Optical Components Market Update

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OC Market Trends

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Cloud SP spending driving Optical Components and Networks markets

- AI infrastructure race fueled a Capex surge in 2024 to approximately $200bn
- 2025 Capex Projection to near $350bn and 2030 Capex projection to near $545bn
- Capex funding facilities expansion, xPU acquisition
- Expectations of continued growth through 2030 with generative AI adoption both at the consumer and enterprise levels.
- AI growth is affecting every part of the network

AI Infrastructure

Cloud Expansion

Subsea Cables

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AI Driven Data Center Growth Expectations – Power Capacity Needs

Europe & MEA

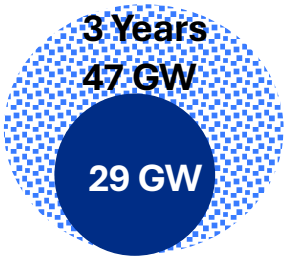
- FLAP, Ireland
- Nordics, Portugal, Genoa, Barcelona, Poland, Emirates
- Data sovereignty
- Sustainability

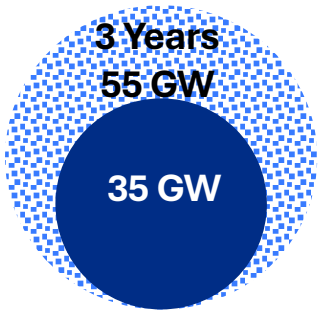
Asia Pacific (Excluding China)

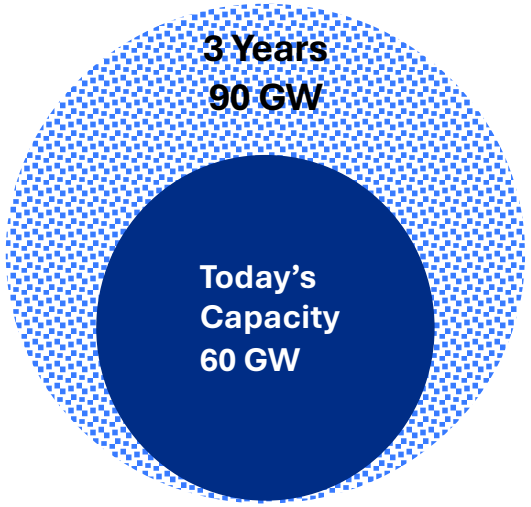
- Singapore-Johor, Tokyo, Sydney
- Indonesia, India, Philippines, ASEAN-5
- Geopolitics driving rise of new regions
- Modernization driving growth

North America

- NoVa, Atlanta, Dallas, Phoenix, N-West
- Kansas City, Nashville, Minneapolis, Wisconsin, Iowa, Ohio, Queretaro
- HQ country for US cloud SPs







Data Center Building and Investment Intelligence Service | Omdia
Data Center Building Tracker – 2H24 Omdia

AI is catalyzing another data center build cycle

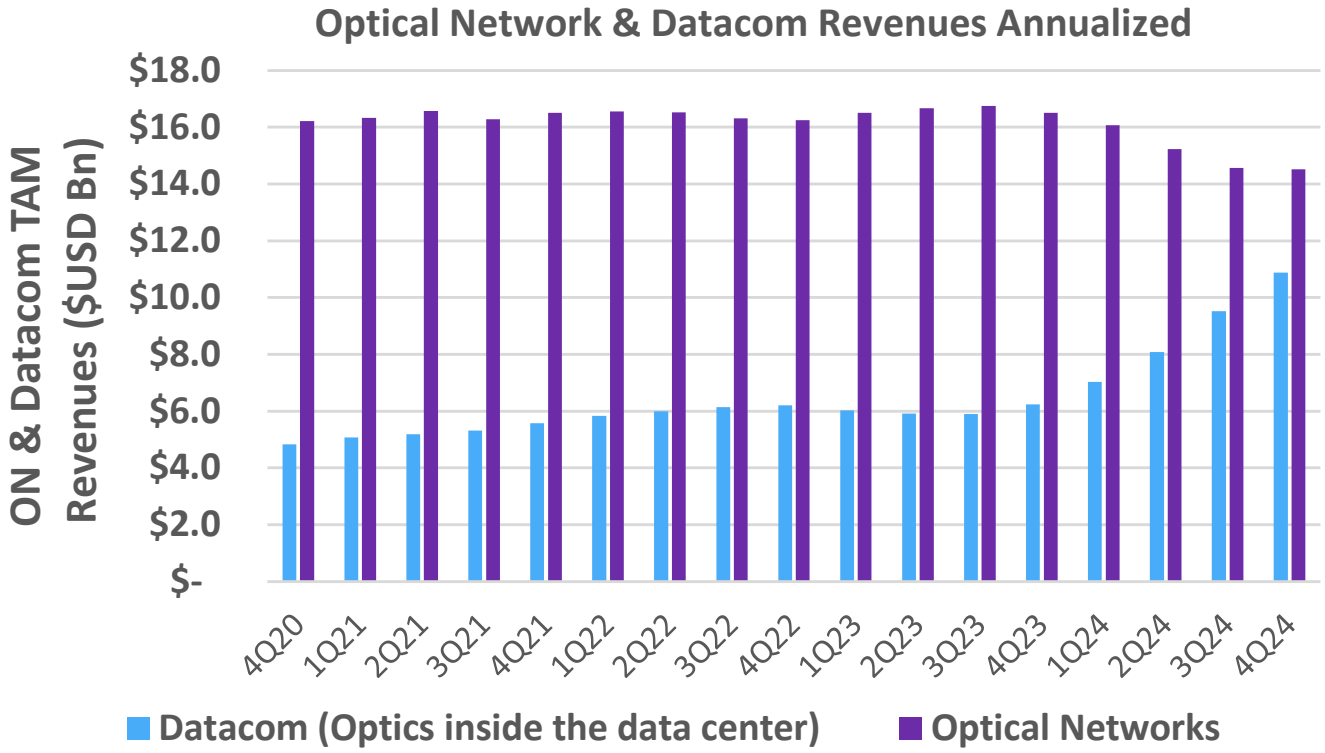
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Optical Network and Datacom TAM Annualized

- **Datacom AI boost has already started**
  - The AI architectures require optical components for XPU scale up and scale out architectures
- **Optical Network just emerging from slowdown**
  - Intuitively, AI will start to impact the optical core in a meaningful way
  - Just hasn't shown up in the Optical network numbers yet
  - Expect to see networking numbers improve with new distributed AI architectures



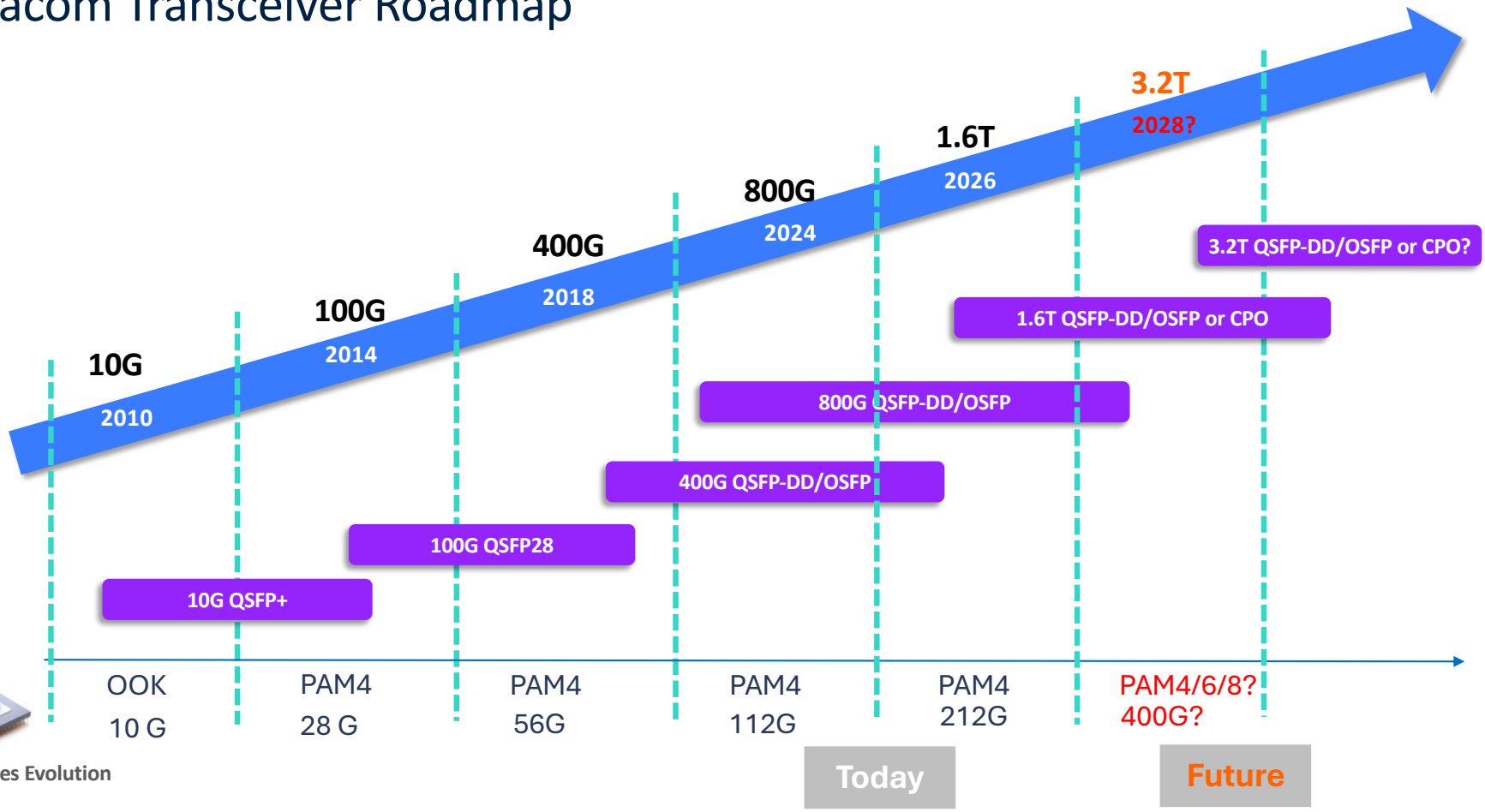
Datacom AI boost began in late 2023

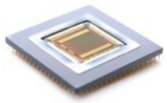
Source: Omdia: OC – 2Q25 Market Share Report and ON – 2Q25 Market Share Report

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Datacom Transceiver Roadmap





DSP/SerDes Evolution

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Scale-up and scale-out AI networks growth have limiting factors

Data center AI networks need new supporting infrastructure that may delay their adoption

- **Power: To the server rack and to the building:** New server nodes are pushing the AI server power envelope to new heights. With xPU rack density skyrocketing, the power envelope per rack is increasing beyond 200kW. Place rows of these racks in a data center, and the AI section of the data center may eat the power budget of the entire delivered power to the data center. Power is already a limiting factor for AI server deployment, and the new technologies that are denser will only make it worse.
- **Cooling in the rack:** All data centers implementing AI have resigned themselves to the fact that when using the new versions of XPUs, they will have to use liquid cooling. While many cloud service providers (cloud SPs) have designs for this, it is a new technology that must be delivered to the AI sections of their data centers. Either it must be retrofit into existing data centers, or entirely new data centers must be built to support it. This will also be a limiting factor for AI server deployment.
- **AEC/direct attach copper cables (DACs), AOCs, and optical transceiver capacity:** While there is already a high demand for AECs/DACs, AOCs, and optical transceivers to support new AI deployments, it will accelerate even more this year and beyond. Whether suppliers can keep up with it remains to be seen.
- **Mounting community and political pressure:** Communities do not want to see their electric bills increase and when data centers are built within them, electric bills rise and the availability of electric decreases. Cloud SPs have several tactics to counter this resistance:
  - Their green initiatives
  - Alternatives to connecting to existing power grids.
    - Constellation Energy to restart the Unit 1 reactor on Three Mile Island in Pennsylvania to support AI data center expansion.
    - Adding their own “portable” nuclear energy sources to their new data center cites.
    - New “scale across” architectures to split AI workloads between two adjacent power grids.

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Technologies to Watch

- High speed coherent transmission evolution
  - 1.2 Tbps/1.6 Tbps, delivery will be paramount
  - 800G ZR/ZR+ roadmaps solidified, ecosystems developing
  - Liquid cooling in communications & now in pluggables
  - Distributed AI infrastructures for optimization of power delivery constraints
- Datacom
  - Ramping now
  - Omdia doubled our AI DC SU and SO forecast in 2025
  - CPO will become a viable solution for some parts of AI networks within the next few years
  - Optical circuit switching for inside the data center

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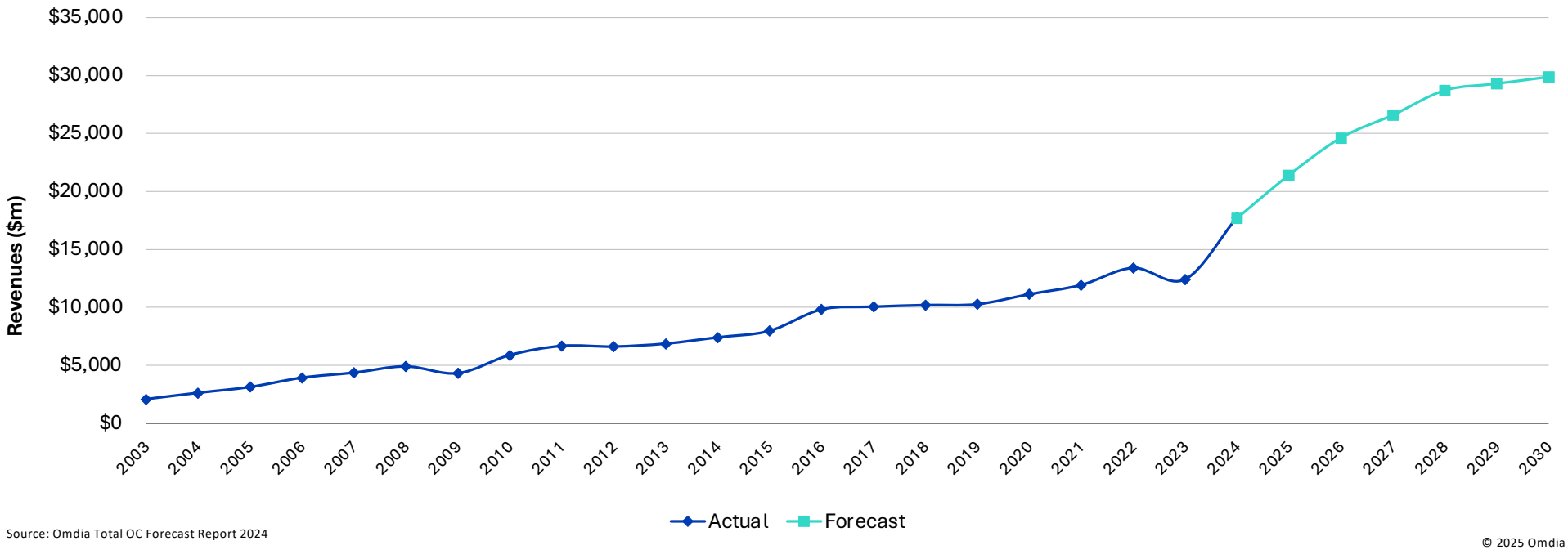
OC Market Status 2Q25

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Optical Components Market History and Forecast

GROWTH RATE IS ACCELERATING DUE TO AI NETWORK

Optical Components Merchant Market



Source: Omdia Total OC Forecast Report 2024

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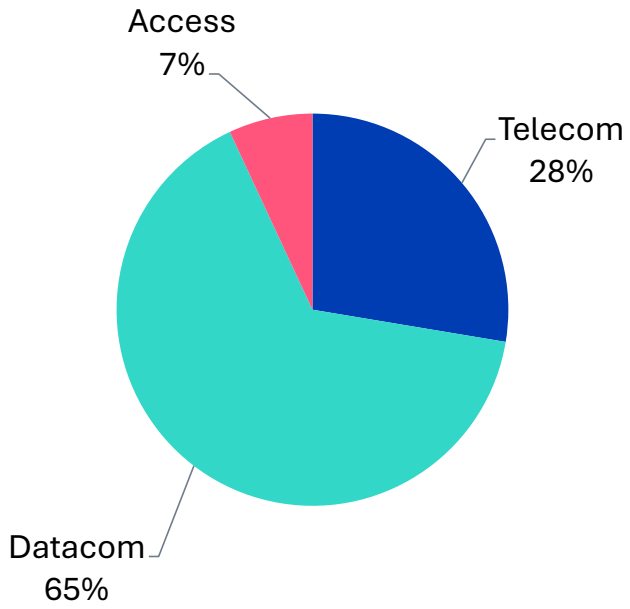
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2Q25 Global Optical Components Market

43% GROWTH RATE FROM 2023 TO 2024

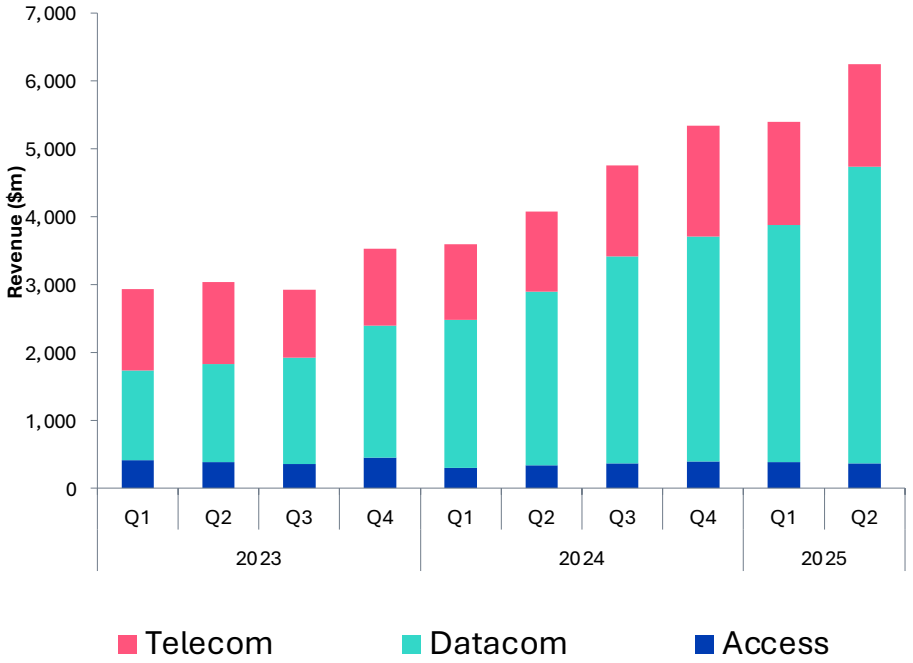
3Q24–2Q25: $21.8bn OC market



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Dashboard (by application)



Source: Omdia

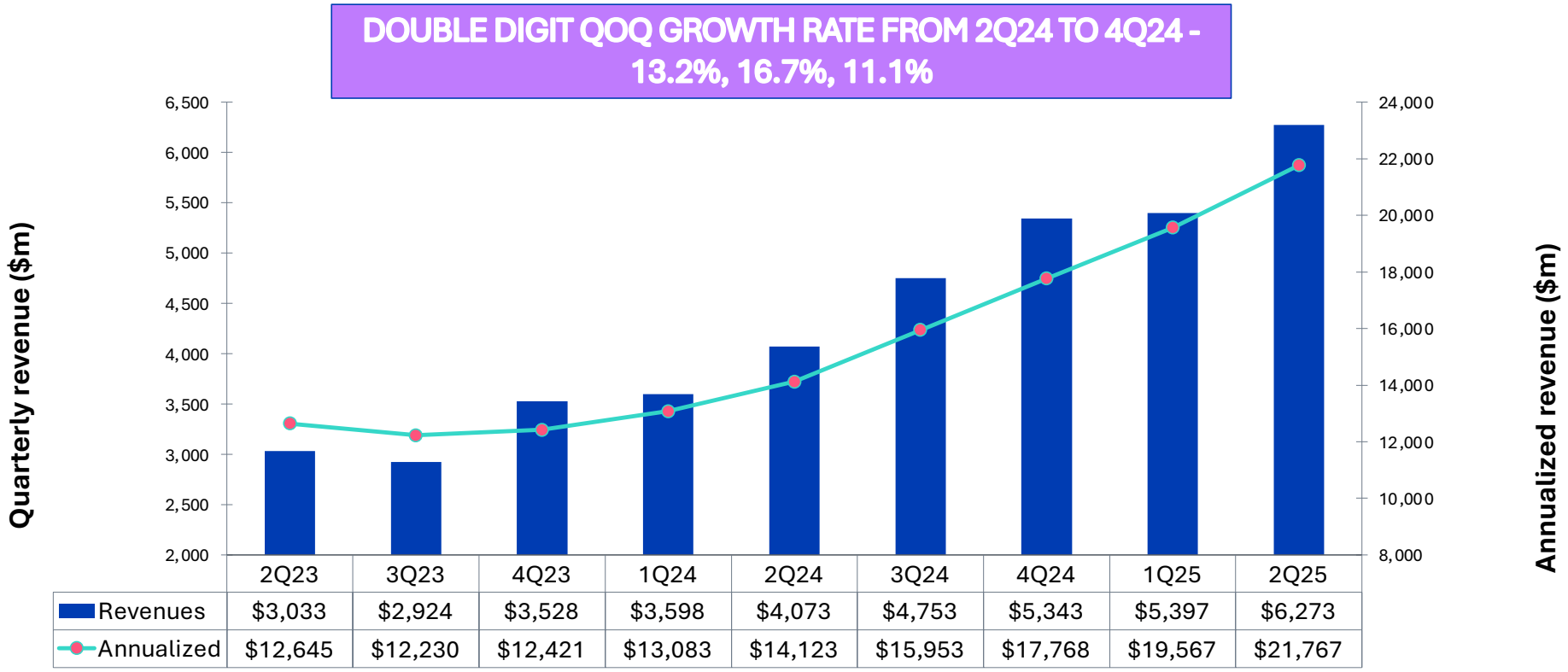
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2Q25 Global Optical Components Market



	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25
Revenues	$3,033	$2,924	$3,528	$3,598	$4,073	$4,753	$5,343	$5,397	$6,273
Annualized	$12,645	$12,230	$12,421	$13,083	$14,123	$15,953	$17,768	$19,567	$21,767

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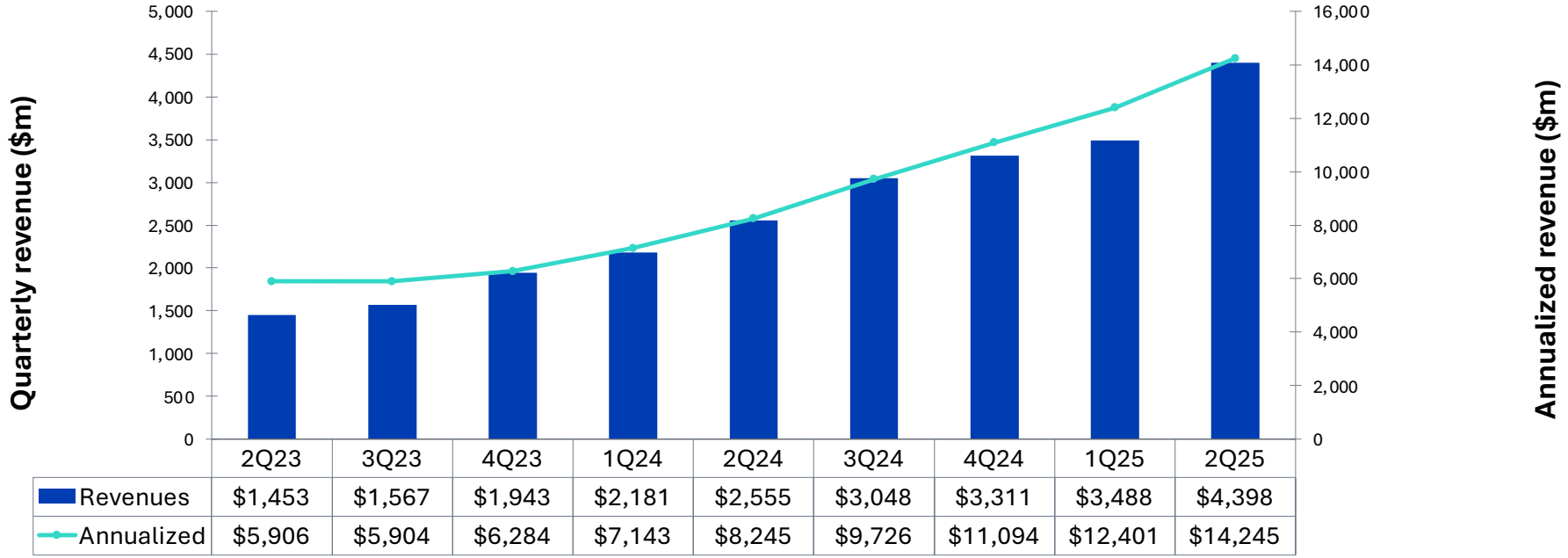
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2Q25 Global Optical Components Market - Datacom

UNPRECEDENTED QOQ GROWTH RATE FOR EIGHT STRAIGHT QUARTERS FOR DATACOM SECTOR

Datacom



	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25
Revenues	$1,453	$1,567	$1,943	$2,181	$2,555	$3,048	$3,311	$3,488	$4,398
Annualized	$5,906	$5,904	$6,284	$7,143	$8,245	$9,726	$11,094	$12,401	$14,245

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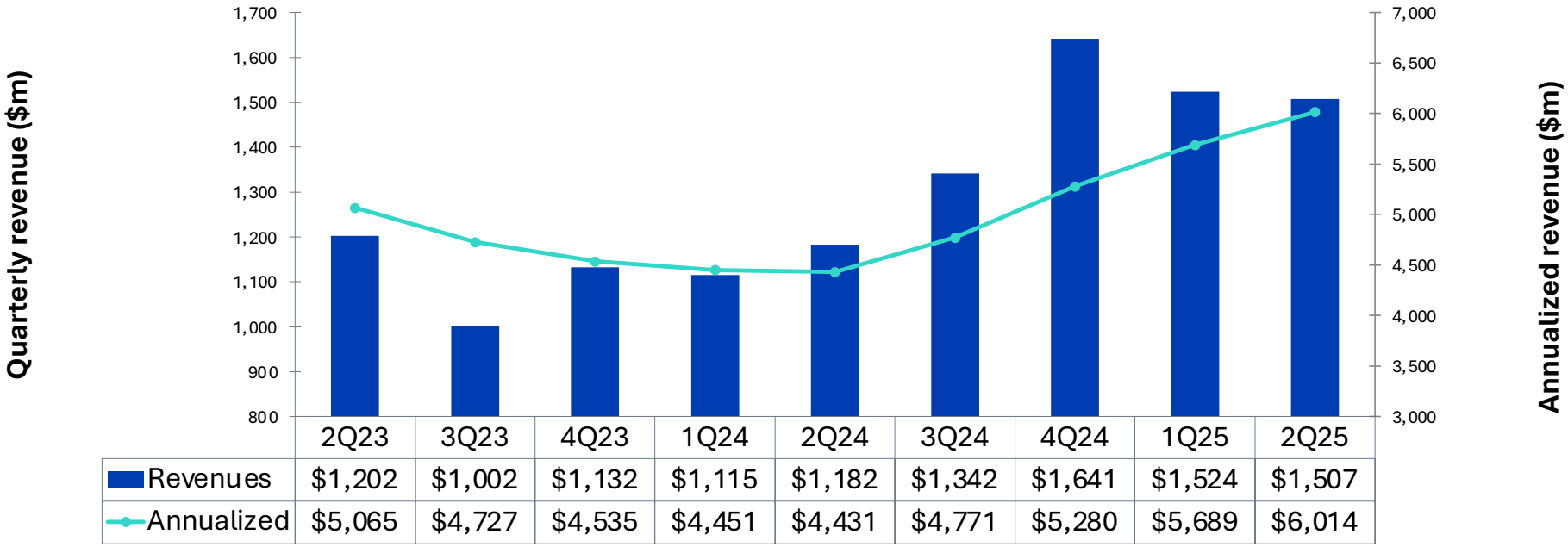
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2Q25 Global Optical Components Market – Telecom

TELECOM SECTOR REBOUNDED STARTING 2Q24 AND ACCELERATED GROWTH IN 3Q AND 4Q

Telecom



	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25
Revenues	$1,202	$1,002	$1,132	$1,115	$1,182	$1,342	$1,641	$1,524	$1,507
Annualized	$5,065	$4,727	$4,535	$4,451	$4,431	$4,771	$5,280	$5,689	$6,014

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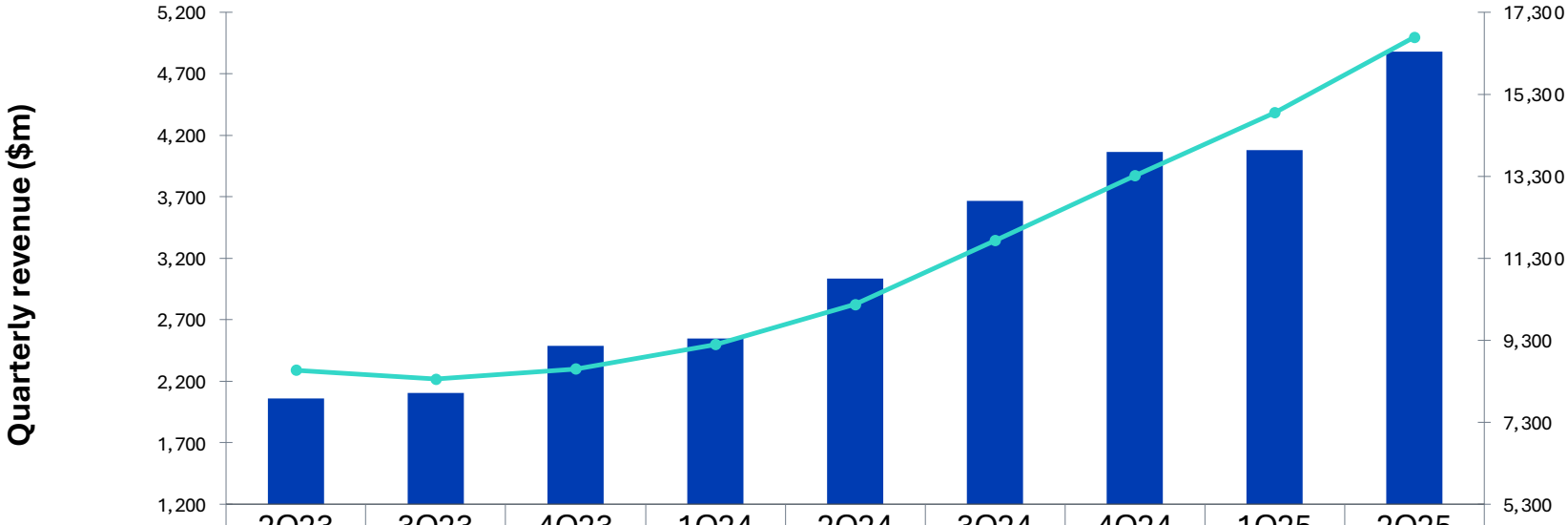
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2Q25 Global Optical Components Market – Transceivers

TRANSCEIVERS MARKET DRIVES THE GROWTH IN GLOBAL OC

Transceivers



	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24	4Q24	1Q25	2Q25
Revenues	$2,059	$2,107	$2,487	$2,545	$3,035	$3,666	$4,066	$4,081	$4,879
Annualized	$8,568	$8,355	$8,600	$9,198	$10,174	$11,733	$13,313	$14,849	$16,693

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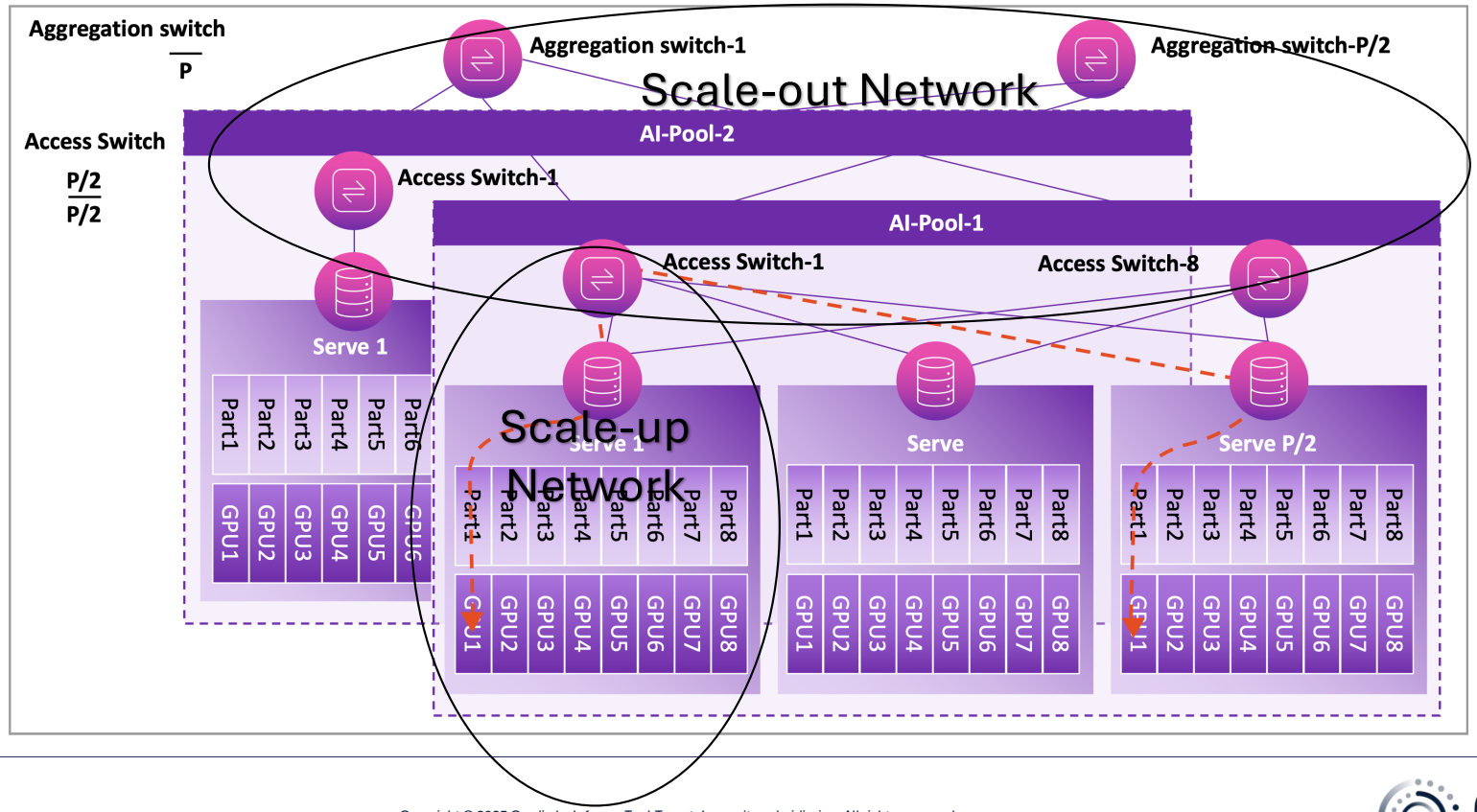
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OC Market Forecasts

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Inside the Data Center: Scale-up and Scale-out AI Backend Network Detail



Source: Omdia

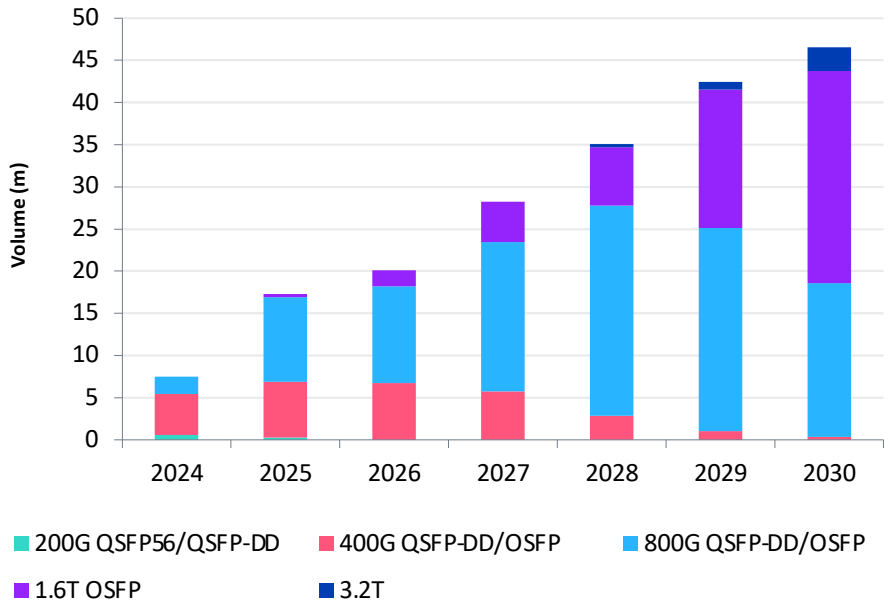
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Global AI Networks (both scale-up and scale-out) Optical Modules Forecast

- Six-year CAGR (2024 to 2030) of 36% (44% for 800G)
- Cloud SP's AI scale up and scale out networks are rapidly changing
  - Server ports, while mainly still copper currently and for the next few years, will eventually transition to optics via pluggable modules, AOCs and in some cases co-packaged optics (CPO). This connection started to transition from 100G and 200G to 400G and 800G in late 2023.
  - The first switch connection out from the server (ToR-to-leaf or MoR-to-aggregation) already primarily uses optics for its uplinks – either AOCs or optical modules. This connection is rapidly transitioning to 800G.
  - Omdia expects to see some deployment of 1.6T devices in 2025 and 2026 with acceleration of adoption starting in 2027.
  - Estimated need for 3.2T starting in 2028 and accelerating in 2030

Total optical modules in scale up and scale out AI Networks by data rate



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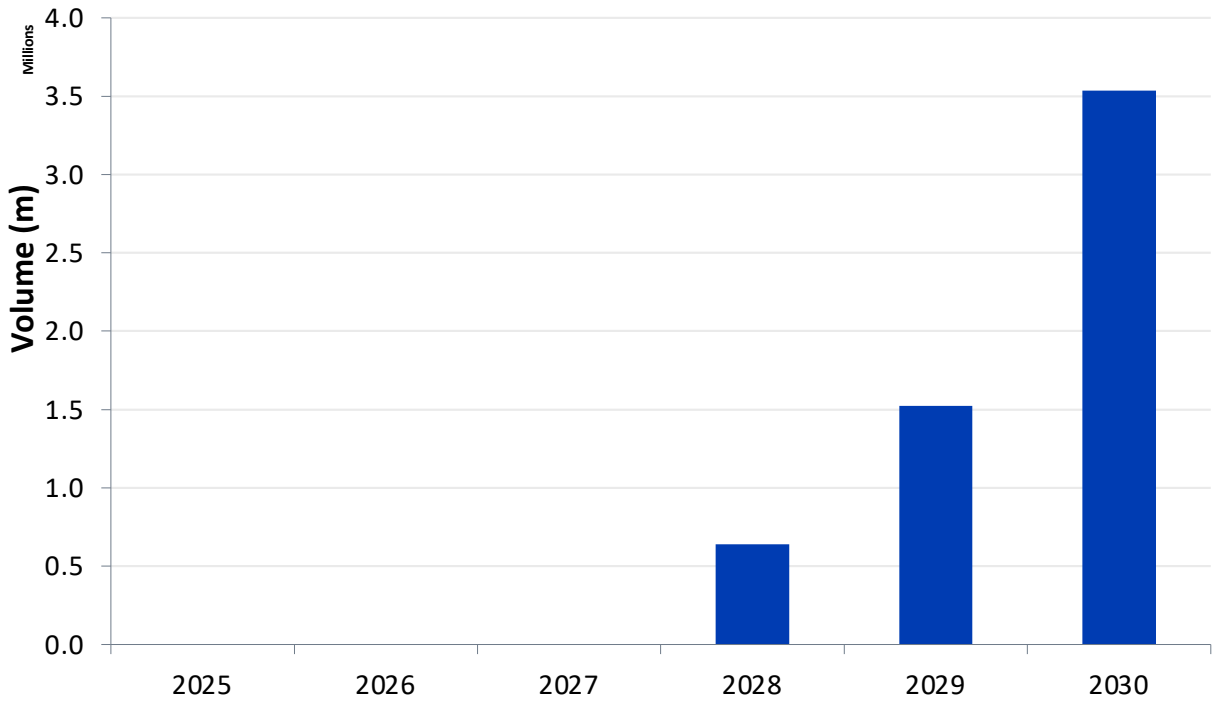
Source: Omdia: Scale-up and Scale-out Forecast Report 2025

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Estimated Ports for 3.2T in AI Networks

- Very early to be projecting 3.2T port forecast so speculative
- Includes Total 3.2T ports in AI Networks
  - Some will be AOCs, some will be pluggables and some will be CPO devices

Projections for 3.2T ports in AI Networks



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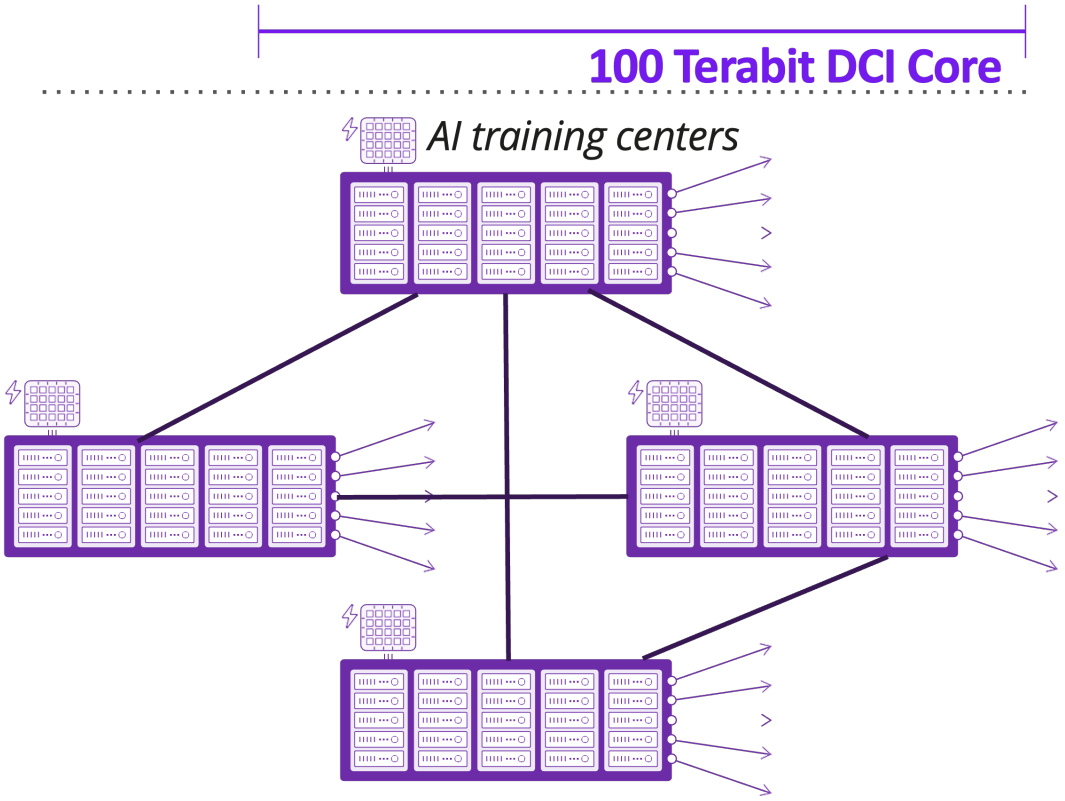
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Scaling AI Data Centers Geographically – Scale Across

- To distribute power delivery so as not to overwhelm one power grid, a new type of DCI is emerging:
  - Geographically distributed AI training centers
  - C and L bands line system
  - Hundreds of fiber pairs
  - 64x800G per fiber pair
  - 800G ZR and ZR+



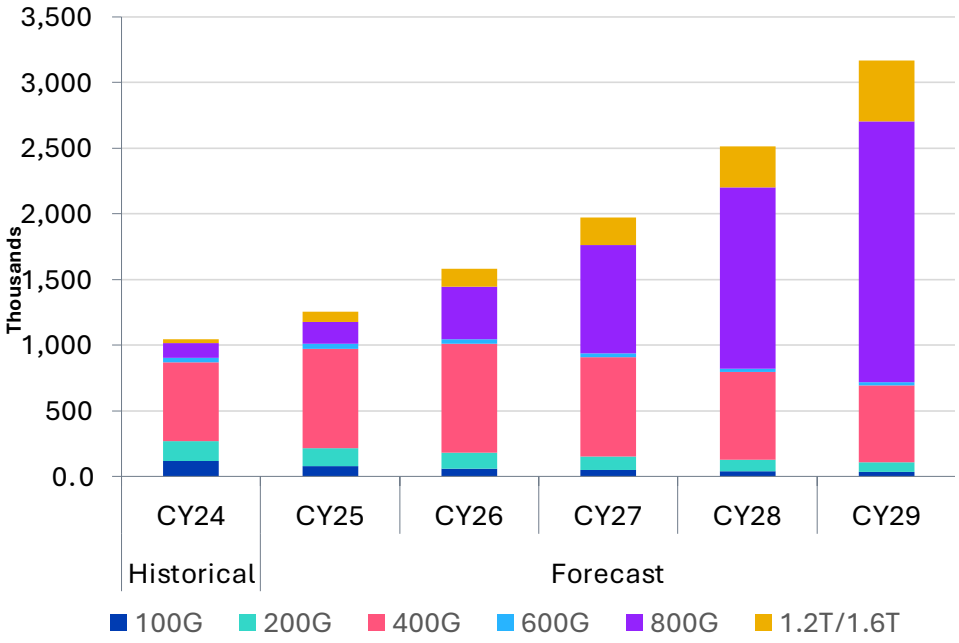
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Global Coherent Optics Forecast

- Five-year (2024 to 2029) CAGR of 21% (44% for 800G)
- 100G will see a resurgence in the Access network to replace legacy 10G connections
- 400G solutions still growing until 2026
  - Embedded fading in the western world in favor of 800G and above embedded solutions
  - ZR and ZR+ continue to grow for DCI applications
- 800G will be driven by two submarkets
  - High-performance embedded started in 2020
  - ZR and ZR+ pluggables starting in 2025 for DCI applications
    - Expect two form factors – QSFP-DD and CFP2
- 1.2T/1.6T solutions
  - High-performance embedded 1.2T solutions started shipping in 2023 in modest volumes and momentum is clearly building
  - 1.6T trials on carrier networks are continuing in 2025 for high ROADM pass-through, subsea backhaul and trans-Atlantic transmission. Early deployments are now starting.

Coherent Ports by Maximum Data Rate



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Conclusions

- AI has re-energized bandwidth growth
  - Largest revenue opportunity is currently with the cloud SPs AI networks inside their data centers
  - Leading enterprises are actively deploying AI solutions with the leading Cloud & AI providers.
  - The AI providers will have very limited last mile access to enterprises and minimal “AI middle mile”.
  - Communications SPs (CSPs) own many customers relationships within the total enterprise community.
- Optical innovation continues along many dimensions
  - IMDD* continues to be the technology of choice inside the data center. However, many cloud SPs are intrigued with coherent for longer distances as data rates increase.
  - CPO and Optical Circuit Switches are also being evaluated by cloud SPs and may start to be deployed in some data centers soon.
  - More and faster adoption of coherent pluggables for both cloud SPs and CSPs

*Intensity modulated, direct-detect

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