



Cisco Meraki

# Cloud Managed NBASE-T

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# Webinar Speakers



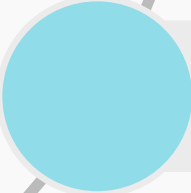
**Simon Tompson**  
Technical Evangelist  
Cisco Meraki  
@merakisimon



**Peter Jones**  
Chairman, NBASE-T Alliance  
Distinguished Engineer, Cisco  
chairman@nbaset.org  
@petergjones

# Agenda



	NBASE-T Overview	Peter
	Cisco Meraki Overview	Simon
	Cisco Meraki & NBASE-T	Simon
	Wrap-up & Discussion	Simon & Peter

# NBASE-T Alliance

- NBASE-T Alliance ([www.nbaset.org/](http://www.nbaset.org/))
  - Vendor alliance for 2.5G/5G BASE-T
- Who are we?
  - Member companies representing all areas of network infrastructure including components, silicon, systems, cabling, testing equipment
- What are we doing?
  - Educate the market about multiple NBASE-T applications, enable widespread deployment, facilitate interoperability and build the market



## Promoters



## Contributors



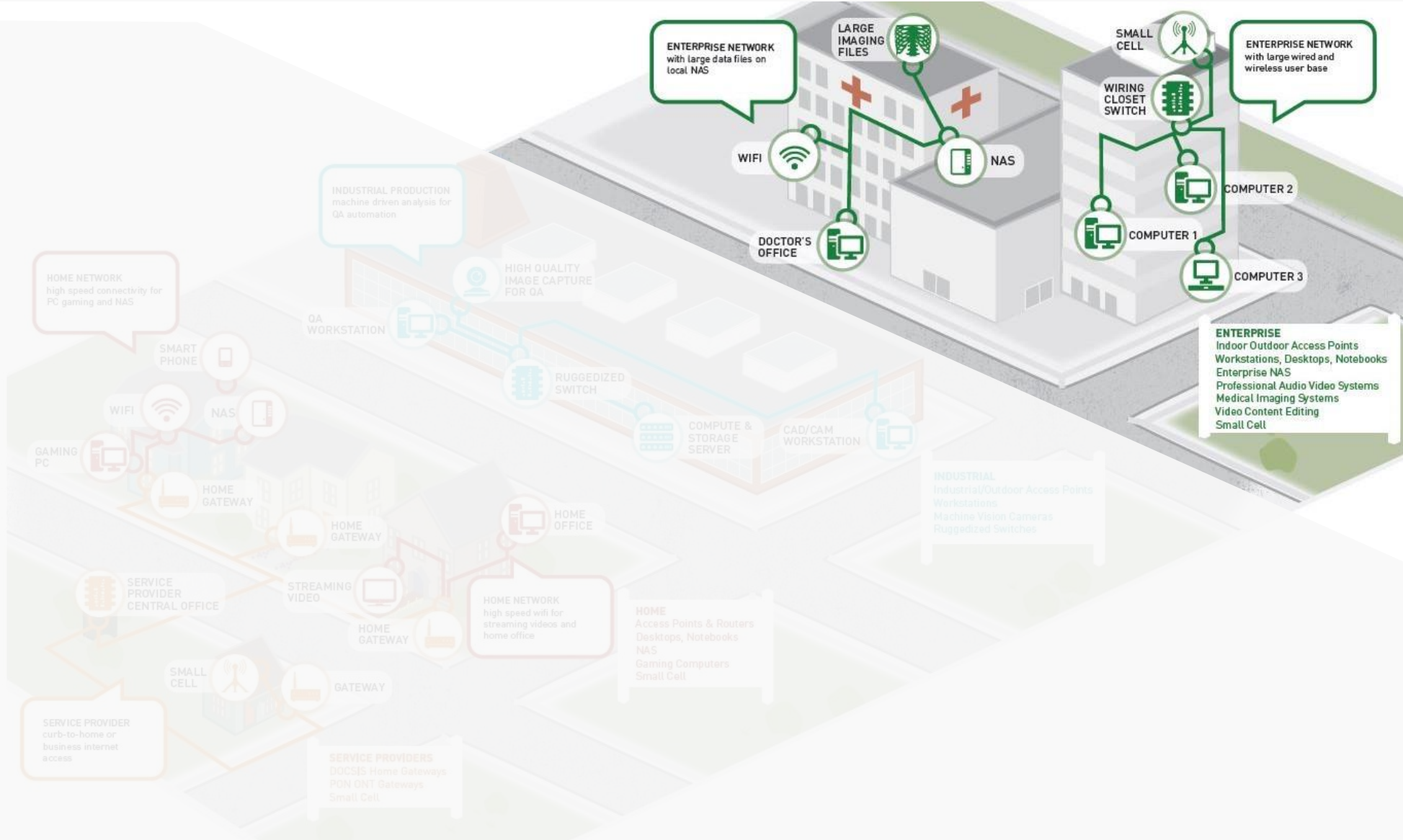
## Adopters



## Liaisons



# NBASE-T Application Areas



## Enterprise:

Switch  
Wireless AP  
Desktop  
Storage  
Small Cell

## Industrial:

Switch  
Wireless AP  
Workstation  
Storage  
Compute  
Machine Vision

## Home:

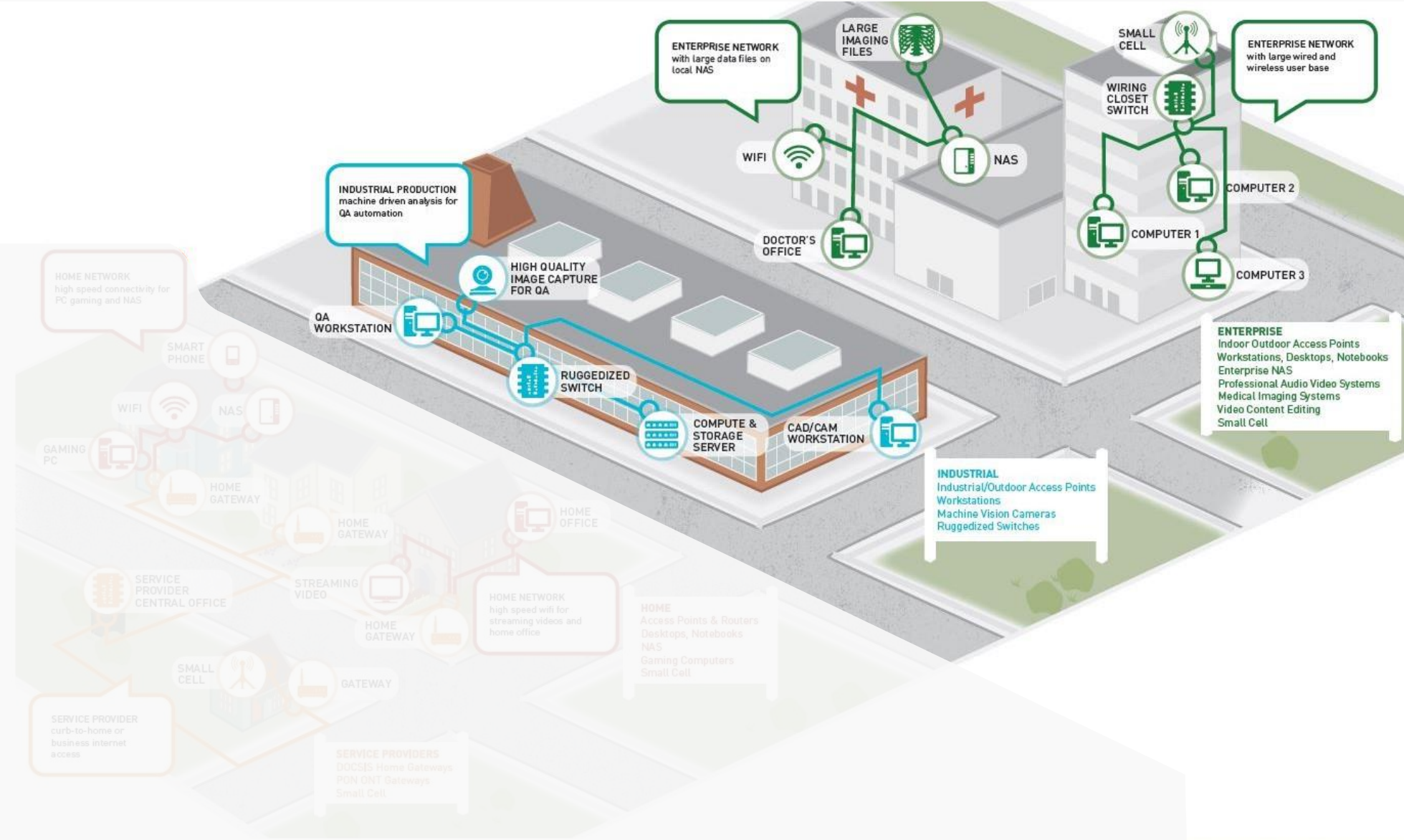
Switch  
Wireless AP  
Storage Server  
Home Gateway  
Streaming Media

## Service Provider:

Small Cell  
Home Gateway



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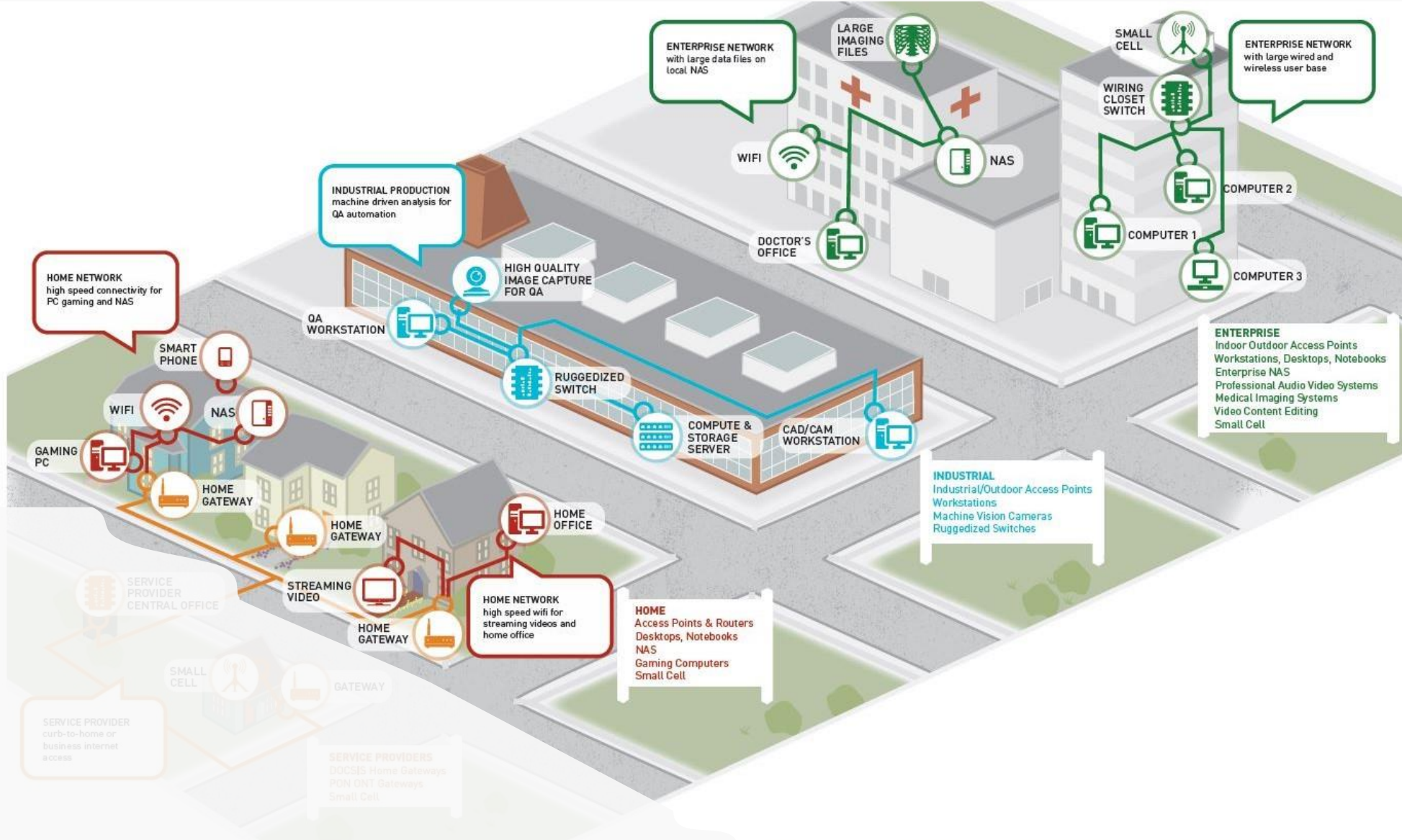
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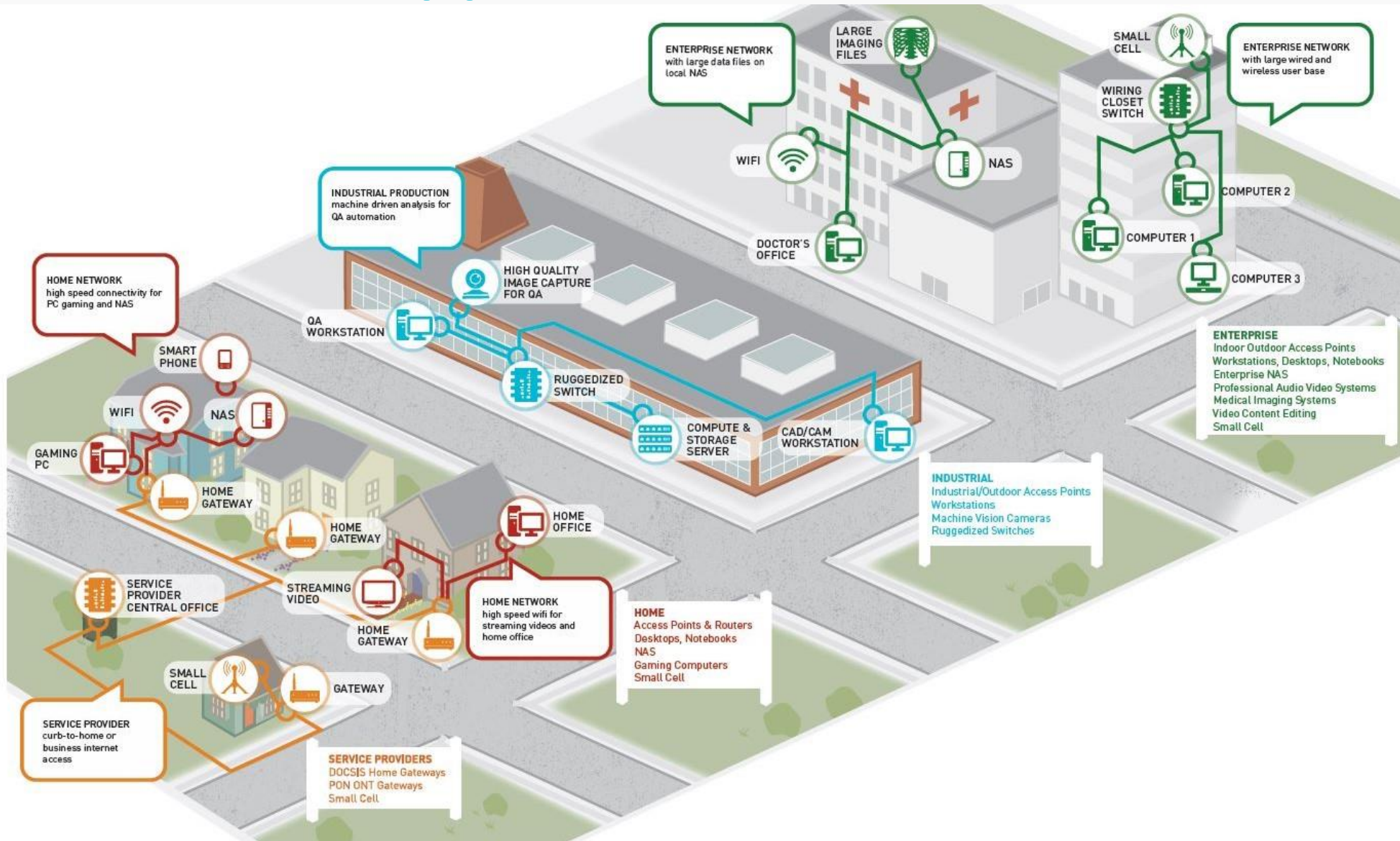
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# Companies with NBASE-T Product

## NBASE-T Products

### NBASE-T Alliance Member Companies

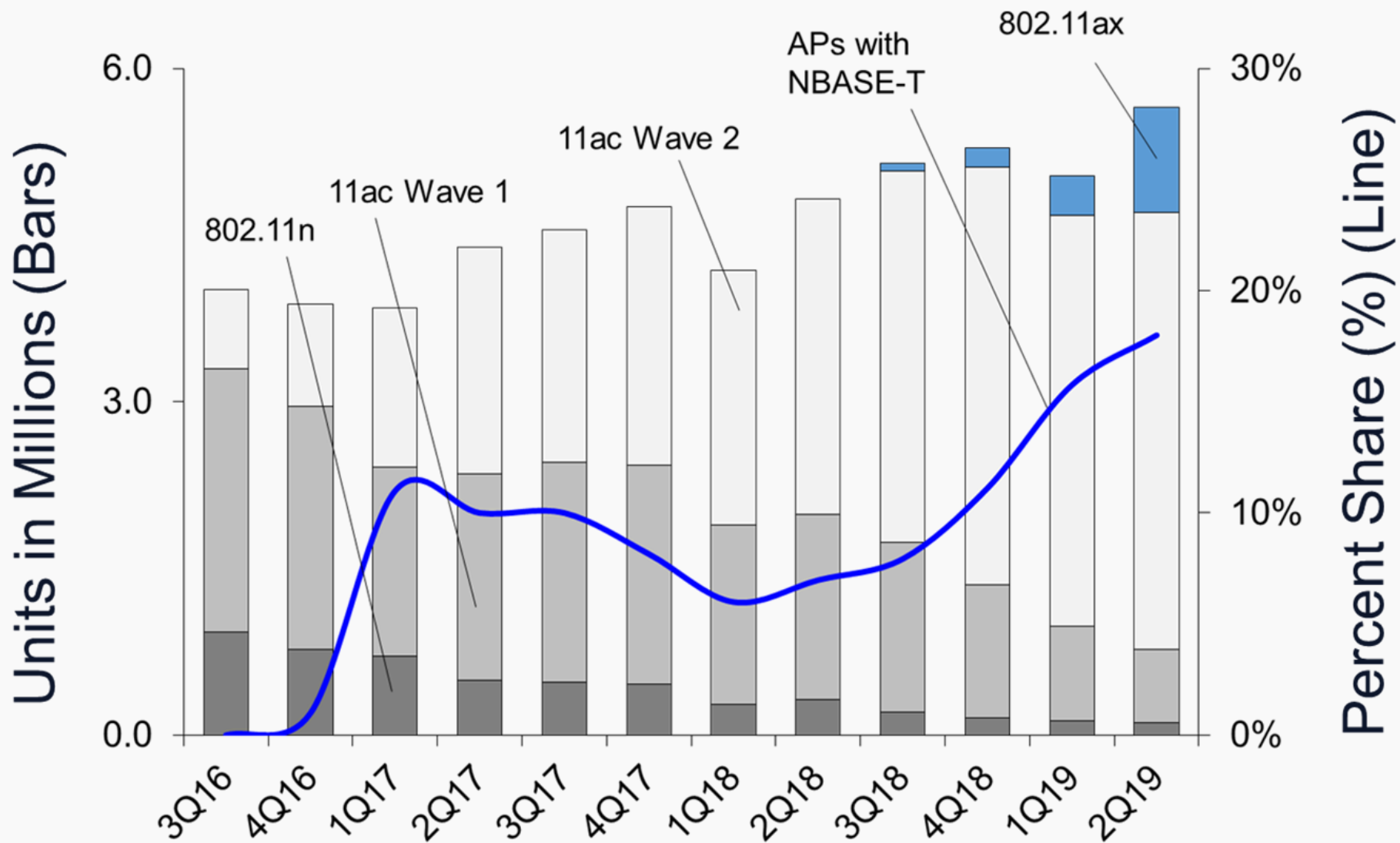
Component	System Level Product
Aquantia	Aquantia
Aruba HPE	Aruba HPE
Bel Magnetic Solutions	Cisco
Cisco	Microsemi
GLGNet	Netgear
Intel	Pleora Technologies
KinnexA	Tehuti Networks
Marvell	Teledyne e2v
NXP	
	Test Equipment
	AEM
	Aukua Systems
	Spirent
	Tektronix
	Xena Networks

### Non-Member Companies

Component	System Level Product
Akitio	Accton
Dell	Apple
Gigabyte	ASRock
Promise Technology	ASUS
QNAP	Brocade
Sonnet	Buffalo
	Dell
	Dell EMC
	Lenovo
	MSI
	Promise Technology
	Sonicwall
	StarTech
	Supermicro

<https://www.nbaset.org/technology/nbaset-products/>

# NBASE-T & Wireless

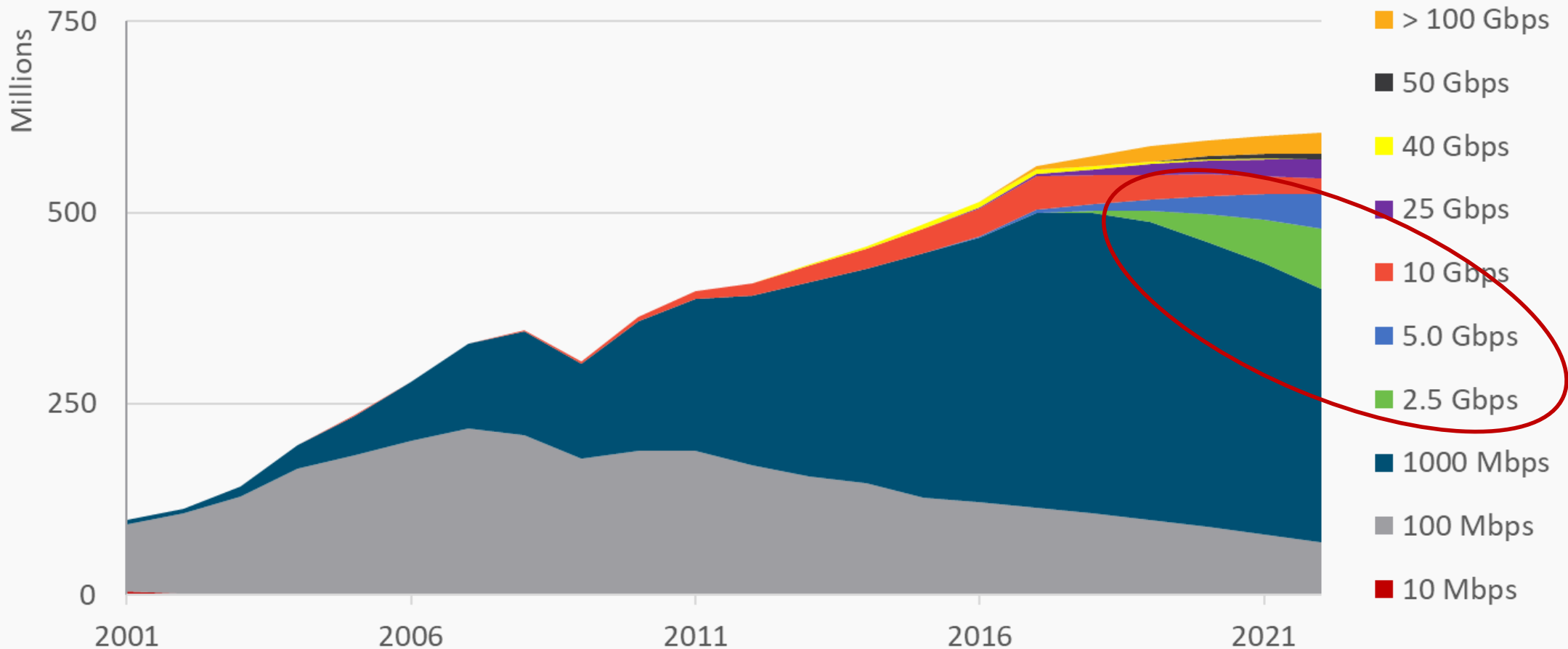


Source: [Dell'Oro Group NBASE-T Webinar November 2018](#)

# NBASE-T Momentum



Ethernet Switch Ports  
Dell'Oro Group Ethernet Switch 5-year Forecast Jan 2018







# Value of NBASE-T Technology

Leverages more than 1.3+ billion Cat5e/Cat6 outlets and more than 70 billion meters of Cat5e/Cat6 cables that make up greater than 90% of the current installed base

Enables network evolution by providing up to 10x faster speed without pulling cables or requiring building construction

Supports high-speed links to next generation WiFi access points and high-data rate client PC and workstation systems



**“NBASE-T technology is significantly impacting the market with the biggest transition we’ve seen in campus switching since 2000.”**

**- Dell’Oro Group**



**#NBASETQUOTES**

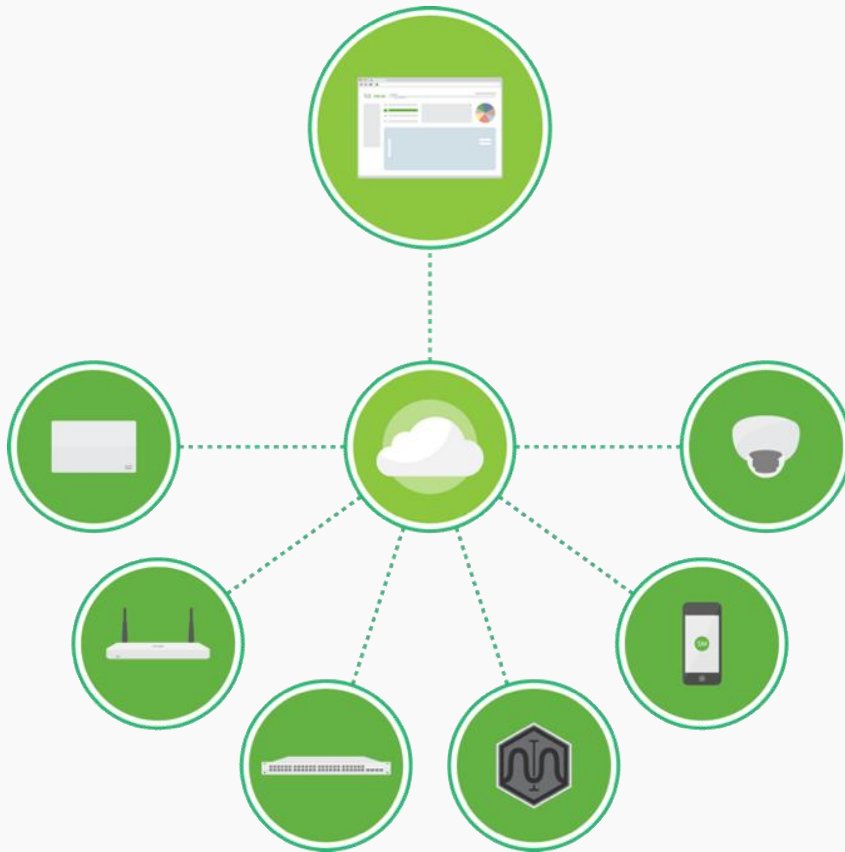


# Cisco Meraki Overview

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# About Cisco Meraki



## A complete cloud-managed IT solution

Wireless, switching, security, SD-WAN, endpoint management, and security cameras

Integrated hardware, software, and cloud services

## Leader in cloud-managed IT

Among Cisco's fastest growing portfolios

**350k+**

Unique customers

**4.5M+**

Meraki devices  
online

**5.5M+**

Active Meraki  
dashboard users

# Out of band cloud management

## Intuitive

- Simple browser-based dashboard
- Cloud-hosted centralized management platform

## Scalable

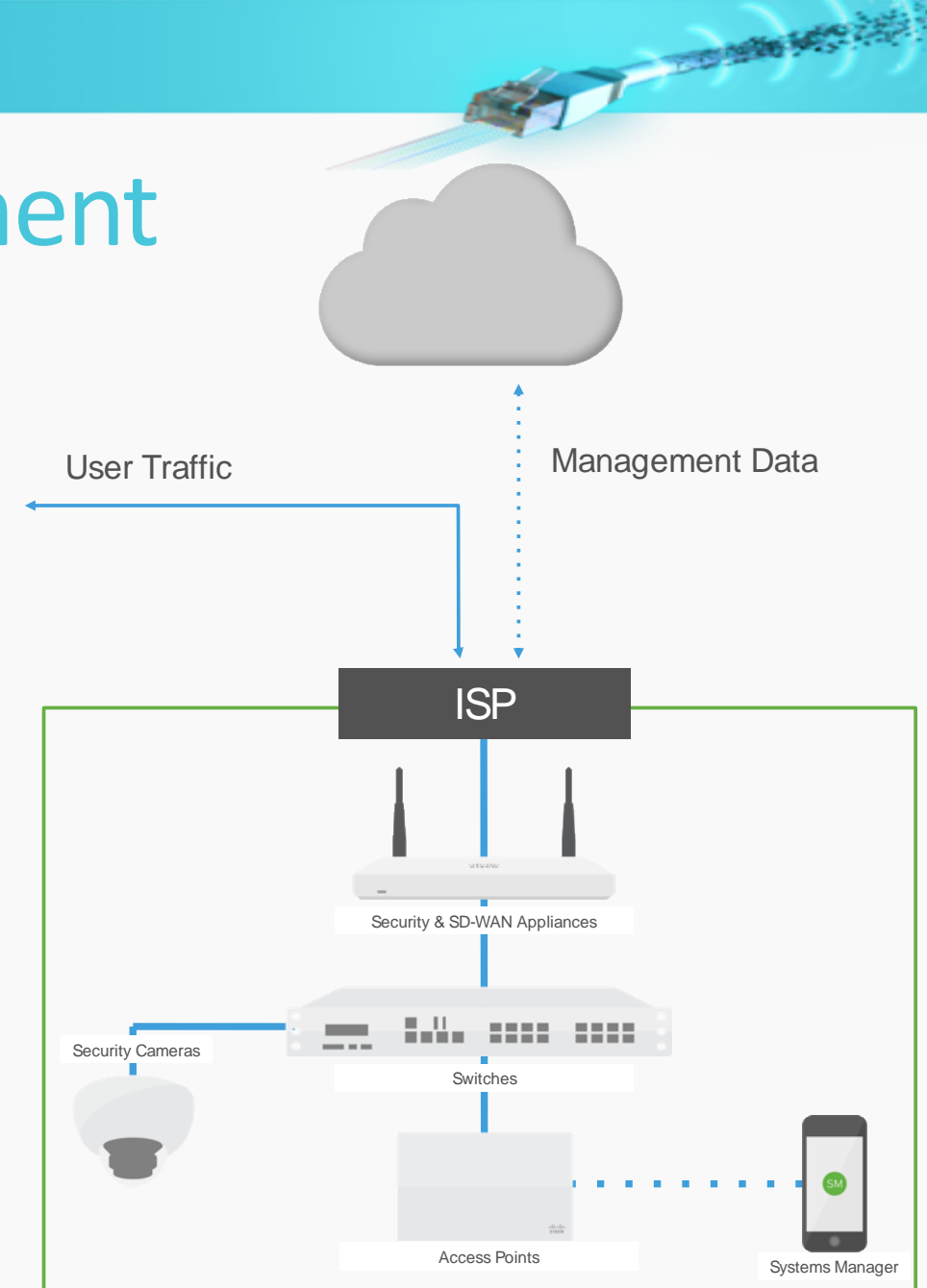
- Unlimited throughput, no bottlenecks
- Add devices or sites in minutes

## Reliable

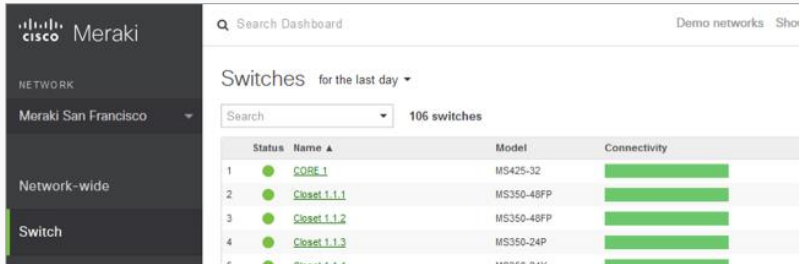
- Highly available cloud with multiple data centers
- Network functions even if connection to cloud is interrupted
- 99.99% uptime SLA

## Secure

- No user traffic passes through Meraki cloud
- Can fully support a HIPAA- / PCI-compliant network (level 1 certified)
- Third party security audits, daily penetration testing
- Automatic firmware and security updates (user-scheduled)

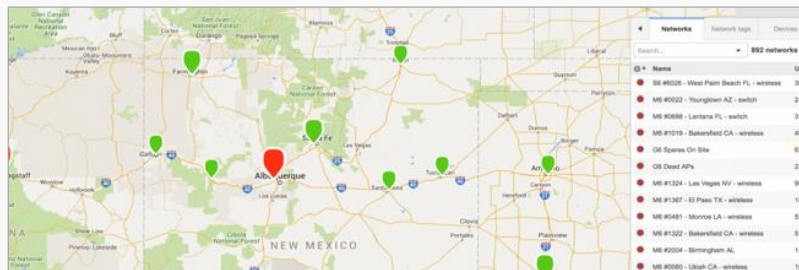


# Why choose Meraki for switching?



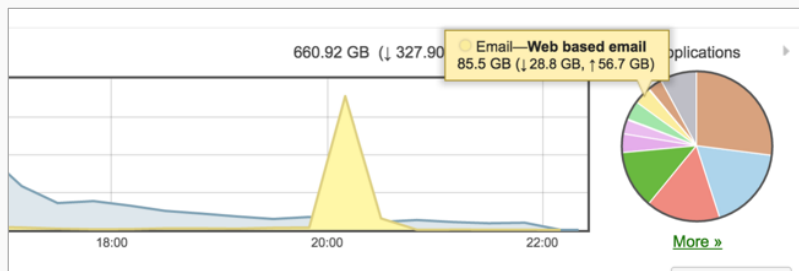
## Intuitive, centralized management

- All Meraki devices are configured through a single-pane-of-glass
- No training or complex command line script required
- **Visualize and manage** all switch ports on the Meraki dashboard with Virtual Stacking



## Easiest to deploy, manage, and configure

- **Zero-touch provisioning** for multi-site deployment
- Customizable Meraki APIs for automated site setups
- Seamless firmware updates from the cloud

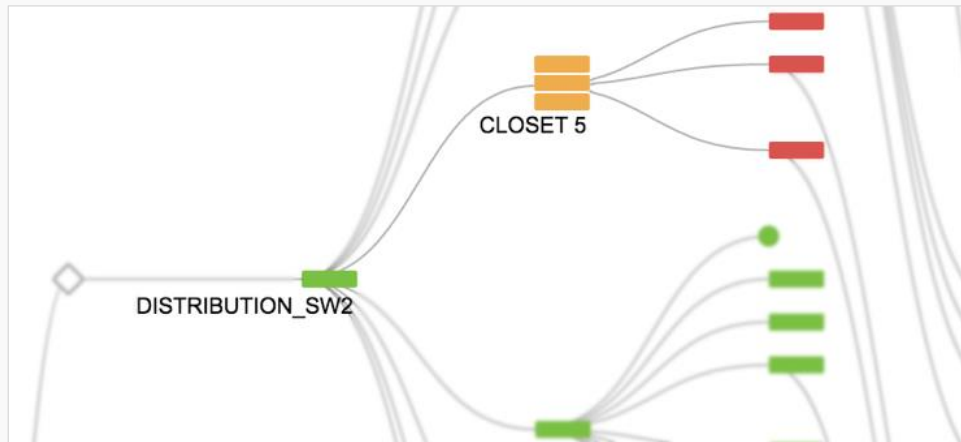


## Industry-leading visibility

- User, application, and device analytics
- **Network-wide monitoring and alerts** to reduce response times
- Remote packet capture and other diagnostics tools



# Avoiding disruption



Access **6 switch stacks** Delete stacks Add a stack

Stack Name	Stack Members
● 1.1 Access	<a href="#">Closet 1.1.3</a> <a href="#">Closet 1.1.2</a> <a href="#">Closet 1.1.1</a>
● 5.3 Access	<a href="#">Closet 5.3.4</a> <a href="#">Closet 5.3.5</a>
● 4.1 Access Orange	<a href="#">Closet 4.1.16</a> <a href="#">Closet 4.1.15</a> <a href="#">Closet 4.1.14</a>
● 3.1 Access Blue	<a href="#">Closet 3.1.11</a> <a href="#">Closet 3.1.9</a> <a href="#">Closet 3.1.10</a> <a href="#">Closet 3.1.12</a>
● 3.2 Access	<a href="#">Closet 3.2.1</a> <a href="#">Closet 3.2.2</a> <a href="#">Closet 3.2.3</a>

## Physical Stacking

- Stacking supported on many models
- Immediate failover to warm spare if hardware goes offline
- Clone switch configurations

## Dynamic Routing with Gateway Redundancy

- Built-in routing resilience with OSPF
- Adapts to detected link failures
- Visual interface reduces opportunities for errors

## DHCP and IP Services

- Support multiple DHCP relay definitions
- DHCP snooping
- Dynamic ARP Inspection



# Cisco Meraki & NBASE-T

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# The growing justification for NBASE-T



PHY	Bandwidth (as number of data subcarriers)	Data bits per subcarrier	Time per OFDM symbol (800ns GI)	1 SS	3 SS	4 SS	8 SS
<b>802.11ac</b>	234 (80 MHz)	$5/6 \times \log_2(256)$ $\approx 6.67$	4 $\mu$ s	390 Mbps	1.17 Gbps	1.56 Gbps	-
	2 x 234 (160 MHz)	X	/	= 780 Mbps	-	3.12 Gbps	-
<b>802.11ax</b>	980 (80 MHz)	$5/6 \times \log_2(1024)$ $\approx 8.33$	13.6 $\mu$ s	600 Mbps	1.8 Gbps	2.4 Gbps	4.8 Gbps
	2 x 980 (160 MHz)			1.2 Gbps	3.6 Gbps	4.8 Gbps	-



# Case Study: Pfeiffer University

- Private college with ~2000 students
- Sought to future proof network for high bandwidth learning applications
- Deployed 802.11ac Wave 2 access points leveraging legacy cabling



# Meraki NBASE-T switches



## MS355

High multigigabit port-count for high density deployments of 802.11ax access points

100M/1G/2.5G/5G/10G on multigigabit ports

Available in 24- and 48- port models

2 x 40G QSFP+ or 4 x 10G SFP+ uplink ports

400G of stacking bandwidth

Dynamic Layer 3 routing

PoE+/UPoE support



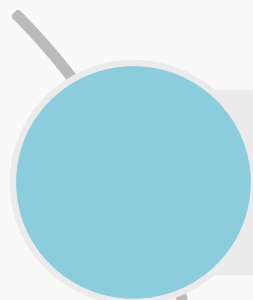


# Wrap-up & Discussion

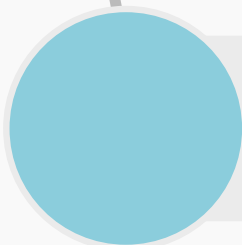
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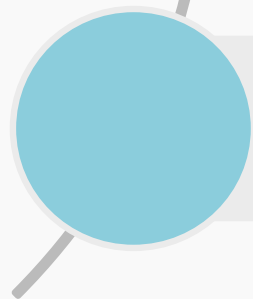
# Wrap-up & Discussion



Native cloud management speeds technology adoption



802.11ax driver for NBASE-T



NBASE-T & installed cabling just makes sense



Thank you!

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Visit [www.nbaset.org](http://www.nbaset.org) &  
[meraki.cisco.com/technologies/multigigabit](http://meraki.cisco.com/technologies/multigigabit)  
for more information