GLOBAL OPTICAL TRANSCEIVERS

Raising 1.6T and above shipment by 29% / 61% / 50% for 2026-28E; continuous mix upgrade ahead

We are constructive on the optical transceiver growth ahead, supported by the growing AI infrastructure spending driving demand, product mix upgrade towards high-speed transmission (800G/ 1.6T/ 3.2T), and the rising adoption of optics in connection with the increase of the server port rate. In this report, we raised the global optical transceiver shipment by 21%/ 31%/ 31% for 2026-28E, 800G+ shipment by 31%/ 39%/ 36% for 2026-28E, and 1.6T+ shipment by 29% / 61% / 50% for 2026-28E to reflect higher shipment of rack-level servers/ ASIC servers, higher usage of optical modules per GPU chip, and specification upgrade. **Read more** on our latest views: Optical networking thematic; Server TAM update; FOCI initiation; Optical top 3 debates.

In 2026/27/28E, we expect the global optical transceiver market to reach US$68bn/131bn/148bn, respectively, with 800G and above segment increasing at a +69% CAGR to reach US$45bn/ 108bn/ 130bn. We expect 800G/1.6T shipment volumes at 45m/33m units in 2026E, growing to 49m/71m in 2027E, with 3.2T shipment ramping up to 23m/ 68m in 2027/ 28E. In our view, Silicon photonics will account for 60%/ 80%/ 80% of 800G/1.6T/3.2T optical transceivers.

Within the optical transceivers supply chain, we are Buy rated on (1) Optical transceiver or engines makers: Eoptolink, FOCI; (2) CW lasers or Epiwafer suppliers: Landmark, VPEC; (3) Equipment: RoboTechnik.

Related reports:

Global Server: Raising both AI and General servers; better mix and higher memory costs drive CSP spending (Jun 24, 2026)

GLOBAL OPTICAL TRANSCEIVERS: Raising 800G and above shipment by 14% / 29% / 33% for 2026-28E; AI to drive growth ahead (Apr 17, 2026)

Global Optical transceivers: Raising value TAM by 43% / 46% in 2026-27E with 800G / 1.6T at 38m / 14m units in 2026E on AI trend (Jan 8, 2026)

Global Server: ASIC servers expanding; AI full racks see diversifying chip platform (Jan 4, 2026)

Global Optical transceivers: TAM introduced; rising 800G / 1.6T driven by growing AI servers infrastructure (Dec 13, 2025)

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Global Server: 2027E estimates introduced; Raising baseboard-based AI servers with rising ASIC penetration (Sep 27, 2025)

Global Switch: Raising TAM on higher AI Data Center Switch ASP; Global Switch TAM to grow at 21% CAGR in 2025-27E (Nov 17, 2025)

TAIWAN TECHNOLOGY: Silicon Photonics / CPO: LandMark and VPEC the early beneficiaries of 800G / 1.6T upgrade; Initiate with Buys (Feb 13, 2025)

Optical transceivers: 800G / 1.6T/ 3.2T at 49m / 71m/ 23m units in 2027E

US$ m	1Q25	2Q25	3Q25	4Q25	1Q26	2Q26	3Q26E	4Q26E	2025	2026E	2027E	2028E
Global Optical module TAM												
Global TAM (US$m)	**7,260**	**7,988**	**10,261**	**12,068**	**13,135**	**14,304**	**17,730**	**22,533**	**37,577**	**67,702**	**131,414**	**148,495**
Below 400G	4,535	4,328	5,052	4,784	4,886	4,998	5,445	5,196	18,698	20,526	22,639	18,617
400G	2,119	1,127	1,195	422	493	451	596	467	4,863	2,007	1,243	376
800G	606	2,352	3,800	5,042	4,706	4,778	4,969	4,521	11,800	18,974	19,440	15,296
1.6T	-	181	214	1,820	3,050	4,077	6,719	12,349	2,216	26,195	53,526	32,914
3.2T	-	-	-	-	-	-	-	-	-	-	34,566	81,293
By Speed Mix	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Below 400G	62%	54%	49%	40%	37%	35%	31%	23%	50%	30%	17%	13%
400G	29%	14%	12%	3%	4%	3%	3%	2%	13%	3%	1%	0%
800G	8%	29%	37%	42%	36%	33%	28%	20%	31%	28%	15%	10%
1.6T	0%	2%	2%	15%	23%	29%	38%	55%	6%	39%	41%	22%
3.2T	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26%	55%
By Material Mix	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
SiPh	15%	23%	26%	35%	39%	41%	45%	53%	26%	46%	59%	64%
EML	85%	77%	74%	65%	61%	59%	55%	47%	74%	54%	41%	36%

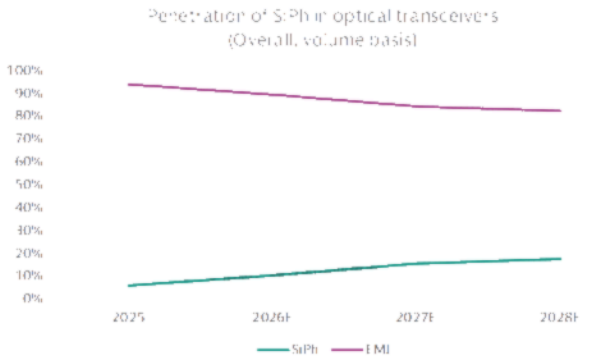
	1Q25	2Q25	3Q25	4Q25	1Q26E	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
Global Optical module shipment TAM												
Global shipment (k units)	**107,332**	**102,788**	**121,854**	**117,518**	**127,068**	**130,841**	**145,316**	**145,108**	**449,492**	**548,332**	**690,763**	**729,400**
Below 400G	96,741	92,327	107,767	102,056	109,732	112,238	122,279	116,677	398,890	460,926	540,838	555,926
400G	9,212	4,900	5,196	1,836	2,256	2,063	2,729	2,140	21,145	9,187	6,052	2,232
800G	1,378	5,345	8,637	11,459	11,259	11,430	11,888	10,816	26,819	45,393	49,475	48,660
1.6T	-	216	255	2,167	3,822	5,109	8,420	15,475	2,638	32,826	71,357	54,848
3.2T	-	-	-	-	-	-	-	-	-	-	23,040	67,734
Mix	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Below 400G	90%	90%	88%	87%	86%	86%	84%	80%	89%	84%	78%	76%
400G	9%	5%	4%	2%	2%	2%	2%	1%	5%	2%	1%	0%
800G	1%	5%	7%	10%	9%	9%	8%	7%	6%	8%	7%	7%
1.6T	0%	0%	0%	2%	3%	4%	6%	11%	1%	6%	10%	8%
3.2T	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%	9%
SiPh penetration rate	**4%**	**5%**	**6%**	**8%**	**8%**	**9%**	**10%**	**14%**	**6%**	**10%**	**16%**	**18%**
Below 400G	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
400G	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	29%
800G	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
1.6T	0%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
3.2T	0%	0%	0%	0%	0%	0%	0%	0%			80%	80%

	1Q25	2Q25	3Q25	4Q25	1Q26E	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
ASP (US$)												
By speed (US$)	**79**	**74**	**100**	**99**	**112**	**113**	**136**	**155**	**84**	**123**	**190**	**204**
Below 400G	54	45	55	44	48	46	49	42	47	45	42	33
400G	314	122	244	81	268	200	289	171	230	219	205	168
800G	596	1,706	711	584	411	424	435	380	440	418	393	314
1.6T			991	7,143	1,407	1,067	1,315	1,467	840	798	750	600
3.2T												1,200
YoY					**41%**	**51%**	**36%**	**57%**		**48%**	**54%**	**7%**
Below 400G					-12%	2%	-11%	-4%		-5%	-6%	-20%
400G					-15%	63%	19%	111%		-5%	-6%	-18%
800G					-31%	-75%	-39%	-35%		-5%	-6%	-20%
1.6T							33%	-79%		-5%	-6%	-20%
3.2T												-20%

Source: Company data

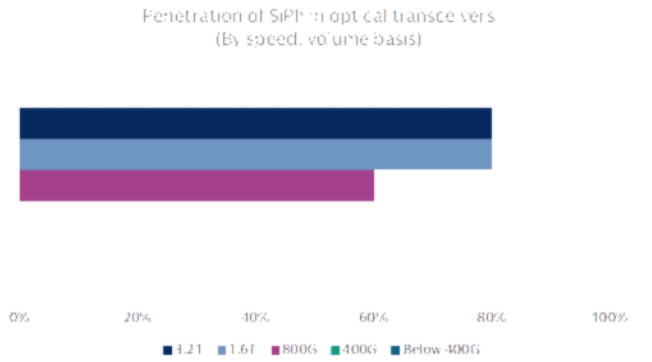
Optical transceivers: Rising adoption of SiPh under high-speed connection

Exhibit 1: Penetration of SiPh: reaching 18% by 2028E



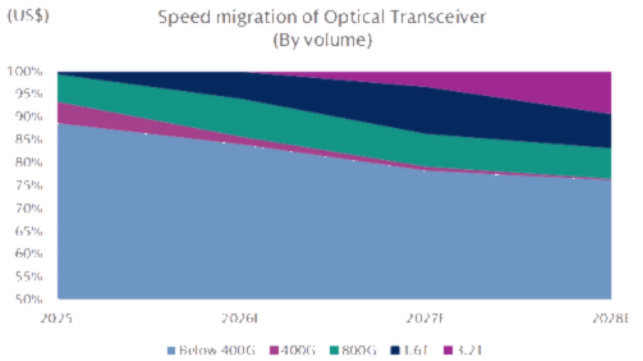
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 2: Penetration of SiPh: 3.2T will 80% adopt SiPh



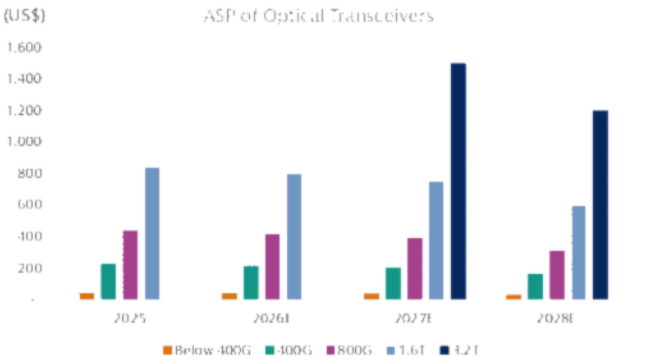
Source: Company data, Goldman Sachs Global Investment Research

Exhibit 3: Global Optical transceivers: 800G/ 1.6T/ 3.2T accounts for 7%/ 8%/ 9% by 2028E (by volume)



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 4: Global Optical transceivers: Assuming ASP decline YoY for like-for-like products



Source: Company data, Goldman Sachs Global Investment Research

Optical transceiver outlook

AI data center optical transceivers accelerate specification migrations. We expect a total demand of 548m/ 691m/ 719m units for optical transceivers globally in 2026-28E, with the high end market (800G+) demand mainly driven by AI data center applications growing at +48% CAGR in 2026-28E to 171m by 2028E. This growth is driven by the volume ramp up of rack-level AI servers and ASIC AI servers, as well as migration to new AI server platform with higher attach ratio of optical modules. General data center and Telecom applications still require products of 400G or lower. We expect 400G or below shipment contribution to decline from 87% in 2026E to 77% in 2028E driven by strong demand for high-speed products in AI servers, vs. steady growth of general servers and telecom.

High speed migrations: 800G has become the mainstream specification data centers, and we expect 1.6T to see a strong volume ramp up startin 3.2T adoption beginning in 2027E. The migration of AI servers networkin and hence we expect **800G's demand volume** will increase from 45m in

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49m in 2027-28E, and **1.6T's volume** will increase from 33m in 2026E to 71m/ 55m in 2027-28E ,as hyperscalers rapidly migrate to 3.2T solutions in 2028E, growing from 6% of total shipments in 2026E to 8% in 2028E. **3.2T** will start shipment from 2027E at 23m units, then we expect the **volume** to reach 68m units in 2028E.

AI data center networking migration: AI servers networking continues to migrate. Take NVIDIA's rack-level AI servers for example: GB200 uses 400G (GPU layer) and 800G networking (leaf, spine, core layer), GB300 uses 800G (GPU layer) and 1.6T (leaf, spine layer), and we expect Rubin and Rubin Ultra to further migrate to 1.6T and 3.2T. As inferred by our updated server TAM estimates, we expect rack-level AI servers powered by NVIDIA at 50k / 92k / 148k racks in 2026-28E, and AMD at 5k/ 13k/ 15k units in 2026-28E, driving the adoption of high-speed optical transceivers.

ASIC AI servers in expansion: We expect the diversification trend from GPU to ASIC AI servers to continue in the coming years, which will support demand expansion of optical transceivers. This is because, ASIC chips rely more on networking capabilities to handle AI workload and to mitigate the lower computing power per chip. As inferred by our global server estimates, we expect ASIC to account for 50%/ 52%/ 55% of total AI chips in 2026/ 27/ 28E. Across ASIC users, we see Google and Meta are more aggressively expanding high-speed connection (800G+), with Google being one of the early CSP to migrate to 1.6T, and Meta is set to use more optical transceivers per ASIC than GPU servers (i.e. on GPU servers typically there are 2-3 optical transceivers per GPU), according to our channel checks.

SiPh penetrations: We expect SiPh solutions to see increasing adoption as they have cost advantages over traditional EML modules in high speed products. Based on our industry checks, the 1.6T SiPh optical transceiver uses four 70mW CW lasers, or US$15-20 laser content per module, while the 1.6T EML optical transceiver uses eight 200G EMLs, or US$160 of laser content, leading to different GMs to optical module makers. We expect that the higher the speed, the higher penetration of SiPh, driving SiPh modules to account for 10% to 18% of the total market in 2026-28E, or 68%-74% to the 800G+ market in 2026-28E.

Exhibit 5: Summary of 800G+ optical transceiver revision

800G+ optical transceiver shipments (scale out)

New	2026E	2027E	2028E
Global	78,219	143,872	171,242
YoY	166%	84%	19%
By laser			
SiPh	53,497	105,203	127,262
EML	24,722	38,670	43,980
SiPh penetration rate	68%	73%	74%
By format			
Pluggable	77,499	135,344	154,990
CPO	720	8,528	16,252
CPO penetration rate	1%	6%	9%
Old	**2026E**	**2027E**	**2028E**
Global	59,683	103,779	125,733
YoY	132%	74%	21%
By laser			
SiPh	40,910	76,638	97,410
EML	18,773	27,141	28,324
SiPh penetration rate	69%	74%	77%
By format			
Pluggable	58,603	97,443	117,813
CPO	1,080	6,336	7,920
CPO penetration rate	2%	6%	6%
New vs. Old	**2026E**	**2027E**	**2028E**
Global	31%	39%	36%
By laser - SiPh	31%	37%	31%
By laser - EML	32%	42%	55%
By format - Pluggable	32%	39%	32%
By format - CPO	-33%	35%	105%

Source: Goldman Sachs Global Investment Research

Optical transceiver revision

We raise global optical transceiver value TAM by 33% / 81% / 115% in 2026-28E mainly on (1) higher rack-level AI server and ASIC AI server shipments in our Global Server TAM Updates , and (2) higher estimates on the usage of optical transceivers per Nvidia GPU in rack-level AI servers. We raised our Nvidia and AI chip shipment estimates for 2026-28E, as these chips are major drivers for 1.6T/ 3.2T optical transceivers. We also raise the per GPU usage of 1.6T/ 3.2T optical transceivers in Nvidia rack-level AI servers and Google AI servers. Furthermore, we have increased (1) 1.6T usage per GPU in Rubin Ultra to 2 (vs. 0 previously), and 3.2T usage per GPU in Rubin Ultra to 5 (vs. 3 previously), and (2) adding Google TPU v9 server into our 2027/ 28E estimate with per GPU 1.6T optical transceivers used at 12 in 2H27E to 1H28E, and per GPU 3.2T optical transceivers used at 6 in 2H28E, further supporting the value TAM growth. Our estimates still incorporate a one quarter pull in to reflect component supplier (optical transceiver) delivery time gap compared to ODM final system shipment.

Exhibit 6: Global Optical Transceiver TAM revision

New	2026E	2027E	2028E
Global TAM (US$m)	67,702	131,414	148,495
Below 400G	20,526	22,639	18,617
400G	2,007	1,243	376
800G	18,974	19,440	15,296
1.6T	26,195	53,526	32,914
3.2T	-	34,566	81,293

New	2026E	2027E	2028E
Global TAM shipment (k units)	548,332	690,763	729,400
Below 400G	460,926	540,838	555,926
400G	9,187	6,052	2,232
800G	45,393	49,475	48,660
1.6T	32,826	71,357	54,848
3.2T	-	23,040	67,734

Old	2026E	2027E	2028E
Global TAM (US$m)	50,883	72,593	69,135
Below 400G	16,886	16,166	13,196
400G	1,745	969	287
800G	13,530	14,715	10,761
1.6T	18,722	27,403	23,264
3.2T	-	13,340	21,625

Old	2026E	2027E	2028E
Global TAM shipment (k units)	452,269	528,286	556,429
Below 400G	384,292	419,238	428,689
400G	8,295	5,268	2,007
800G	34,183	44,993	44,047
1.6T	25,500	45,719	53,525
3.2T	-	13,067	28,162

New vs. Old	2026E	2027E	2028E
Global TAM (US$m)	33%	81%	115%
Below 400G	22%	40%	41%
400G	15%	28%	31%
800G	40%	32%	42%
1.6T	40%	95%	41%
3.2T		159%	276%

New vs. Old	2026E	2027E	2028E
Global TAM shipment (k units)	21%	31%	31%
Below 400G	20%	29%	30%
400G	11%	15%	11%
800G	33%	10%	10%
1.6T	29%	56%	2%
3.2T		76%	141%

Source: Goldman Sachs Global Investment Research

Servers: AI server racks +190%/+89%/+56% YoY in 2026-28E; General server volume +14%/ +6%/ +6% YoY in 2026-28E

Global Server market opportunity

(Shipments in k units/ k racks)

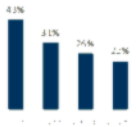
Our Bottom up method

Global server TAM =
General server + **AI** server racks (NVL72) + AI server (8-GPU)

General server

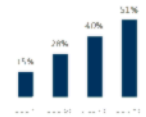
General server shipments = shipments of Top 6 server brands + ODM direct + others
General server revenues = shipments of each company x ASP of each company

General servers revenues mix

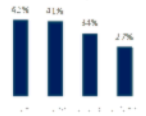


AI server
AI server shipments = shipments of Top 6 server brands + ODM direct + others
AI server revenue = shipments x ASP

AI server racks revenues mix



AI server (8-GPU) revenues mix



Revenues by type		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
Global server revenues	US$ m	62,164	84,687	85,680	115,382	128,512	155,238	149,935	170,432	347,913	604,117	849,860	1,102,109
General servers	US$ m	32,801	38,085	37,231	39,854	44,533	49,666	48,165	46,767	147,970	189,132	221,573	245,210
AI server racks (NVL72)	US$ m	4,268	8,464	15,804	25,380	26,983	44,831	37,867	56,993	53,916	166,673	336,140	561,402
AI server training (8-GPU)	US$ m	19,792	32,860	27,316	43,286	47,134	51,440	52,727	53,865	123,255	205,166	215,799	219,395
AI server inferencing (8-GPU)	US$ m	5,304	5,278	5,329	6,862	9,862	9,301	11,175	12,807	22,772	43,146	76,347	76,102
Mix		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
Total	%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
General servers	%	53%	45%	43%	35%	35%	32%	32%	27%	43%	31%	26%	22%
AI server racks (NVL72)	%	7%	10%	18%	22%	21%	29%	25%	33%	15%	28%	40%	51%
AI server training (8-GPU)	%	32%	39%	32%	38%	37%	33%	35%	32%	35%	34%	25%	20%
AI server inferencing (8-GPU)	%	9%	6%	6%	6%	8%	6%	7%	8%	7%	7%	9%	7%
Revenues YoY		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
Total	%					107%	83%	75%	48%		74%	41%	30%
General servers	%					36%	30%	29%	17%		28%	17%	11%
AI server racks (NVL72)	%					532%	430%	140%	125%		209%	102%	67%
AI server training (8-GPU)	%					138%	57%	93%	24%		66%	5%	2%
AI server inferencing (8-GPU)	%					86%	76%	110%	87%		89%	77%	0%
Revenues QoQ		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
Total	%		36%	1%	35%	11%	21%	-3%	14%				
General servers	%		16%	-2%	7%	12%	12%	-3%	-3%				
AI server racks (NVL72)	%		98%	87%	61%	6%	66%	-16%	51%				
AI server training (8-GPU)	%		66%	-17%	58%	9%	9%	3%	2%				
AI server inferencing (8-GPU)	%		0%	1%	29%	44%	-6%	20%	15%				
Shipments by type	**Units**	**1Q25**	**2Q25**	**3Q25**	**4Q25**	**1Q26**	**2Q26E**	**3Q26E**	**4Q26E**	**2025**	**2026E**	**2027E**	**2028E**
Global server shipments													
General servers	k units	3,619	3,887	3,642	3,904	4,158	4,345	4,326	4,260	15,053	17,088	18,053	19,053
AI server racks (NVL72)	k racks	2	3	6	9	9	15	12	19	19	55	105	163
AI server training (8-GPU)	k units	156	221	209	268	289	313	325	338	855	1,264	1,419	1,406
AI server inferencing (8-GPU)	k units	71	78	78	97	132	127	161	174	323	593	984	1,152
Shipments YoY		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
General servers	%					15%	12%	19%	9%		14%	6%	6%
AI server racks (NVL72)	%					511%	393%	121%	111%		190%	89%	56%
AI server training (8-GPU)	%					85%	41%	55%	26%		48%	12%	-1%
AI server inferencing (8-GPU)	%					87%	63%	107%	79%		84%	66%	17%
Shipments QoQ		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
General servers	%		7%	-6%	7%	6%	5%	0%	-2%				
AI server racks (NVL72)	%		100%	87%	61%	2%	61%	-16%	53%				
AI server training (8-GPU)	%		42%	-6%	28%	8%	8%	4%	4%				
AI server inferencing (8-GPU)	%		10%	0%	25%	37%	-4%	26%	8%				
Shipments by vendor		1Q25	2Q25	3Q25	4Q25	1Q26	2Q26E	3Q26E	4Q26E	2025	2026E	2027E	2028E
General server shipments	**k units**	**3,619**	**3,887**	**3,642**	**3,904**	**4,158**	**4,345**	**4,326**	**4,260**	**15,053**	**17,088**	**18,053**	**19,053**
Dell	k units	334	307	299	355	417	400	323	372	1,295	1,512	1,587	1,619
HP	k units	165	161	161	182	173	177	180	201	669	730	770	785
Super Micro	k units	156	173	134	130	165	135	135	142	592	578	557	579
Lenovo	k units	174	187	213	263	226	233	234	289	837	983	1,032	1,084
Gigabyte	k units	24	31	23	21	29	31	31	28	99	119	137	144
Quanta - ODM direct	k units	576	650	483	541	639	747	579	649	2,249	2,615	2,694	2,748
Hon Hai- ODM direct	k units	207	256	221	211	218	255	229	242	895	944	971	971
Wiwynn- ODM direct	k units	455	527	596	588	638	606	834	588	2,166	2,666	2,986	3,404
Others	k units	1,527	1,596	1,514	1,614	1,651	1,762	1,781	1,748	6,252	6,942	7,320	7,721
AI server - 8-GPU	**k units**	**227**	**299**	**287**	**365**	**421**	**440**	**485**	**512**	**1,178**	**1,858**	**2,403**	**2,558**
Dell	k units	9	33	28	44	65	77	72	73	113	285	377	432
HP	k units	3	6	4	3	3	8	10	7	16	27	29	34
Super Micro	k units	9	12	12	29	29	30	31	33	62	123	146	168
Lenovo	k units	16	10	11	13	34	18	25	27	51	104	190	278
Gigabyte	k units	4	9	5	5	7	10	6	7	23	30	34	37
Quanta - ODM direct	k units	19	20	24	34	29	28	41	39	97	137	141	145
Hon Hai- ODM direct	k units	51	60	56	57	90	91	96	96	224	373	504	431
Wiwynn- ODM direct	k units	21	41	52	54	45	45	46	57	168	193	231	277
Others	k units	94	109	95	127	120	134	158	174	425	586	750	756
AI server - full racks	**k racks ****	**2**	**3**	**6**	**9**	**9**	**15**	**12**	**19**	**19**	**55**	**105**	**163**
Dell	k racks	0	1	1	0	1	1	1	1	2	5	6	8
HP	k racks	0	0	0	0	0	0	0	0	0	0	0	0
Super Micro	k racks	0	0	0	0	0	0	0	0	1	2	4	5
Lenovo	k racks	-	-	-	-	0	0	0	0	-	0	2	3
Gigabyte	k racks	-	0	0	0	0	0	0	0	0	1	2	2
Quanta - ODM direct	k racks	1	1	1	1	3	6	2	3	4	13	17	22
Hon Hai- ODM direct	k racks	0	1	4	6	5	7	8	11	11	30	65	113
Wiwynn- ODM direct	k racks	-	-	-	-	-	-	-	2	-	2	8	7
Others	k racks	0	0	0	1	0	0	0	1	1	2	2	3

Source: Company data, Goldman Sachs Global Investment Research