AL/ML Networking, the Transition Toward Ethernet

2Q23 Results and September Forecast

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Server Installed Base
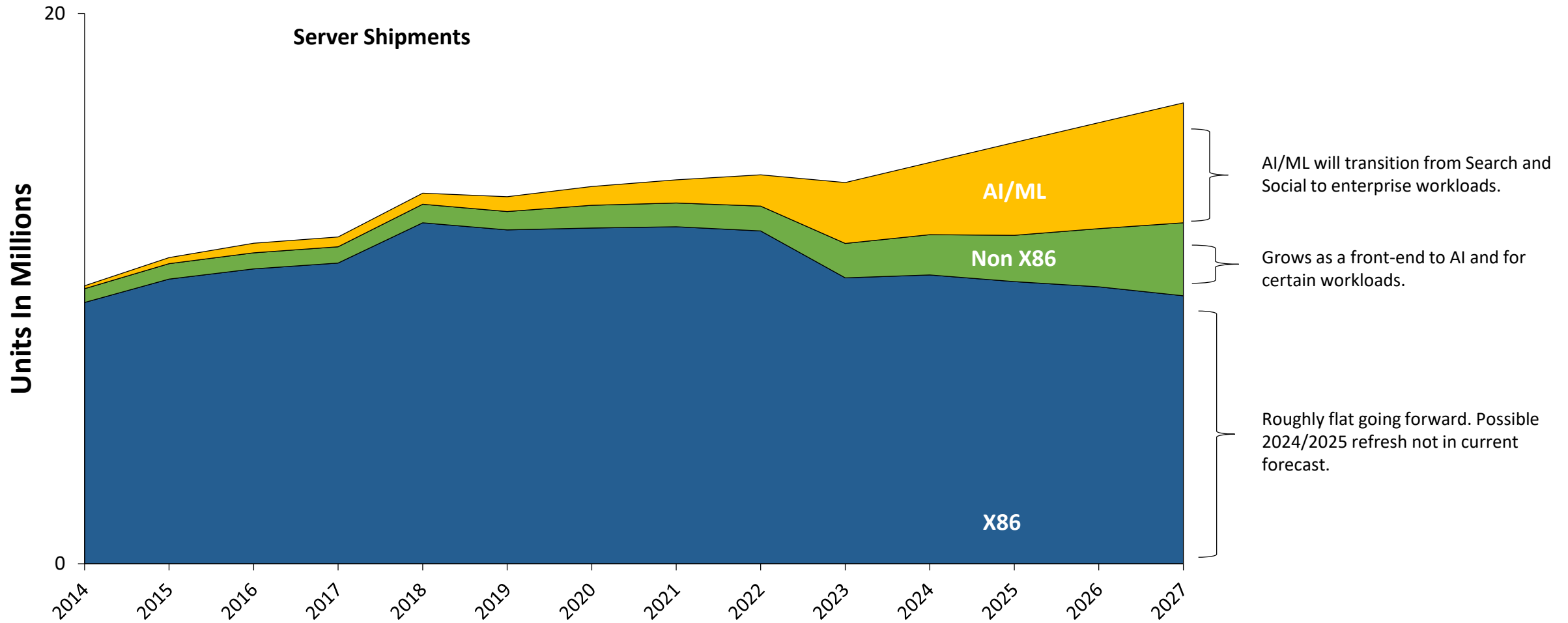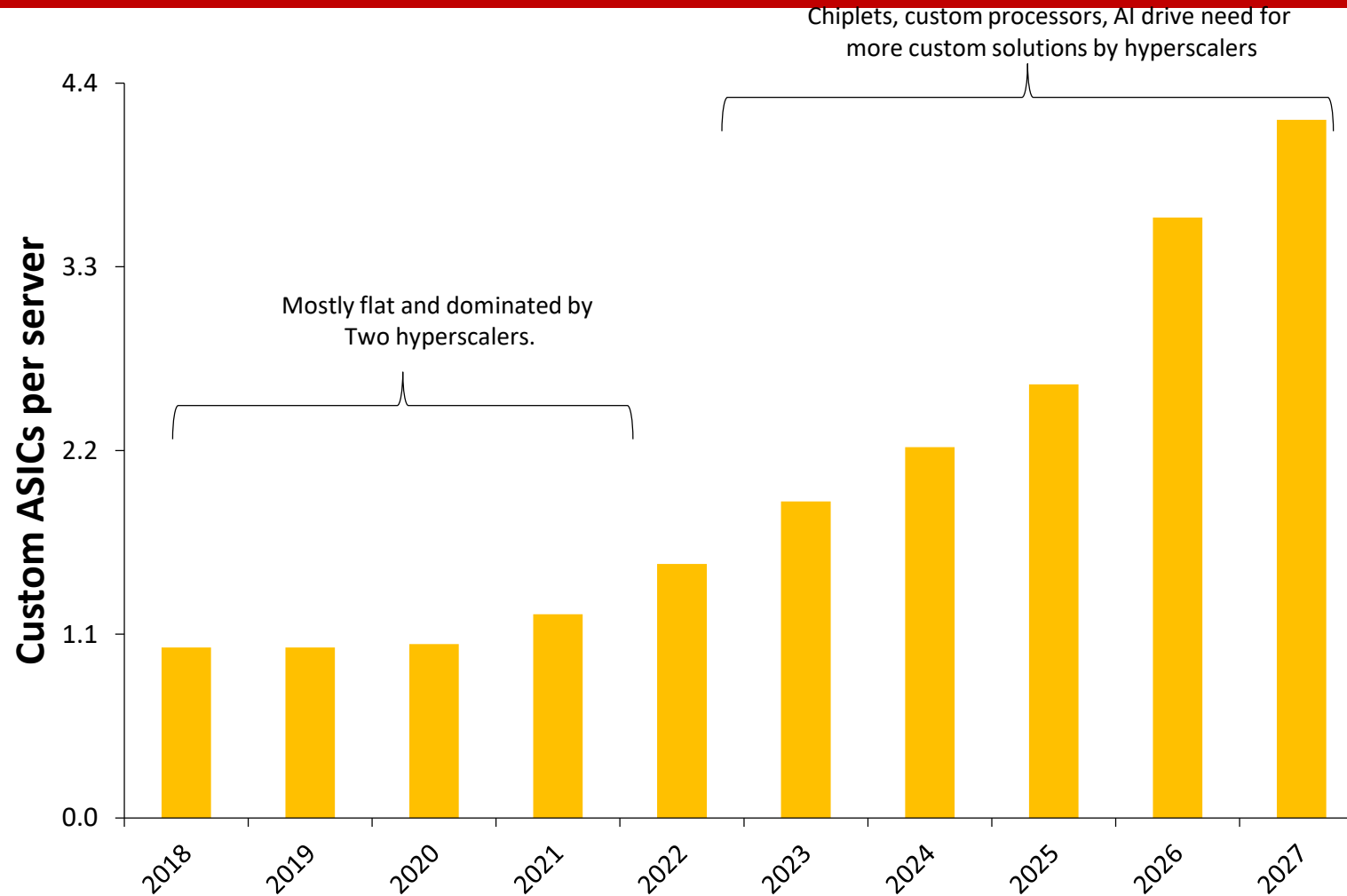# End of 2022 (Select Companies)

<500K	500K - 1M	>1M	>2M

Server and Smart NICs: Server Shipments

650 Group Data – For IEEE Presentation

Server and Smart NICs:
Hyperscalers reach new scale, drive customization

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Chiplets, custom processors, AI drive need for
more custom solutions by hyperscalers

Custom ASICs per server

Mostly flat and dominated by
Two hyperscalers.

- Custom ARM and RISC V development
- Purpose built accelerators for verticals or workloads
  - 5G/6G
  - AI/ML
  - Enterprise/Consumer
- Fully custom and semi-custom approaches
  - Chiplets allow more customization
  - 100% in-house designs will be rare
  - IP licensing opportunity
- New companies forming
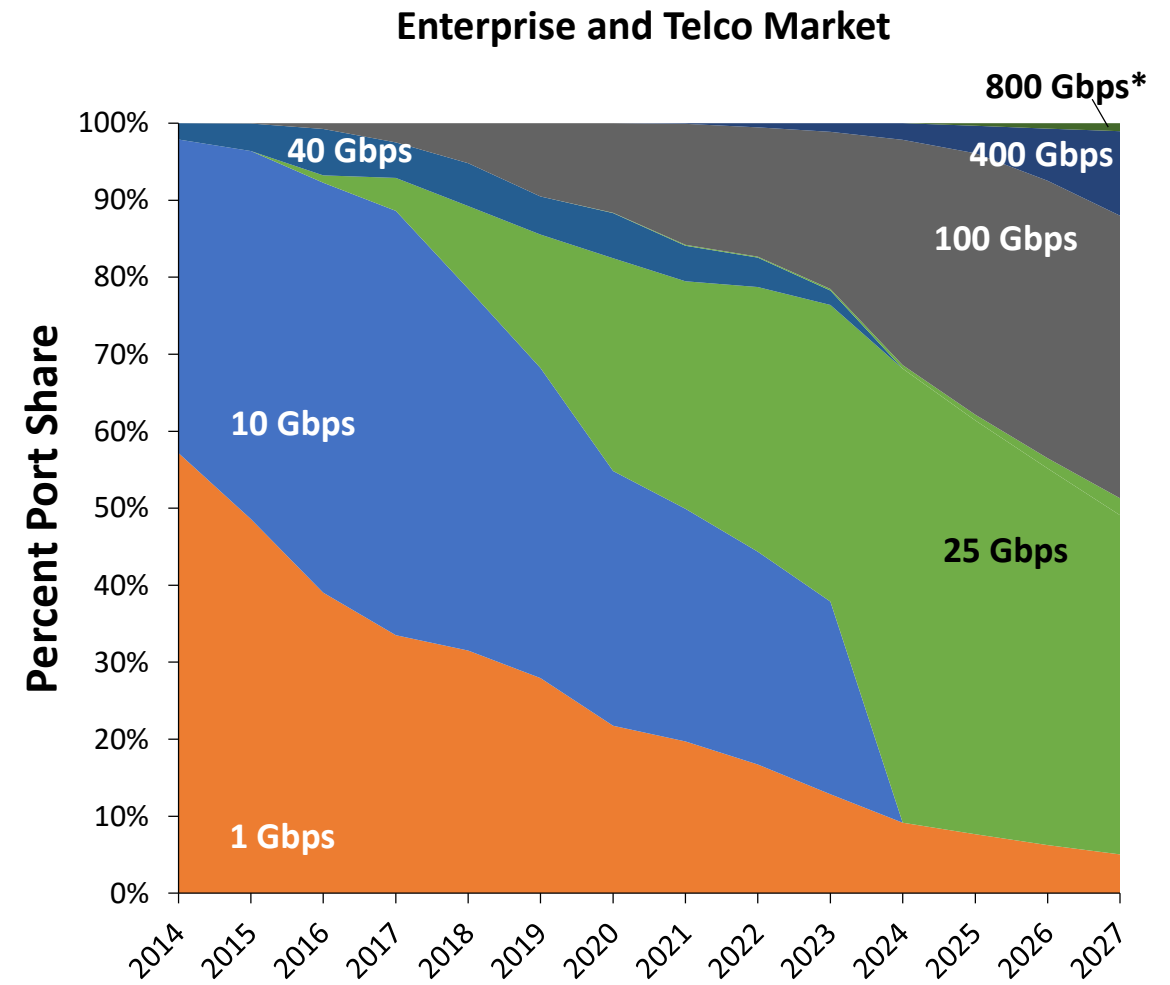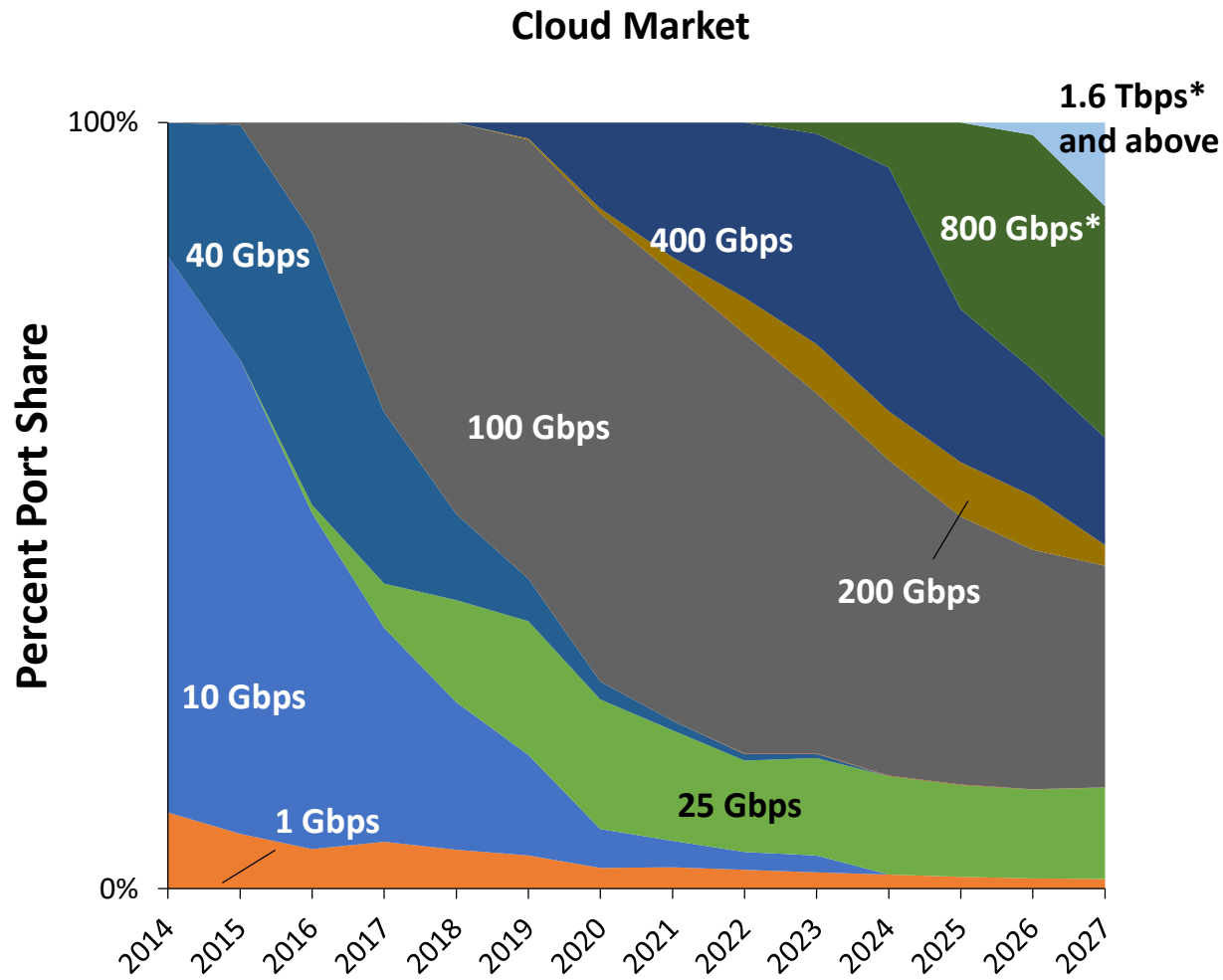- Additional semiconductor consolidation

*A multi-chip solution, or multi-chiplet solution is counted a 1. This chart only reflects products that go in a server.
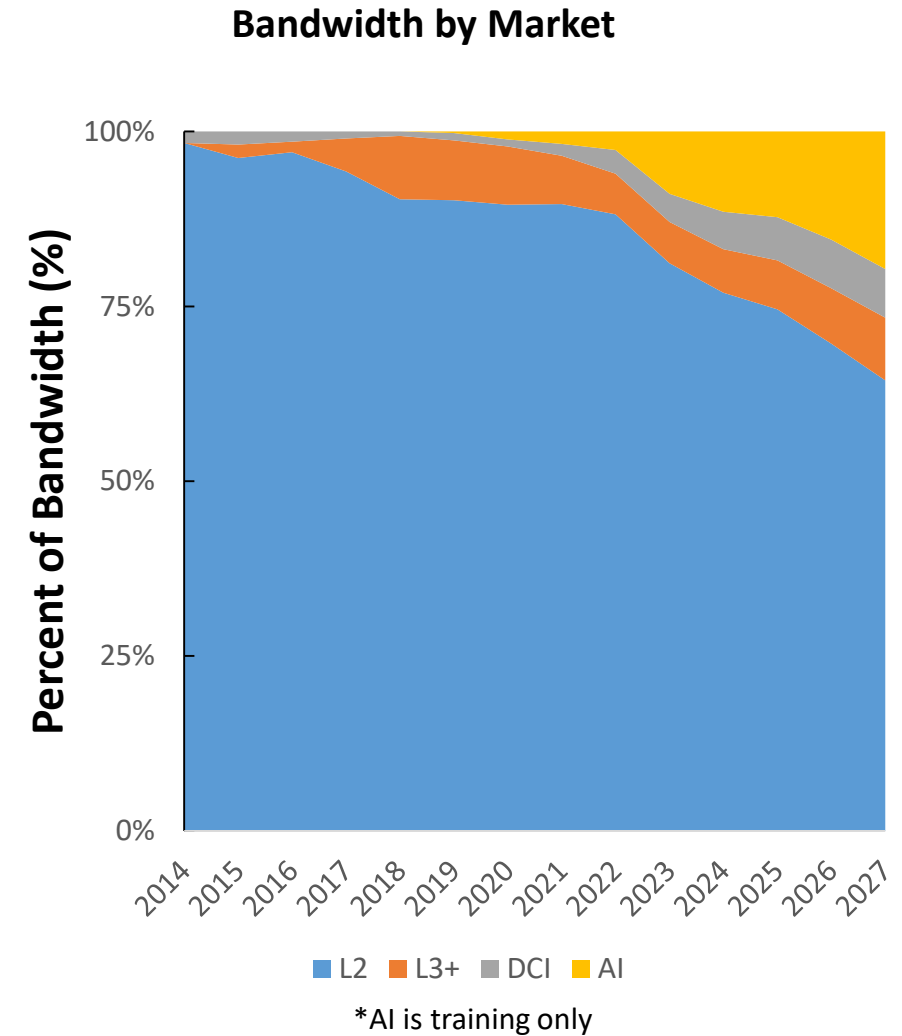
Ethernet Switch – Data Center: Total Market Ports

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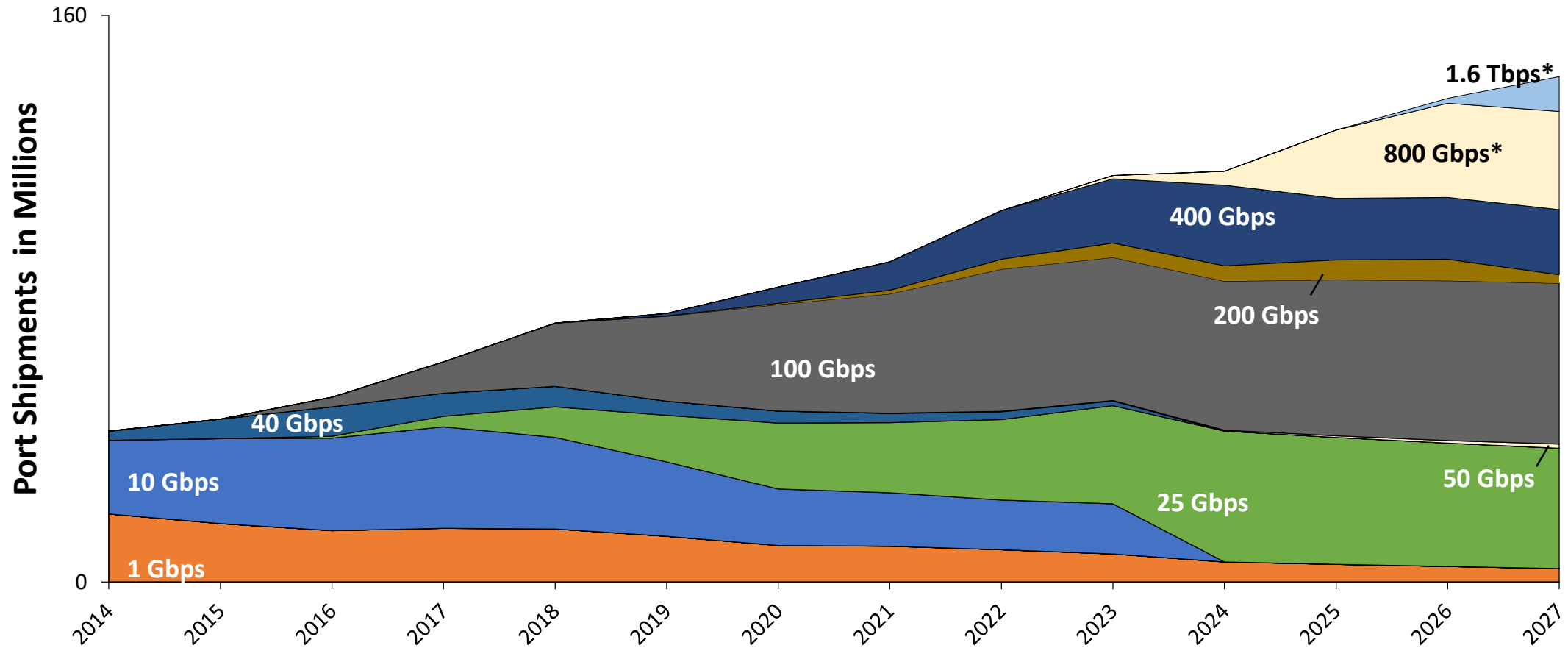
*Optics may lag or be different then front panel port

Ethernet Switch – Data Center: Total Market Ports

Cloud Market

Percent Port Share

- 40 Gbps
- 100 Gbps
- 400 Gbps
- 800 Gbps*
- 1.6 Tbps* and above
- 200 Gbps
- 10 Gbps
- 1 Gbps
- 25 Gbps

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

*Optics may lag or be different then front panel port

Enterprise and Telco Market

Percent Port Share

- 40 Gbps
- 10 Gbps
- 1 Gbps
- 800 Gbps*
- 400 Gbps
- 100 Gbps
- 25 Gbps

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

Merchant Silicon – Data Center Switching: Bandwidth Shipping by SERDES speed

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Bandwidth by Market

CAGR (22-27)

124%
73%
63%
50%
41%

Bandwidth Shipping

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

L2 ■ L3+ ■ DCI ■ AI

*AI is training only

Bandwidth by Market

Percent of Bandwidth (%)

100%
75%
50%
25%
0%

2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

L2 ■ L3+ ■ DCI ■ AI

*AI is training only
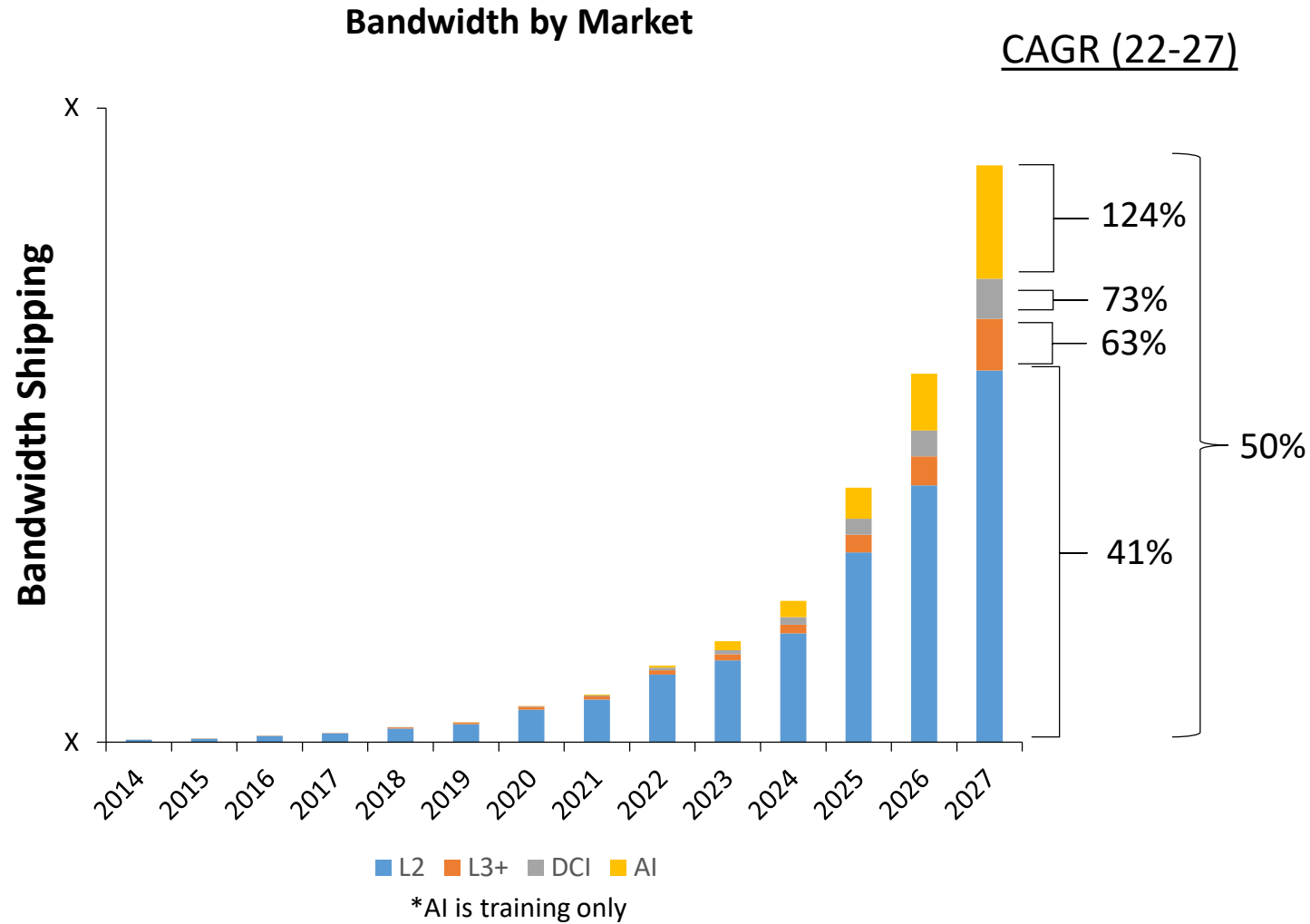
Ethernet Switch – Data Center: Total Market Revenue

Total AI/ML Market

Ethernet – Frontend

Ethernet – Backend

InfiniBand

Ports in Millions (0 to 35)

2021 2022 2023 2024 2025 2026 2027
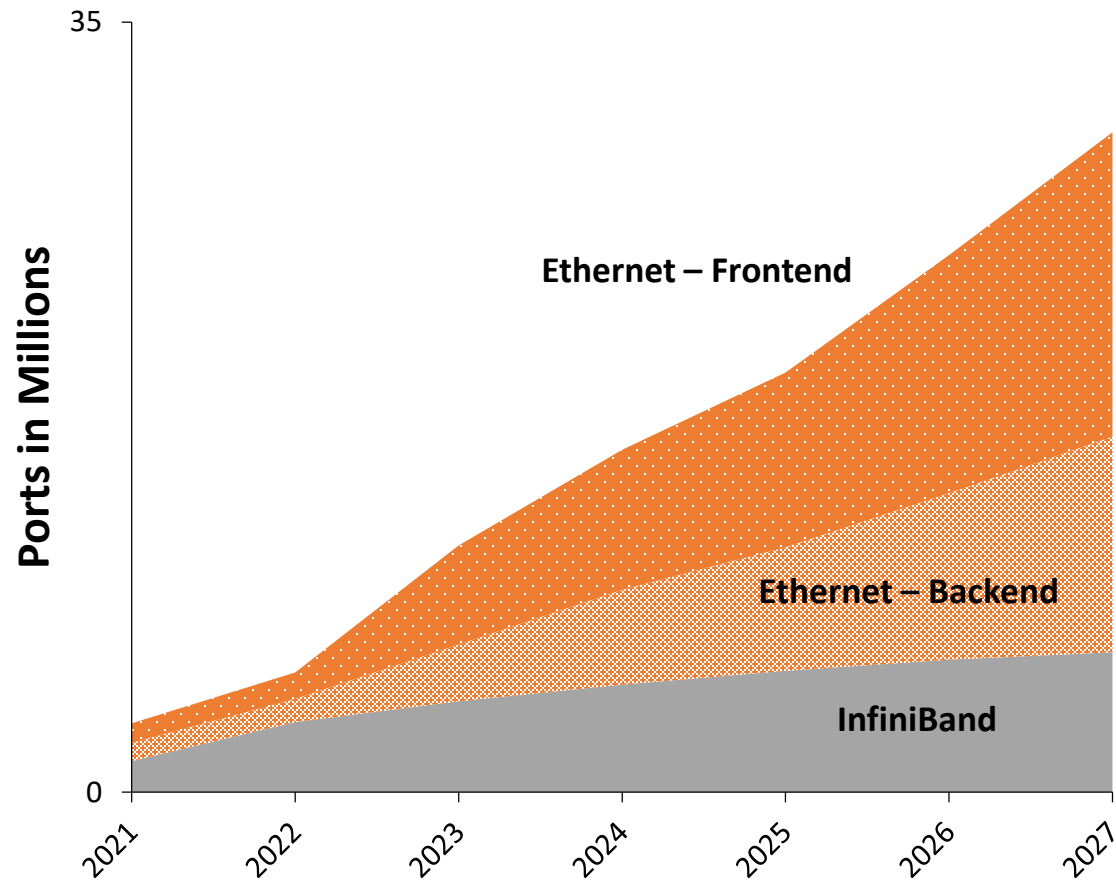
Ethernet AI/ML SERDES Shipments

SERDES Shipments in Millions (0 to 250)

2021 2022 2023 2024 2025 2026 2027

■ ≤56 Gbps ■ 112 Gbps ■ ≥224 Gbps
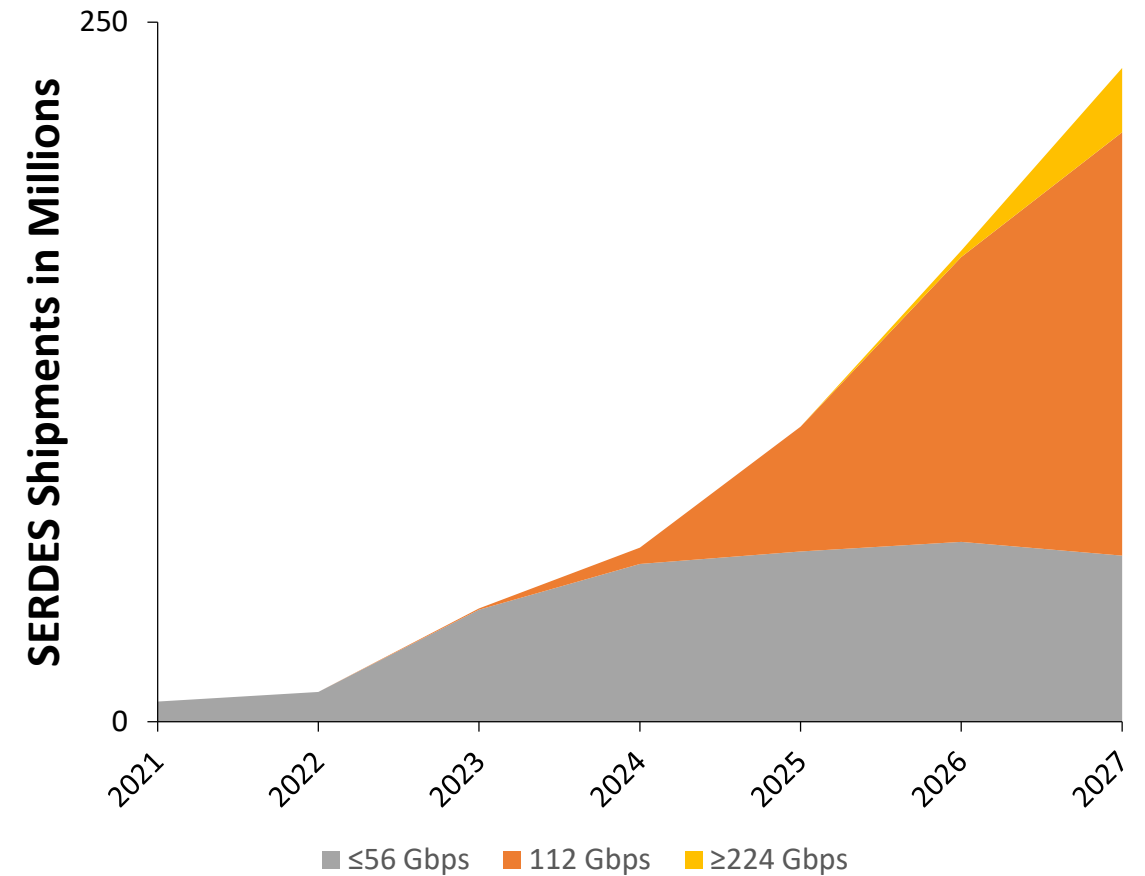
*In the 4Q22 report we began breaking out Backend(internal) and Frontend(external) networks for Ethernet.

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

Ethernet AI/ML

Percent Port Share

- ≤400 Gbps
- 800 Gbps and 1.6 Tbps
- ≥3.2 Tbps

Ethernet AI/ML Port Shipments

Port Shipments in Millions

AI/ML Ethernet

Rest of Ethernet Switch – Data Center