650 GROUP
MARKET INTELLIGENCE RESEARCH

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AI Networking Update

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Setting the Stage for AI/ML

AI Waves

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Wave 1
Academic Research

- Pre 2022
- <$10B in equipment spend

Wave 2
Foundational Models and Content Creation

- 2022 - 2025
- $300B in equipment spend

2026 CAPEX is Accelerating

- 2026 IPOs of SpaceX, Anthropic, OpenAI inject even more capital into the market

Networking Accelerates in 2027 from Scale-Up and 1.6T

Wave 3
AI Agents

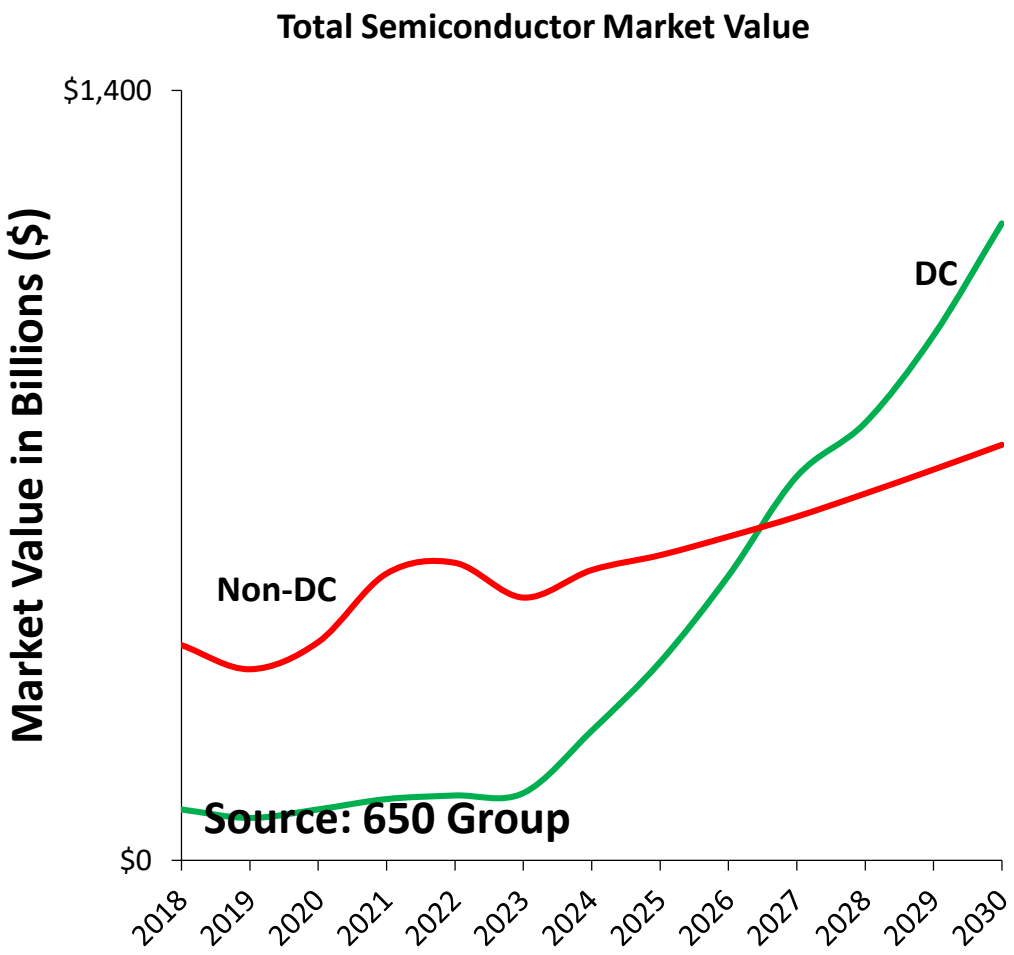
- 2025-2028
- ~$1T in equipment spend

Wave 4
Autonomous Transportation and Robots

- 2027-2035
- >~1T in equipment spend

Source: 650 Group

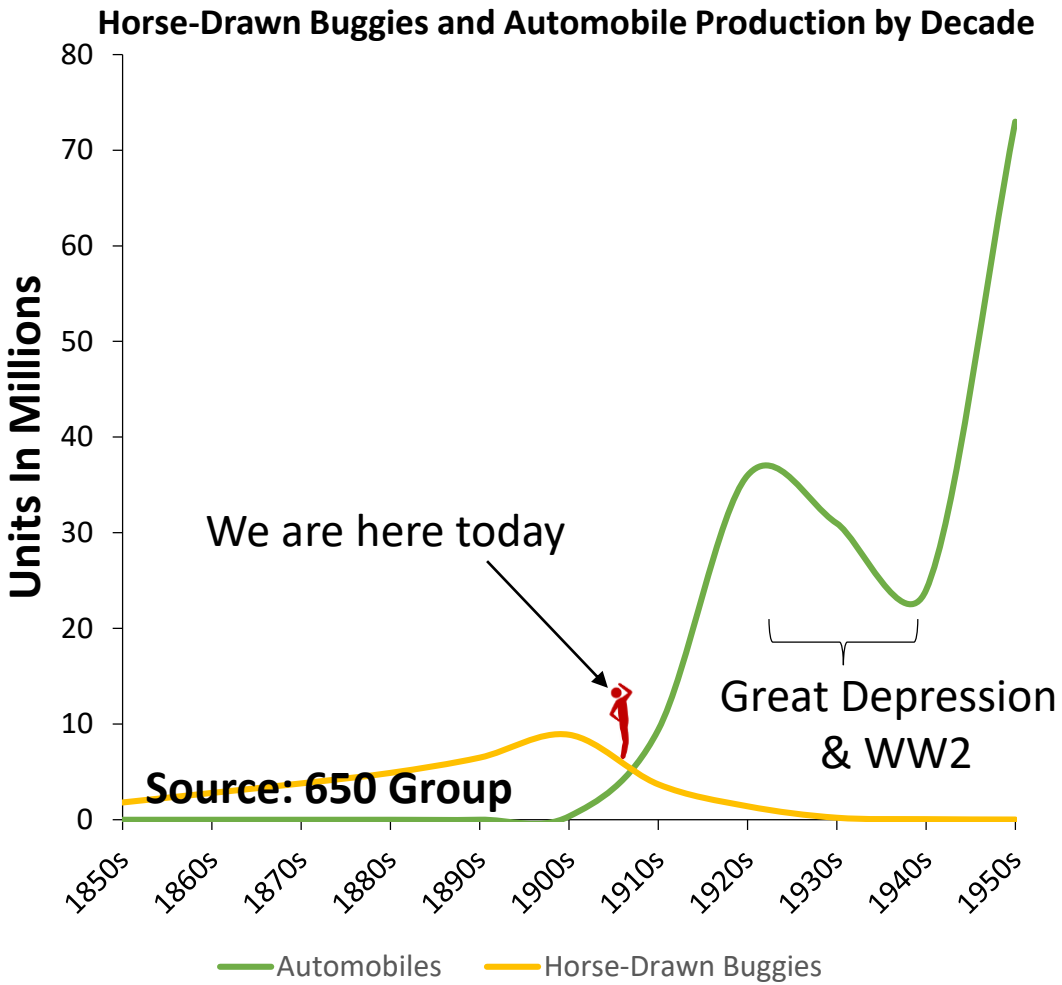
Total Semiconductors: Total Semiconductor Market



DC Semis will be 5X the size in 2030 than 2025

- Fill the Fab to Fab+
  - Industry needs 12+ 3nm and lower Fabs just for data center semiconductors
  - Likely lower yields and quality in 7nm and higher Fabs
  - Change in number one customer at TSMC
- Production Line to Lines
  - Manufacturing is just as power constrained as operators
  - Significant power investment needed to test and burn in systems
- Manufacturing wins
  - Customers/vendors that win manufacturing will be successful

AI Waves:
Lessons from the past

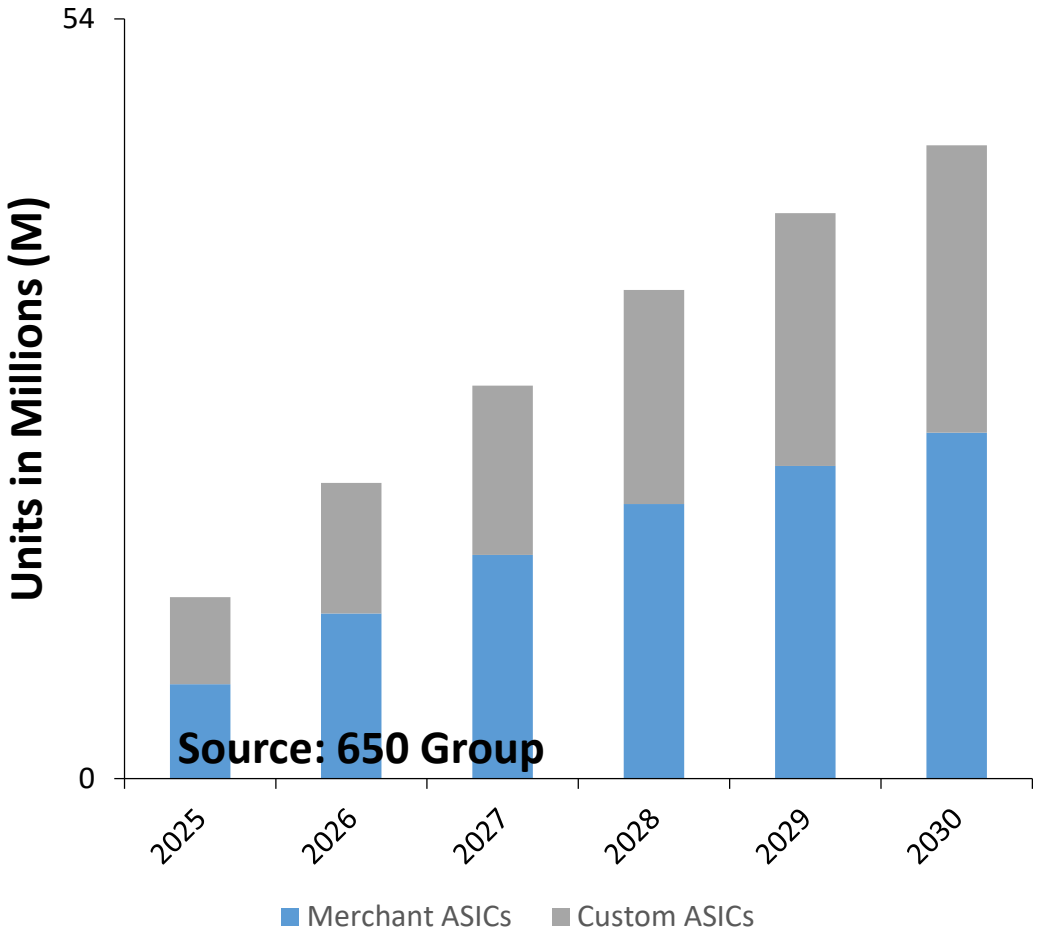


*Source: Grok

During Rapid Growth, CAPEX Surges

- **Manufacturing**
  - Ford acquired lumber mills, glass factories
  - Direct investment in manufacturing
- **Materials**
  - Ford acquired iron mines
  - Securing long-term Rare Earths contracts
- **Power**
  - Ford acquired coal mines
  - DC operators acquiring off-grid power sources

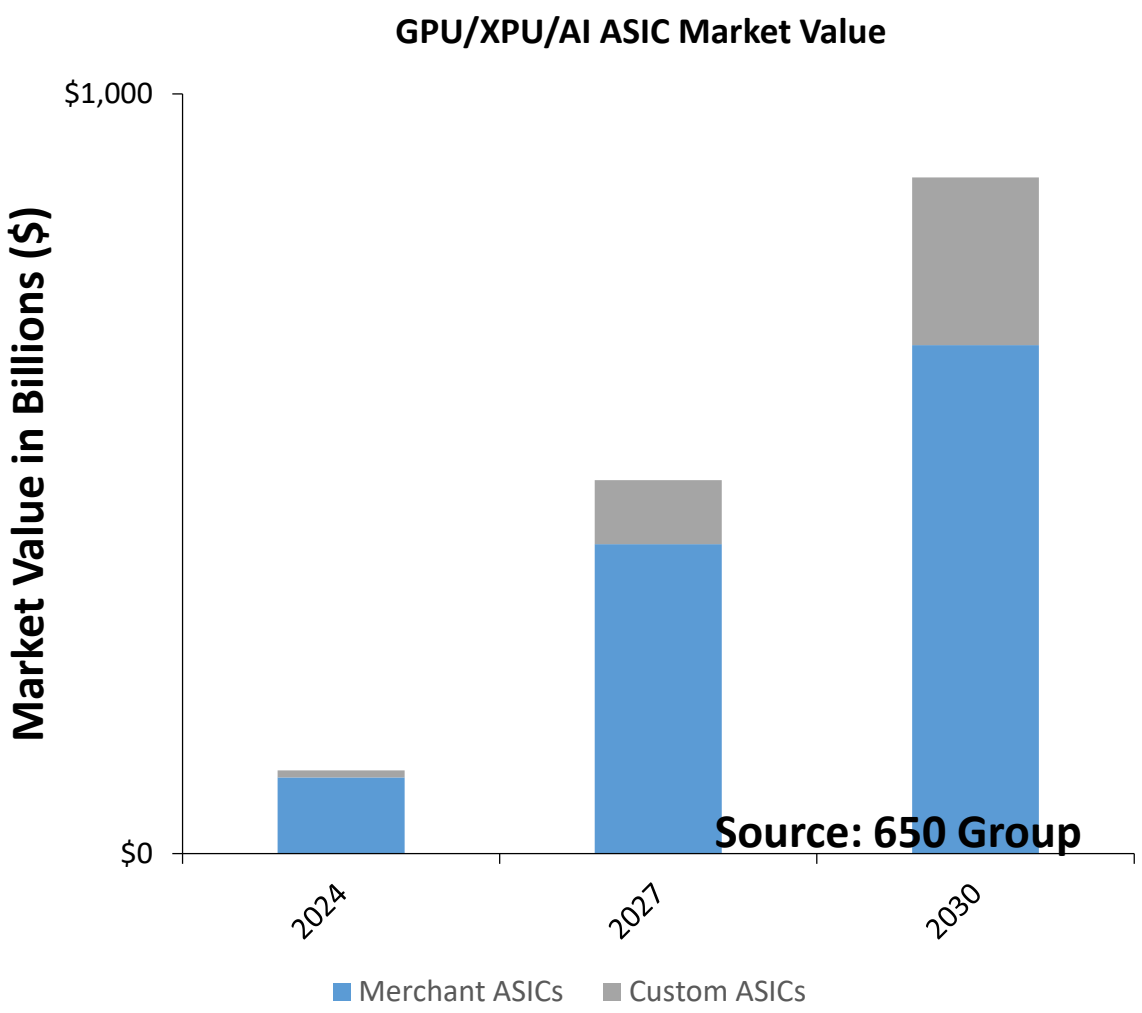
DC Semiconductors: GPU/XPU Split

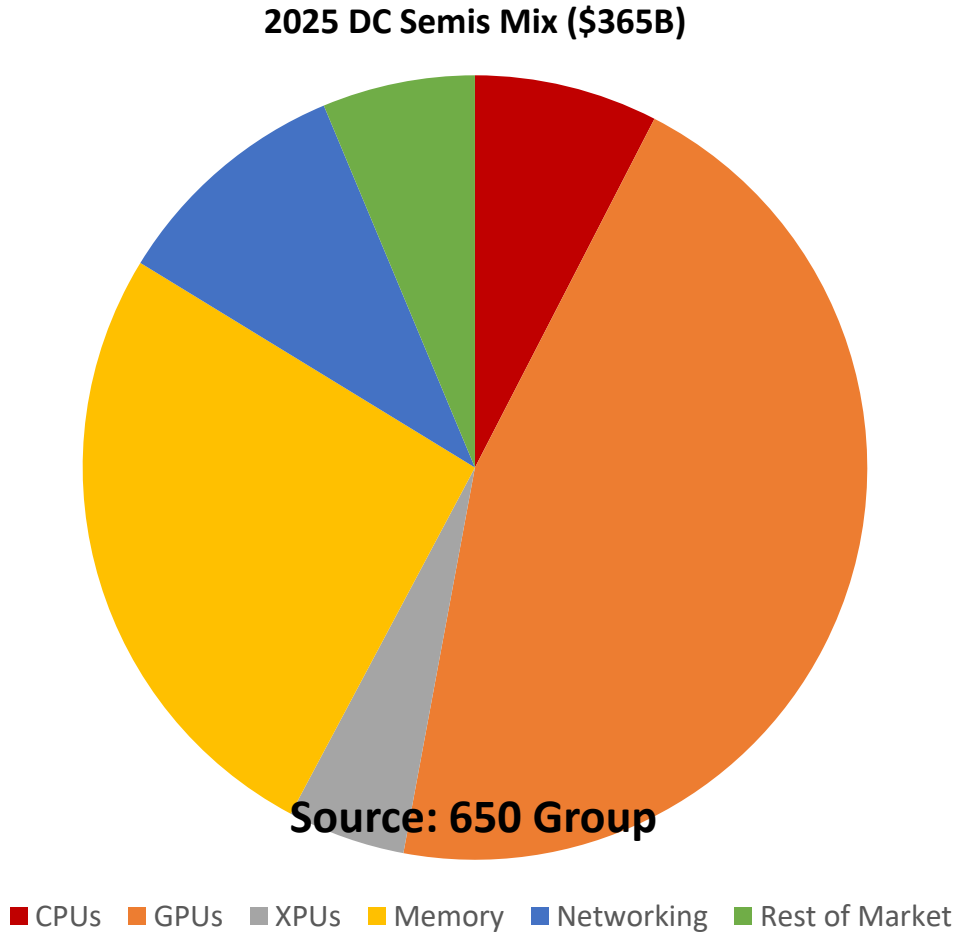


Increased Customization

- CPUs
  - Custom ARM and RISC V efforts
  - AI and memory optimization
- GPU/XPU
  - Algorithm, memory, workload optimization
  - Average Hyperscaler will be buying 12-18 unique accelerators at any point in time
- Different Approaches
  - Custom, semi-custom approaches
  - Multi-vendor unlocked by chiplets

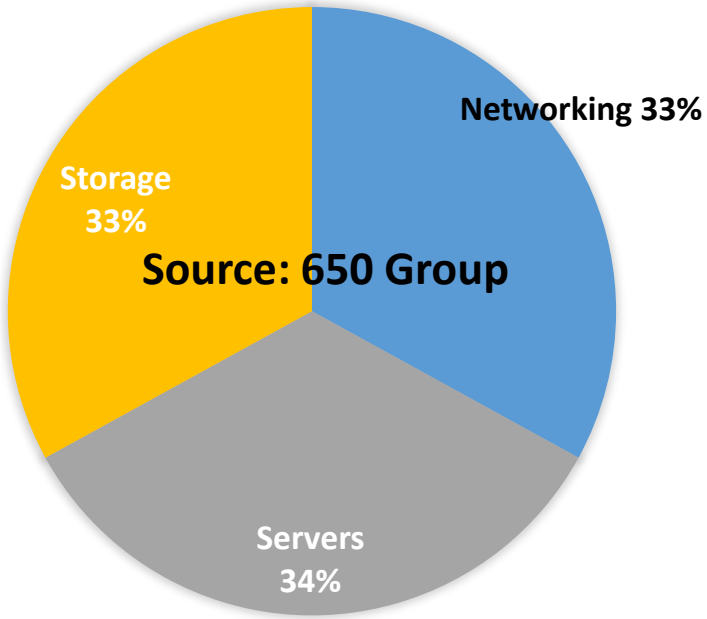
DC Semiconductors: GPU/ASIC Growth is Significant



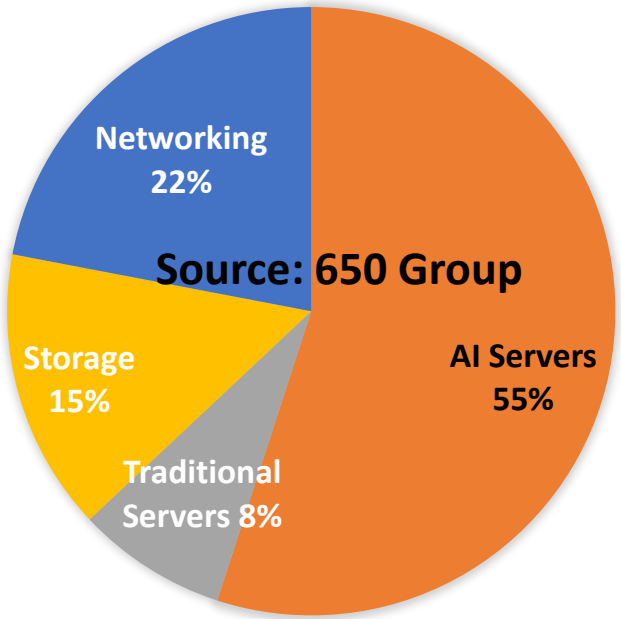


Cloud:
US Top 5 DC Equipment Spend

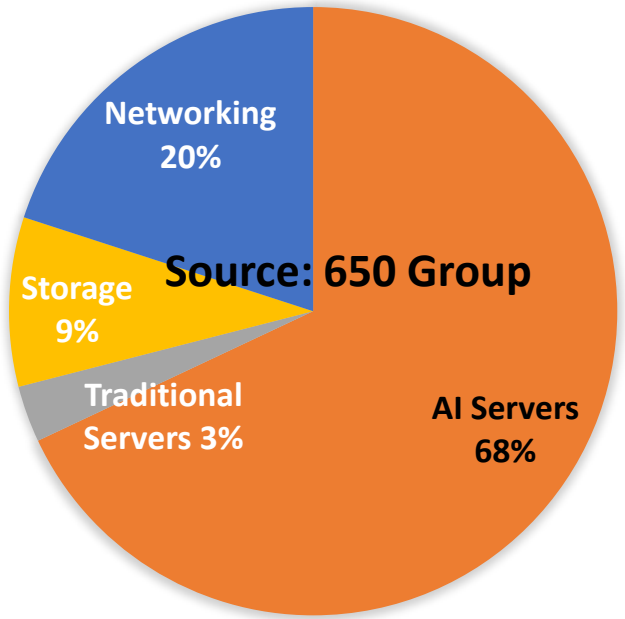
Equipment Spend (2020)



Equipment Spend (2025)

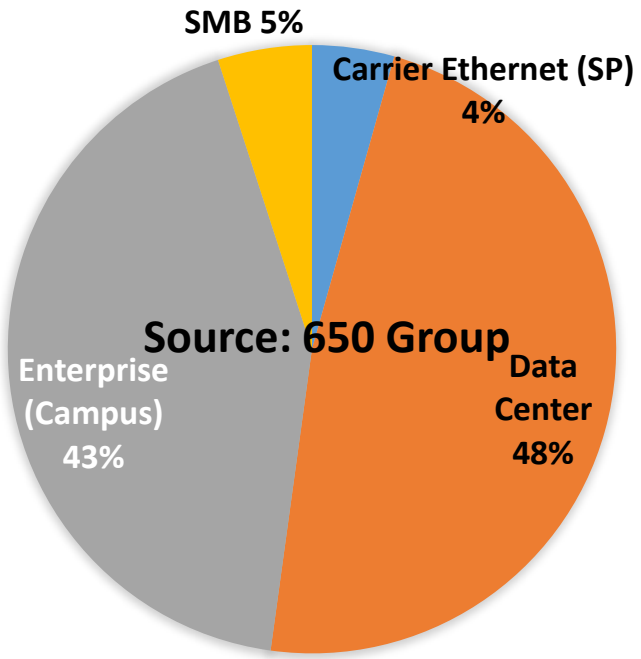


Equipment Spend (2030)

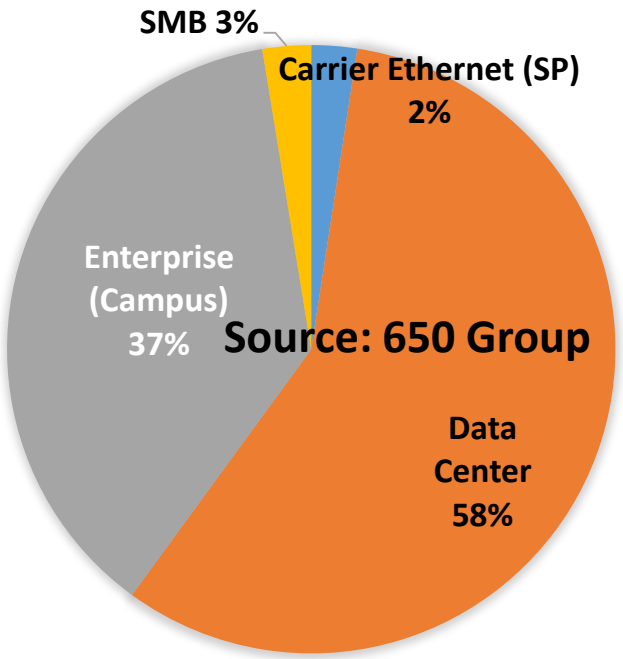


Ethernet Switch - Total Market: Market Verticals

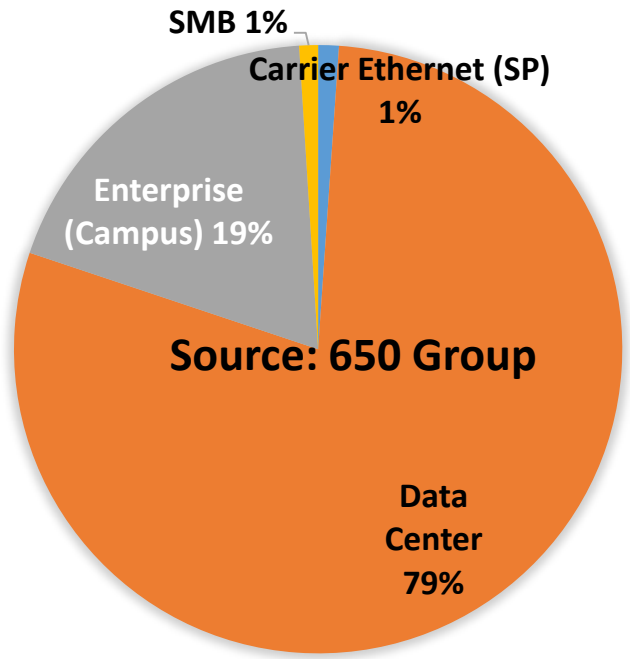
Equipment Spend (2020)



Equipment Spend (2025)



Equipment Spend (2030)



Ethernet Switch - Data Center

Data Center Networking: AI Transition for Ethernet

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Package/ASIC	Server	Rack	Cluster	Building	Campus/DCI
<5cm	<1m	<3m	<50m	50m-2km	20+km

AI Networking

Scale In *			Scale Up			Scale Out			Scale Across (DCI) (prelim)		
2025	2030	CAGR	2025	2030	CAGR	2025	2030	CAGR	2025	2030	CAGR
$1B	$50B	120%	$7B	$79B	41%	$19B	$90B	37%	$.5B	$10B	85%

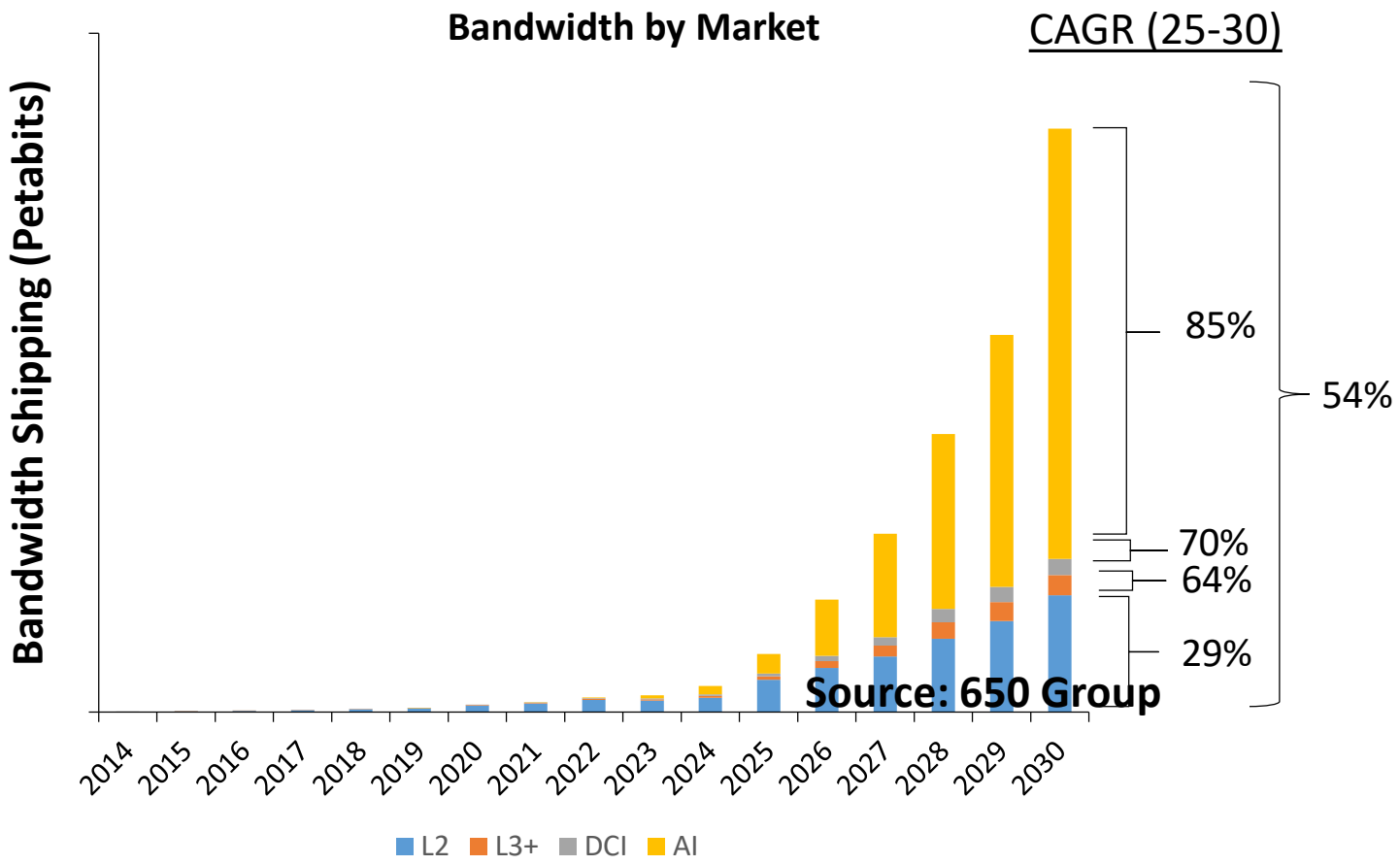
Non-AI Networking

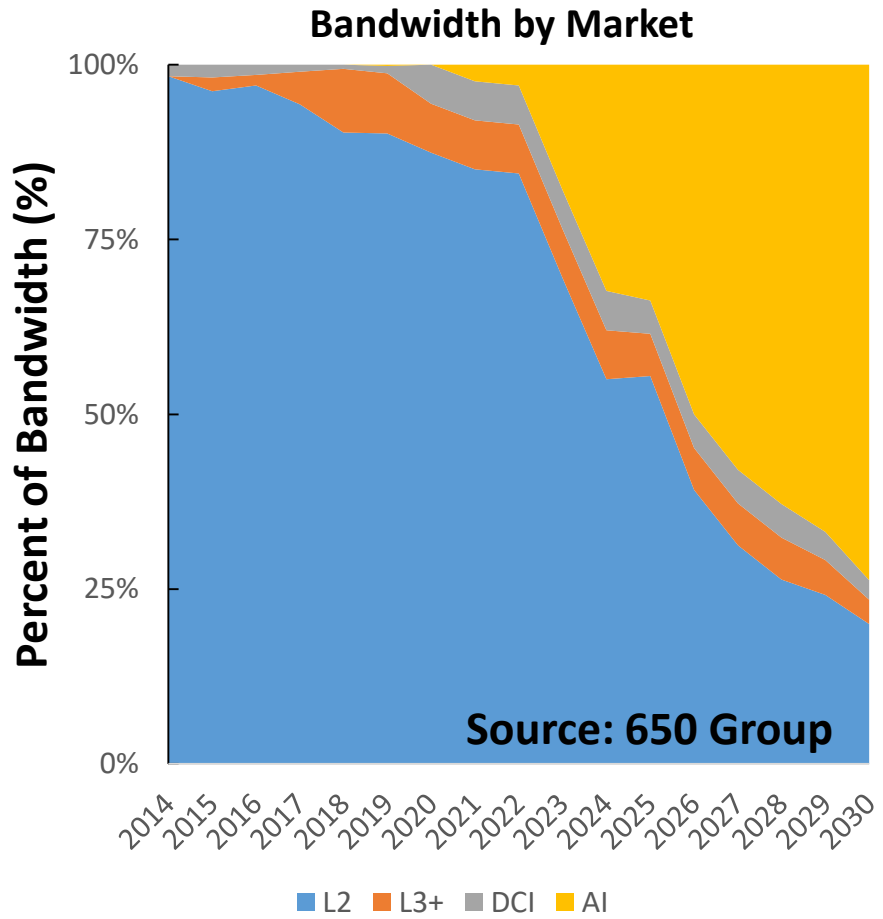
ToR/Leaf			Spine/Aggregation/Core			Traditional DCI		
2025	2030	CAGR	2025	2030	CAGR	2025	2030	CAGR
$17B	$23B	7%	$7B	$12B	12%	$9B	$14B	9%

Source: 650 Group

*Scale In takes a portion of ASICs plus chiplets as not everything is a standalone chip.

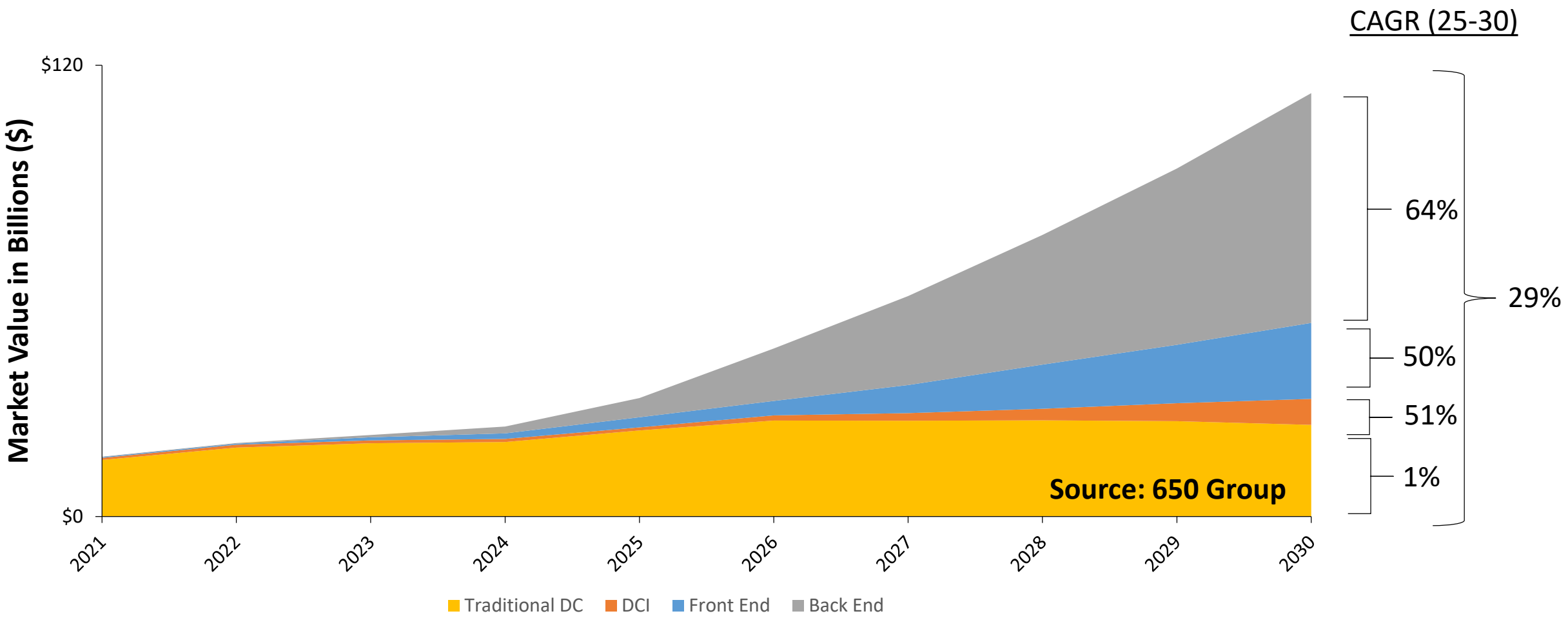
Networking for AI:
Bandwidth Shipping by SERDES speed



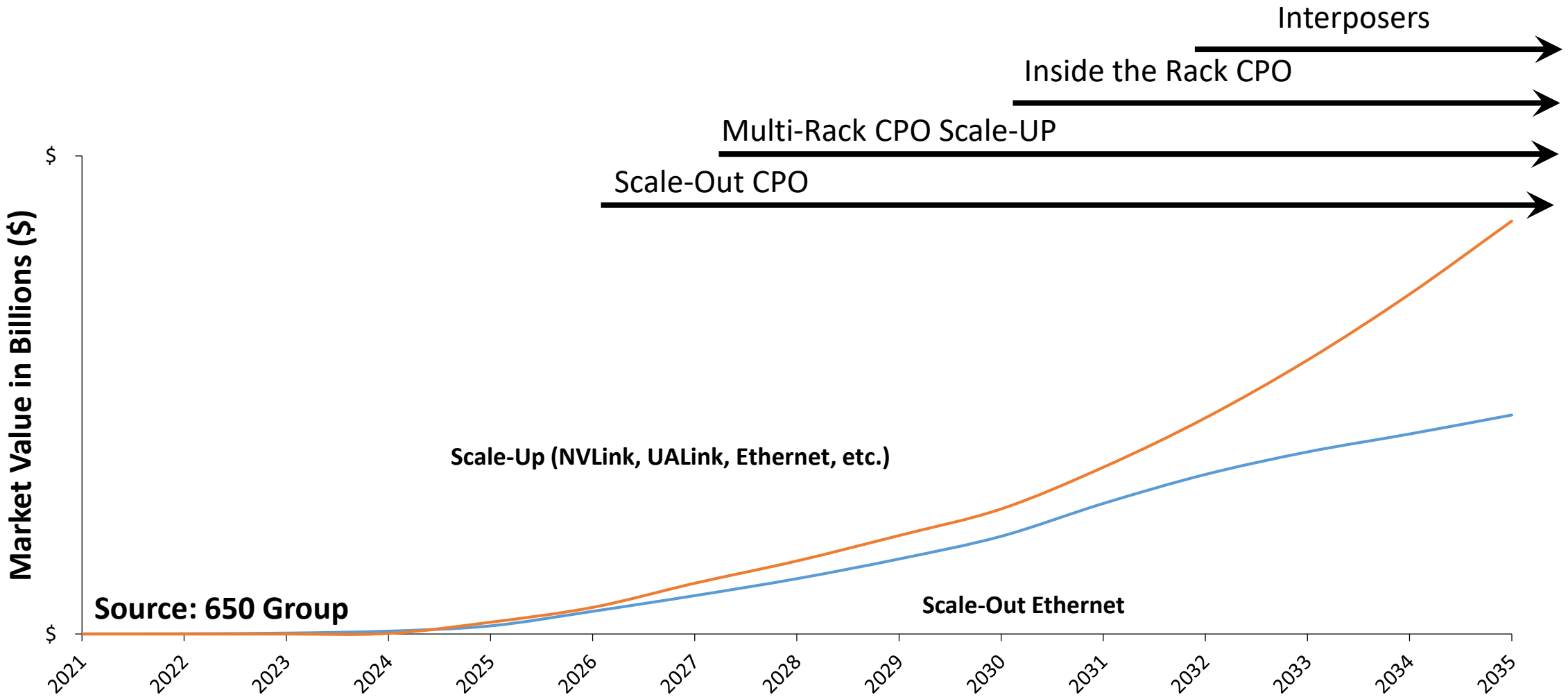


*Does not include Scale-Up bandwidth

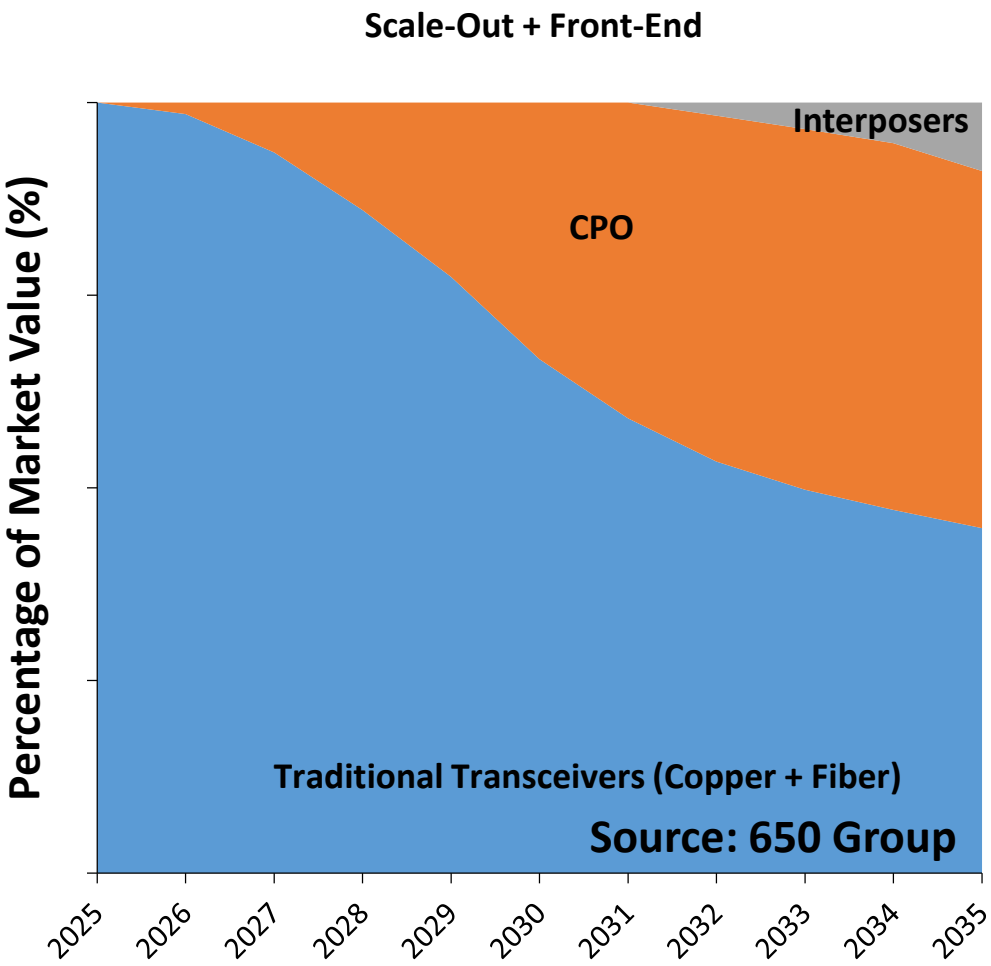
Total DC Networking: Total Ethernet Market

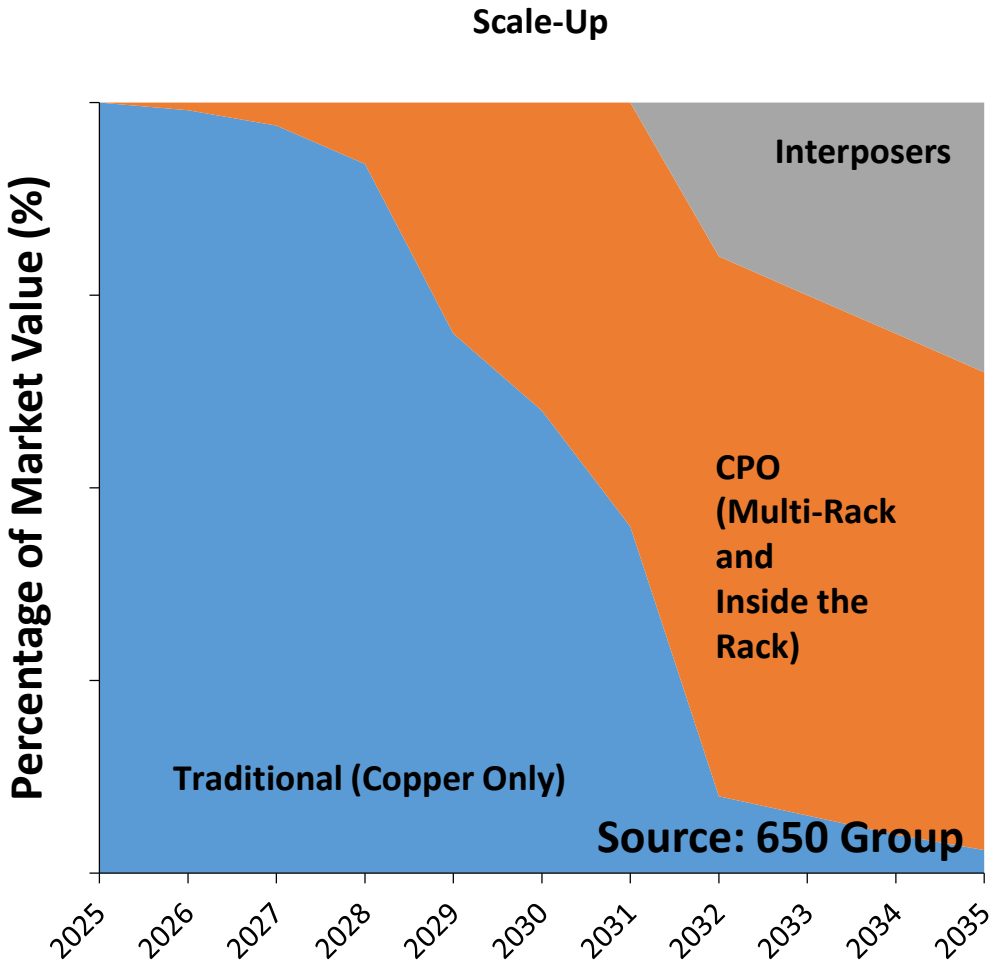


Networking for AI (Preliminary): Longer Term Scale-Up vs. Scale-Out

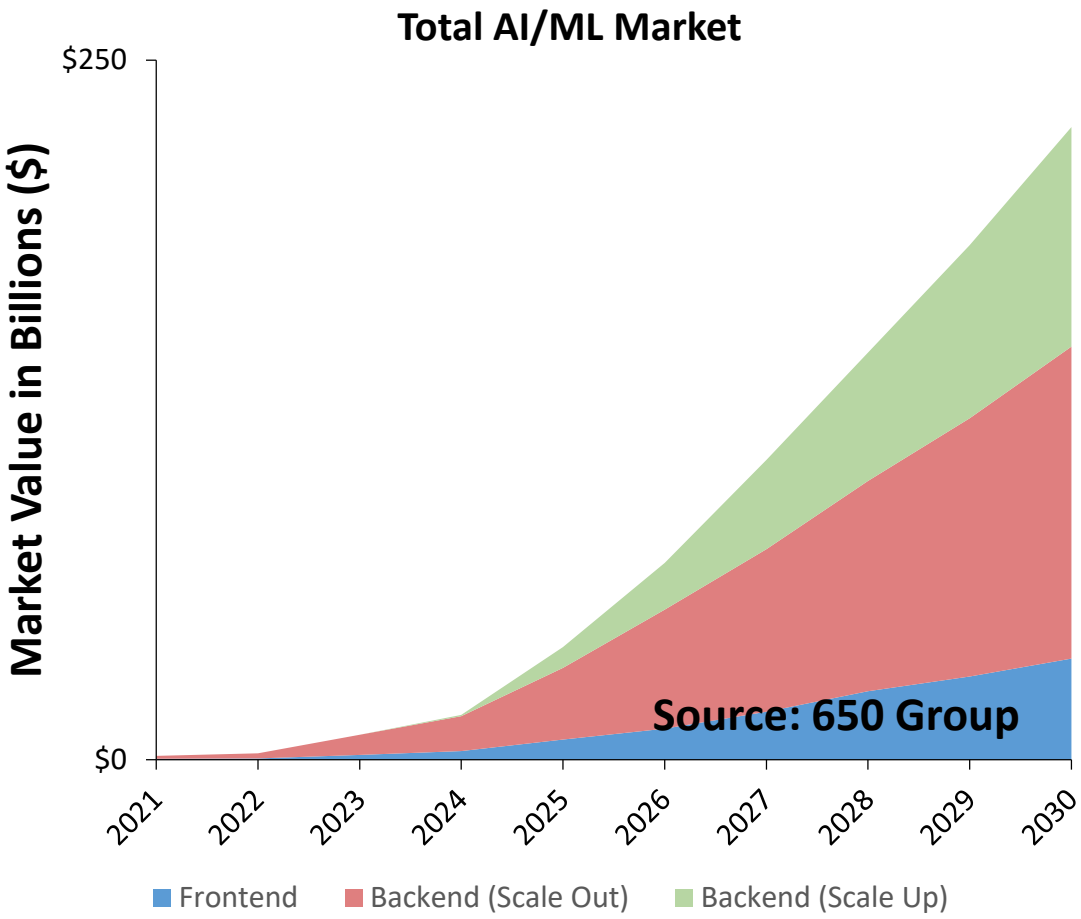


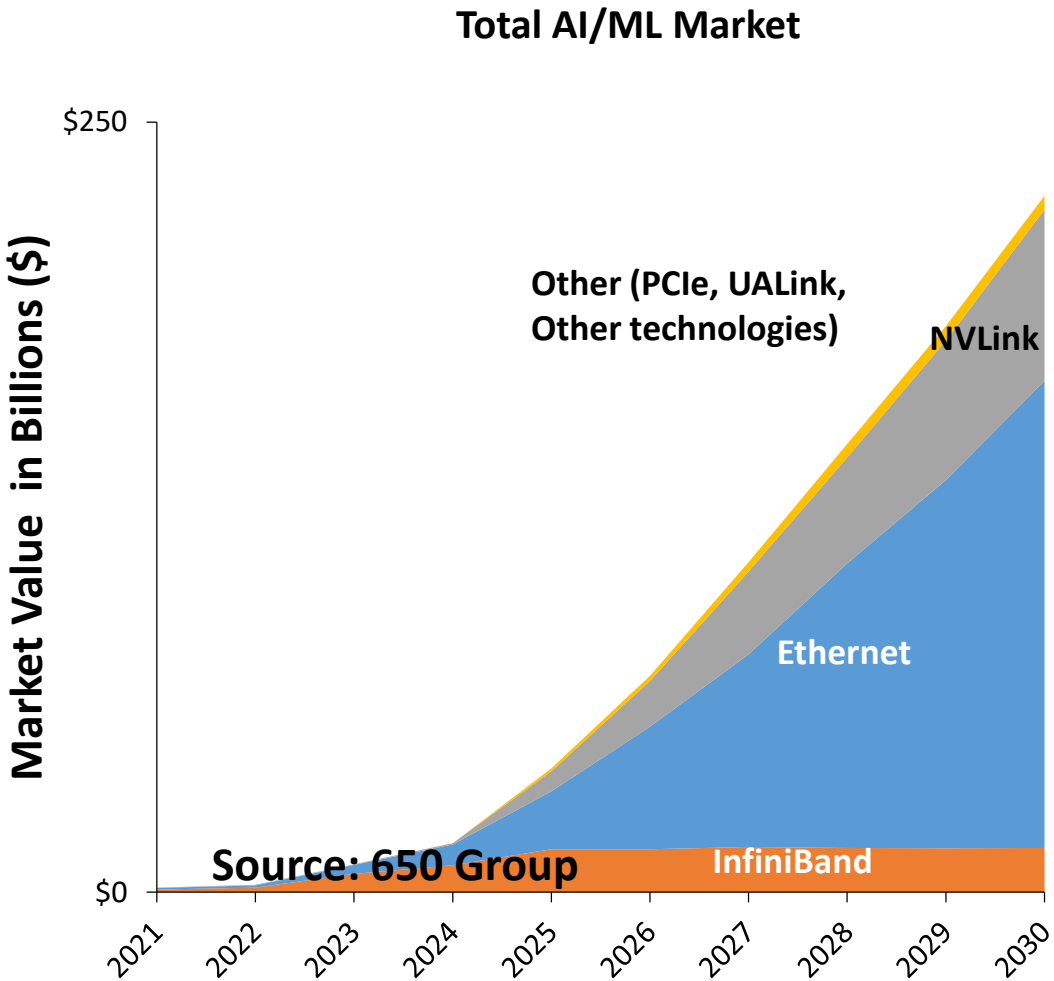
Networking for AI (Preliminary): CPO Transitions over the Long Term





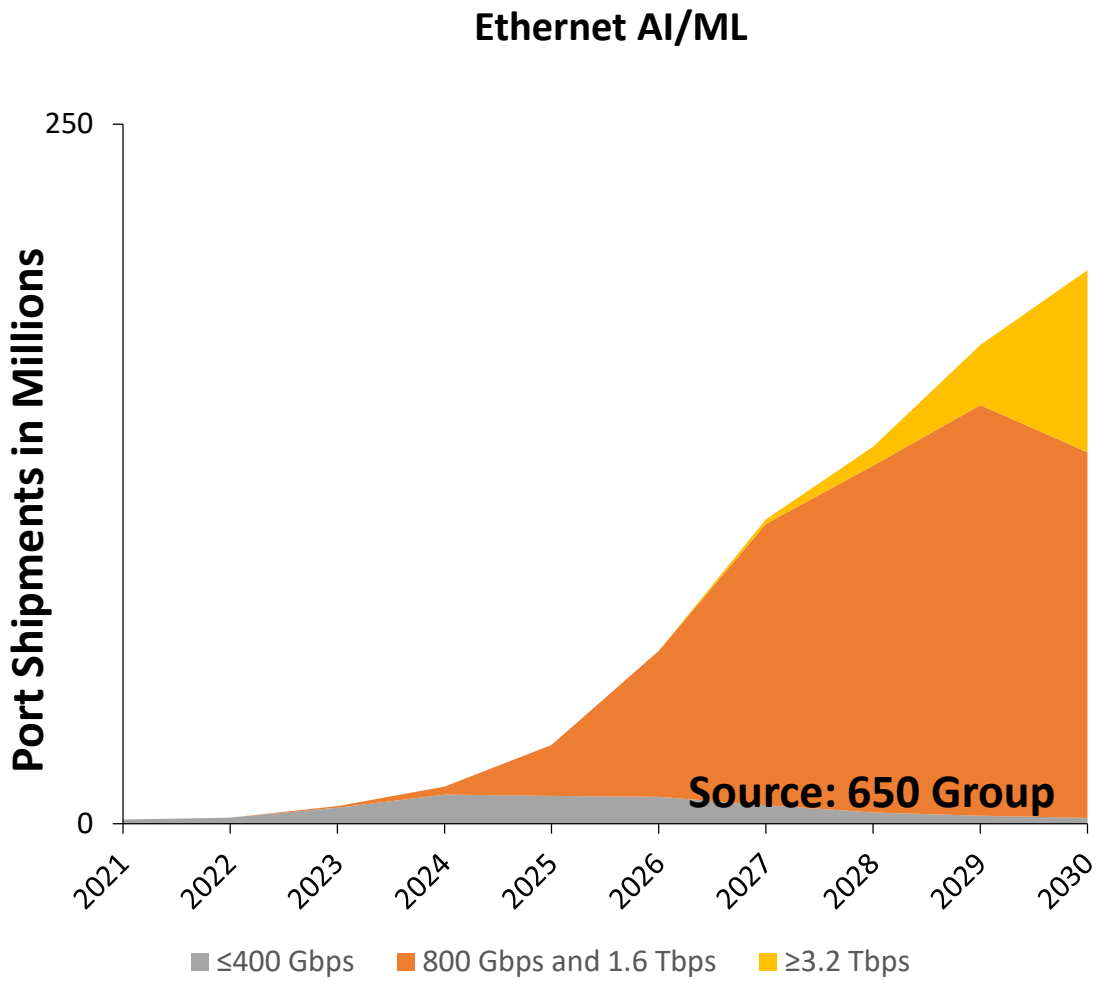
Networking for AI: Total Market

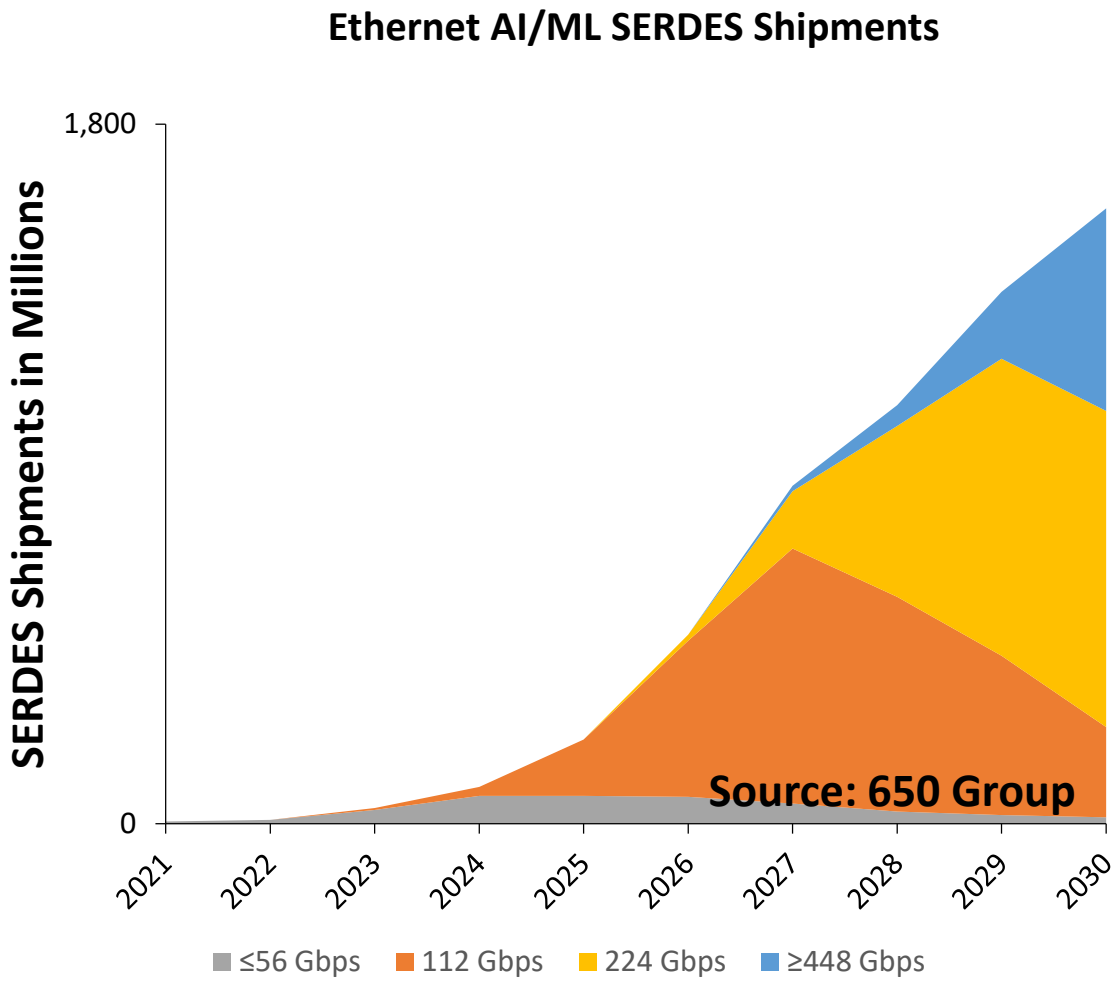




*Scaleup portion is for standalone switch hardware only and does not include embedded devices within the server or portions or Accelerators.

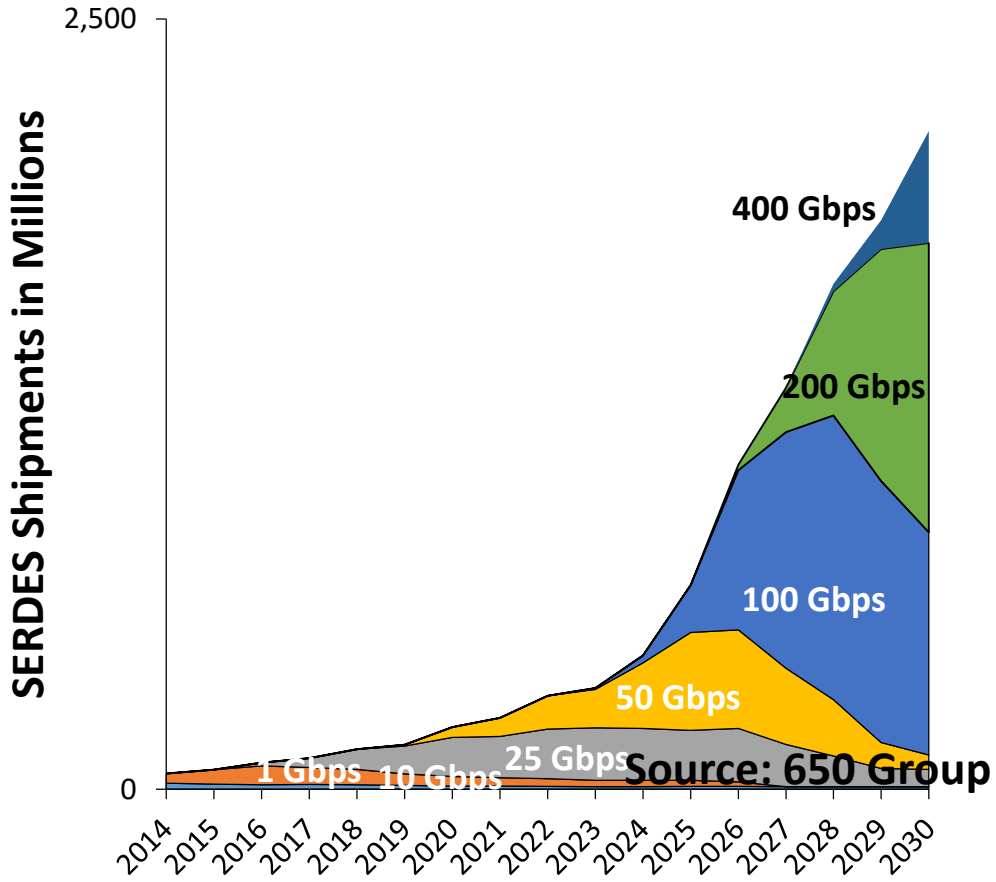
Ethernet Switch – Data Center: AI/ML Port Speeds and SERDES Shipments

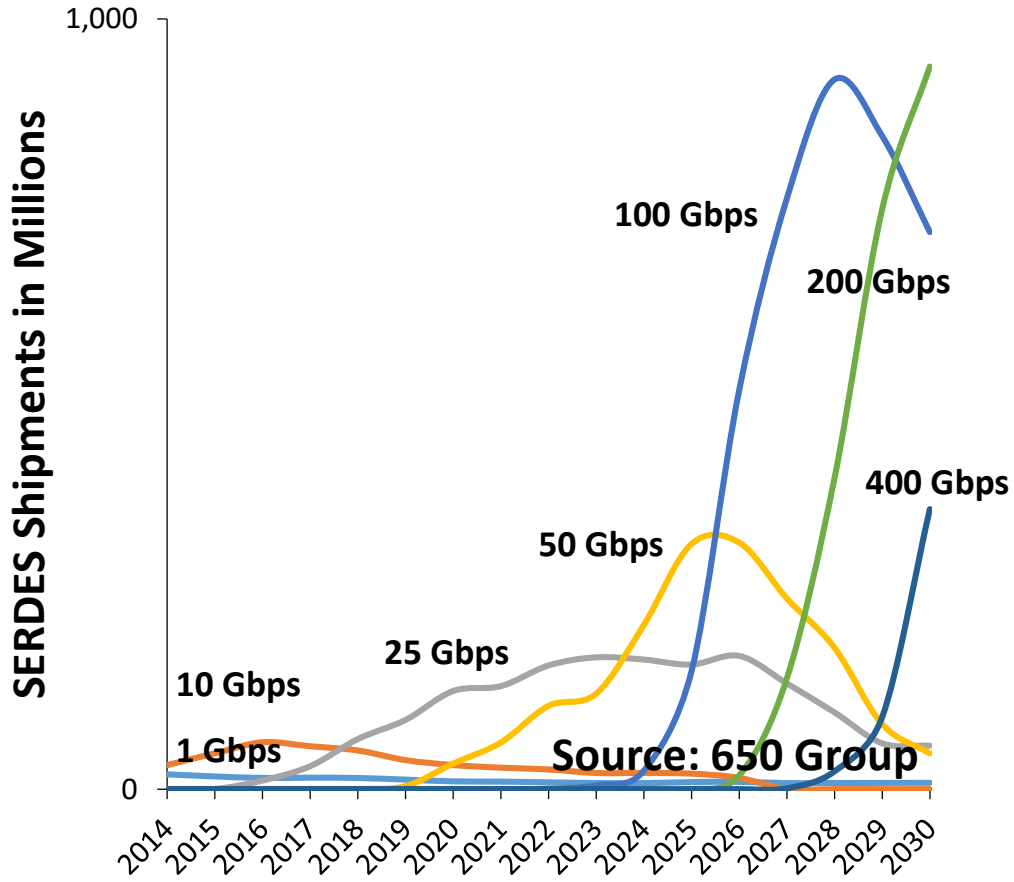




Merchant Silicon – Data Center Switching

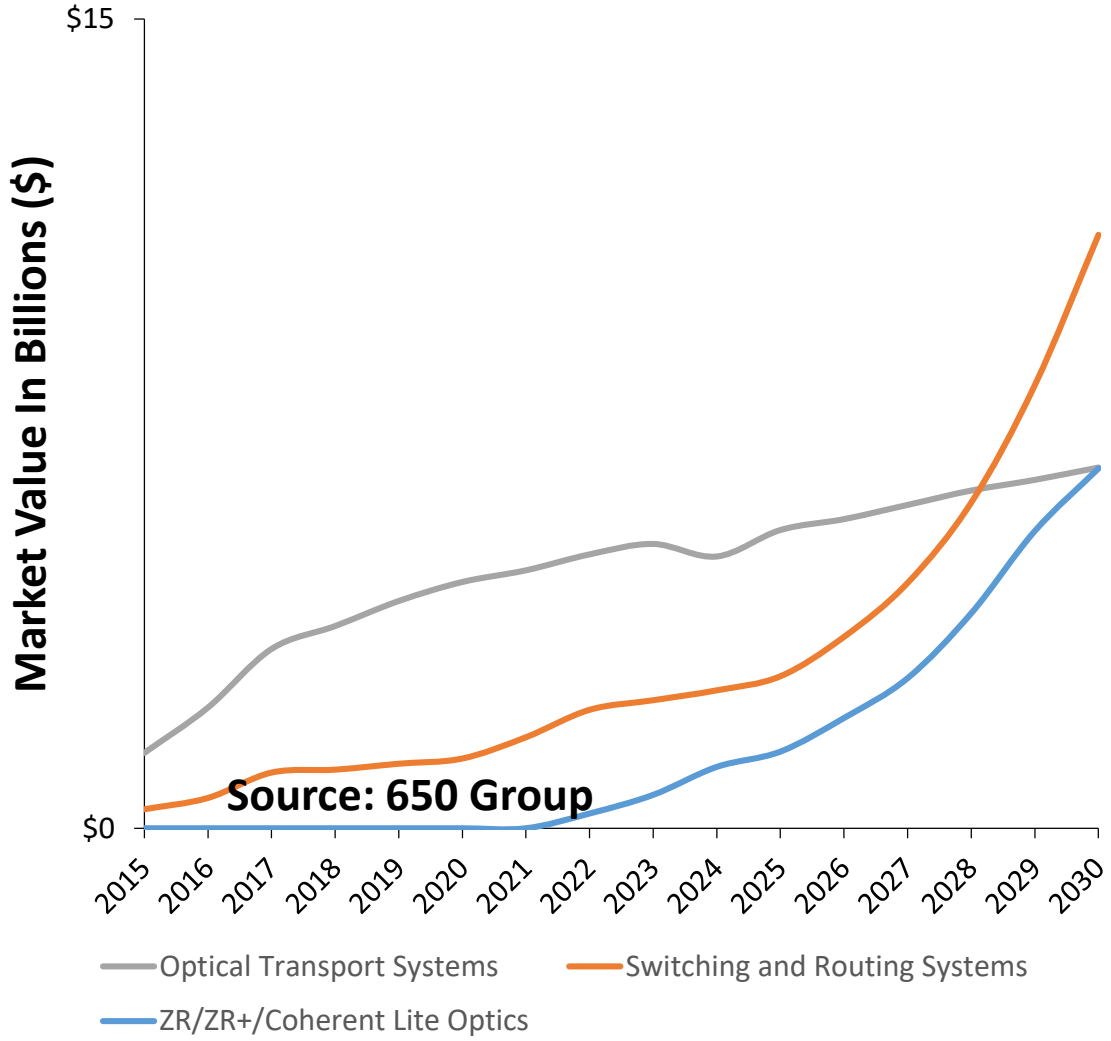
Merchant Silicon – Data Center Switching: Total SERDES Shipments

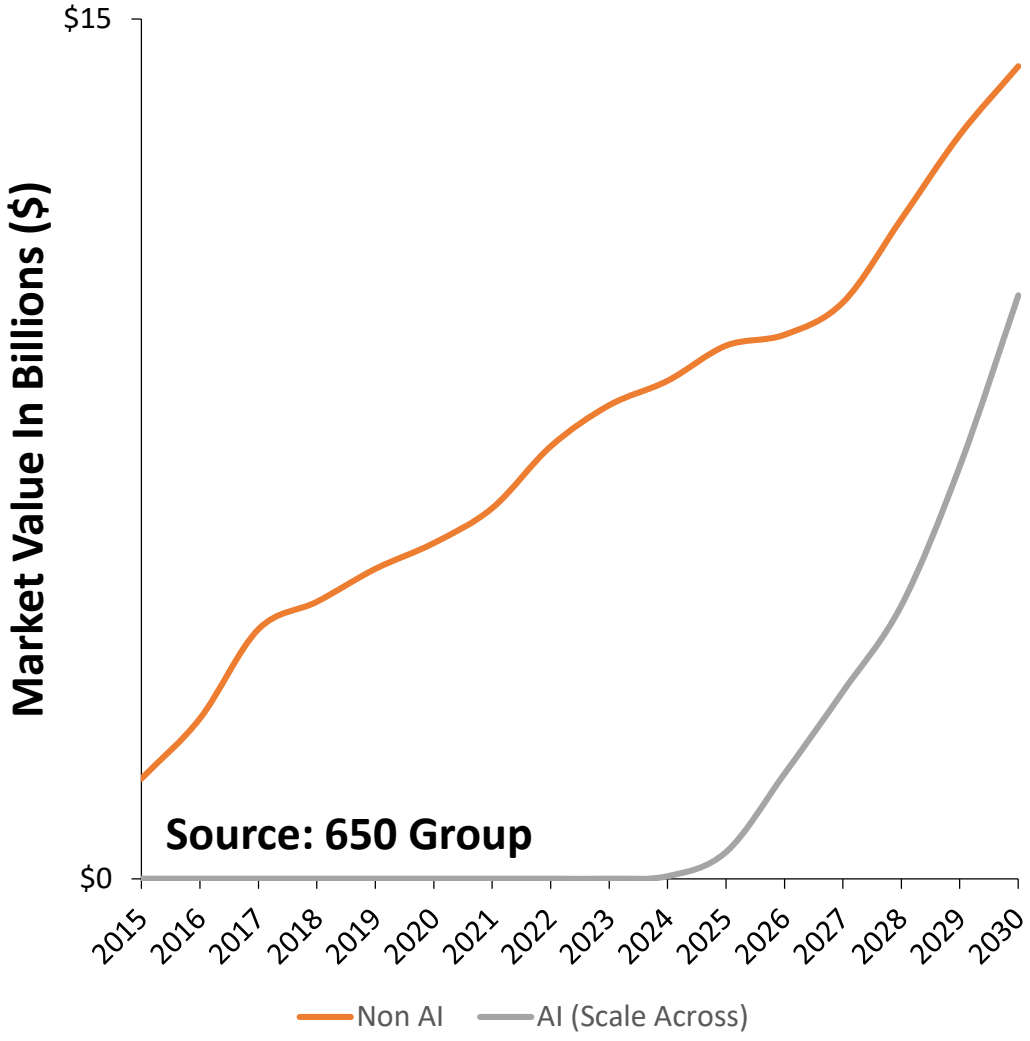




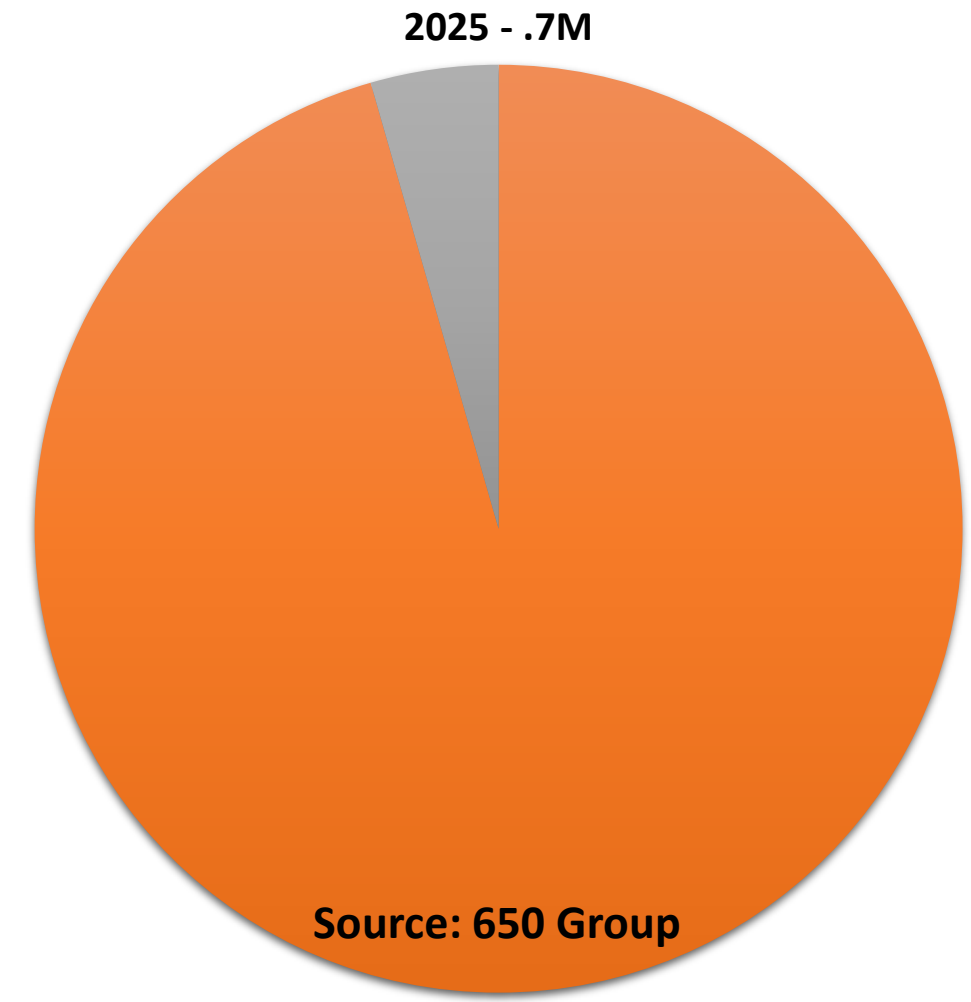
Ethernet DCI and Scale Across (Data Center Interconnect)

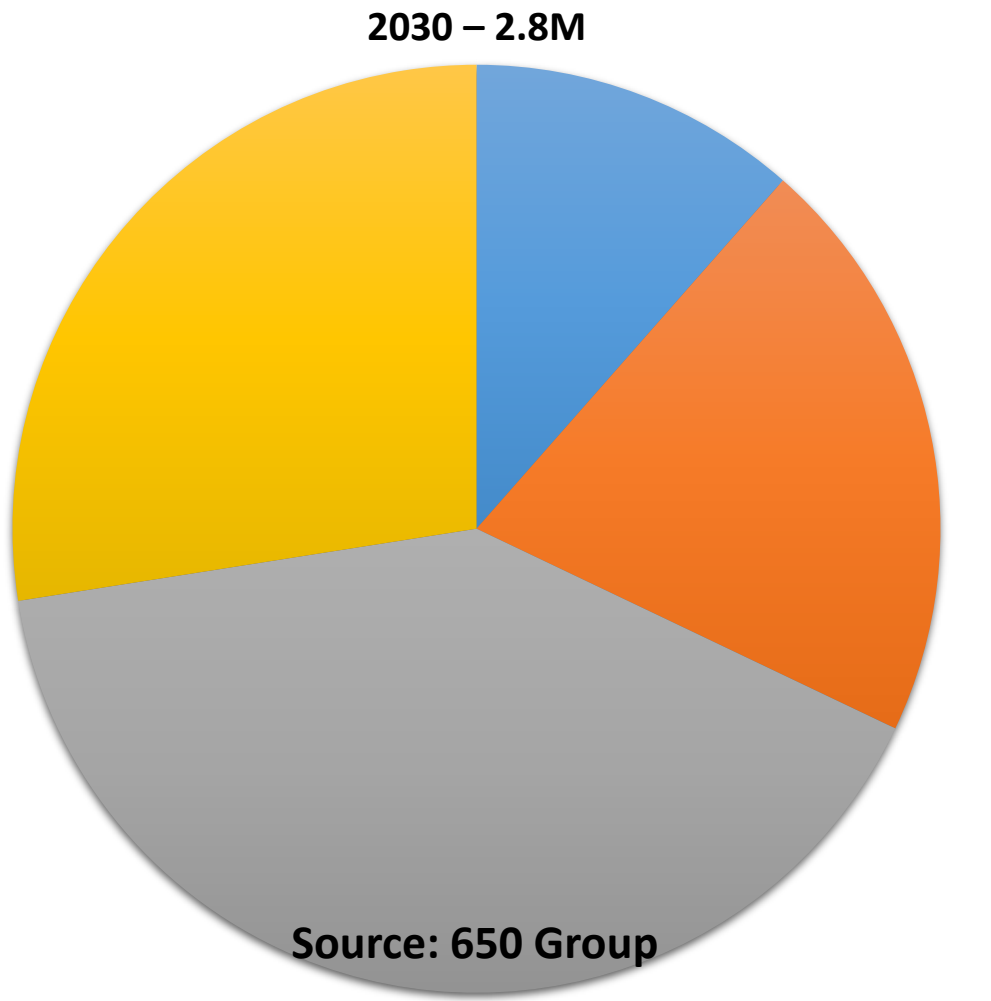
DCI Opportunity:
New TAM vs. Cannibalization (preliminary)





ZR, ZR+, Coherent Lite (preliminary): Units





Thank You!