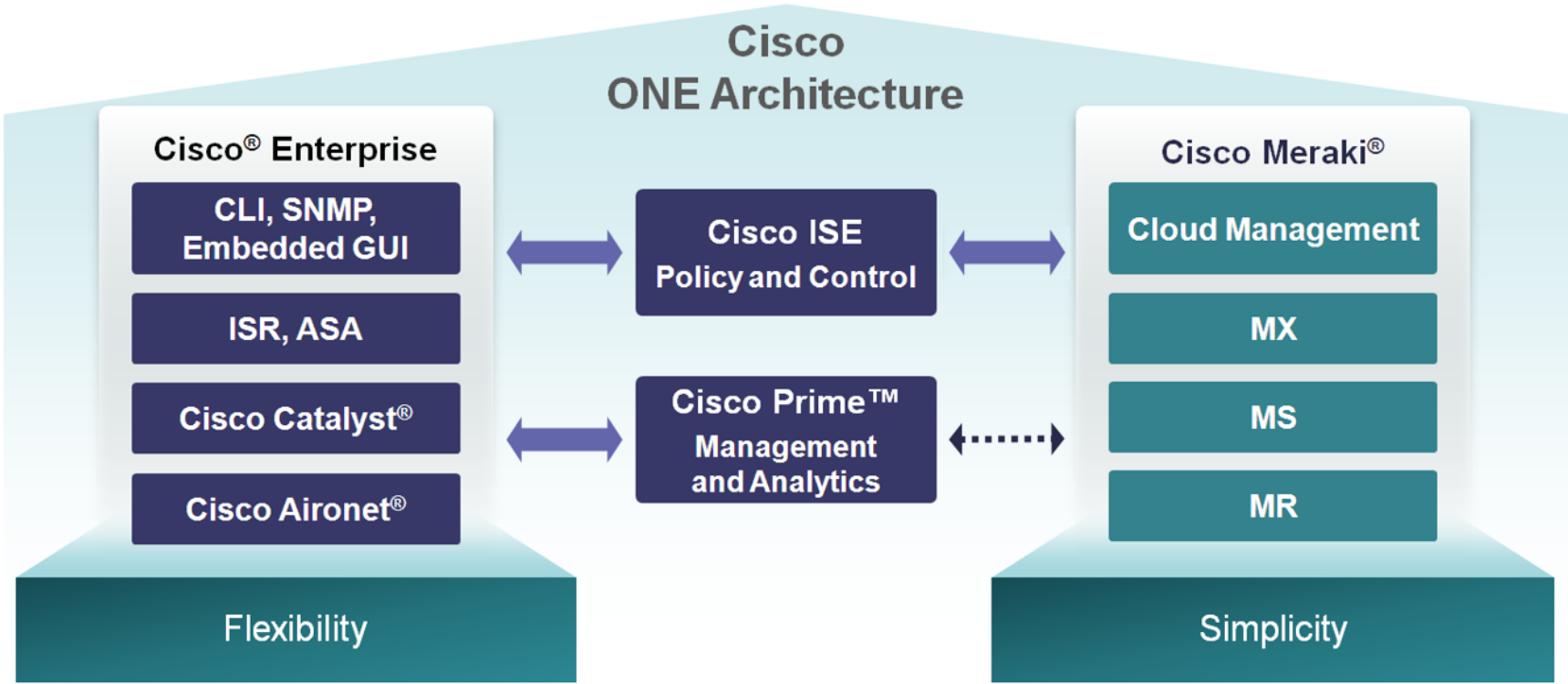


# Changing Mobility Landscape

Driven by Device, App, and Data Rate Growth

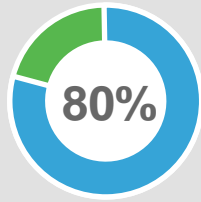


# Cisco Enterprise + Meraki Architectural Integration

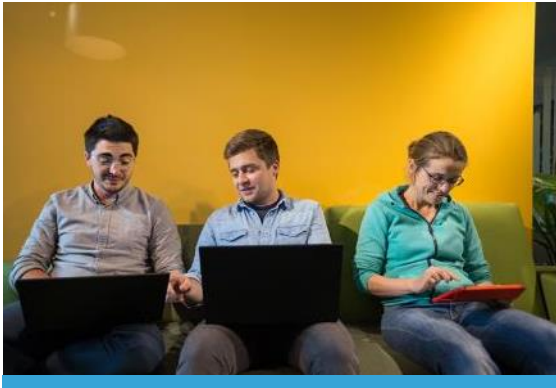


# 802.11ac Wave 2

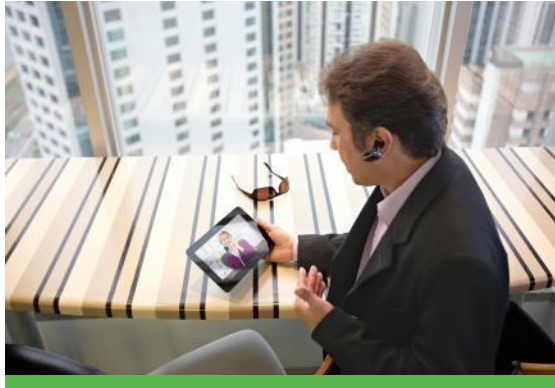
# How 802.11ac Wave 2 Works



speed boost compared to Wave 1, thanks to:



Multi User MIMO  
(MU-MIMO)



Wider RF Channels



Four Spatial Streams



# Aironet 1815 Series Access Points



# Cisco Aironet 1815i Series



**Cisco Aironet® 1815i Series**  
**Targeting for 8.3MR1 release**

- Enterprise-class 2x2 MU-MIMO 802.11ac Wave 2 Access Point
- Dual Radio, **Dual Band with 802.11ac Wave 2, 80MHz**
- **Integrated Bluetooth Low Energy radio\***
- **Mobility Express**
- **Sleek design in a small form factor: 15 x 15 x 3,3 cm**
- 1 x uplink GigE port
- Powered over Ethernet (PoE)
- Internal antennas

\* Future availability

# Cisco Aironet 1815w Series



Targeting for 8.4 release

Cisco Aironet 1815W Series	
Wi-Fi Standards	802.11a/b/g/n/ac Wave 2
Max Data Rate	867 Mbps on 5GHz radio
Radio Design MIMO: Spatial Streams	Dual-Radio, 2x2:2 SU/MU-MIMO
Bluetooth	Integrated Bluetooth Low Energy
Local Ethernet Ports	3 x GE
Powering Capability	1 x GE port PoE out
Wired authentication	Open, MAC filter or 802.1x
Wired traffic options	Per port: locally switched or tunneled to WLC
Mobility Express	Supported FCS
Data Uplink (Mbps)	10/100/1000
Power	802.3af/at
Physical security	Torx screw, Kensington lock
Minimum WLC software	8.4



# Cisco Aironet 1815t - 802.11ac OfficeExtend AP



## Cisco Aironet® 1815t Series Targeting for 8.4 release

- 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
- Elegant design with integrated antennas for optimal wireless coverage and convenient cable management.
- 3 x GigE Ethernet Ports, 1 x uplink GigE port
  - Up to 2 ports can be tunneled back to Wireless LAN Controller
- USB port\*
- AC Adapter included
- Full PoE out (803.af) on LAN 1 port

\* future availability

# AP1830 Series 802.11ac Wave 2



Cisco Aironet® 1830 Series

- Next-generation 3x3 MIMO:2 spatial streams (SS) **Wave 2** 802.11ac access points
- Dual radio, 802.11ac Wave 2, 80 MHz
- 5 GHz: 3x3 supporting
  - 2 SS SU/MU-MIMO
  - 870 Mbps Max 5-GHz PHY
  - 1 Gbps Max Aggregate PHY
- 1 x Gigabit Ethernet and USB 2.0
- Internal antenna model

802.11ac Wave 2 MU-MIMO

# AP1850 Series 802.11ac Wave 2



**Cisco Aironet® 1850 Series**

- Next-generation 4x4 MIMO:4 spatial streams (SS) **Wave 2** 802.11ac access points
- Dual radio, 802.11ac Wave 2, 80 MHz
- 5 GHz: 4x4 supporting
  - 3 SS MU-MIMO
  - 4 SS SU-MIMO
  - 1.7 Gbps Max 5-GHz PHY
  - 2.0 Gbps Max Aggregate PHY
- 2 x Gigabit Ethernet and USB 2.0
- Internal and external antenna models

Gigabit Wi-Fi has fully arrived.

# 2800 and 3800 Series Access Points

# Innovations for the Access Points

## All The Benefits of 802.11ac Wave 2

Highest Wi-Fi Performance Ever



Higher Data Rate



Wider Channels

Better End Device Efficiency



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



**Improved** Modularity



**Improved** CleanAir



**New** Zero Impact AVC



Flexible Dynamic Frequency Selection

*Optimized Mobile User Experience*



**Improved** ClientLink



Turbo Performance



**New** Smart Antenna Connector



**Improved** Enhanced Location\*



Optimized Roaming

# Flexible Radio Assignment

---

5GHz  
Serving



2.4GHz  
Serving

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

5GHz  
Serving



5GHz  
Serving

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

5GHz  
Serving



Wireless  
Security  
Monitor

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

5GHz  
Serving



Wireless  
Service  
Assurance\*

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

5GHz  
Serving



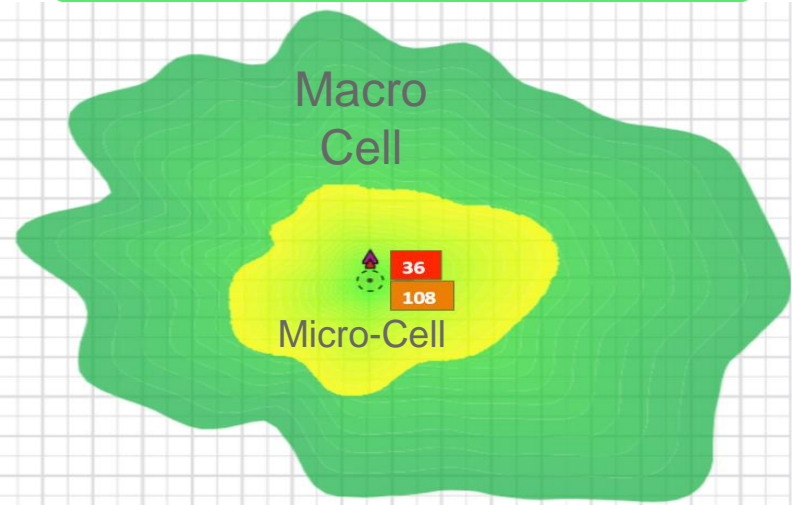
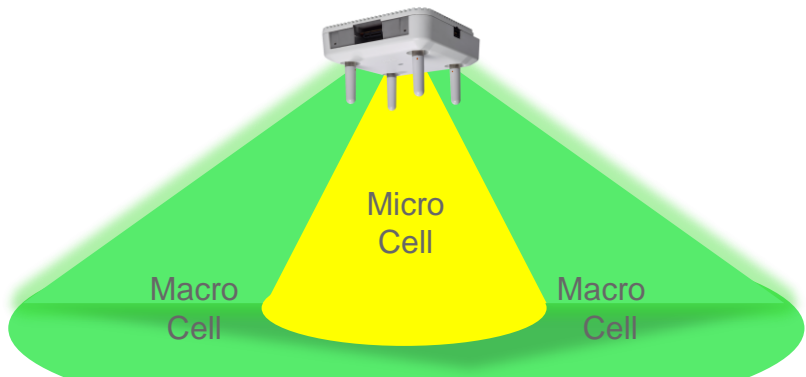
Enhanced  
Location\*

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

\* Denotes feature availability post-FCS

# Internal 5 GHz radio antennas “Macro & Micro cell”

Used when you have plenty of 2.4 GHz (high density deployments) HDX



**\*New Term\*** *Flexible Radio Assignment*

*Allows choosing two 5 GHz radios*

*This option can be used when you have plenty of 2.4 GHz coverage and desire two 5 GHz radios instead.*

*Using RF isolation on the AP & different RF channels this essentially creates what appears to be two different 5 GHz APs in the same enclosure.*

*Note: Extra 5 GHz radio can be used for client connectivity or monitoring*

# AP2800 - 802.11ac Wave 2 Access Point



## Cisco Aironet® 2800 Series

- 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 - 2<sup>nd</sup> Antenna Connector

Multi-Gigabit Wi-Fi has fully arrived.



# AP3800 - 802.11ac Wave 2 Access Point



## Cisco Aironet® 3800 Series

- 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, Dual-5GHz, Wireless Security Monitoring, Wireless Service Assurance\*, or Enhanced Location\*
- **Gigabit Ethernet and multi-Gigabit Ethernet (1G, 2.5G, 5G)**
- HDX Technology
- Enhanced Location using External Antennas\*
- USB 2.0
- Internal and external antenna models
- Smart Antenna Connector - 2<sup>nd</sup> Antenna Connector
- **Modularity: Side Mount Modular**

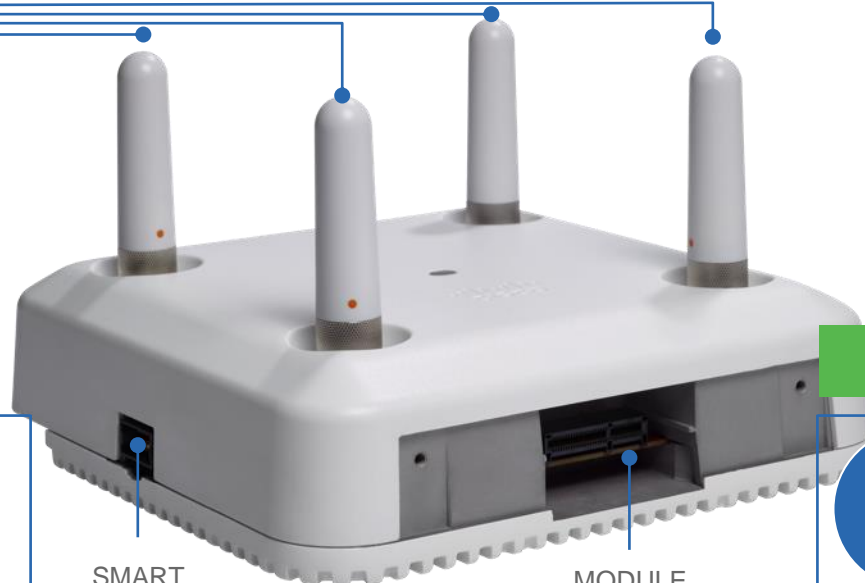
Multi-Gigabit Wi-Fi has fully arrived.

# Meet Any Wi-Fi Use Case

## Expandability and Investment Protection

### Access Point Extensions (APeX)

PRIMARY DUAL-BAND  
ANTENNAS



#### Self-Discover / Self-Configure

- Other
- Stadium Panel Antenna
- Directional Antennas
- Location Antennas

SMART  
ANTENNA  
PORT

#### Potential Future Expandability

- 3G and LTE Small Cell Offload
- Bluetooth Beaconing
- Other
- Custom Application Using Linux
- Future Wi-Fi Standard
- Video Surveillance

MODULE  
PORT

# Cisco Aironet 802.11ac Wave 2 Access Point Portfolio

## Enterprise Class

## Mission Critical

## Best in Class

DNA Ready | RF Excellence | CMX | Centralized, FlexConnect or Mobility Express

Dual 5 GHz | Flexible Radio | HDX

Future Proof

NEW



### 1815

#### Indoor / High-powered Indoor Wall Plate / Teleworker

- 2x2:2SS 80 MHz
- 867 Mbps Performance
- Tx Beam Forming
- Integrated BLE Gateway<sup>1</sup>
- Max Transmit Power (dBm) per local regulations<sup>2</sup>
- 3 GE Local Ports, including 1 PoE out<sup>3</sup>
- Local ports 802.1x ready<sup>3</sup>
- USB 2.0<sup>4</sup>

### 1830

- 3x3:2SS 80MHz
- 867 Mbps Performance
- Tx Beam Forming
- 1 GE Port Uplink
- USB 2.0

### 1850

- 4x4:4SS 80MHz
- 1.7 Gbps Performance
- Internal or External Antenna
- Tx Beam Forming
- 2 GE Ports Uplink
- USB 2.0

### 2800

- 4x4:3SS 160 MHz
- 5 Gbps Performance
- 2.4 and 5GHz or Dual 5GHz
- 2 GE Ports Uplink
- CleanAir and ClientLink
- Internal or External Antenna
- Smart Antenna Connector
- Enhanced Location<sup>1</sup> (External Antenna)
- USB 2.0

### 3800

- 4x4:3SS 160 MHz
- 5 Gbps Performance
- 2.4 and 5GHz or Dual 5GHz
- 2 GE Ports Uplink or 1 GE + 1 mGig (5G)
- CleanAir and ClientLink
- StadiumVision
- Internal or External Antenna
- Smart Antenna Connector
- Enhanced Location<sup>1</sup> (External Antenna)
- USB 2.0
- Investment Proof Modularity

<sup>1</sup>Future availability <sup>2</sup> Available for High-powered only

<sup>3</sup> Available for wall-plate and teleworker only

<sup>4</sup> Available for teleworker only

# Cisco Aironet 802.11ac Outdoor Access Point Portfolio

DNA Ready | RF Excellence | CMX

802.11ac Wave 2

New  
Q1 2017



1540

- 802.11ac Wave 2, MU-MIMO
- 2x2:2, 80MHz, 867 Mbps
- Ultra low profile
- Internal antenna only
- PoE (802.3af) power
- Centralized, FlexConnect, Mesh and **Mobility Express**

8.3MR1



1560

- 802.11ac Wave 2, MU-MIMO
- 3x3:3, 80MHz, 1.3Gbps (I)
- 2x2:2, 80MHz, 867Mbps (E/D/PS)
- Internal or External antenna model (I/E)
- Internal directional antenna model (D)
- Public Safety 4.9 GHz model (PS)
- SFP
- Flexible Antenna Ports
- CleanAir and ClientLink
- Centralized, FlexConnect, Mesh and **Mobility Express**

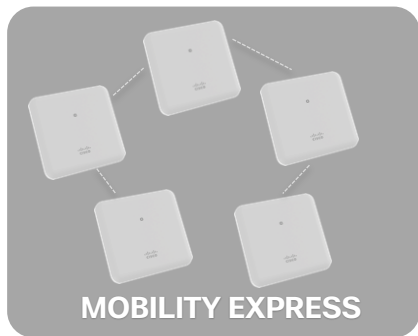


1570

- 802.11ac Wave 1
- 4x4:3 80 MHz; 1.3 Gbps
- External antenna model (EAC)
- Cable Modem model (IC/EC)
- SFP
- GPS
- Flexible Antenna Ports
- CleanAir and ClientLink
- Modularity
- Centralized, FlexConnect and Mesh
- Cable Modem Version Only (IC/EC)
- DOCSIS 3.0, 24x8
- Internal or External antenna
- PoE Out 802.3at (EC only)

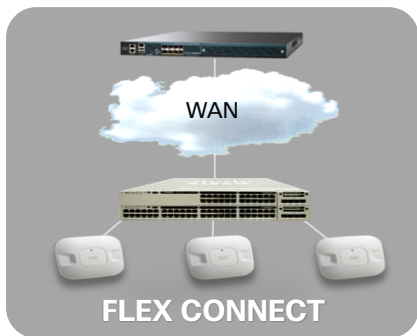
# Mobility Express

# Unified Access: One Architecture, Multiple Deployment Options



## Small Network

- Single site network
- Low IT footprints
- SP hotspots
- Controller function on AP
  - 11ac:  
1800/2800/3800/1560



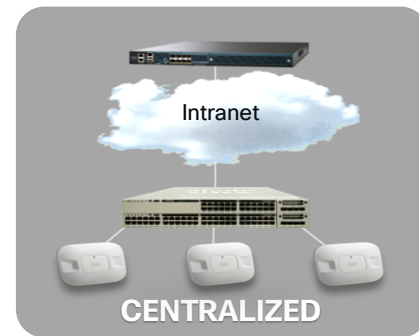
## Branch

- Distributed network
- Highly scalable
- Best in class for distributed networks
- Controllers
  - New 8540 Controller
  - New 5520 Controller
  - or other Cisco Wireless Controllers



## Wireless links among APs

- When cabling is not possible
- On-off feature, no license
- Controllers
  - New 8540 Controller
  - New 5520 Controller
  - or other Cisco Wireless Controllers



## Large Campus

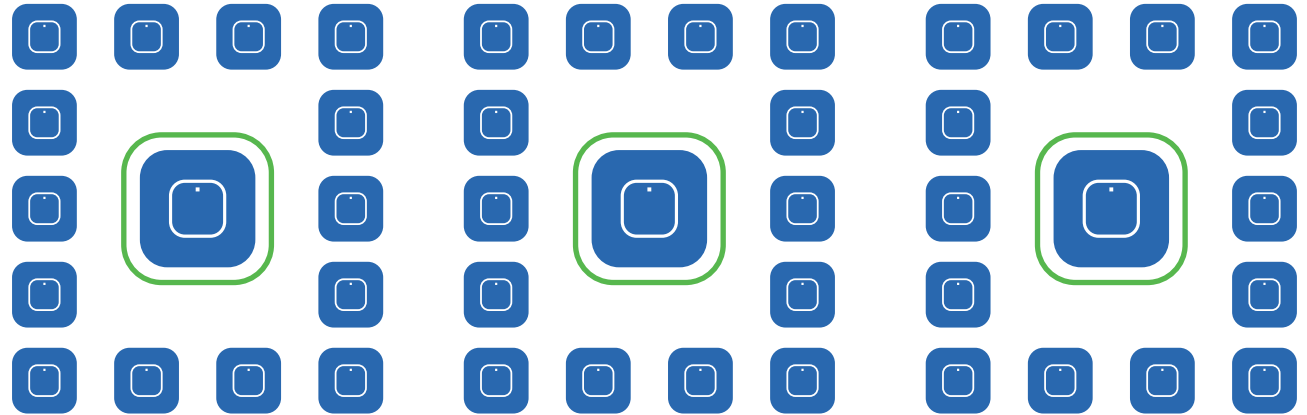
- Data center hosted controller
- Distributed enterprises
- Controllers
  - New 8540 Controller
  - New 5520 Controller
  - or other Cisco Wireless Controllers

# Mobility Express: Investment Protection

Same Access Point hardware regardless of where the WLAN Controller function is located – Access Point, Appliance, Switch, Router, Virtual Machine, etc.



Investment  
Protection



 Management Point



Wireless  
Controller  
e.g. AIR-AP3802x-E-K9C

Hardware Protection

Flexible Migration

Feature Protection

# Summary



# Aironet Legacy and 802.11n G1 Access Point Series

Aironet AP Series	First customer ship date	End of Sale Announce	End of Sale Date	SW End of Support	HW End of Support	Software Release Support	8.3 behavior	Product Migration Options
<b>Indoor</b>								
1600, 2600, 3600	Dec11 – Dec12	Jun 30, 2016	Dec 29, 2016	Dec 29, 2017	Dec 31, 2021	<i>Last supported release – 8.x IOS XE 3.6</i>	AP will join	1700, 2700, 3700, 1800, 2800, 3800
1130, 1240	Oct 2004	Jan 25, 2013	Jul 26, 2013	Jul 1, 2016	Jul 31, 2018	Last Supported release – 8.0	AP will not join	1700, 2700, 3700, 1800, 2800, 3800
1250	Sep 2008	Aug 1, 2011	Jan 30, 2012	Jul 1, 2016	Jan 31, 2017	Last Supported release – 8.0	AP will not join	1700, 2700, 3700, 1800, 2800, 3800
1040, 1140, 1260	Dec 2009	Apr 2, 2013	Oct 1, 2013	Jul 1, 2016	Sep 30, 2018	Last supported release – 8.3 IOS XE 3.6	AP will join with reduced feature set	1700, 2700, 3700, 1800, 2800, 3800
1040, 1140 for EU/ETSI#	Dec 2009	Sep 1, 2012	Nov 30, 2012	Jul 1, 2016	Mar 31, 2018	Last supported release – 8.3 IOS XE 3.6	AP will join with reduced feature set	1700, 2700, 3700, 1800, 2800, 3800
3500	May 2010	Apr 2, 2015	Oct 1, 2015	Jul 1, 2018	Sep 30, 2020	<i>Last supported release – 8.x IOS XE 3.6</i>	AP will join	2700, 3700, 2800, 3800
<b>Outdoor</b>								
1552C/1552E /1552I*	Jun-11	Sep 30, 2015	Mar 30, 2016	Mar 30, 2017	Mar 31, 2021	<i>Last supported release – 8.x</i>	AP will join	1570, 1560
1520	Aug 2008	Sep 30, 2011	Mar 30, 2012	Jul 1, 2016	Mar 31, 2017	Last release – 8.0	AP will not join	1570, 1560
1524SB#	Apr 2008	Mar 22, 2013	Jun 21, 2013	Jul 1, 2016	Jun 30, 2018	Last release – 8.0	AP will not join	1570, 1560



\* Except 1552H, 1552S, 1552W

# Earlier EOS timeline for EU/ETSI due to new DFS rules starting 2013

# AP Feature Matrix & DG

## **Feature Matrix for 802.11ac Wave 2 Access Points**

[http://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-3/b\\_feature\\_matrix\\_for\\_802\\_11ac\\_wave2\\_access\\_points.html](http://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-3/b_feature_matrix_for_802_11ac_wave2_access_points.html)

## **Cisco Aironet Series 2800/3800 Access Point Deployment Guide**

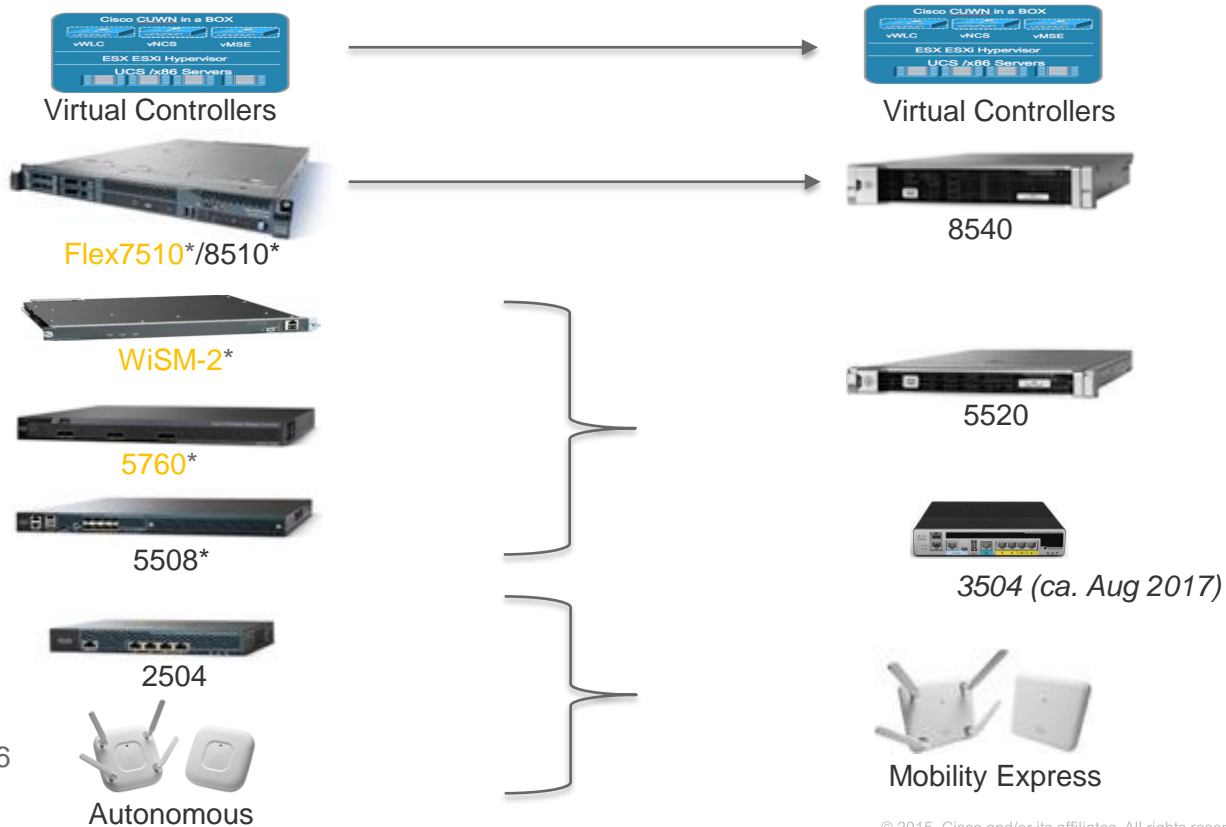
[http://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-3/b\\_cisco\\_aironet\\_series\\_2800\\_3800\\_access\\_point\\_deployment\\_guide.html](http://www.cisco.com/c/en/us/td/docs/wireless/controller/technotes/8-3/b_cisco_aironet_series_2800_3800_access_point_deployment_guide.html)

## **TAC Recommended AireOS Builds**

<http://www.cisco.com/c/en/us/support/docs/wireless/wireless-lan-controller-software/200046-TAC-Recommended-AireOS.html>

# New Wireless LAN Controllers

# Controller Portfolio – New deployments



EoS April 2017

\* Price increase Dec 2016



# 5520 and 8540 Wireless LAN Controllers

## 5520 WLAN Controller



Access Points	1,500
Clients	20,000
Deployment Modes	Centralized, FlexConnect and Mesh
Form Factor	1 RU
IO Interface	Dual 1G or 10G ports with LAG
Power	AC w/Optional Redundant Power Supply
Redundancy	Solid State Drives
Product Warranty	3 years

## 8540 WLAN Controller



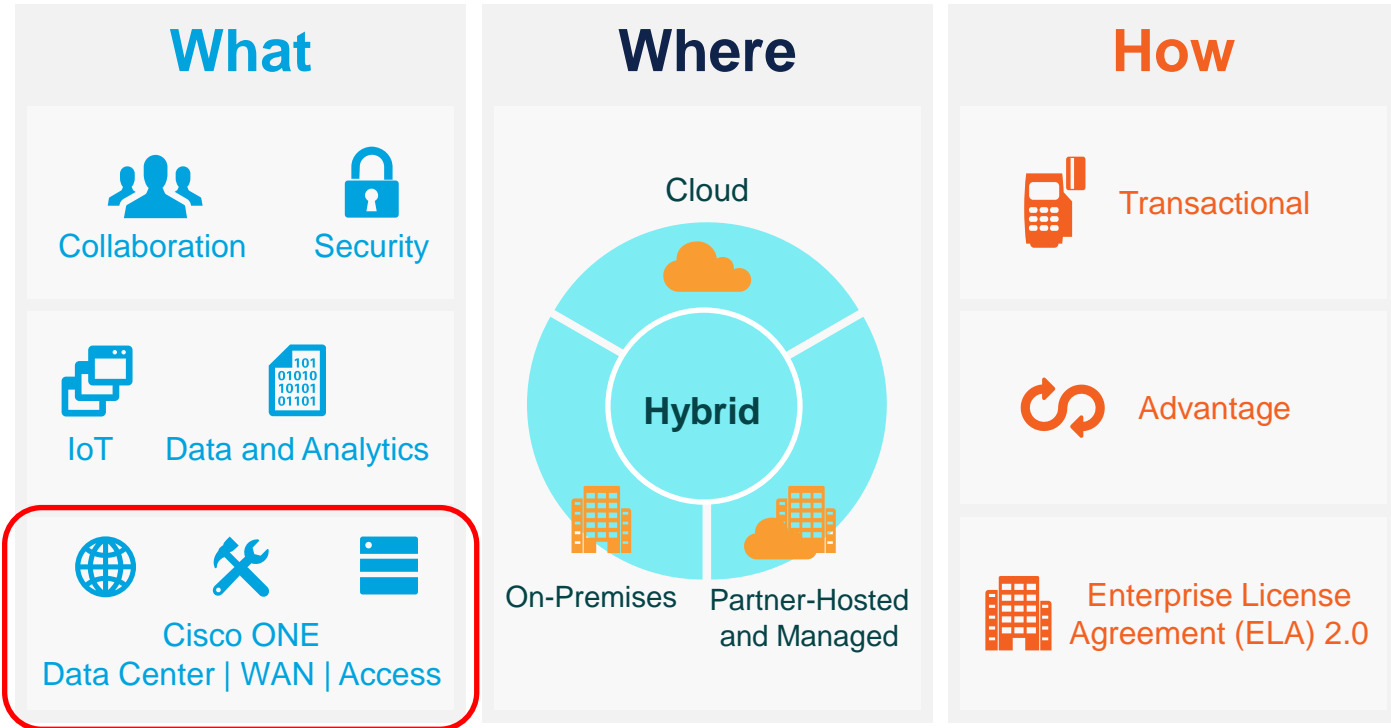
Access Points	6,000
Clients	64,000
Deployment Modes	Centralized, FlexConnect and Mesh
Form Factor	2 RU
IO Interface	Four port 1G or 10G with LAG
Power Options	AC or DC
Redundancy	Dual Power supply and Solid State Drive with RAID
Product Warranty	3 years



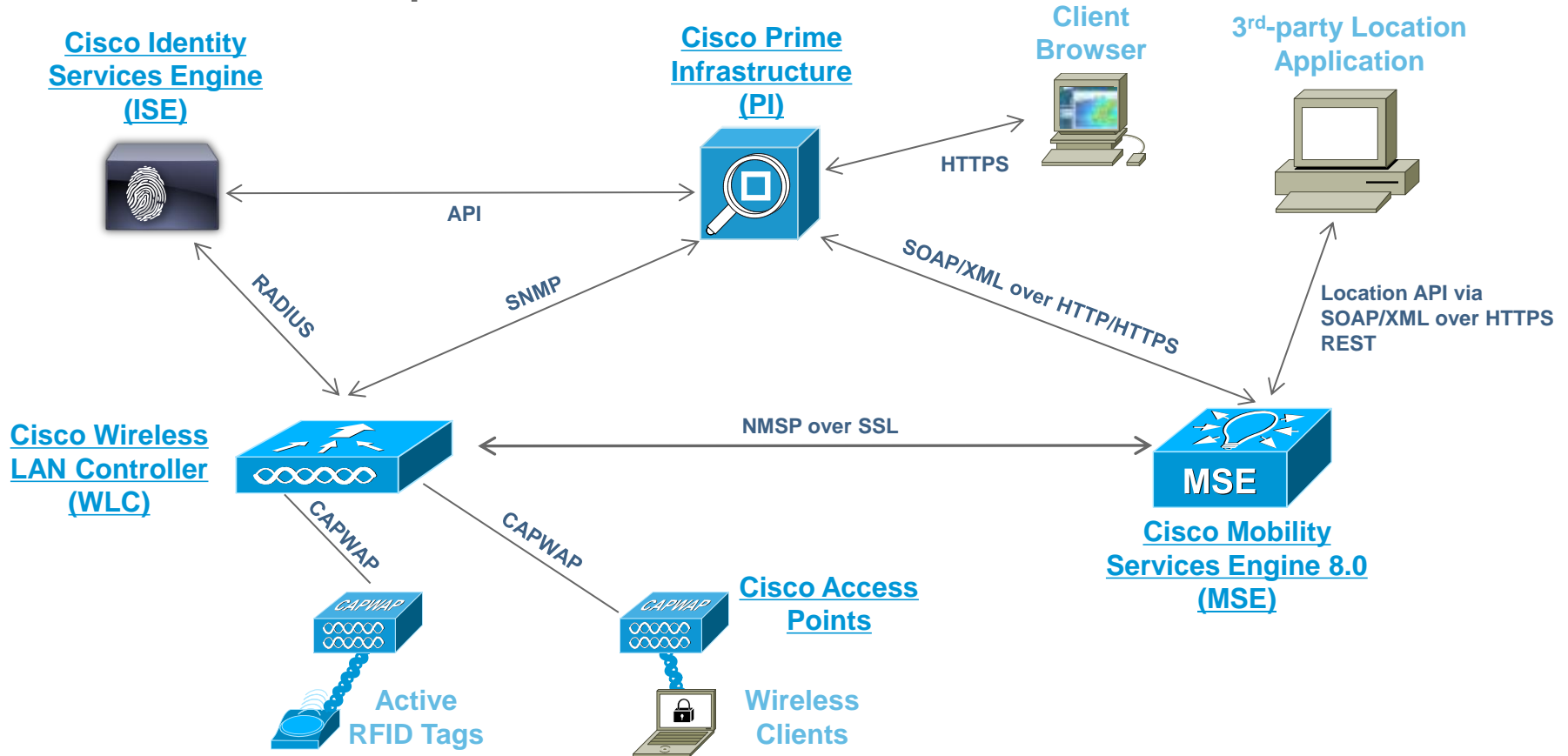
WLC	PI	CMX	ISE
8.2	2.2.2	10.1	1.3

# Cisco ONE

# Cisco Software Framework



# Cisco – Enterprise Wireless Network





# Example Outcome: Business-Class Wireless Access

## Traditional Model

### Necessary Features:

- 1 AP License
- 2 Prime - Assurance & Lifecycle
- 3 CMX Base
- 4 ISE Base
- 5 Cisco Energy Management

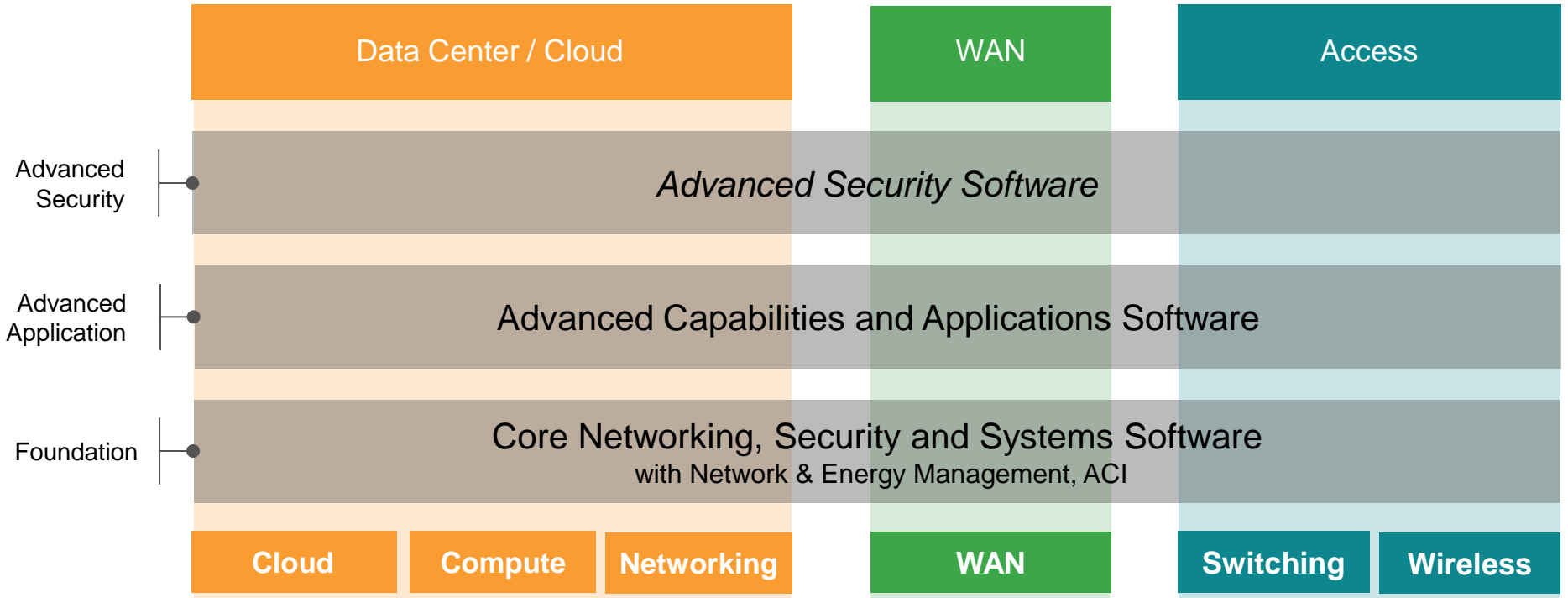
## Cisco ONE Software

### Foundation for Wireless



+ License Portability and Ongoing Innovation

# Cisco ONE Software Suites



# Cisco ONE Software

## Included Licenses and Applications by Suite

### Cisco ONE Data Center / Cloud

### Cisco ONE for WAN

### Cisco ONE for Access

Advanced Security	<b>Threat Defense for Data Center</b> <b>FP Services on ASA</b> (NGFW, NGIPS, URL Filtering, AMP for Networks), <b>and Security Contexts</b>			<b>Threat Defense for WAN &amp; Edge</b> <b>FP Services on ASA</b> (NGFW, NGIPS, URL Filtering, AMP for Networks and <b>AnyConnect Plus</b>	<b>Policy &amp; T</b> <b>(Tier1 )IS</b> Plus License, ISE Apex, AnyConnect Apex	<b>Threat Defense for Access</b> Plus License, ISE Apex, AnyConnect Apex
	ASA 5585-10, 5585-20, 5585-40, 5585-60, Firepower 9300, 4300			ASA 5506, 5508, 5516, 5525, 5545, 5555		ISE
Advanced Applications	<b>ECS – Service Mgmt</b> Prime Service Catalog Base Cisco Process Orchestrator (20K transactions/yr)	<b>ECS – Big Data          Automation</b> UCS Director Express for Big Data  <b>Tetration Analytics</b>	<b>Data Center Fabric</b> SAN Enterprise Prime DCNM-SAN VDC, MPLS, FCoE Intelligent Traffic Director Nexus Data Broker	<b>WAN Collaboration</b> UC License UC Apps CME	<b>Campus Fabric</b> IP Services	<b>Advanced Mobility          Services</b>  CMX aWIPS
	<b>ECS – Cloud Mgmt</b> CloudCenter Manager CloudCenter Orchestrator (2) CloudCenter VMs (100)	<b>ECS – Infrastructure          Automation</b> UCS Director UCS Performance Manager UCS Central IMC Supervisor VACS (3 app containers)	<b>Foundation for          Networking</b> FabricPath, VDC, FCoE, OTV/LISP, LAN Enterprise, PI Lifecycle, PI Assurance, Prime DCNM-LAN Energy Mgmt, ACI Fabric RISE, Intelligent Traffic Director	<b>Foundation for WAN</b> SEC License APP License PI Lifecycle PI Assurance IWAN- App for APIC-EM Energy Mgmt,	<b>Foundation          for Switching</b> IP Base Stealthwatch PI Lifecycle, Assurance ISE Base, Energy Mgmt	<b>Foundation          for Wireless</b> WLC AP CMX Base PI Lifecycle PI Assurance ISE Base Energy Mgmt StealthWatch (1YR)
Foundation					<b>Foundation Lite</b> LAN Base PI Lifecycle, Assurance ISE Base, Energy Mgmt	
<b>Infrastructure and Base OS</b>	<b>Cloud</b>	<b>Compute</b> X86, UCS	<b>Networking</b> Cisco Nexus® 3K,5K,6K,7K,9K, MDS	<b>WAN</b> ISR, ASR	<b>Switching</b> Cisco Catalyst® 2K, 3K, 4K, 6K	<b>Wireless</b> WLC, AP, MSE

Note: Infrastructure software (e.g., operating system) is included with each device. Not sold as a Cisco ONE bundle, but included with the device.

# Cisco ONE Technical Software Services

## Cisco ONE for Data Center

## Cisco ONE for WAN

## Cisco ONE for Access

Advanced Security

Threat Defense for Data Center

Threat Defense for WAN

Identity Services for Access

ASA

**Software Support Service (SWSS)**

ISE

Advanced Applications

Data Center Fabric

Enterprise Cloud Suite

- **Technical Support**
- **Updates / Upgrades**
- **License Portability**

Campus Fabric

Advanced Mobility Services

- **Access to Ongoing Innovation**

Foundation

Foundation for Networking

Foundation for Compute

Foundation for WAN

Foundation for Switching

Foundation for Wireless

Infrastructure and Base OS

Networking  
Cisco Nexus® 3K, 5K, 6K, 7K, 9K

Compute

Smart Net Total Care **SNTC / PSS** Partner Shared Support

WAN

Switching

2K, 3K, 4K, 6K

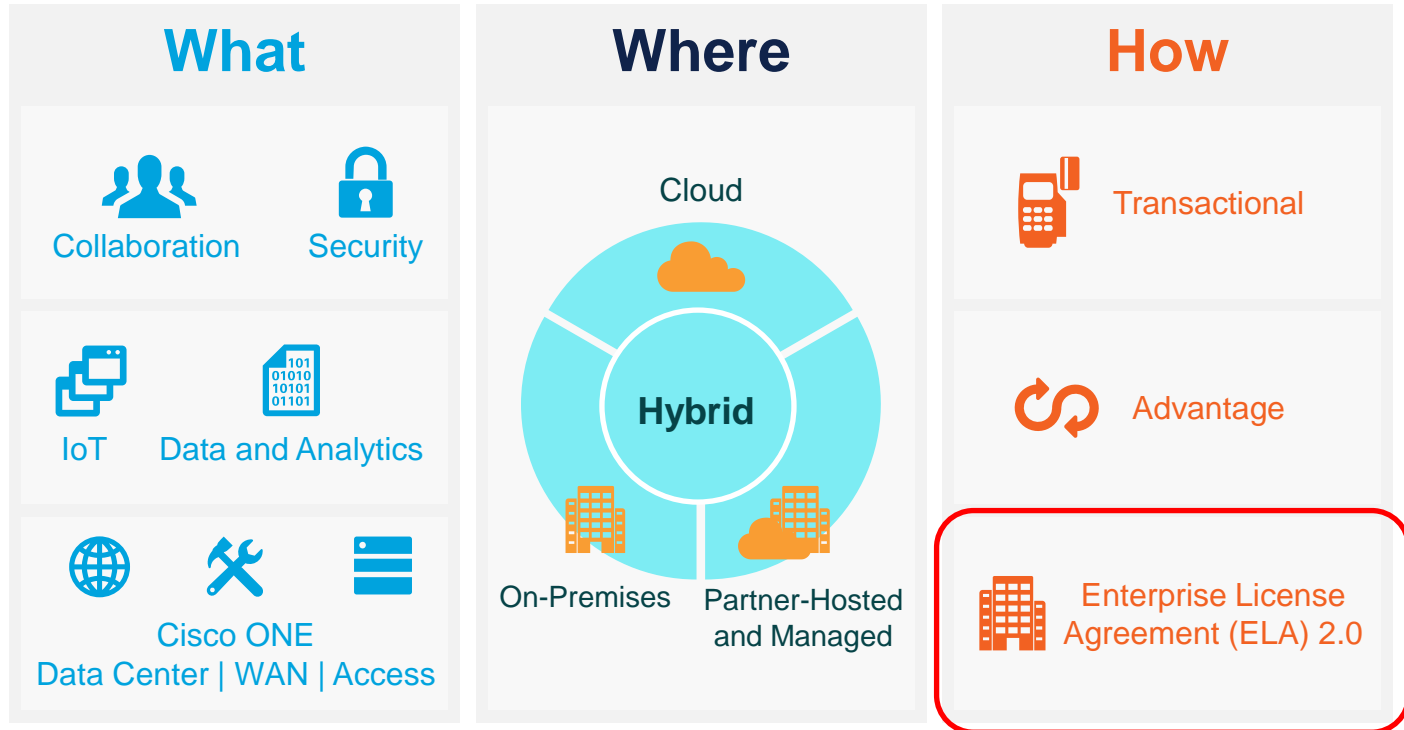
Wireless

WLC, MSE, AP

**Technical Support (Hardware + Operating System), Device Replacement**

# Enterprise License Agreement ELA 2.0

# Cisco Software Framework





## Cisco ONE Software

---

What

### Software Offer

- Single list price SKU
- Software solution suite
- Single device/user



## Enterprise Agreement (ELA)

---

How

### Buying Model

- Legal agreement
- Entitlements across offer catalogs
- Broad / Enterprise-wide purchase

# Cisco ELA 2.0 Delivers...

## **Simplicity**

- One Agreement
- Unified Dashboard
- Standardize Software
- Financial predictability
- Co-Term Multiple Contracts

## **Flexibility**

- Updates via SWSS
- On-demand deployment
- License portability
- Deployment Methodology

## **Value**

- Better together pricing
- Investment protection
- **20% Built-In Growth**
- True forward →  
No retro-active billing

Easy to Buy

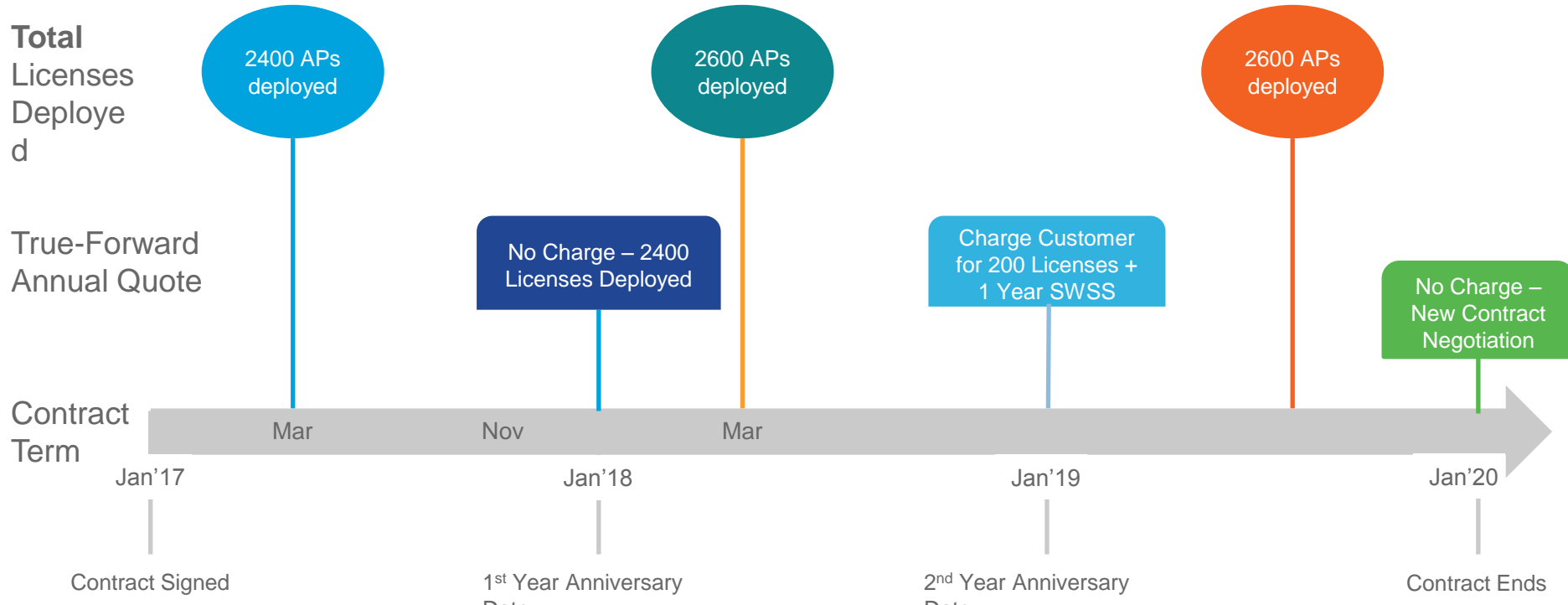
Easy to Consume

Easy to Manage

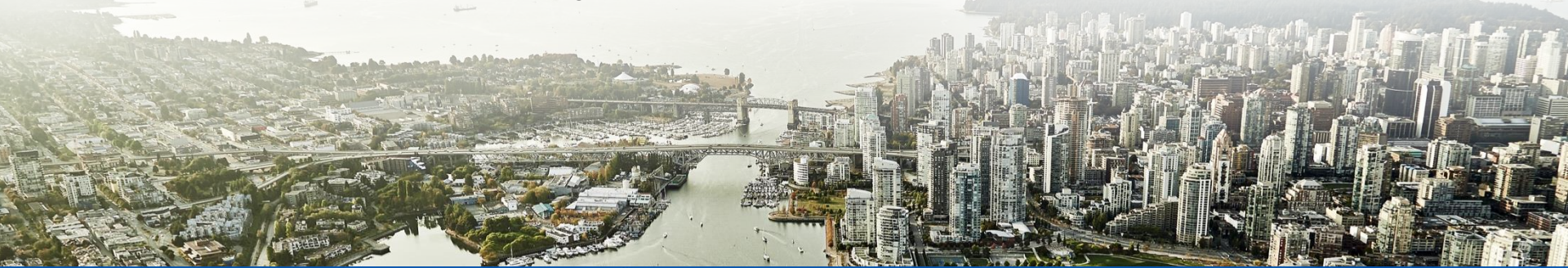


# Let's Look at a True-Forward Example

**Scenario** : Customer Purchased a Cisco ONE Wireless 3-Year ELA for **2000** Access Points



# What Can You Buy As an ELA in 2.0?



## Cisco ONE Software

## Collaboration

## Security (Coming Soon)

DC: Networking	DC: Compute	Unified Communications	WebEx On-Premise	Email Security	Web Security
WAN	DC: Cloud	Multiparty Plus	Customer Collaboration	End Point Security	Advanced Threat
Access Wireless	Access Switching	Prime Collaboration Contact Center Assurance	Prime Collaboration	ISE	NGFW   NFIPS
		HCS-LE Management	Cisco Spark Flex Plan		



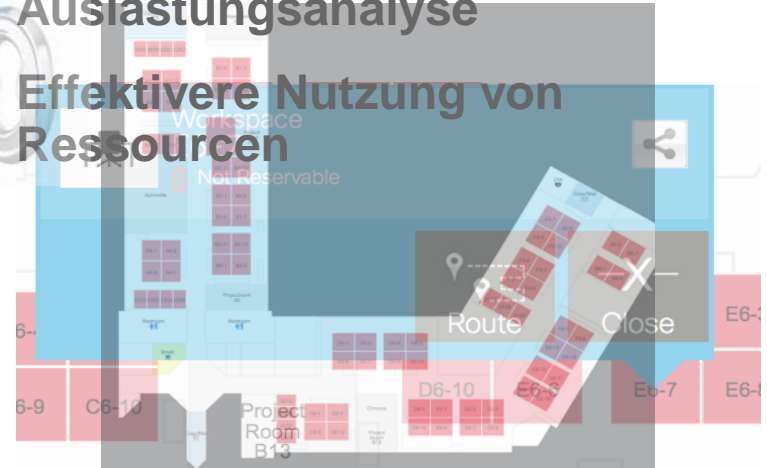
# Anwendungsbeispiele

# Mitarbeiter - SmartOffice



- **Unified Access**
- **Flexible Office – Buchung von Räumen und Arbeitsplätzen**
- **Inhouse-Navigation zum schnellen Auffinden von Räumen und Abteilungen**

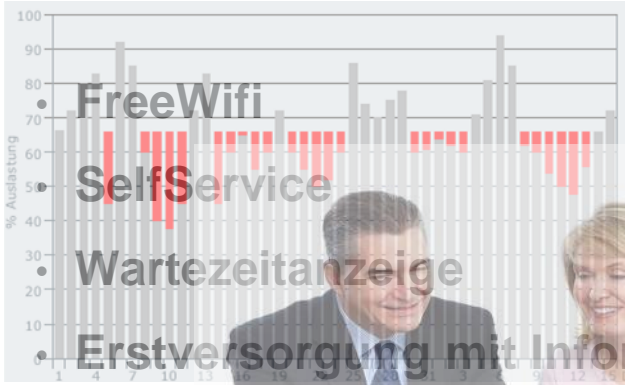
- **Optimierung IT-Management**
- **Auslastungsanalyse**
- **Effektivere Nutzung von Ressourcen**



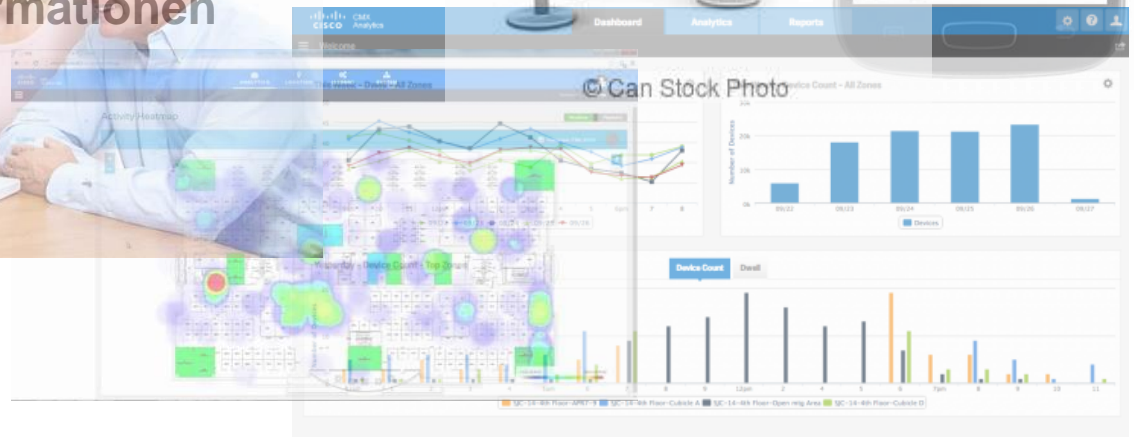
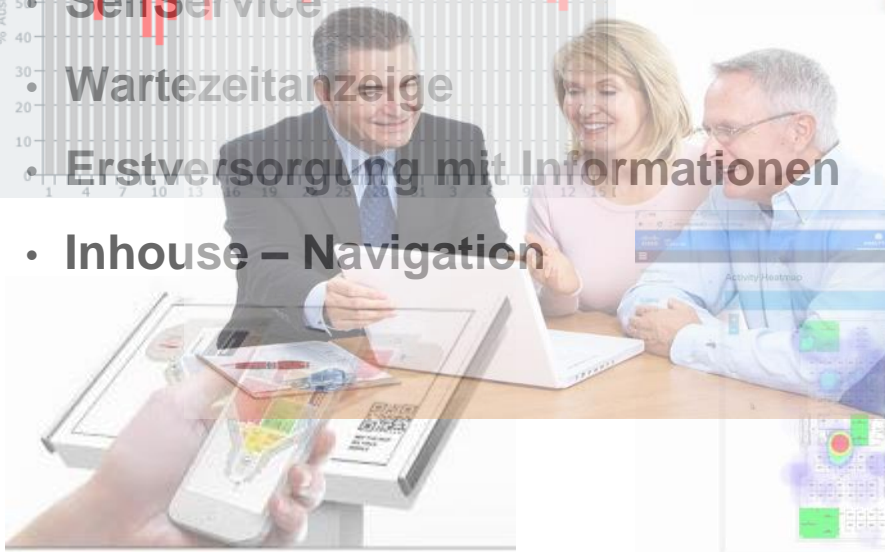
# Schule / Uni / Behörde



- Analytics
- Nutzerinformationen
- Optimierung der Auslastung



- FreeWifi
- SelfService
- Wartezeitanzeige
- Erstversorgung mit Informationen
- Inhouse – Navigation



# Healthcare



- FreeWifi
- Flexibilität bei Wartezeiten
- App-Terminplanung
- Inhouse-Navigation



- Asset-Tracking
- Hygienevorschriften
- Serviceverbesserung
- Patientenmonitoring



# Vielen Dank!



Vernetzen.

Gestalten.

Werte schaffen.

Mit Sicherheit!

