

# Growth of NBASE-T: Market Trends & Forecasts from 650 Group

# Today's Speakers



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# Agenda

- NBASE-T Overview Peter
- Campus Market Overview Alan
- Current BASE-T Market Adoption Alan
- Wrap-up & Discussion Alan



# NBASE-T Alliance

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

**Alliance Strength - Full Ecosystem**



## Promoters



## Contributors



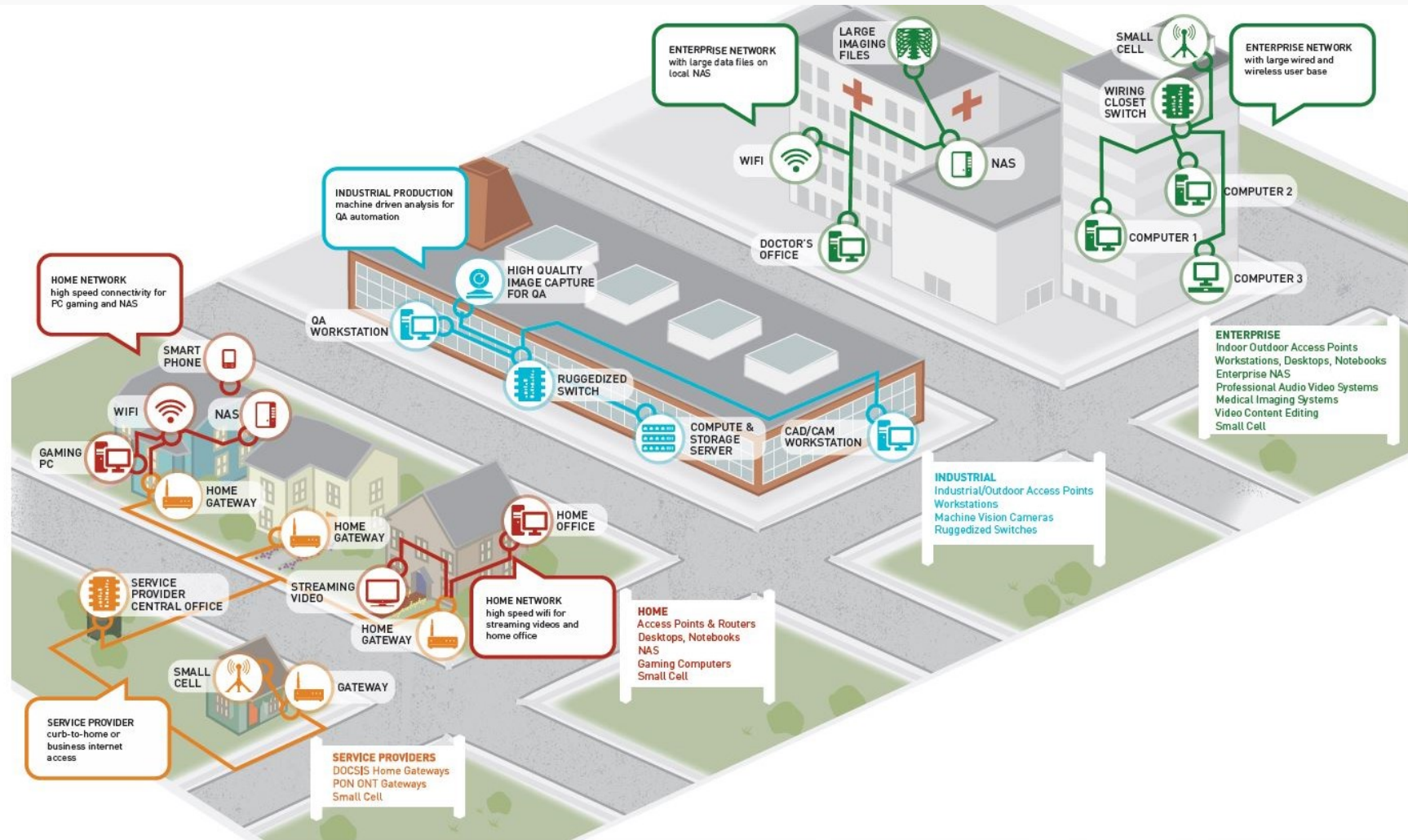
## Adopters



## 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

## Service Provider:

- Small Cell
- Home Gateway

# NBASE-T Products



## NBASE-T Alliance Member Companies

### Component

Aquantia  
Aruba HPE  
Bel Magnetic Solutions  
Cisco  
GLGNet  
Intel  
KinnexA  
Marvell  
NXP

### System Level Product

Aquantia  
Aruba HPE  
Cisco  
Microsemi  
Netgear  
Pleora Technologies  
Tehuti Networks  
Teledyne e2v

### Test Equipment

Aukua Systems  
Spirent  
Tektronix  
Xena Networks

## Non-Member Companies

### Component

Akitio  
Dell  
Gigabyte  
Promise Technology  
QNAP  
Sonnet

### System Level Product

Accton  
Apple  
ASRock  
ASUS  
Brocade  
Buffalo  
Dell  
Dell EMC  
Lenovo  
MSI  
Promise Technology  
Sonicwall  
Startec  
Supermicro



# 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



# CAMPUS MARKET OVERVIEW

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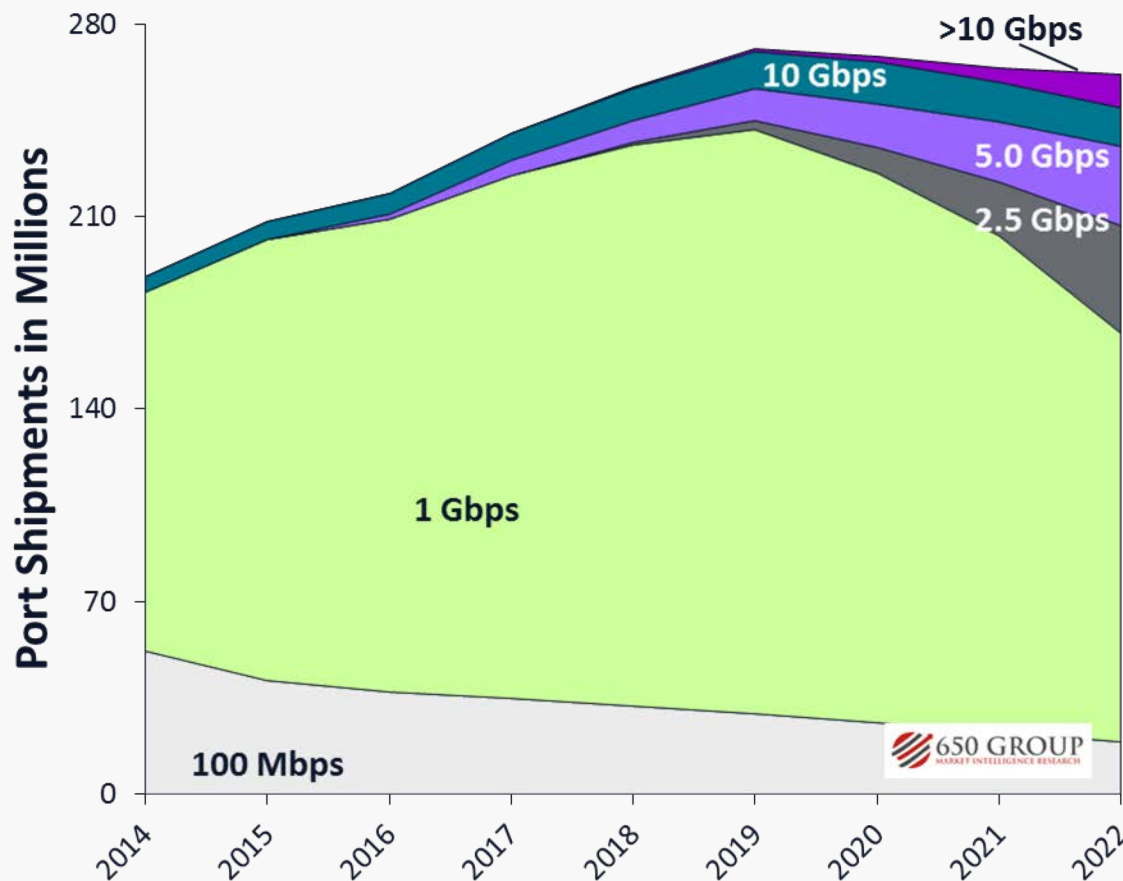
# 650 Group

We started 650 Group to provide our subscribers and customers with a unique perspective on the industries we research. Our team has decades of experience researching our focus industries and in roles at companies similar to the ones we cover. We research the data center, communications and Information Technology markets.

- Founded in 2017 by Chris DePuy and Alan Weckel
- Headquartered in Silicon Valley
- Trusted source of research for system vendors, component manufacturers, service providers, sell-side, buy-side, and standards bodies



# Ethernet Switch – Enterprise/Campus: Total Port Shipments



- Continued near-term port growth
  - Strong upgrade market in North America
  - Continued growth in China
  - Vendor Consolidation
    - Avaya -> Extreme
    - Brocade (campus) -> Aris
    - Xirrus -> Riverbed
- NBASE-T replacing 1 Gbps
  - WLAN APs need >1 Gbps speeds
  - PC market forming

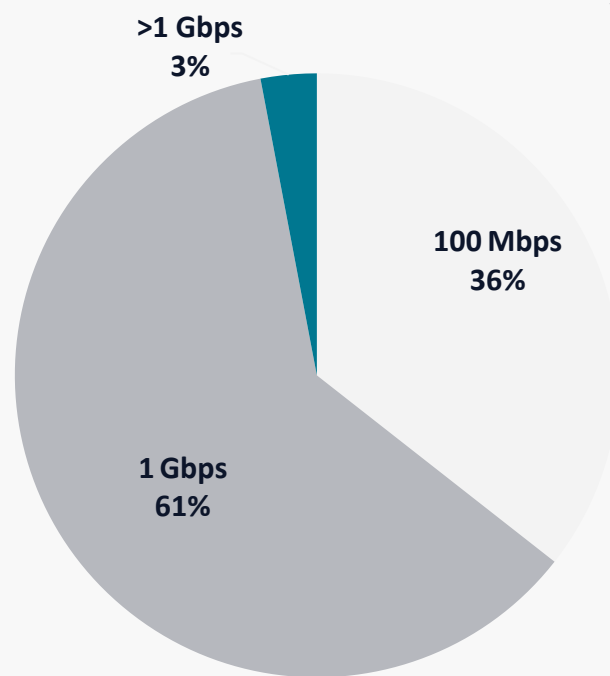


# Installed Base of Ethernet Switch Ports Continues to Grow

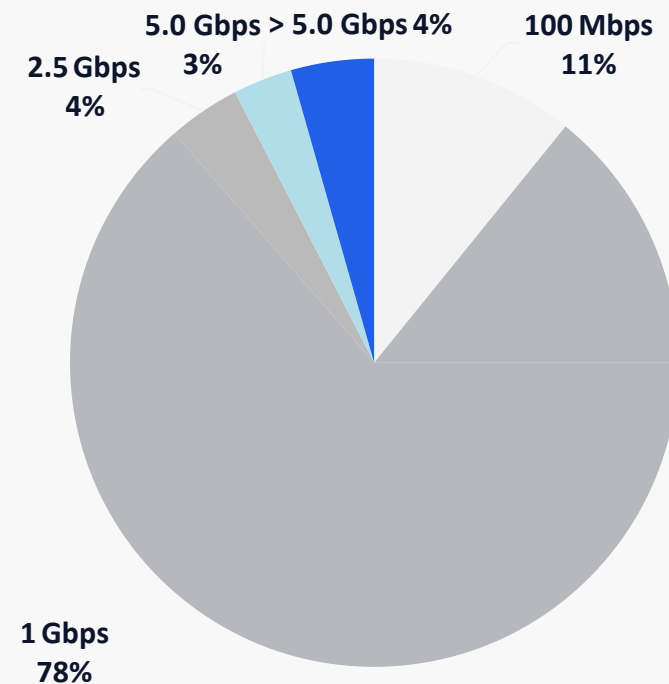
**Table 2:** ALSNR support risk for 2.5G and 5G applications

Bundled cabling length 0m to 50m	Category 5e	Category 6	Category 6A
2.5GBASE-T	Assured	Assured	Assured
5GBASE-T Assured	Assured	Assured	Assured
Bundled cabling length 50m to 75m	Category 5e	Category 6	Category 6A
2.5GBASE-T	Assured	Assured	Assured
5GBASE-T Assured	Assured	Assured	Assured
Bundled cabling length 75m to 100m	Category 5e	Category 6	Category 6A
2.5GBASE-T	Assured	Assured	Assured
5GBASE-T Assured	Assured	Assured	Assured
ALSNR Risk	High	Medium	Low

## Switch Port Installed Base (>1.2 B Ports end of 2016)



## Projected Switch Port Installed Base (>1.5 B Ports end of 2022)





# Vendor Positioning – 2017 Revenue

## Campus Switch

Vendor	Share
Cisco	62% ↓
HPE	9% ↑
Huawei	8% ↑
H3C	4% ↑
Extreme	2% ↑
Others	15% ↓

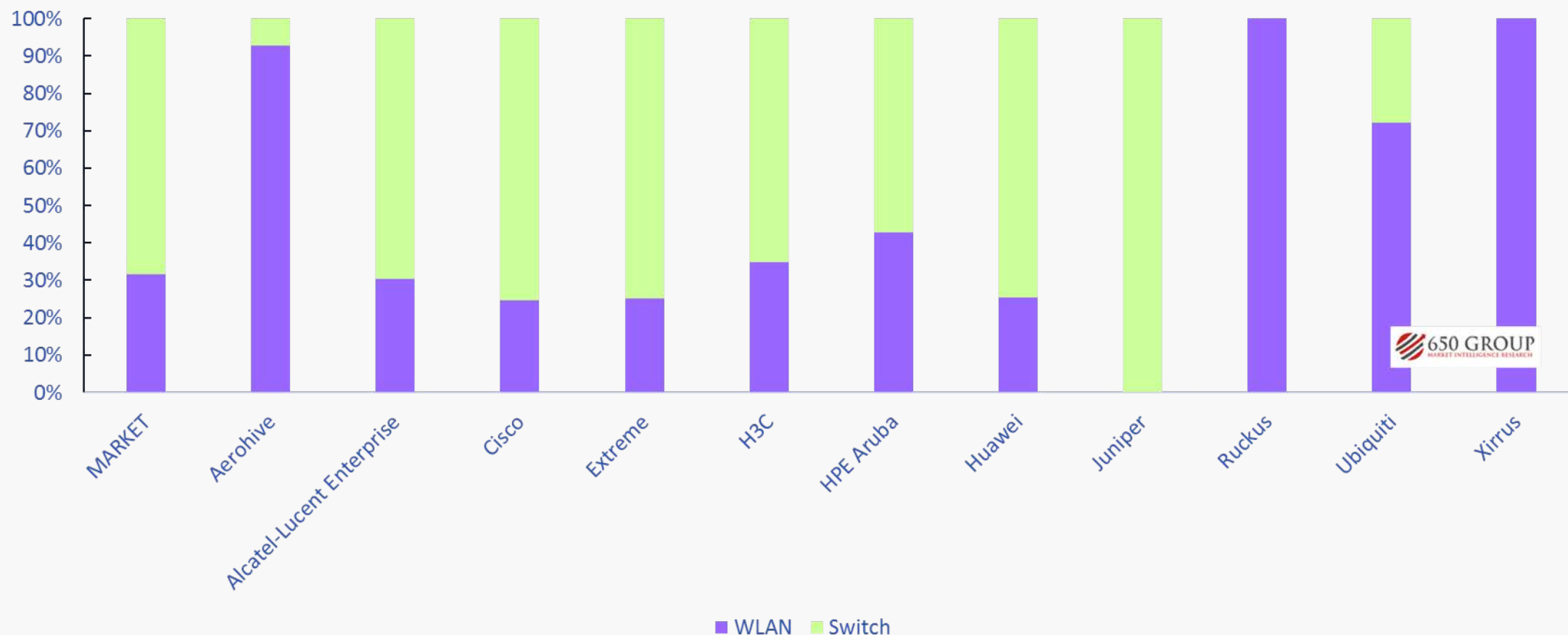
## Enterprise WLAN

Vendor	Share
Cisco	44% ↓
HPE	15% ↓
Huawei	7% ↑
Ubiquiti	6% ↑
Ruckus	5% ↓
Others	23% ↓

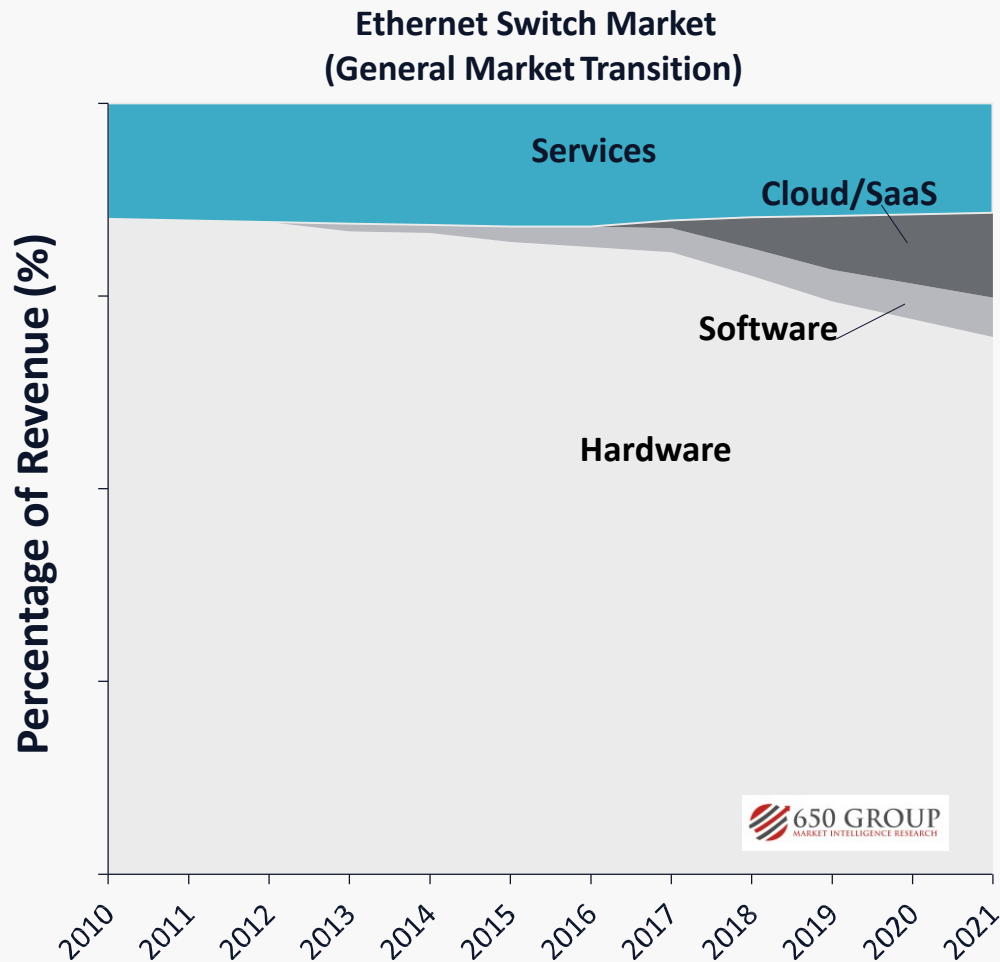
- China Vendor Influence Increasing
  - Strong growth in Europe
  - Battleground in emerging markets
- NBASE-T replacing 1 Gbps
  - WLAN APs need >1 Gbps speeds
  - PC market forming



# WLAN/Campus Switch revenue: 4Q17 Revenue Distribution



# Push Towards Recurring Revenue



- Vendors looking to transition towards recurring revenue
  - Multiple business models
    - Cloud/SaaS
    - Subscription
  - Some vendors remain hardware based
- ASC606 Accounting
  - How vendors account for software is changing

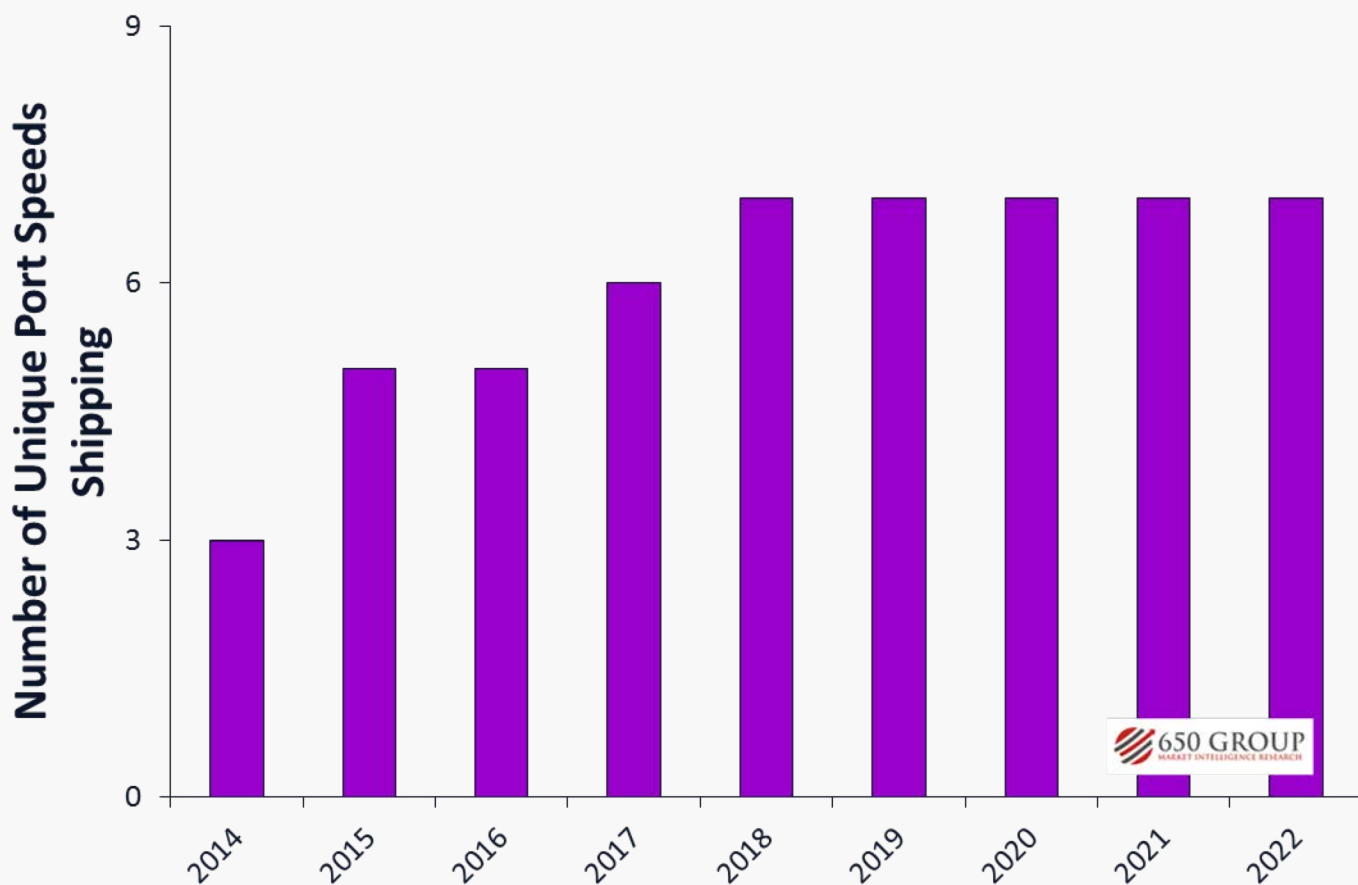


# NBASE-T MARKET ADOPTION

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# Ethernet Switch – Enterprise/Campus: Unique Port Shipments



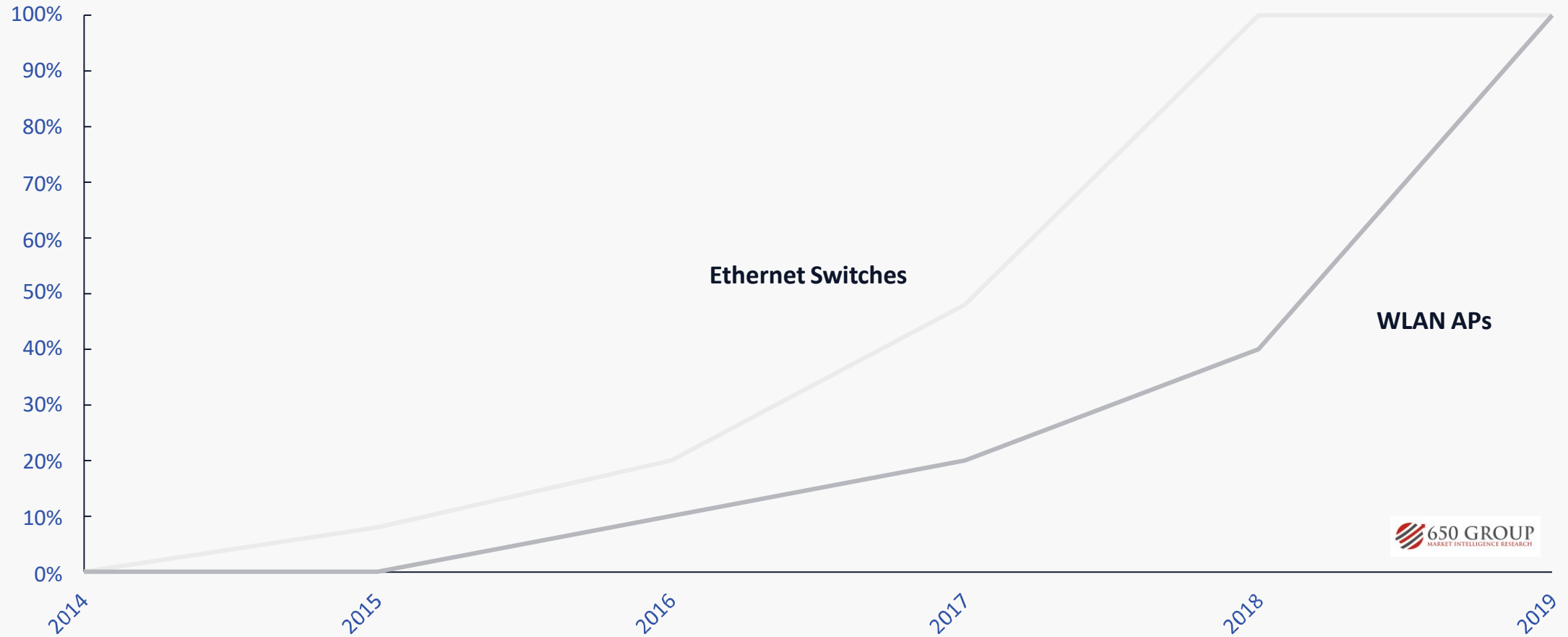
- Switching transitioning into an infrastructure role and away from a user connectivity role
- Client Device Migration
  - 100 Mbps -> 1 Gbps
  - 1 Gbps -> NBASE-T
- Uplink and Core Migration
  - 10 Gbps -> 25 Gbps
  - 40 Gbps -> 100 Gbps

# More Than Just a WLAN Technology



- High-end workstations
  - Becoming more popular with each PC refresh
  - Laptop docks and dongles
- Home use
  - Gaming adapters
  - CPE deployments
- Cameras and IOT
  - Increased adoption in cameras
  - Large sensors / fast framerates

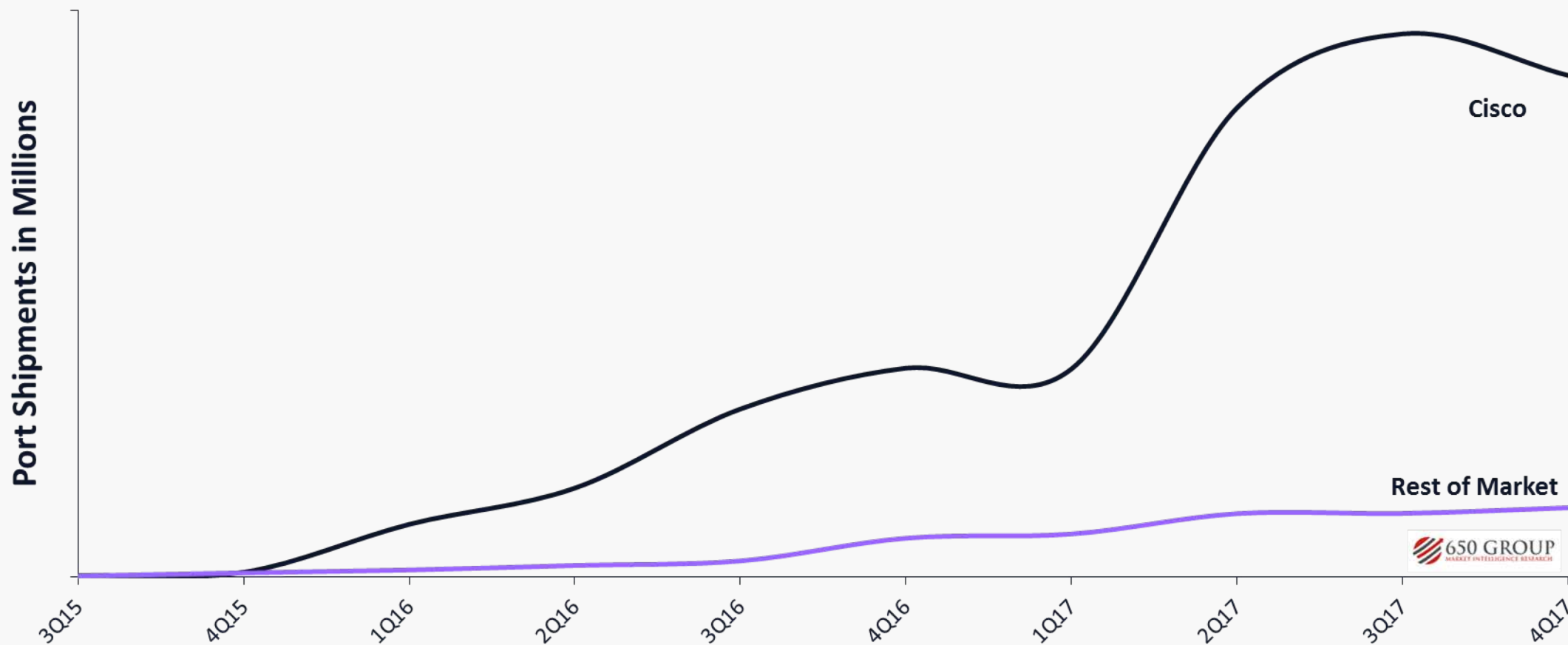
# Vendor's with Offerings of 2.5 and 5.0 Gbps Ports



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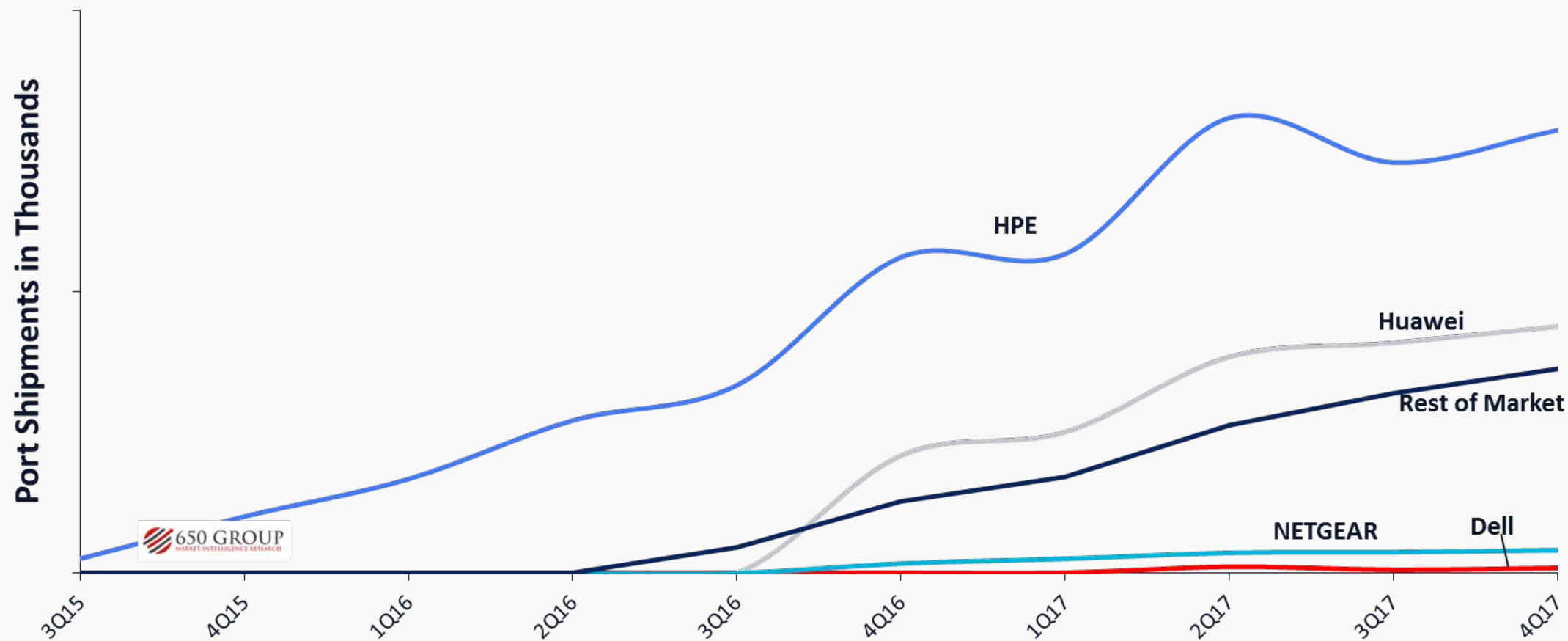
# Ethernet Switch – NBASE-T: Total Port Shipments (2.5 and 5.0 Gbps)



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# Ethernet Switch – NBASE-T: Total Port Shipments (2.5 and 5.0 Gbps)





# Wrap-up & Discussion

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# Wrap-up & Discussion

- Ethernet switch and WLAN markets are evolving to be **more consumption based (OPEX)** instead of strictly purchased (CAPEX)
- NBASE-T is becoming **more popular** amongst users
- NBASE-T adoption is **beyond switching and WLAN**
- NBASE-T cable infrastructure **preservation drives ROI**



Thank you!

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Visit [www.nbaset.org](http://www.nbaset.org) & [www.650group.com](http://www.650group.com)  
for more information