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We pride ourselves as the Gold Standard

Worldwide Telecommunications, Networks, and Data Center IT

Market Trends for Wireless LAN

**For IEEE ComSoc SCV
December 9, 2015**

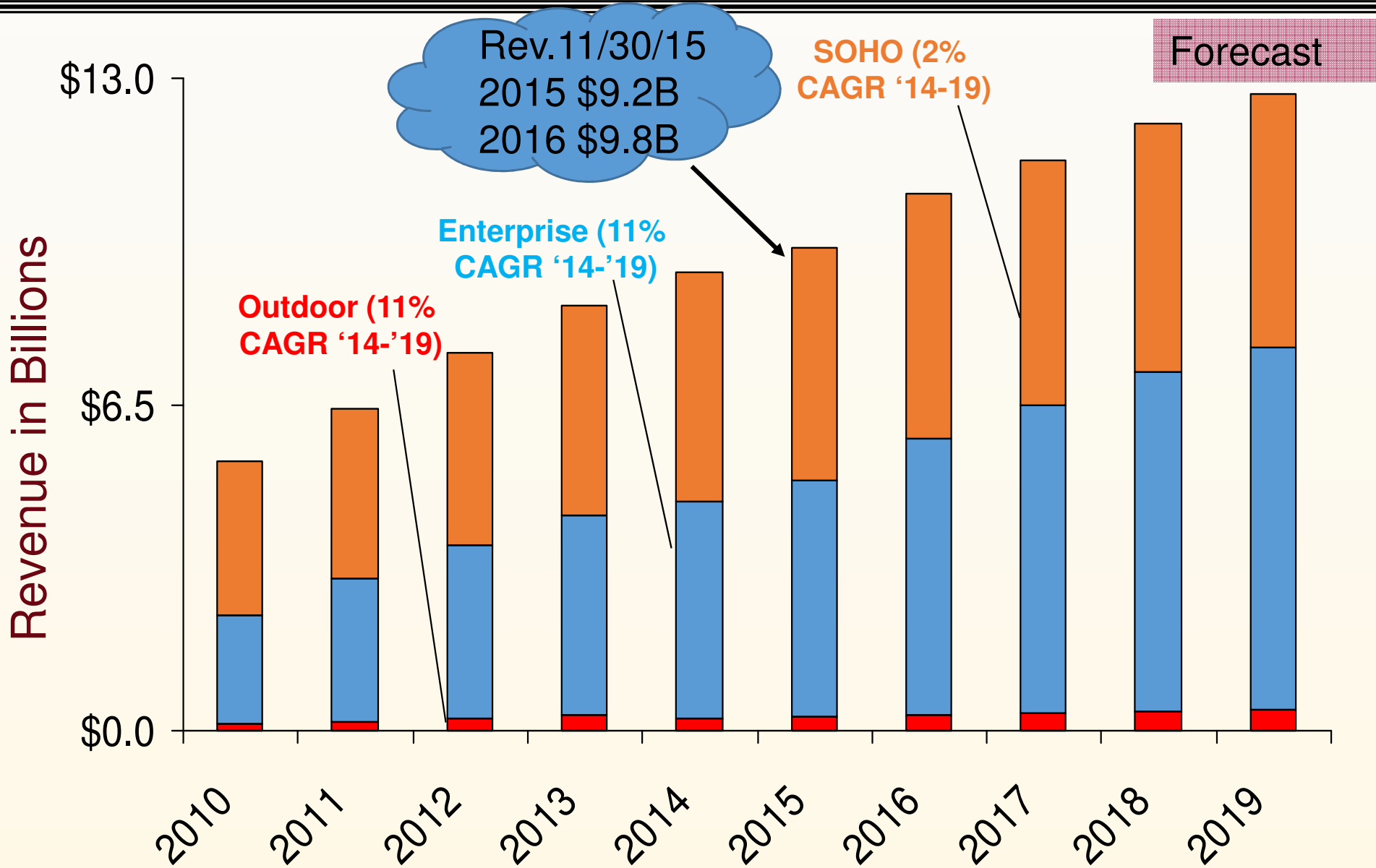
**Chris DePuy
chris@delloro.com**

Agenda

Agenda

- Forecast
- Vendors
- Technology: 802.11ac, Controller, Cloud
- Positioning
- Verticals
- Outdoor, SOHO, SP WiFi
- Ethernet/WiFi

WLAN Revenue Forecast – July 2015 Report



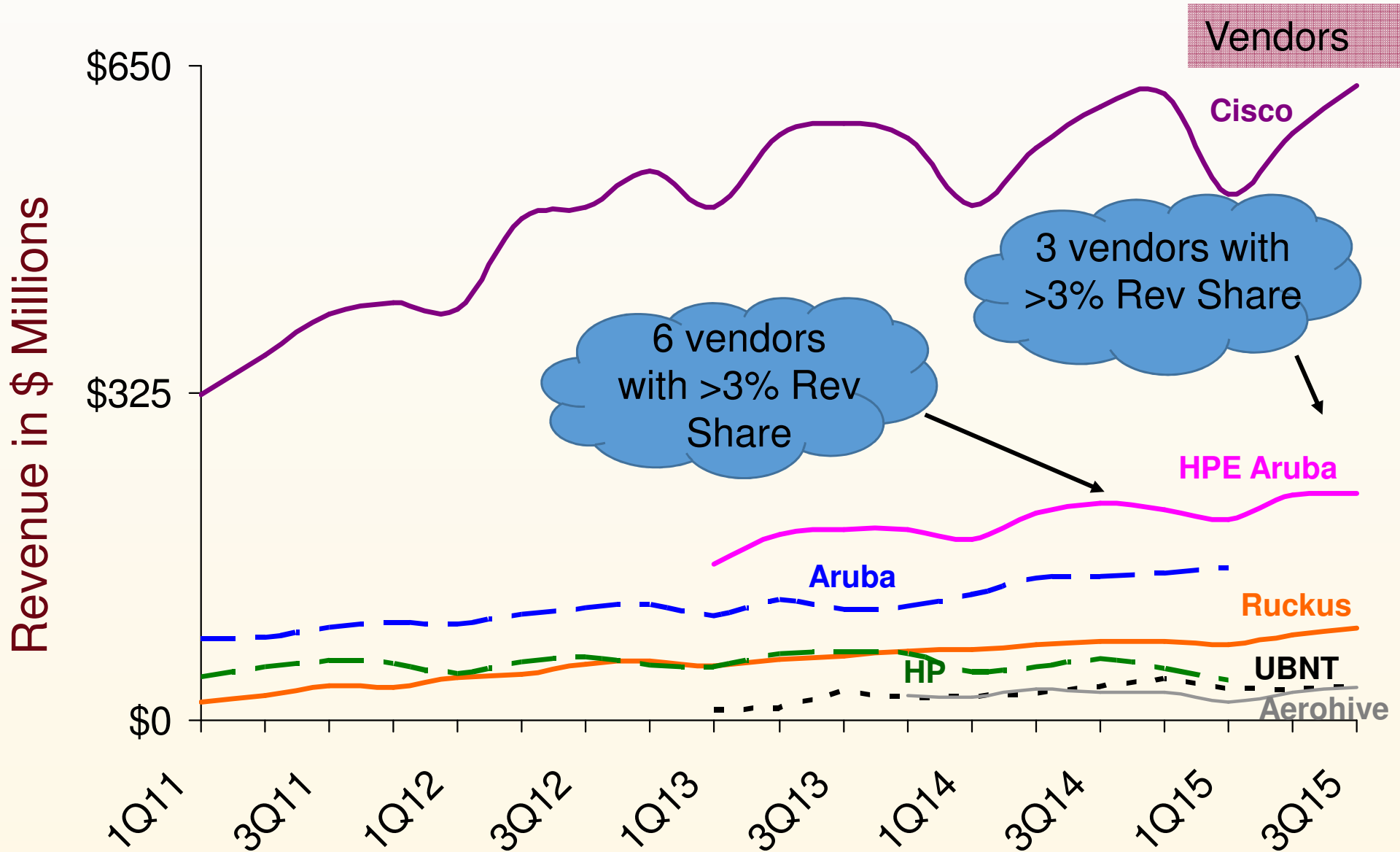
Enterprise Wireless LAN Landscape - 2015

Forecast

- Market under plan: 2015e revenue +3%, AP growth +13%
- E-Rate disappointing
- Mix to low-end customers
- Wave 2 later than expected
- Controller revenues declining (-14% 2015e)
- Market Consolidation underway
- SP WiFi at mobile operators weak

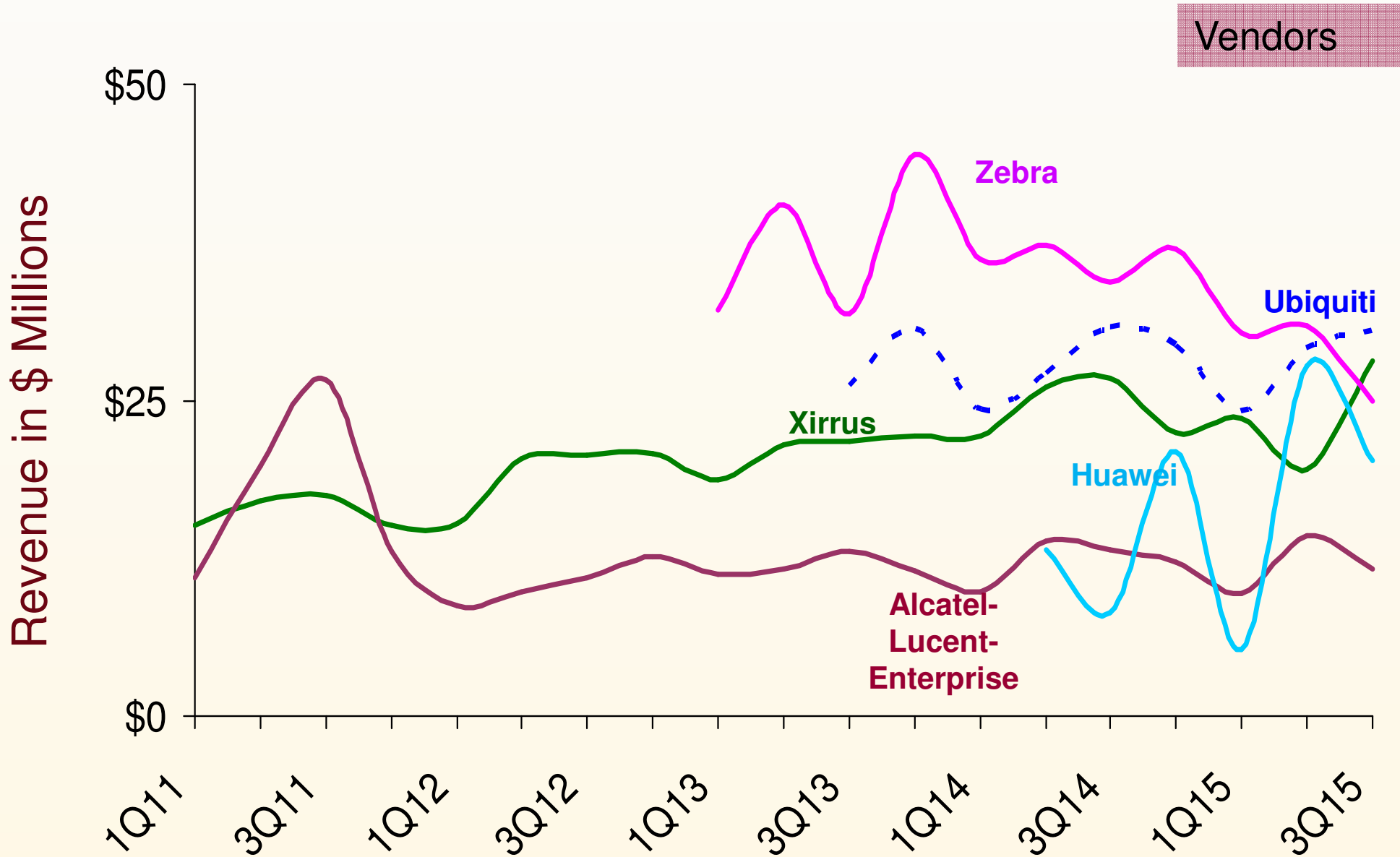
Vendor Positioning

Total Enterprise+Outdoor Revenue (Top 5)



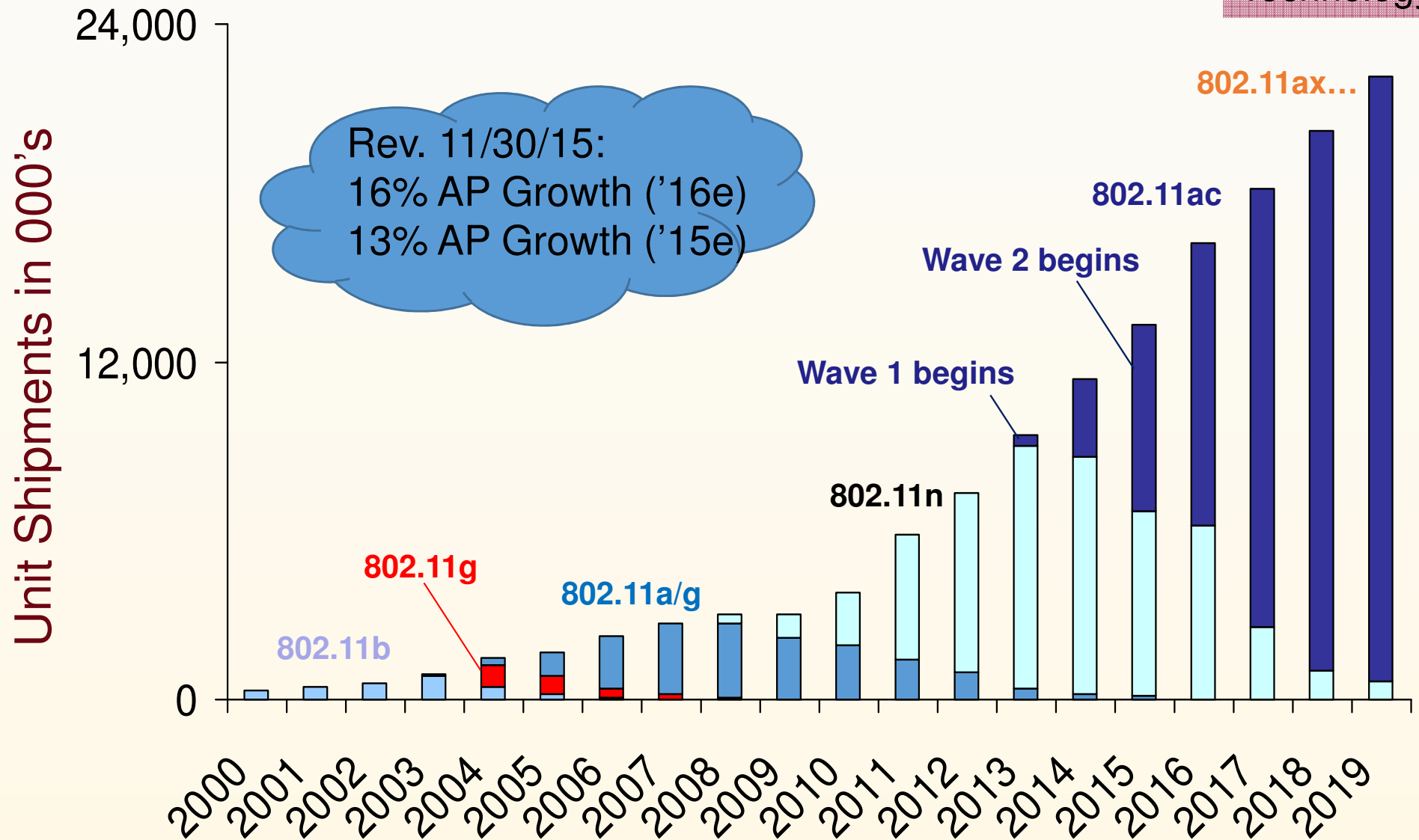
Vendor Positioning

Total Enterprise+Outdoor Revenue (Rank 6-10)



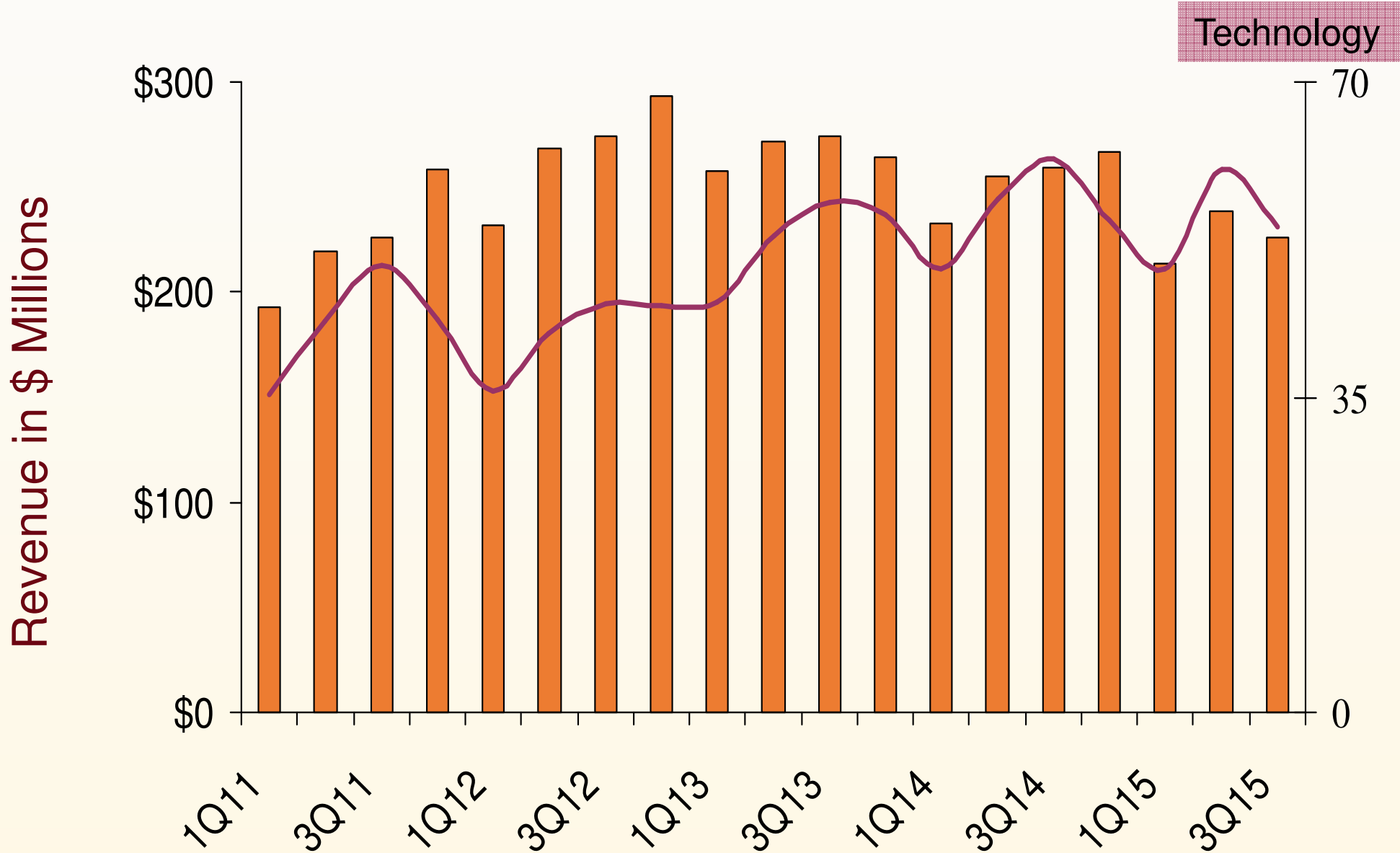
Enterprise Access Points Unit Shipments

Technology



Vendor Positioning

Controller Revenue (Bar) and Units (Line)

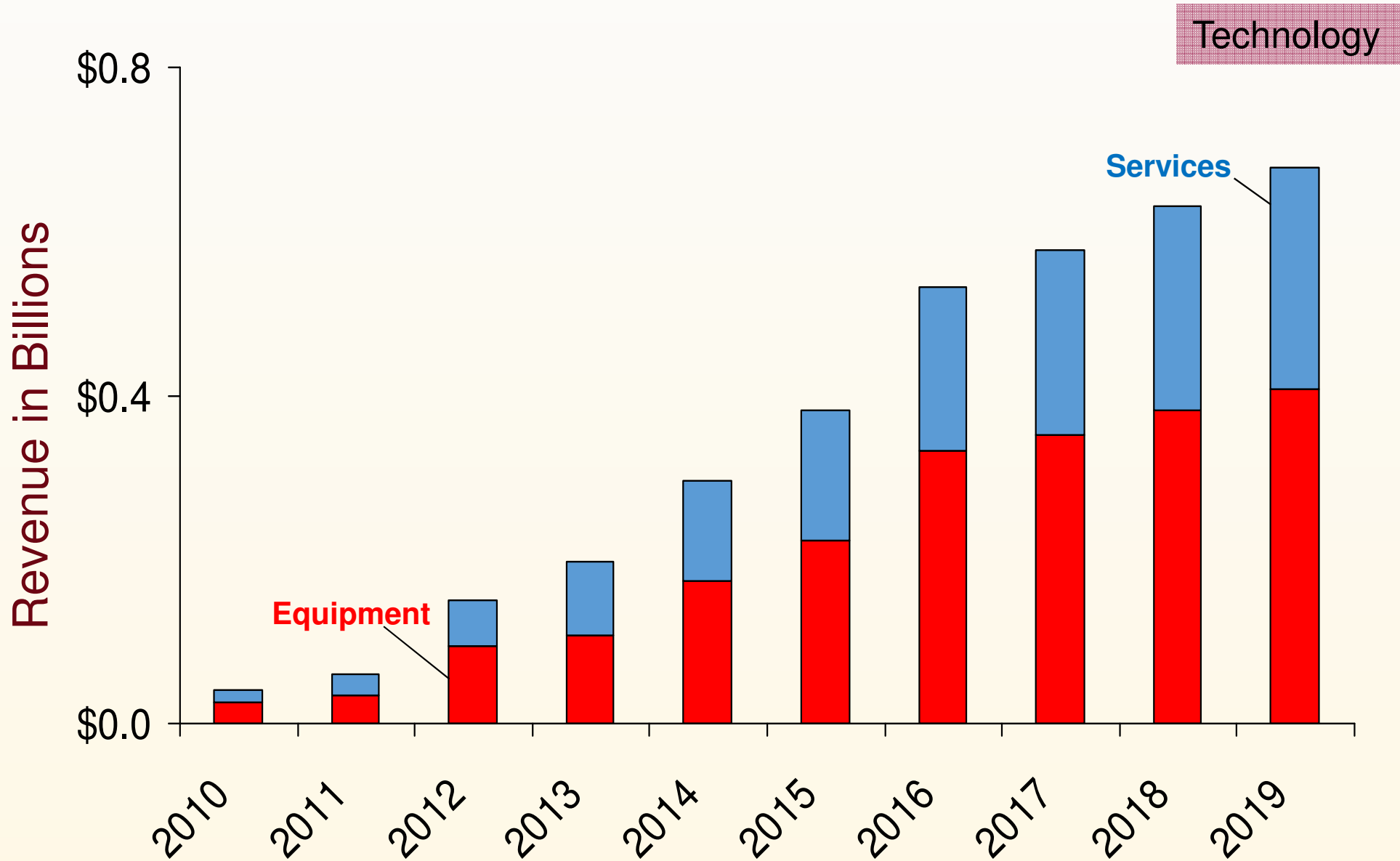


The Controller Has Competition

Technology

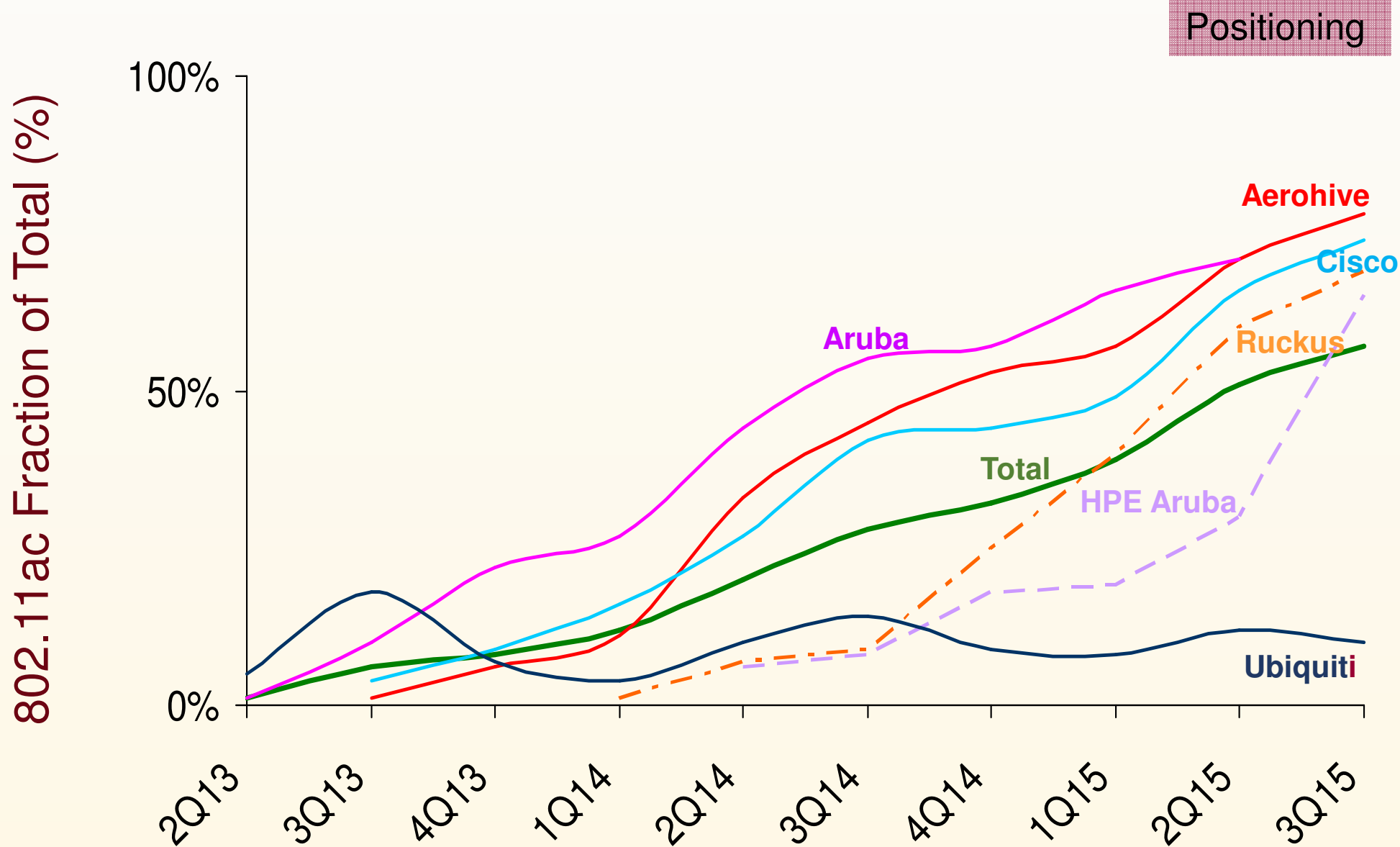
- Cloud-Managed
- Controller-less
- Free Downloadable Controller Software
- Embedded Free Controller

Cloud-Managed Revenues



Vendor Positioning

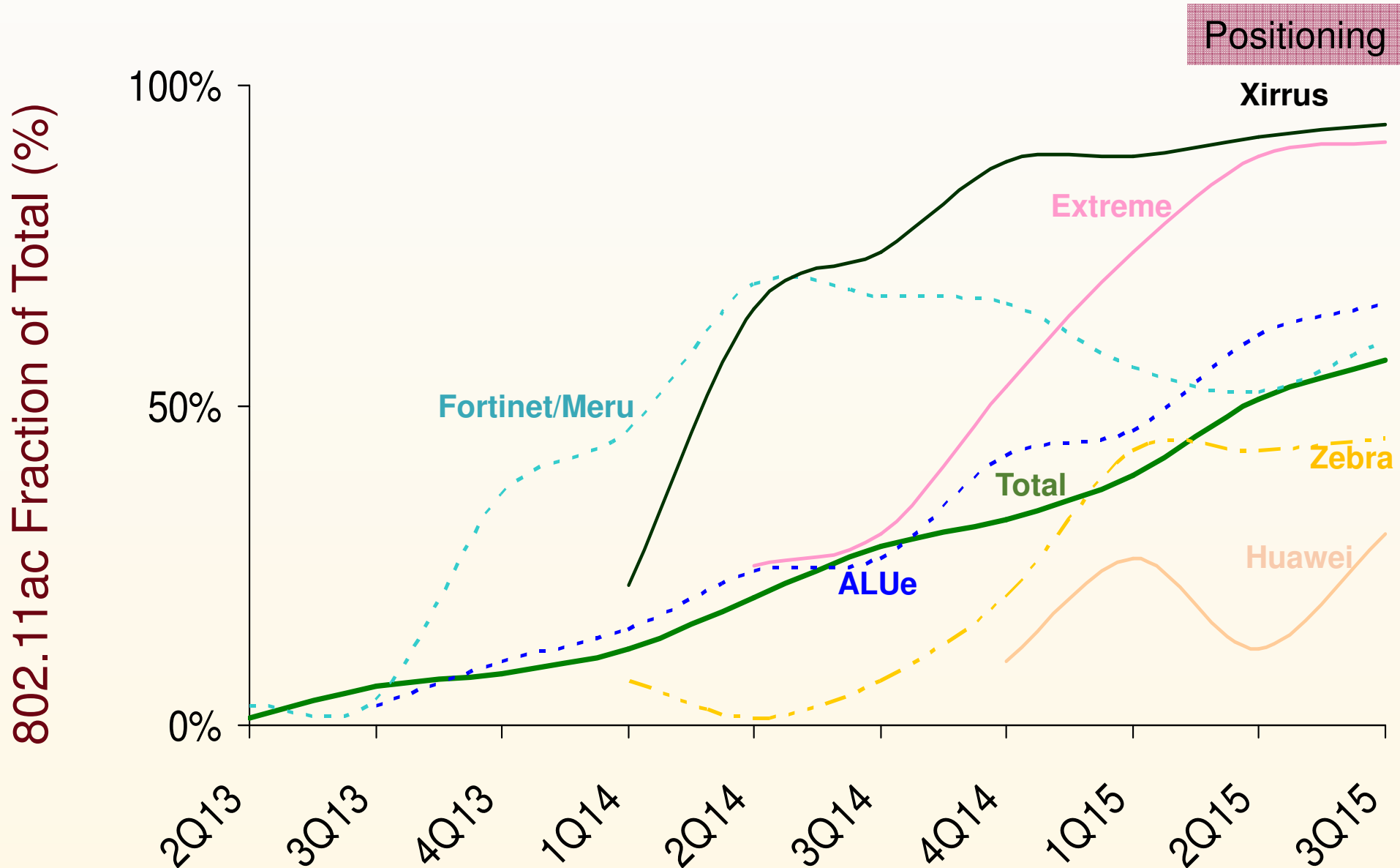
802.11ac Percent of Each Vendors' AP* (Top 5+ARUN)



*AP = Access Point

Vendor Positioning

802.11ac Percent of Each Vendors' AP*(Rank 6+)

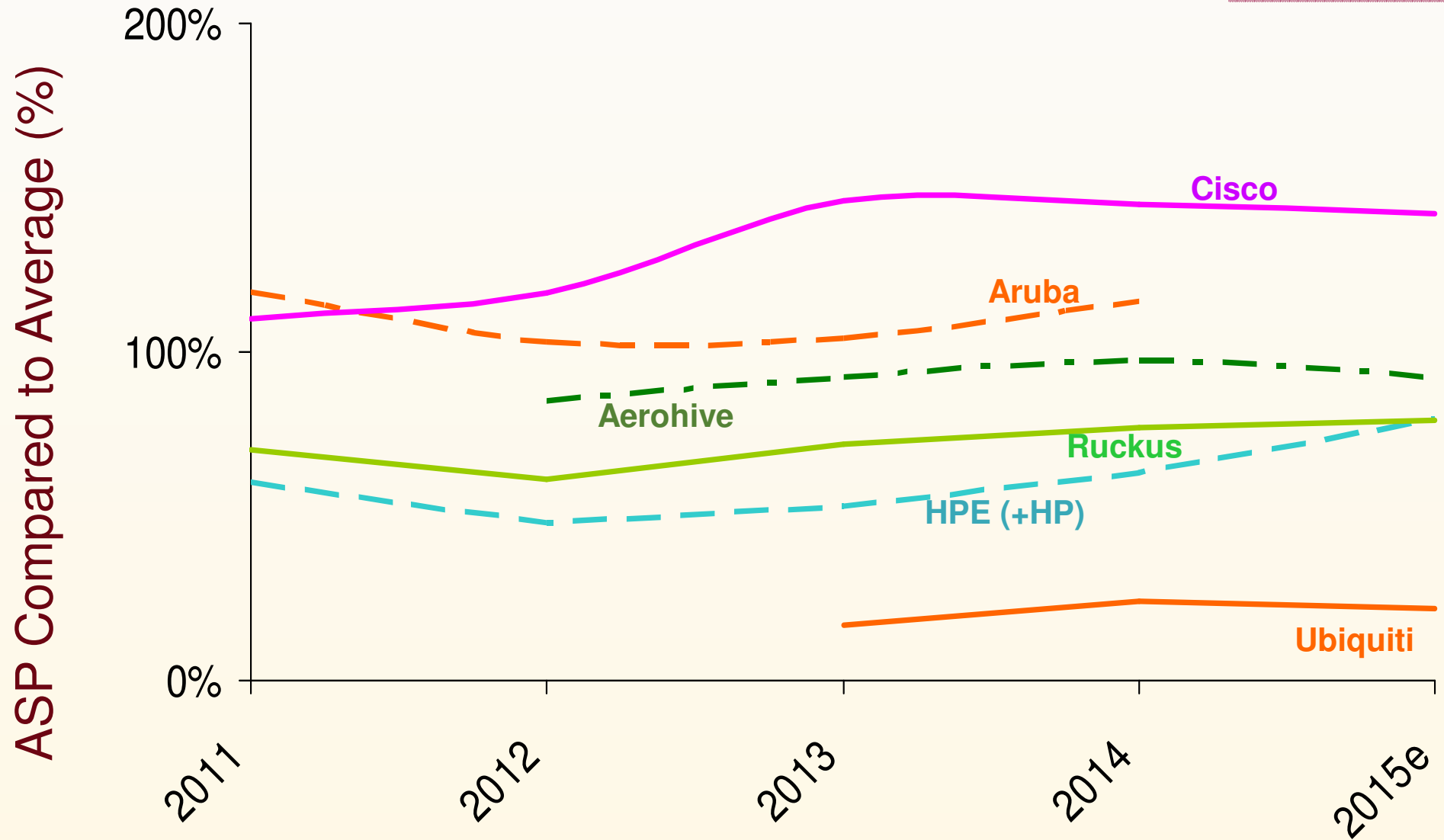


*AP = Access Point

Vendor Positioning

Enterprise ASP* vs Industry - (Top 5 Vendors + Aruba)

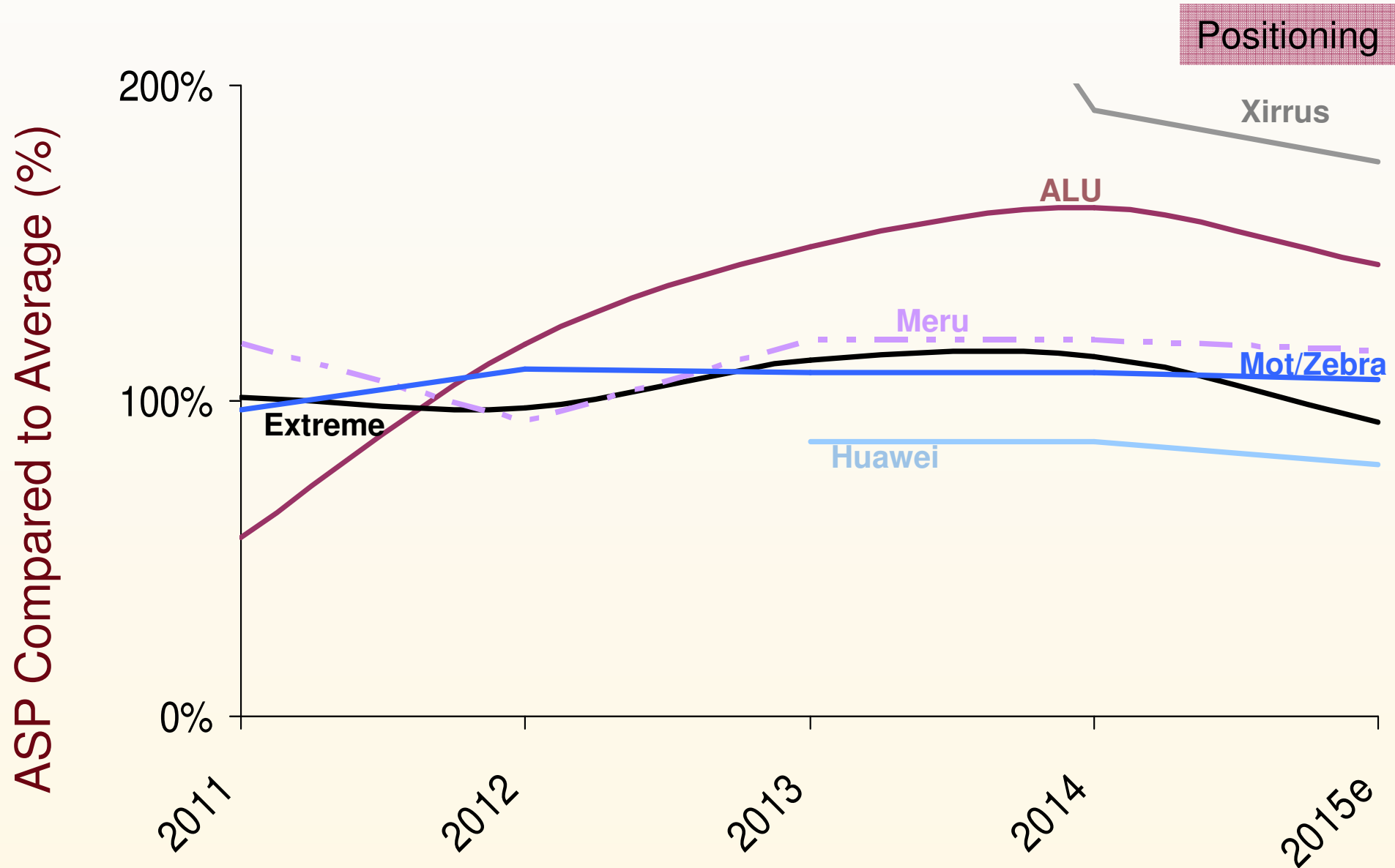
Positioning



*Enterprise-class Average Selling Price (includes Access Point and Controller, if applicable)

Vendor Positioning

Enterprise ASP* vs Industry - (Rank 6+ Vendors)



*Enterprise-class Average Selling Price (includes Access Point and Controller, if applicable)

Top Vendor Revenue Share and Profits - 2014

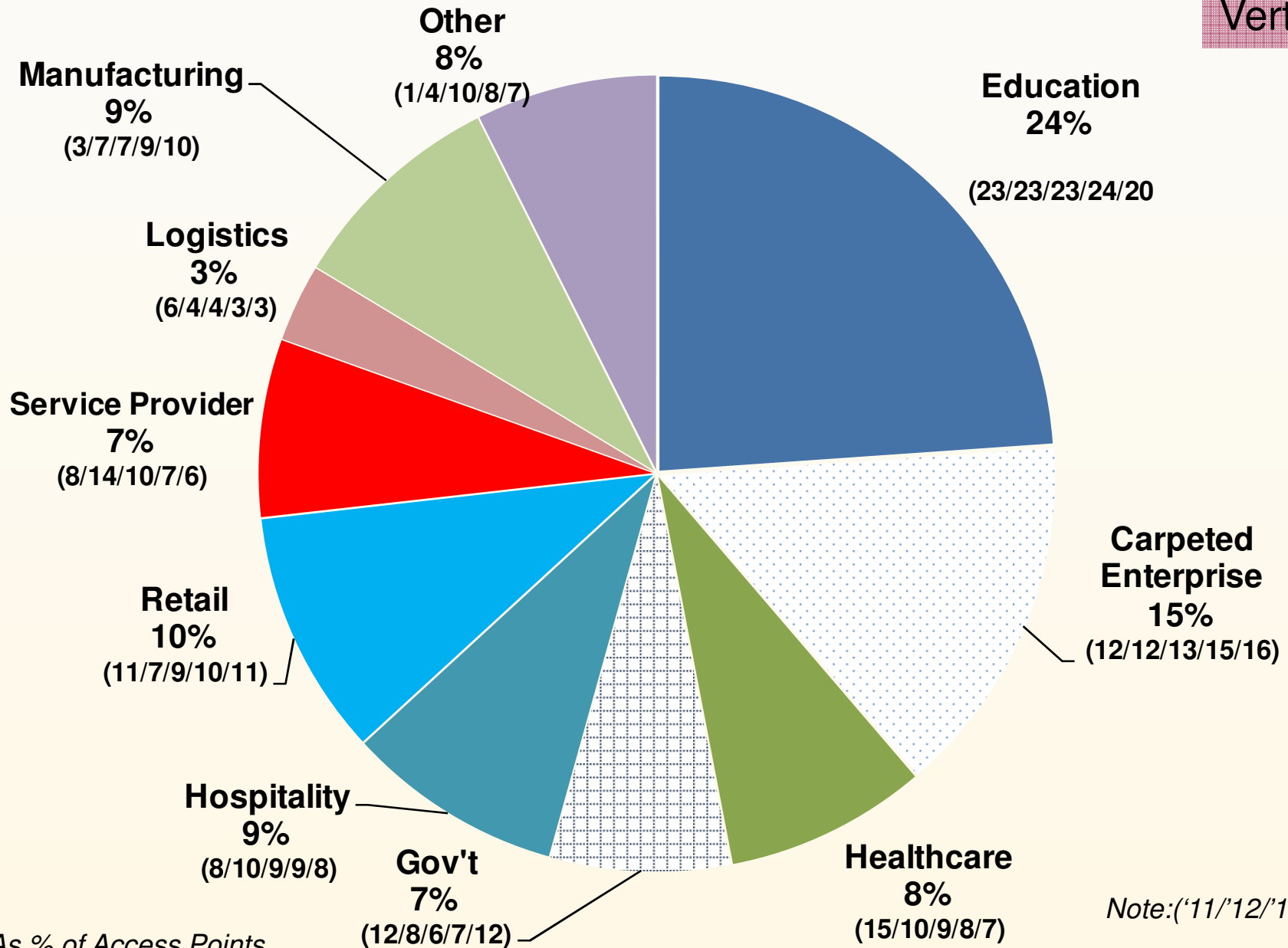
Positioning

Company	Rev Share ('14)	Corporate Profits (\$M, '14)*
Cisco	51%	--
Aruba	12%	\$54
Ruckus	7%	\$8
HP	5%	--
Zebra (frmly MSI)	3%	--
Ubiquiti	3%	--
Aerohive	2%	(\$31)
Xirrus	2%	--
Meru	2%	(\$21)
Extreme	1%	--
Huawei	~1%**	
Alcatel-Lucent (Ent)	1%	--

*Pure-Play publicly traded; Aruba is Jan '15 year-end; Huawei 4Q14 was 2%

Wireless LAN Enterprise-Class Vertical Markets* (2014)

Verticals

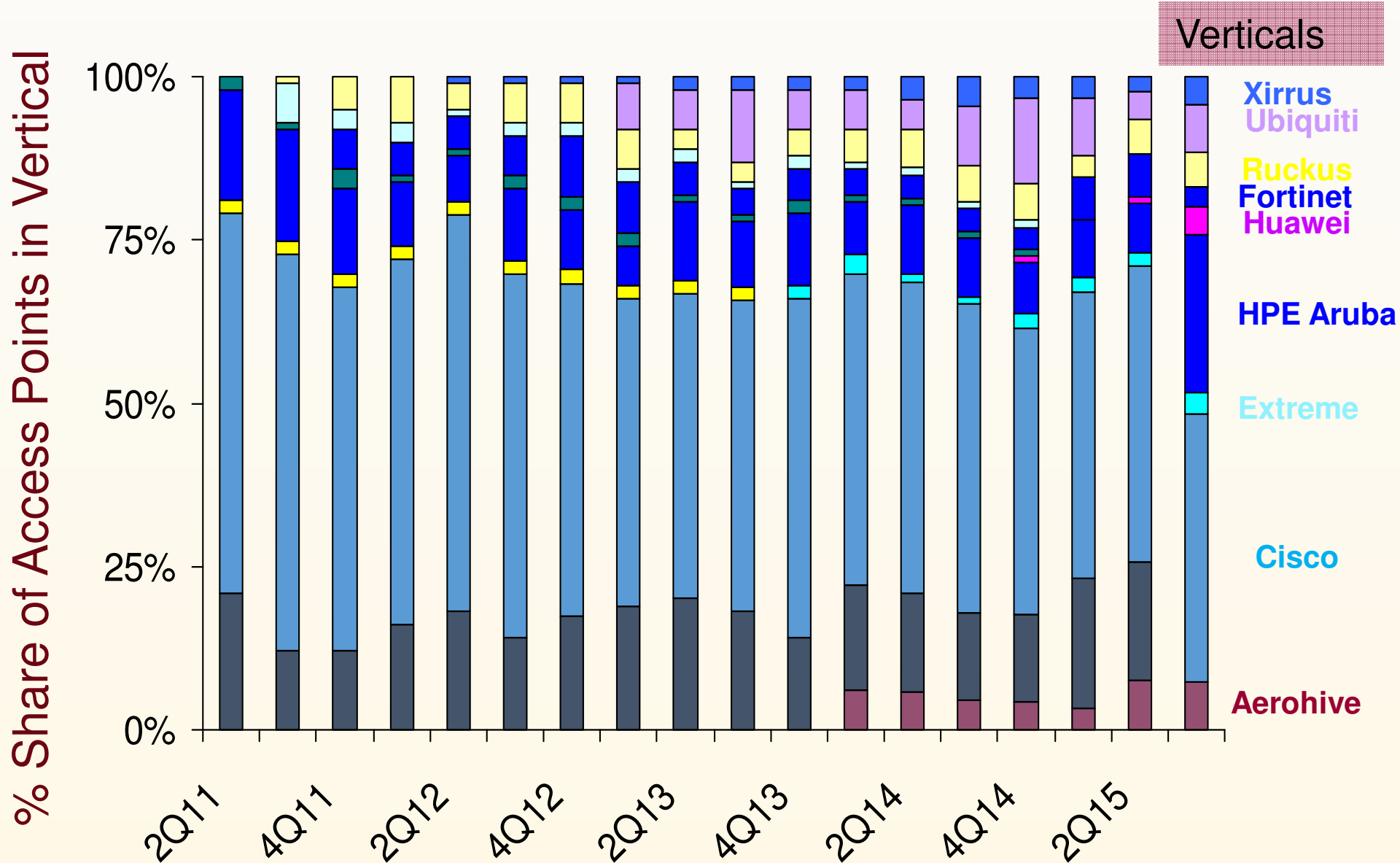


*As % of Access Points

Note:('11/'12/'13/'14/'15e)

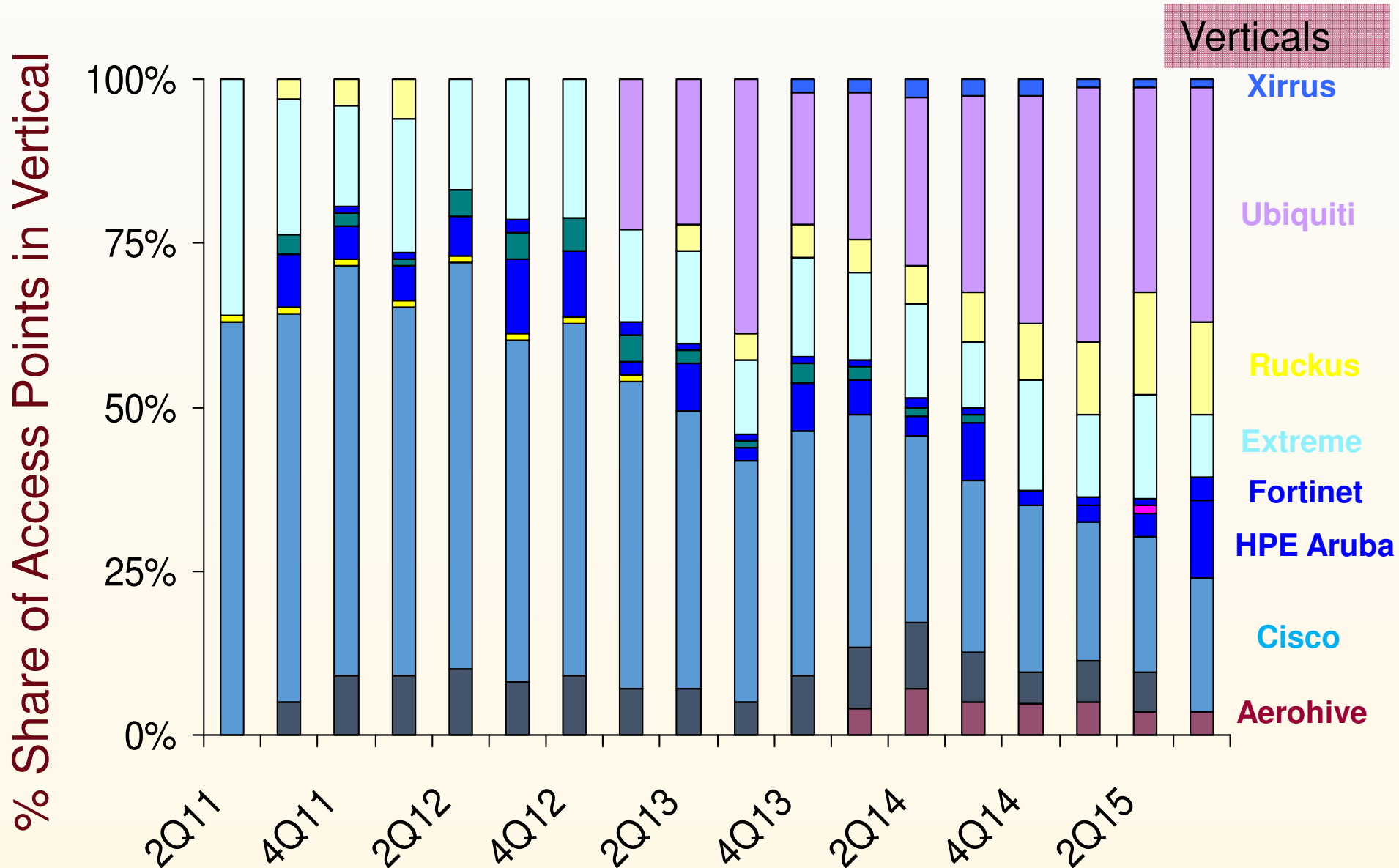
Vendor Positioning

Education Vertical by Vendor

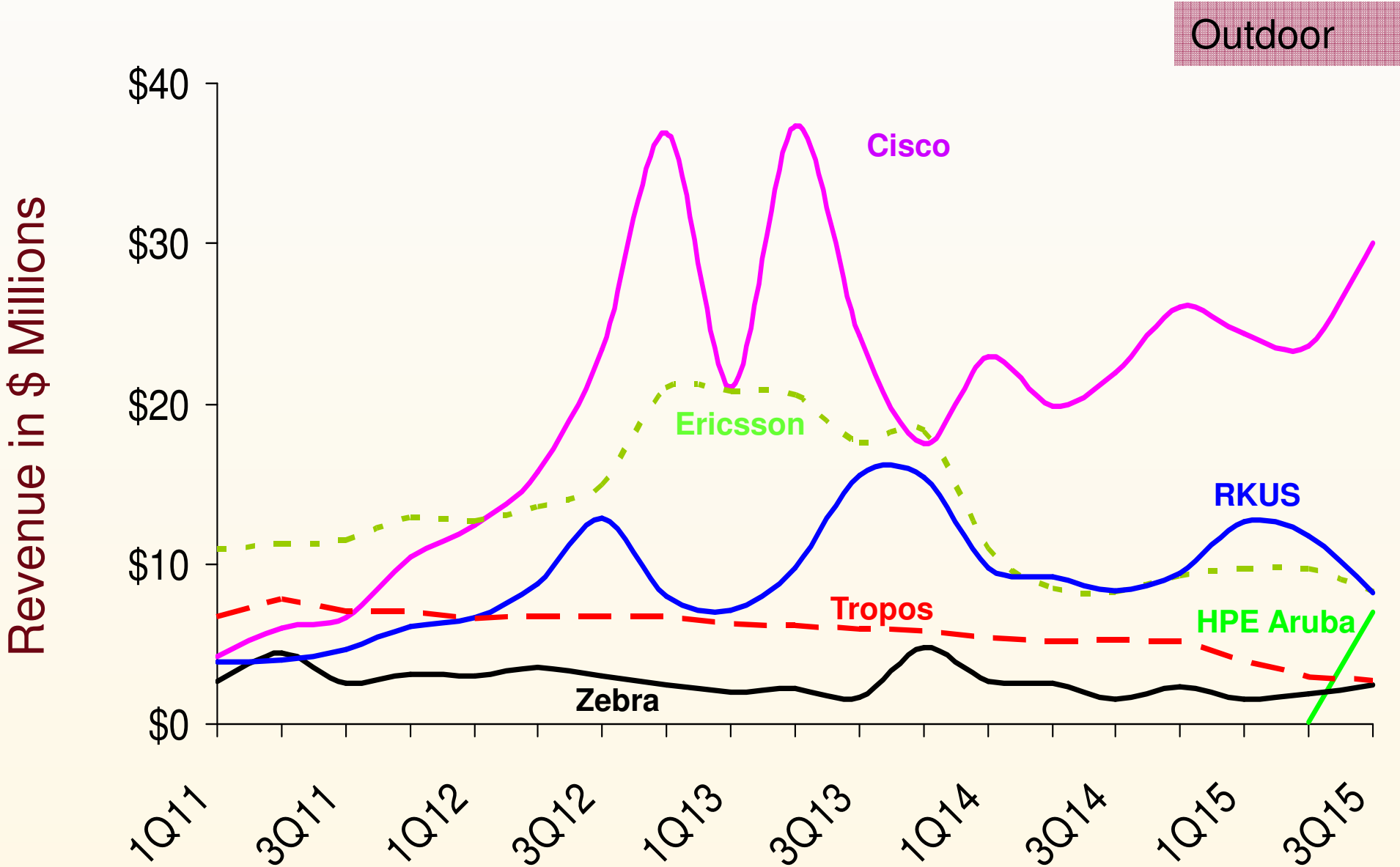


Vendor Positioning

Retail Vertical by Vendor

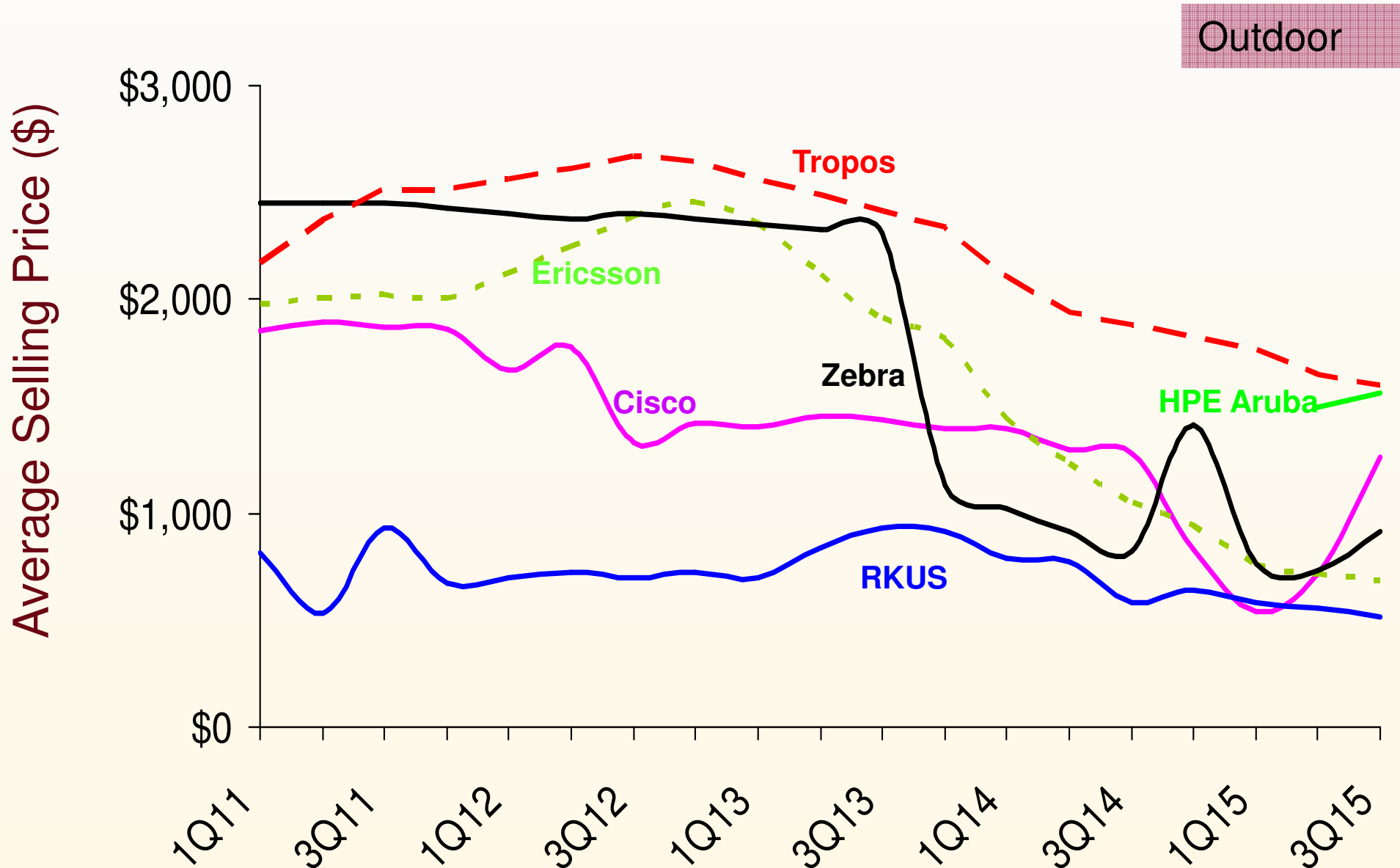


Vendor Positioning Outdoor Revenue

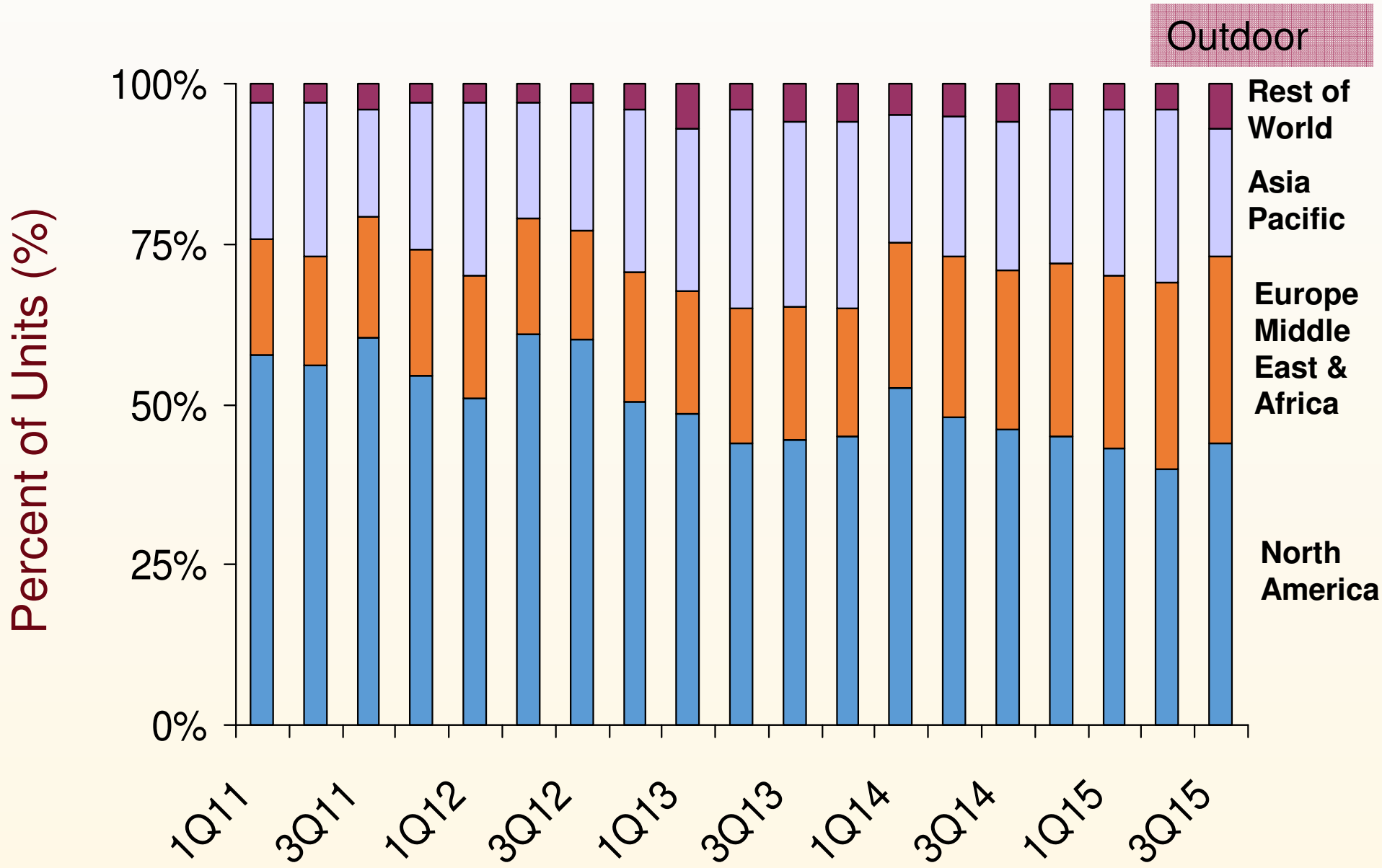


Vendor Positioning

Outdoor Average Selling Prices



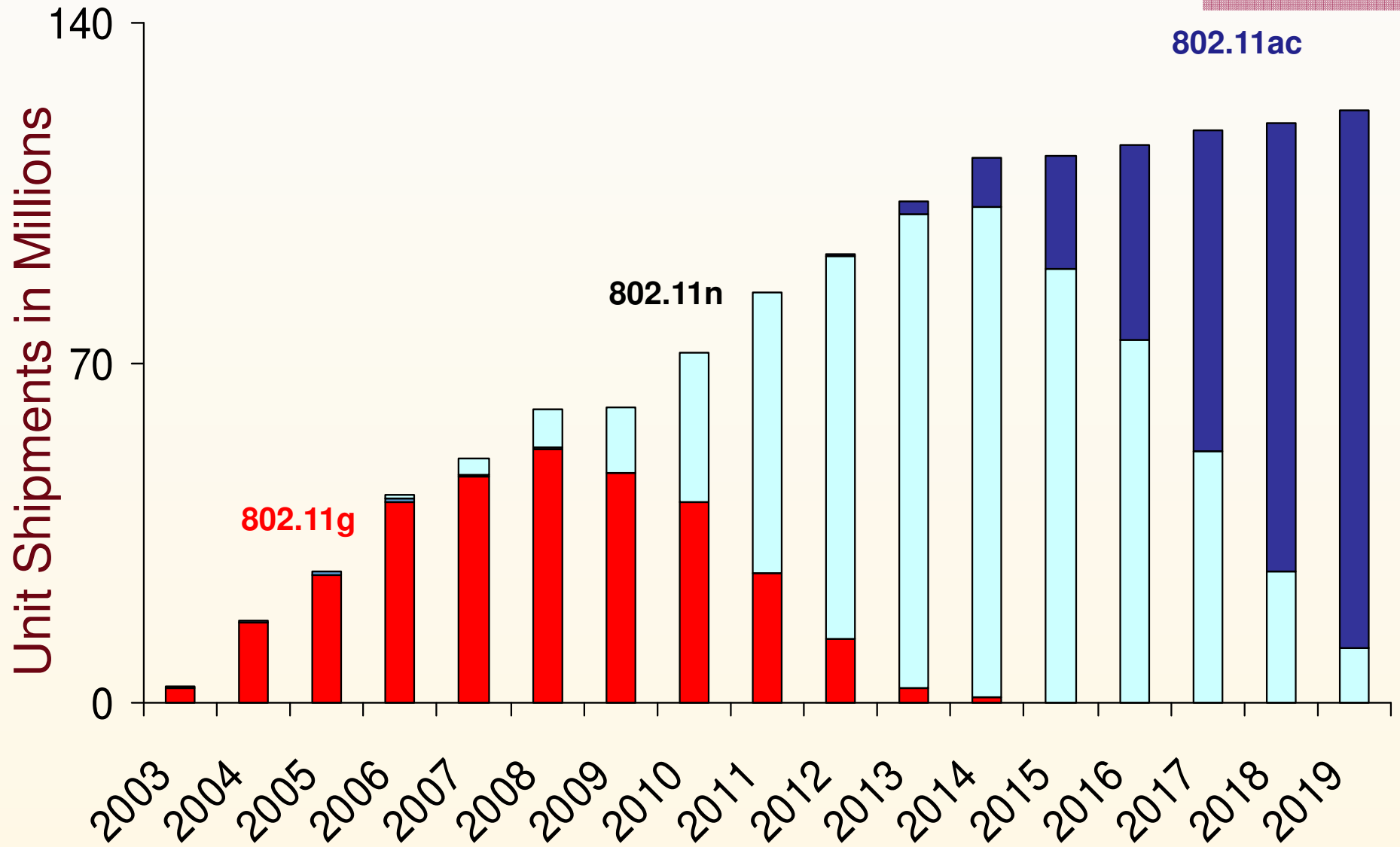
Wireless LAN Outdoor Units by Geography by Quarter



SOHO Unit Shipments

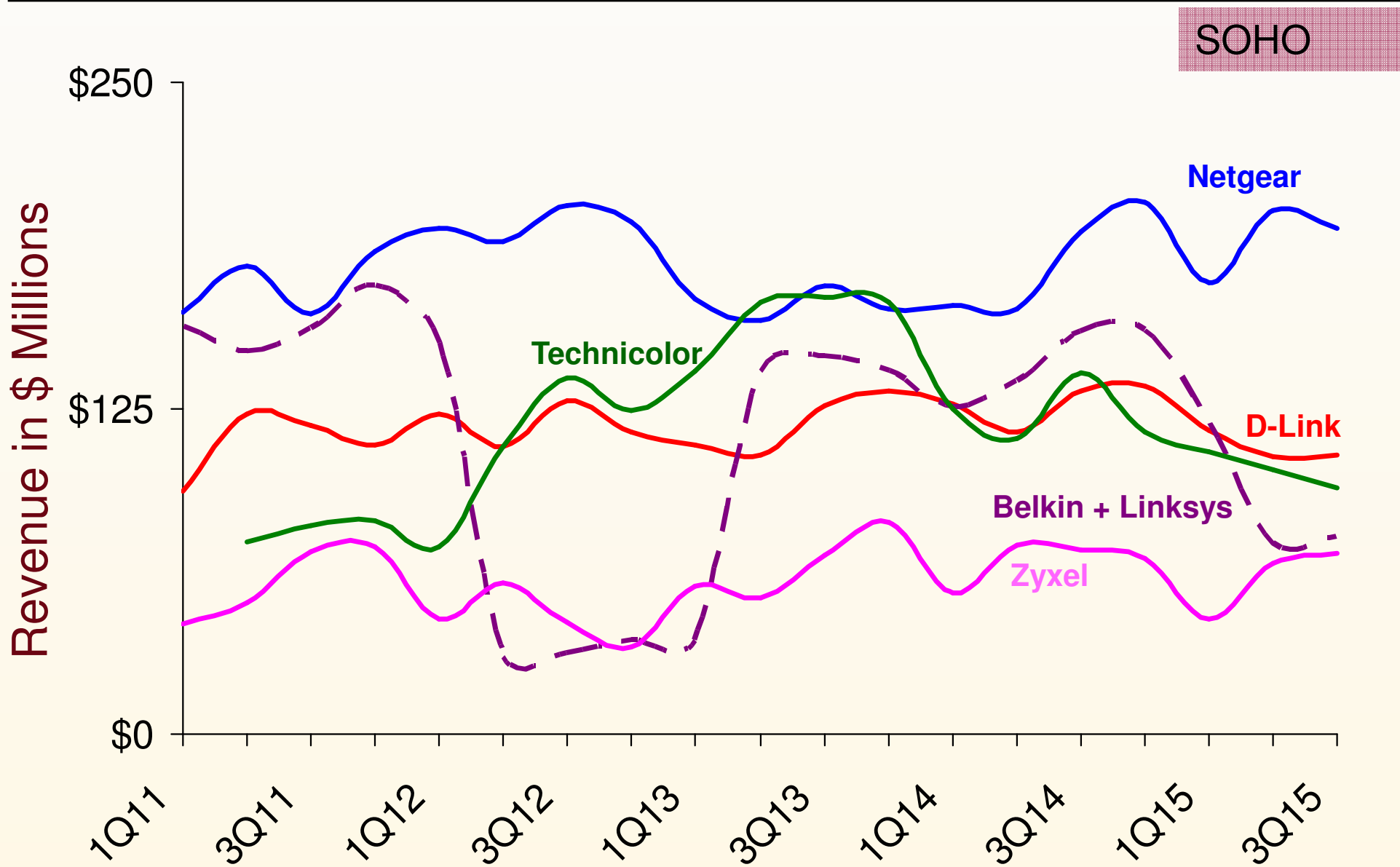
SOHO

802.11ac



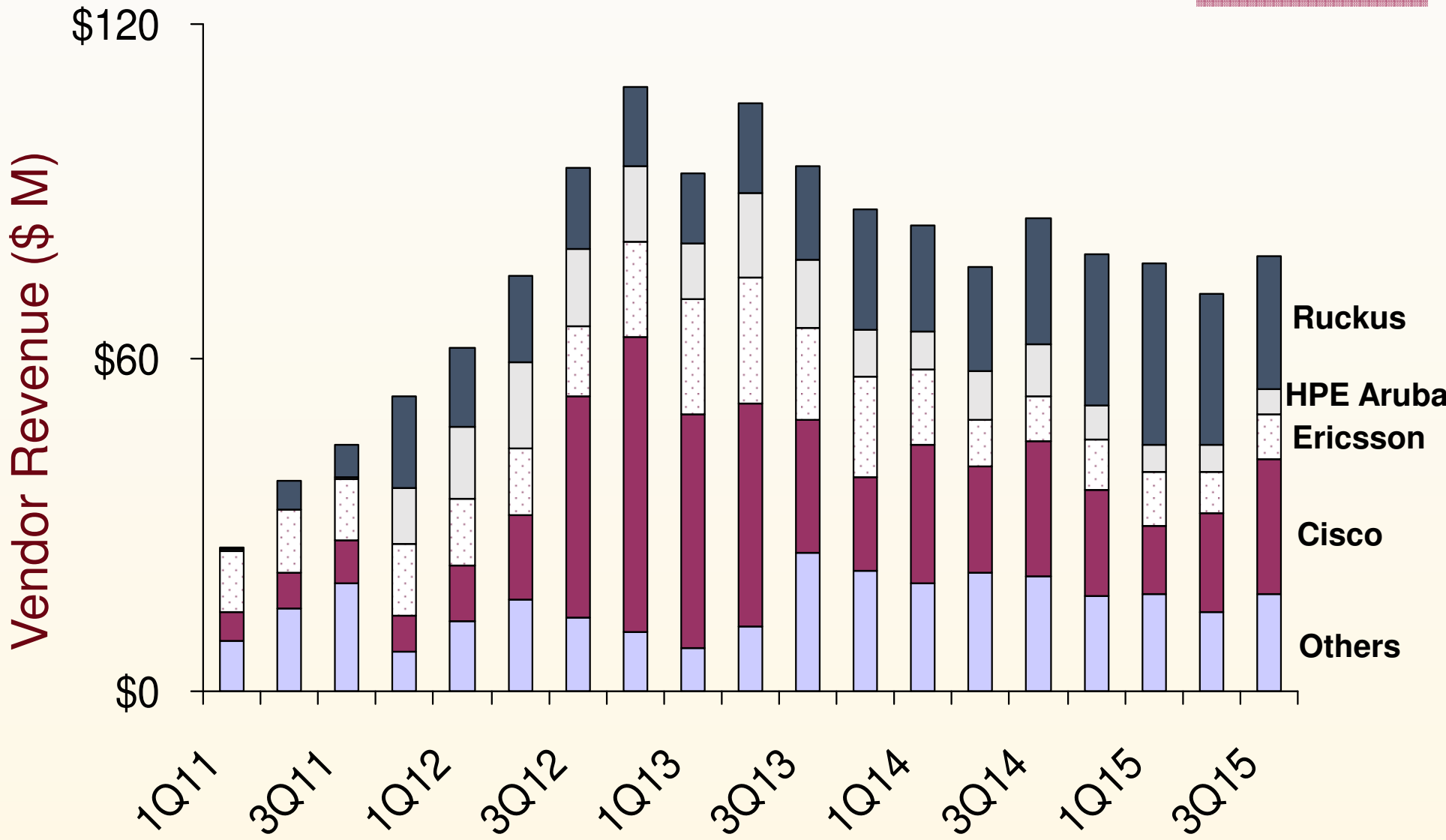
Vendor Positioning

Total SOHO Revenue (Top 5)



Wireless LAN Service Provider WiFi Revenues

SP WiFi



802.11ac and xTBASE-T Scenarios

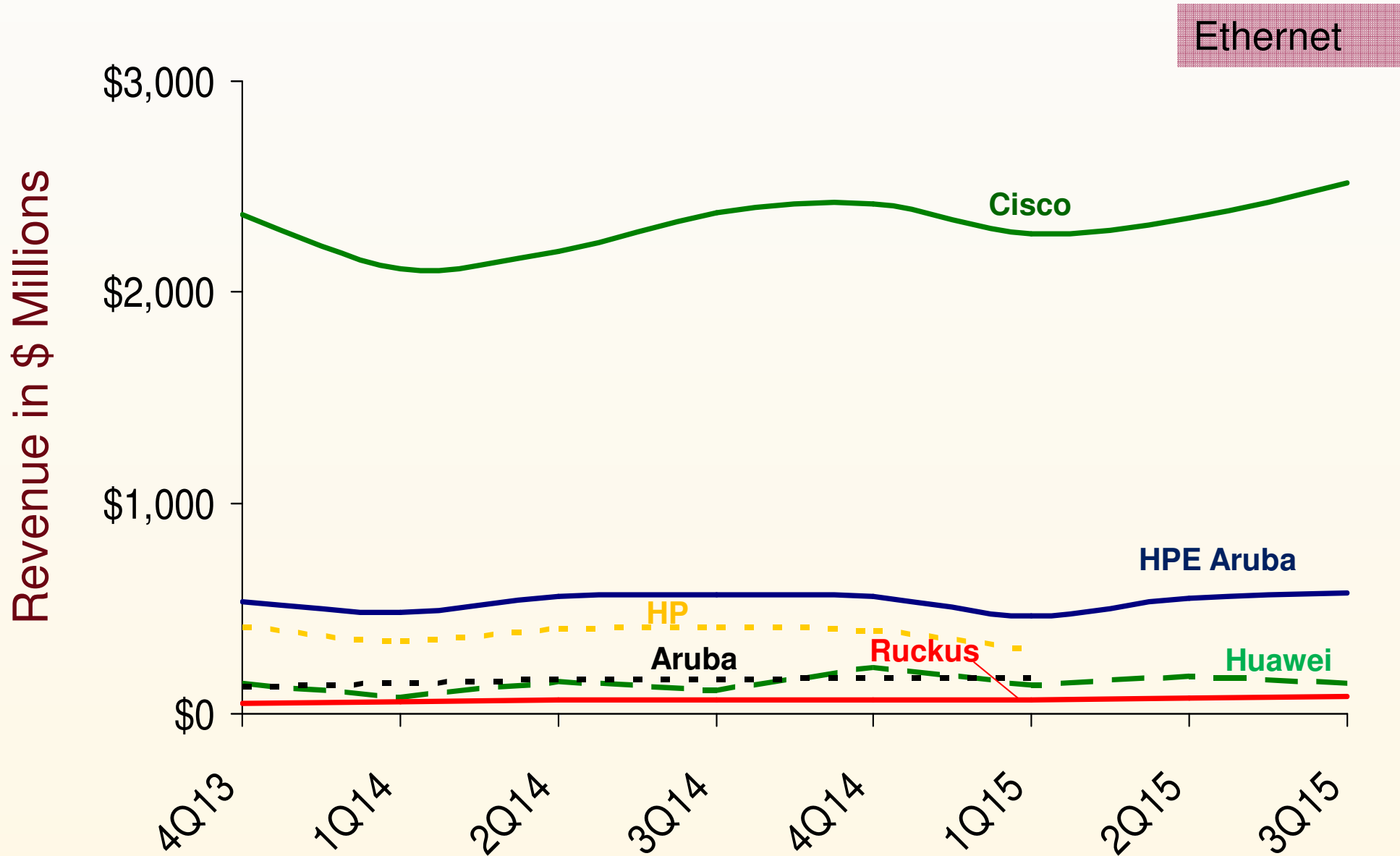
Ethernet

WLAN Radio	Max Throughput (Gbps)*	Ethernet Technology 802.11ac
802.11n	300	1 x 1 Gbps
802.11n 'Array'	2,500	1 x 1 Gbps or 1 x 10 Gbps
802.11ac Wave 1	1,000	1 x 1 Gbps
802.11ac Wave 1	1,000	2 x 1 Gbps
802.11ac Wave 2	2,500	1 x 1 Gbps or 2 x 1 Gbps
802.11ac Wave 2	2,500	1 x 2.5/5 Gbps
802.11ax	>3,000	1+ x 2.5/5 Gbps or 1 x 10 Gbps

**Practical estimated throughput estimates by Dell'Oro Group. 802.11ax refers to technologies that follow 802.11ac such as 802.11ad.*

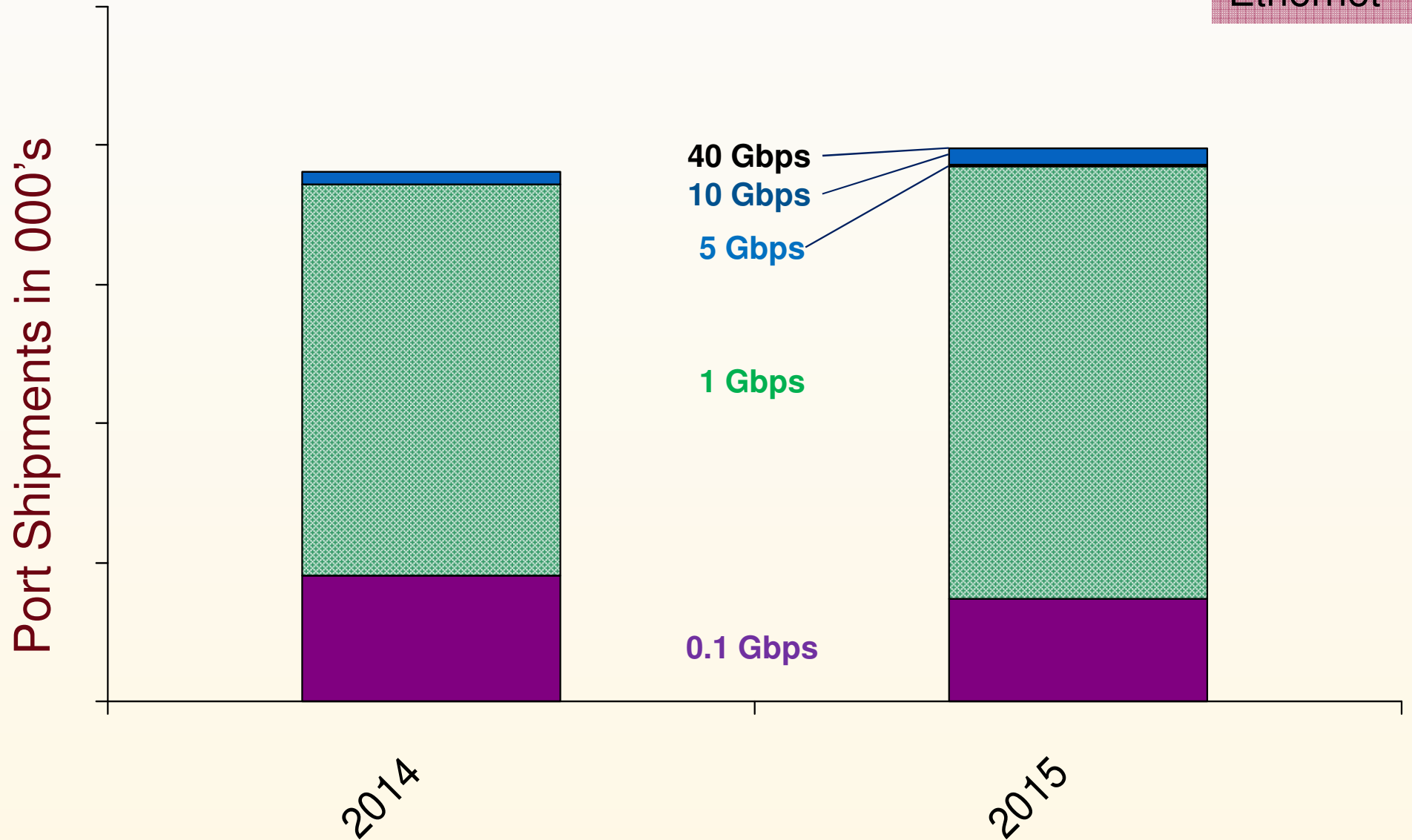
Vendor Positioning

Enterprise Edge (From Enterprise Edge Report)

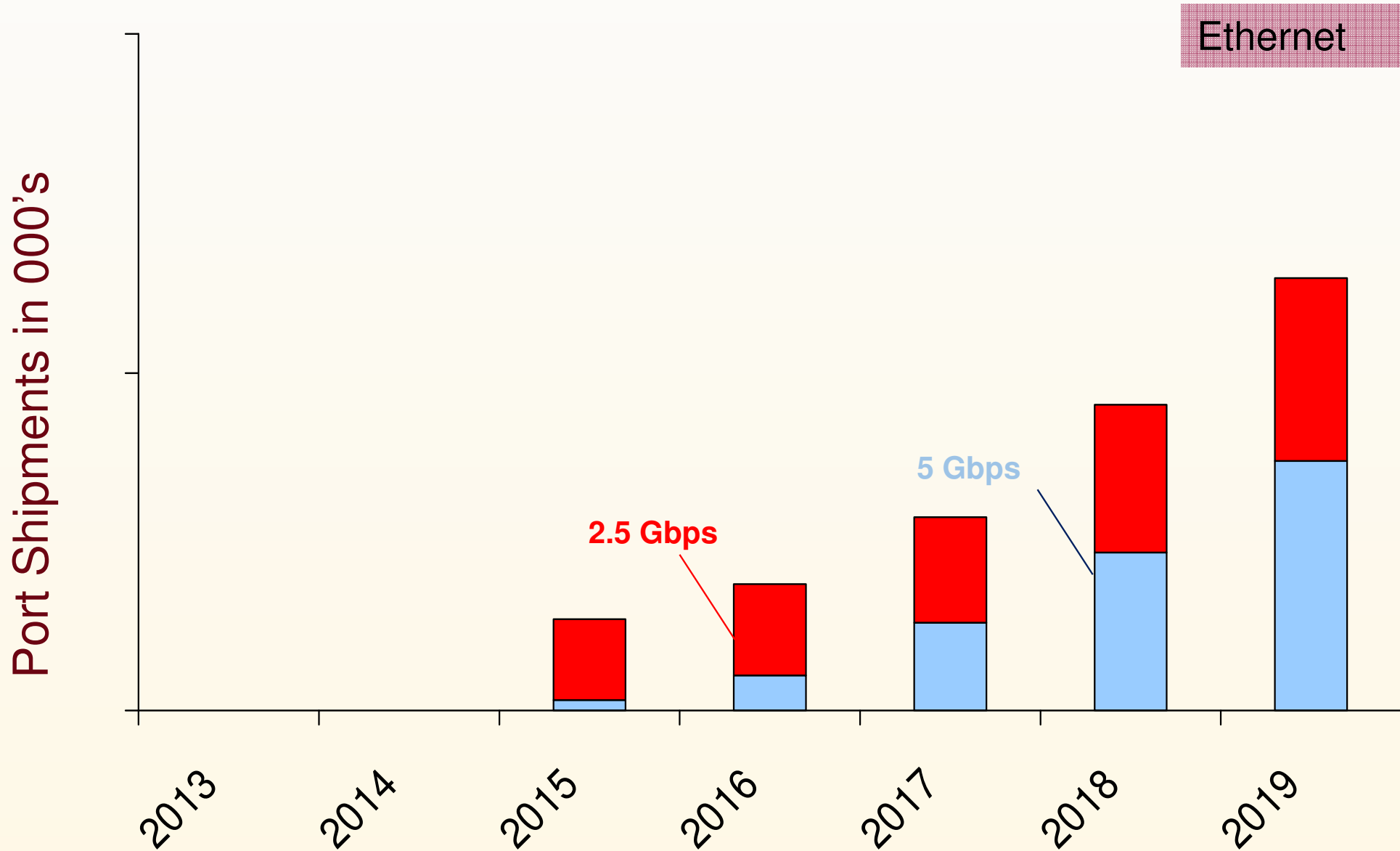


Campus Switch Ports (From Enterprise Edge Report)

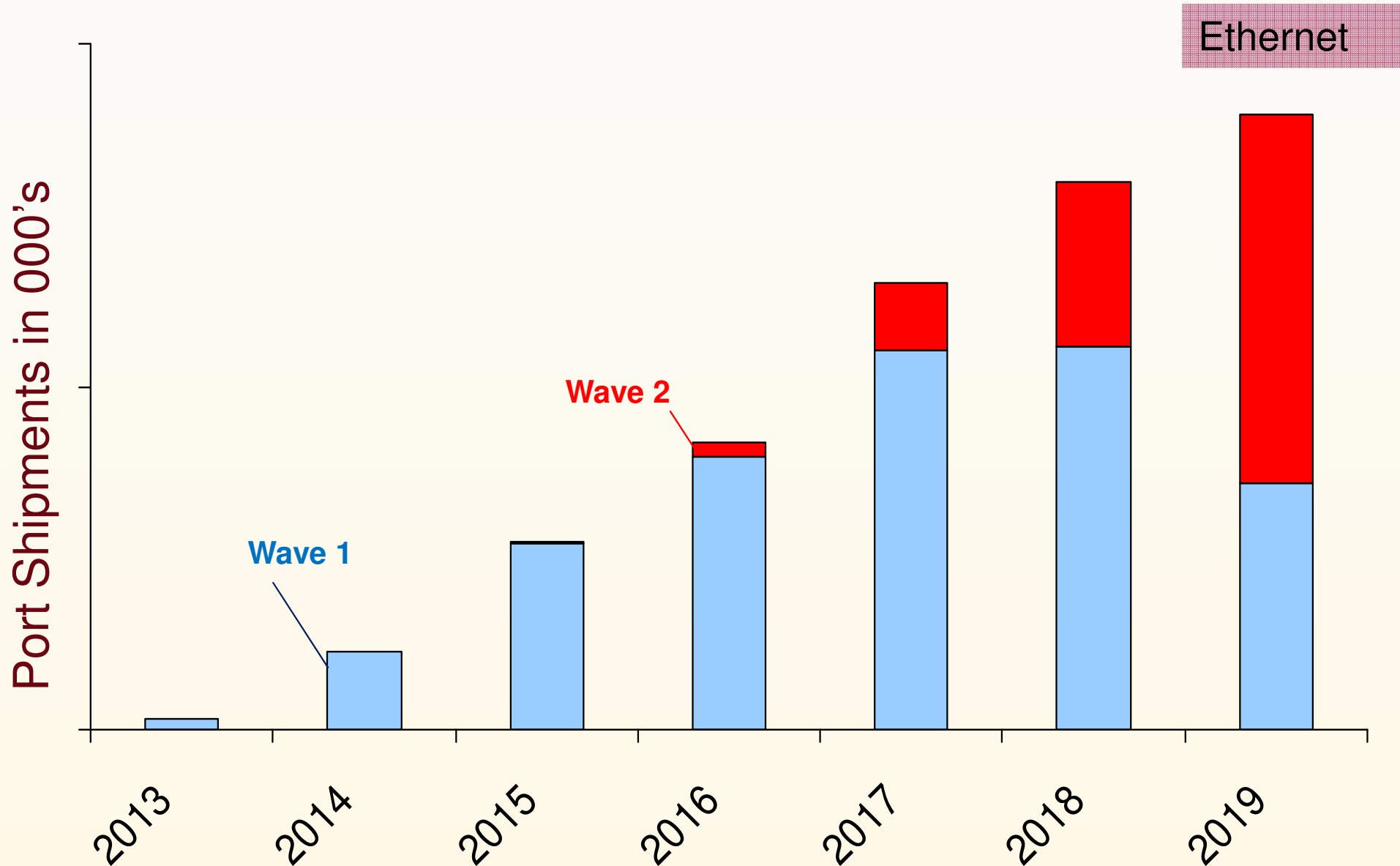
Ethernet



2.5 / 5 Gbps Switch Ports (From Enterprise Edge Report)



Wave 2 & Wave 1 APs (From WLAN Forecast Report, July 2015)

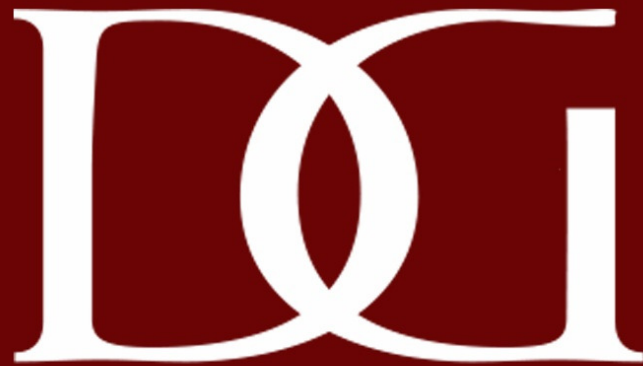


Q&A

- Questions?

- chris@delloro.com

- 415-323-3789



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