

IT Hardware

2Q24 PC shipments beat; PC demand to rise in 2024-25F

Key message

1. Global PC shipments grew 2% YoY to 60.7mn units in 2Q24, beating our forecast on stronger commercial and Chromebook demand.
2. We expect limited PC shipments growth in 3Q24F (0-5% QoQ) on a high comparison base, though growth will be stronger in 4Q24F on AI PC launches.
3. AI PC launches and the commercial PC replacement cycle will see PC demand rise 3% and 6% YoY in 2024-25F; key beneficiaries are PC brands and components makers on spec upgrades in power supply and memory.

Event

Global PC shipments rose 2-3% YoY in 2Q24, stonger than our forecast. Despite 3Q24F shipments growth (0-5% QoQ) potentially falling below the historical pattern, we expect PC demand will resume growth in 4Q24F on AI PC model launches, while replacement demand will boost shipments growth in 2024-25F.

Impact

Better-than-expected PC demand in 2Q24. According to Gartner, global PC shipments grew 1.9% YoY and 7.8% QoQ to 60.7mn units in 2Q24, while inventory has returned to normal levels. The growth was driven by commercial markets as consumer demand declined YoY. Shipments from most regions grew YoY in 2Q24. EMEA posted the strongest growth (4.8%), followed by the US (3.4%) and Latin America (3%). APAC demand fell 2.2% YoY as sluggish China demand offset stronger demand in India, while the Japan market also dropped 2.2% YoY on slower consumer demand. For brands, shipments mostly grew YoY in 2Q24, including Apple (US) at 13.1%, Asustek (2357 TT, NT\$478.5, OP) at 11.7%, Acer (2353 TT, NT\$46, NR) at 11.2%, Lenovo (CN) at 3.5% and HP (US) at 1.7%. Dell's (US) shipments fell 2.4% YoY on a significant drop in APAC business (double-digit decline) due to weak demand in China. In Taiwan, the top-five NB ODM shipments declined 1.4% YoY, but grew 13.1% QoQ, beating our expectation on stronger pull-in and Chromebook demand. Pegatron's (4938 TT, NT\$105, N) shipments rose 29% QoQ and Compal's (2324 TT, NT\$33.05, NR) 16%, the strongest QoQ growth rates among peers.

Limited NB shipments growth in 3Q24F, but better in 4Q24F. Following the NB shipments beat in 2Q24, most Taiwanese NB ODMs expect 3Q24F shipments to grow just 0-5% QoQ given the high comparison base and as most new AI PC models will launch in late-3Q24F. Qualcomm (US) has already launched Copilot+ PC models in June. AI PCs with AMD (US) Ryzen AI 300 CPUs are due to be available on July 28, and Intel (US) Lunar Lake CPU models will debut in September-October. Despite a weak 3Q24F outlook, we expect new AI PC models to drive sales in 4Q24F, with stronger demand in 2025F. We now expect global PC shipments to grow 4-5% QoQ in 3Q24F, with stronger growth in 4Q24F on AI PC. We maintain our global PC shipments forecasts of 3% this year and 6% next year, boosted by the commercial replacement cycle and increasing penetration of AI PC. We expect commercial demand growth will surpass that of consumer in 2024-25F, benefiting ODMs with higher commercial market exposure, such as Inventec (2356 TT, NT\$51.6, OP) and Compal.

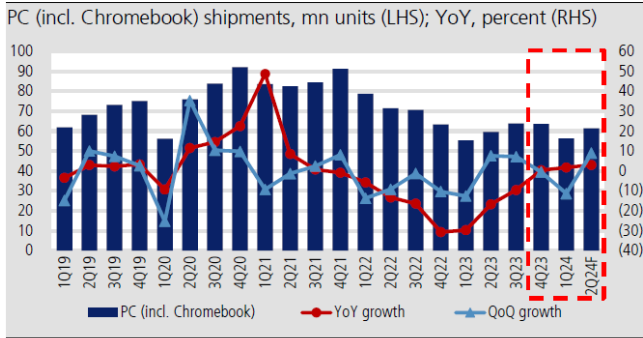
Eyes on AI PC in 2H24-2025F. AI PCs equipped with Qualcomm X Elite chips have shipped to market in mid-June, with the first wave focusing on high-end consumer models. However, there are still firmware and compatibility issues in new models, leaving computing performance below market expectations. Also, more time is needed to build up an ecosystem for ARM architecture. We believe the penetration of AI PC will see a significant increase when models are launched with AMD Ryzen AI 300 CPU and Intel Lunar Lake CPU, as these two vendors command the biggest PC market share. At Acer's recent earnings call, the company said it expects AI PC with over 40 trillion operations per second (TOPS) performance will account for 1-2% of PC shipments in 3Q24F, and will expand to over 40% in 3Q25F. If AI PC is defined as an NPU-equipped CPU, the penetration rate will top 40% in 3Q24F and 80-90% in 3Q25F. The ASPs of AI PCs are higher than those of non-AI PCs by US\$100-200, though Acer expects AI PC retail prices will decrease to US\$799-899 in 6-9 months' time, and will become mainstream models. We think higher AI PC ASPs will benefit PC brands, and that spec upgrade trends in power supply and memory, for example, will benefit related components makers.

Stocks for Action

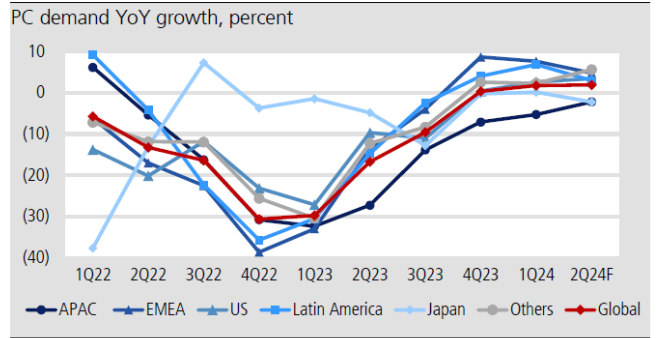
We believe PC demand recovery and rising AI PC contribution will benefit PC brands such as Asustek, Acer and MSI (2377 TT, NT\$177.5, OP), while spec upgrade trends will boost earnings of memory, memory connector, power supply and battery makers.

Risks

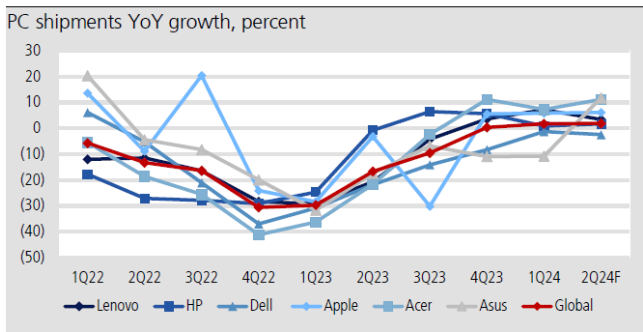
Weak consumer demand; further ASP or margin contraction; rising components prices.

Figure 1: Global PC (incl. Chromebook) shipments grew 7.8% QoQ and 1.9% YoY, beating our forecast


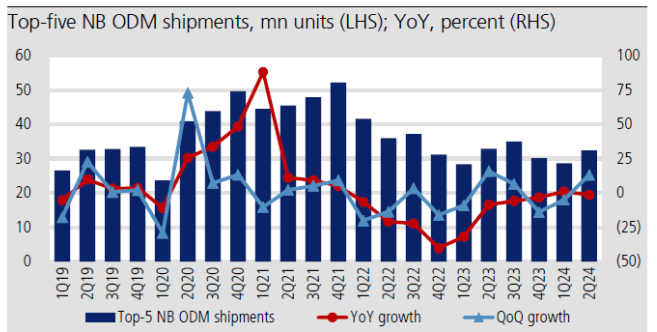
Source: Gartner, IDC, KGI Research

Figure 2: Except for APAC & Japan, PC demand in most regions recovered YoY in 2Q24


Source: Gartner, KGI Research

Figure 3: Apple's & Acer's PC shipments outgrew peers in 1H24


Source: Gartner, IDC, KGI Research

Figure 4: Taiwan top-five NB ODM shipments fell 1% QoQ but rose 13% YoY in 2Q24


Source: Company data, KGI Research

Figure 5: Top-five NB ODM shipments beat our forecasts in 2Q24, will grow just by single digits QoQ in 3Q24F

NB shipment (mn units)		1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24F	2020	2021	2022	2023	2024F
2382 TT	Quanta	19.0	19.0	17.4	19.9	16.9	12.4	15.6	12.8	10.8	12.6	13.1	10.4	10.5	11.7	12.0	59.8	75.3	57.7	46.9	46.9
2324 TT	Compal	13.1	13.0	15.3	16.1	11.8	10.4	9.3	7.8	7.6	8.7	9.3	8.3	7.5	8.7	9.0	47.8	57.5	39.3	33.9	34.5
3231 TT	Wistron	5.4	6.1	6.6	7.5	5.6	5.8	5.2	4.6	3.9	4.6	5.2	5.3	4.6	5.1	5.2	20.4	25.6	21.2	19.1	20.5
2356 TT	Inventec	4.8	5.0	5.9	5.6	5.0	5.4	5.0	4.4	4.4	4.9	4.9	4.5	4.5	4.9	5.0	20.0	21.3	19.8	18.7	19.5
4938 TT	Pegatron	2.3	2.4	2.7	3.1	2.4	2.0	2.1	1.6	1.7	2.1	2.5	1.7	1.6	2.0	2.1	10.2	10.4	8.0	8.0	8.0
Top-5 NB ODM		44.6	45.5	47.9	52.2	41.7	36.0	37.2	31.2	28.4	32.9	35.0	30.2	28.7	32.4	33.3	158.1	190.1	146.0	126.6	129.4
YoY (%)		1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24F	2020	2021	2022	2023	2024F
2382 TT	Quanta	160.3	31.0	(4.9)	1.0	(11.1)	(34.7)	(10.3)	(35.7)	(36.1)	1.6	(16.0)	(18.8)	(2.8)	(7.1)	(8.4)	70.4	25.9	(23.4)	(18.7)	0.0
2324 TT	Compal	65.8	4.0	31.9	2.1	(9.9)	(20.0)	(39.2)	(51.6)	(35.6)	(16.3)	0.0	6.4	(1.3)	0.0	(3.2)	8.8	20.4	(31.7)	(13.7)	1.8
3231 TT	Wistron	52.1	17.3	26.9	17.2	3.7	(4.9)	(21.2)	(38.7)	(30.4)	(20.7)	0.0	15.2	17.9	10.9	0.0	16.3	25.8	(17.2)	(9.9)	7.3
2356 TT	Inventec	41.2	(12.3)	3.5	7.7	4.2	8.0	(15.3)	(21.4)	(12.0)	(9.3)	(2.0)	2.3	2.3	0.0	2.0	6.1	6.5	(7.0)	(5.6)	4.3
4938 TT	Pegatron	48.8	(20.7)	(13.1)	19.2	4.2	(17.3)	(21.3)	(48.4)	(28.7)	4.5	19.9	3.1	(7.5)	(3.4)	(15.8)	1.3	2.1	(22.9)	(0.2)	0.0
Top-5 NB ODM		88.3	11.2	9.1	5.1	(6.5)	(20.9)	(22.3)	(40.2)	(31.9)	(8.6)	(5.9)	(3.4)	1.0	(1.4)	(4.8)	26.1	20.2	(23.2)	(13.3)	2.2
QoQ (%)		1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24	3Q24F	2020	2021	2022	2023	2024F
2382 TT	Quanta	(3.6)	0.0	(8.4)	14.4	(15.1)	(26.6)	25.8	(17.9)	(15.6)	16.7	4.0	(20.6)	1.0	11.4	2.6					
2324 TT	Compal	(16.9)	(0.8)	17.7	5.2	(26.7)	(11.9)	(10.6)	(16.1)	(2.6)	14.5	6.9	(10.8)	(9.6)	16.0	3.4					
3231 TT	Wistron	(15.6)	13.0	8.2	13.6	(25.3)	3.6	(10.3)	(11.5)	(15.2)	17.9	13.0	1.9	(13.2)	10.9	2.0					
2356 TT	Inventec	(7.7)	4.2	18.0	(5.1)	(10.7)	8.0	(7.4)	(12.0)	0.0	11.4	0.0	(8.2)	0.0	8.9	2.0					
4938 TT	Pegatron	(13.3)	6.4	10.4	17.0	(24.2)	(15.5)	5.0	(23.3)	4.7	23.9	20.5	(34.0)	(6.1)	29.4	5.0					
Top-5 NB ODM		(10.3)	2.1	5.2	9.1	(20.2)	(13.6)	3.3	(16.1)	(9.1)	15.9	6.5	(13.9)	(5.0)	13.1	2.8					

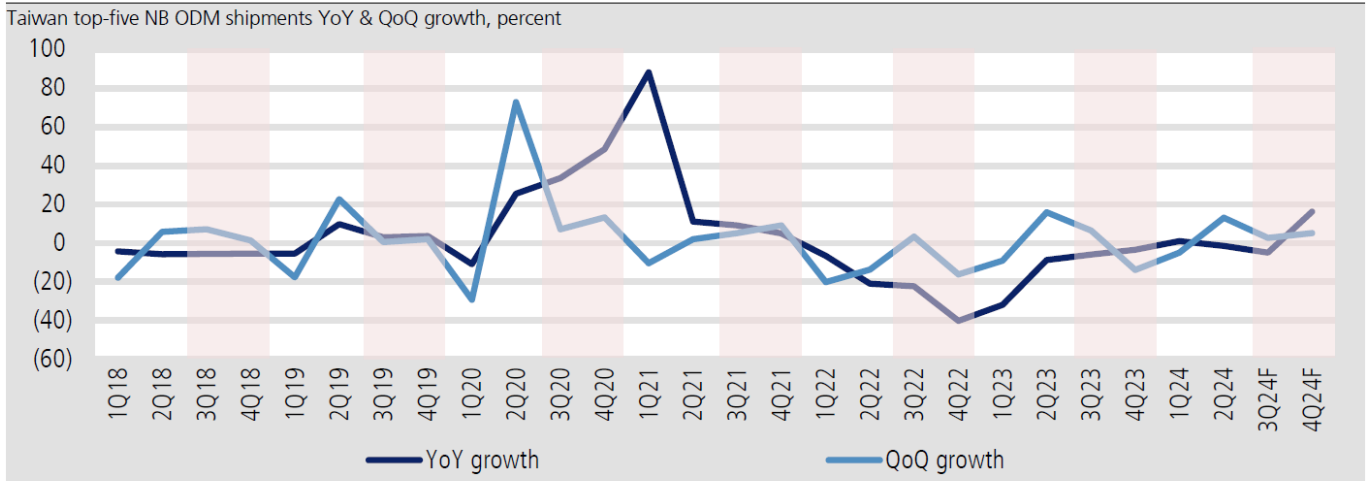
Source: Company data, KGI Research estimates

Figure 6: Most ODMs' 2Q24 NB shipments beat our forecasts

NB shipments (mn units)		Apr-24	May-24	Jun-24	MoM (%)	YoY (%)	2Q24	YoY (%)	QoQ (%)	KGI forecast 2Q24F	Diff. (%)
Compal	2324 TT	2.80	2.90	3.00	3	(9)	8.70	0.0	16.0	8.50	2
Inventec	2356 TT	1.50	1.70	1.70	0	0	4.90	0.0	8.9	4.90	0
Quanta	2382 TT	3.20	4.00	4.50	13	(12)	11.70	(7.1)	11.4	11.50	2
Wistron	3231 TT	1.60	1.70	1.80	6	6	5.10	10.9	10.9	5.10	0
Pegatron	4938 TT	0.52	0.72	0.77	6	(7)	2.01	(3.4)	29.4	1.86	8
Top-5 NB ODM shipments		9.62	11.02	11.77	7	(7)	32.41	(1.4)	13.1	31.86	2

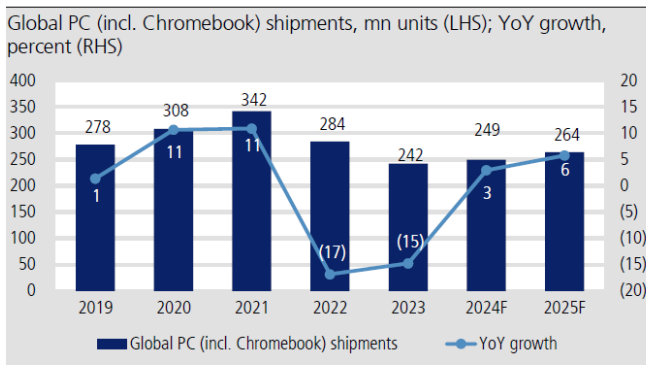
Source: Company data, KGI Research estimates

Figure 7: Taiwan top-five ODMs QoQ growth of NB shipments in 3Q24F to be weaker than historical pattern, but will regain momentum in 4Q24F



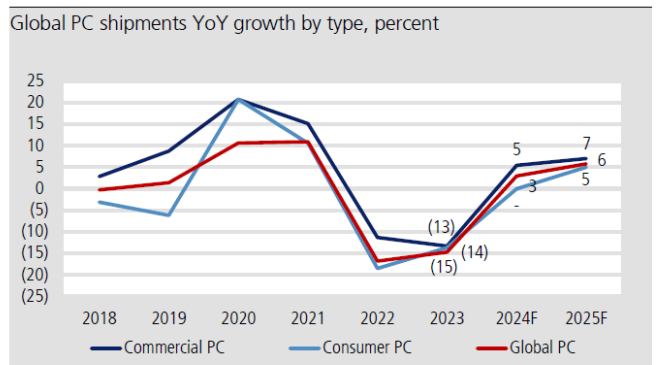
Source: Company data; KGI Research estimates

Figure 8: Global PC shipments to grow 3% YoY in 2024F and 6% YoY in 2025F



Source: Gartner; KGI Research estimates

Figure 9: Global commercial PC sales growth to outstrip that of consumer PC in 2024-25F



Source: Gartner; KGI Research estimates

Figure 10: PC brands' & CPU vendors' views on PC & AI PC markets

Brand	AI PC outlook
Asustek	<ul style="list-style-type: none"> Management expects AI PC penetration rate will continue to lift, with single digit in 2024F, double digits in 2025F, and 50-60% in 2026F Asustek expects AI PC launches will trigger global PC demand recovery in 2H24F
Acer	<ul style="list-style-type: none"> Acer expects AI PC equipped with NPU (TOPS>40) will account 40% of their shipment in 3Q25F, vs. 1-2% in 3Q24, while AI PC equipped with NPU will account 80-90% of their shipment in 3Q25F, vs >40% in 3Q24 Management expects the firm will continue to gain share in PC market in coming quarters, driven by its diversified PC product mix and flexibly promotion in various countries
Dell	<ul style="list-style-type: none"> Management expects PC business sales to see low single digit YoY growth in FY2024, and will focus on commercial PCs, high-end consumer and gaming Management expects that there will be an AI PC out of every five Dell NB sold in FY2025F, and anticipates AI PC shipments will double in FY1Q26F Optimistic about the company PC refresh cycle due to aging PC installed base, Windows 10 end-of-life, and advances in AI-enabled architectures and applications Dell believes that the AI PC trend will upgrade PC hardware, requiring a larger CPU, more memory, increased storage, and better displays, among other improvements
HP	<ul style="list-style-type: none"> HP has launched the Elite and Pro PC solutions that are equipped with AI capabilities powered by Intel Core Ultra or next-generation AMD Ryzen PRO with NPUs for tackling AI tasks For personal systems, management expects 2H24F seasonality is expected to be slightly stronger than historical trends, particularly in 4Q24 Management expects the overall PC market TAM to recover in 2024F, with a low single digit YoY growth, and demand in commercial PC is stronger than consumer PC HP expects that AI PC penetration will be 10% in 2H24F, and between 40-60% of its total sales in 3 years after the launch of AI PC
Lenovo	<ul style="list-style-type: none"> Lenovo has launched a new AI PC models "IdeaPad Slim 5i" in CES 2024, which is equipped with the new Copilot key Lenovo's AI PC can run large language models, enabling edge computing, without a need for cloud processing
Samsung	<ul style="list-style-type: none"> Samsung has launched new Galaxy Book4 series, equipped with an Intel Core Ultra processor, combining a CPU, GPU, and NPU into single package Samsung has launched Galaxy Book4 Edge equipped with Snapdragon X Elite, which not only supports Copilot+, but also comes with its Galaxy AI system
CPU firm	AI PC outlook
Intel	<ul style="list-style-type: none"> Intel expects QoQ revenue growth throughout 2024F and into 2025F, driven by the beginnings of an enterprise refresh cycle and growing sales of AI PCs Improving 2H24F Meteor Lake supply and the addition of Lunar Lake and Arrow Lake later this year, will drive shipments to beat prior guidance of 40 million AI PC CPUs in 2024F The Meteor Lake CPU can provide 1.7x generative AI performance and 2.5x better power efficiency than the Raptor Lake generation Intel will launch next-gen CPUs, including Arrow Lake, Lunar Lake & Panther Lake, offering greater performance & more advanced capabilities Intel will launch Lunar Lake mobile CPU (Core Ultra 200V) in 3Q24, with performance up to over 100 TOPS
AMD	<ul style="list-style-type: none"> Believes AI PC will drive both unit sales & ASP growth in 2H24F, with the premium products coming first, and penetration of the mid-range in 2025F Several new PC models featured with AMD's latest Ryzen 8040 processor (Hawk Point), providing stronger AI computing abilities The firm will launch the "Strix Point" CPU (Ryzen AI 300) in 2H24F, which will include AMD XDNA 2 architecture and deliver more than 3 times the AI computing performance of the previous generation
QCOM	<ul style="list-style-type: none"> Qualcomm launched the Snapdragon X Elite CPU, which is designed for PCs, and has the capability to run complex Generative AI models with its 45 TOPS NPU
NVDA	<ul style="list-style-type: none"> Nvidia will create a series of new chips with MediaTek to capture the growing AI PC market

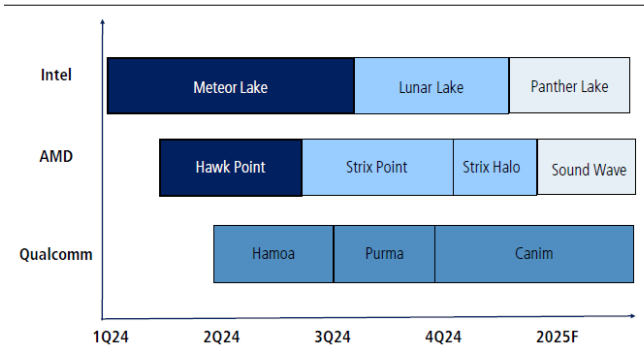
Source: Company data; KGI Research

Figure 11: AI PC to be aggressively marketed by CPU & NPU giants

Platform	Intel Meteor Lake	Intel Lunar Lake	Intel Arrow Lake	Intel Panther Lake	AMD 7040 Phoenix	AMD 8040 Hawk Point	AMD AI300 Strix Point	AMD 9000 Strix Halo	Qualcomm Snapdragon X Elite
Microarchitecture	Redwood cove	Lion cove	Lion cove	Cougar cove	Zen 4	Zen 4	Zen 5	Zen5	Oryon
Launch Date	4Q23	2H24F	2H24F	2025F	2Q23	1Q24	2H24F	2025F	2Q24
Process	Intel 4	Intel 18A	Intel 20A	Intel 18A	TSMC N4	TSMC N4	TSMC N4	TSMC N4	TSMC N4
AI architecture	Movidius VPU	TBD	TBD	TBD	Ryzen AI	Ryzen AI	Ryzen AI	Ryzen AI	Hexagon
TOPS	34 TOPS	120 TOPS	TBD	TBD	33 TOPS	39 TOPS	TBD	>70 TOPS	45 TOPS
NPU	11 TOPS	48 TOPS	50 TOPS	120 TOPS	10 TOPS	16 TOPS	50 TOPS	50-60 TOPS	45 TOPS
CPU	5 TOPS	5 TOPS							
GPU	18 TOPS	67 TOPS							

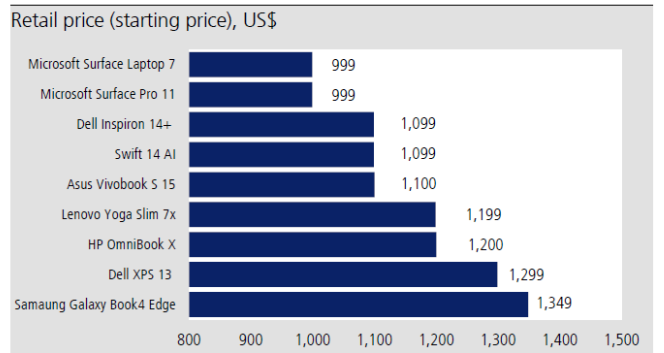
Source: Company data; KGI Research

Figure 12: AI PC roadmap by vendors



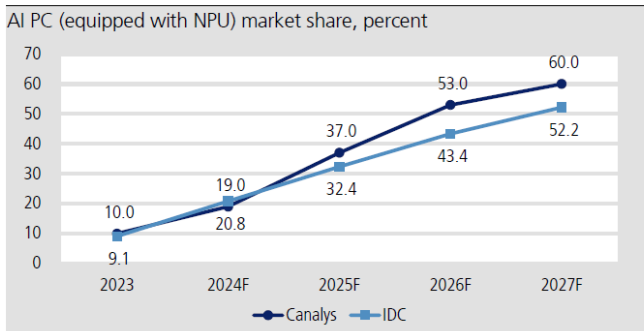
Source: Company data; KGI Research

Figure 13: New AI PC with Qualcomm chips are mostly high-end consumer models



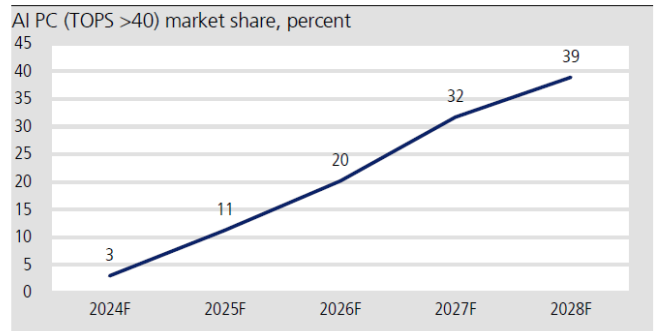
Source: Company data; KGI Research

Figure 14: Canalis & IDC forecast AI PC (equipped with NPU) market share of over 50% by 2027F



Source: Canalis; IDC; KGI Research

Figure 15: AI PC (TOPS >40) market share to reach double digits in 2025F



Source: IDC; Bloomberg; KGI Research

Figure 16: Intel & AMD desktop CPU roadmap

	Intel					AMD				
	Raptor Lake	Raptor Lake refresh	Meteor Lake	Arrow Lake	Panther Lake	Ryzen 4000 (Renoir)	Ryzen 5000 (Vermeer)	Ryzen 7000 (Raphael)	Ryzen 9000 (Granite Ridge)	Ryzen Next (Medusa)
Time for launch	4Q22	3Q23	4Q24F	2024F	2025F	1Q20	4Q20	3Q22	2Q24	2025F
Process (node)	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	TSMC N7	TSMC N7+	TSMC N5	TSMC N3	TSMC N3
Microarchitecture (P-Core)	Raptor Cove	Raptor Cove	Redwood Cove	Lion Cove	Cougar Cove	Zen 2	Zen 3	Zen 4	Zen 5	Zen 6
CPU sockets (desktop)	LGA 1700	LGA 1700	LGA 1851	LGA 1851	LGA 1851	AM4 (LGA 1331)	AM4 (LGA 1331)	AM5 (LGA1718)	AM5 (LGA1718)	TBC
DRAM	DDR4 / DDR5	DDR4 / DDR5	DDR5 LPDDR5X	DDR5	DDR5	DDR4	DDR4	DDR5	DDR5	DDR5
PCIe	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 4	Gen 3	Gen 5	Gen 5	Gen 5

Source: Company data; KGI Research

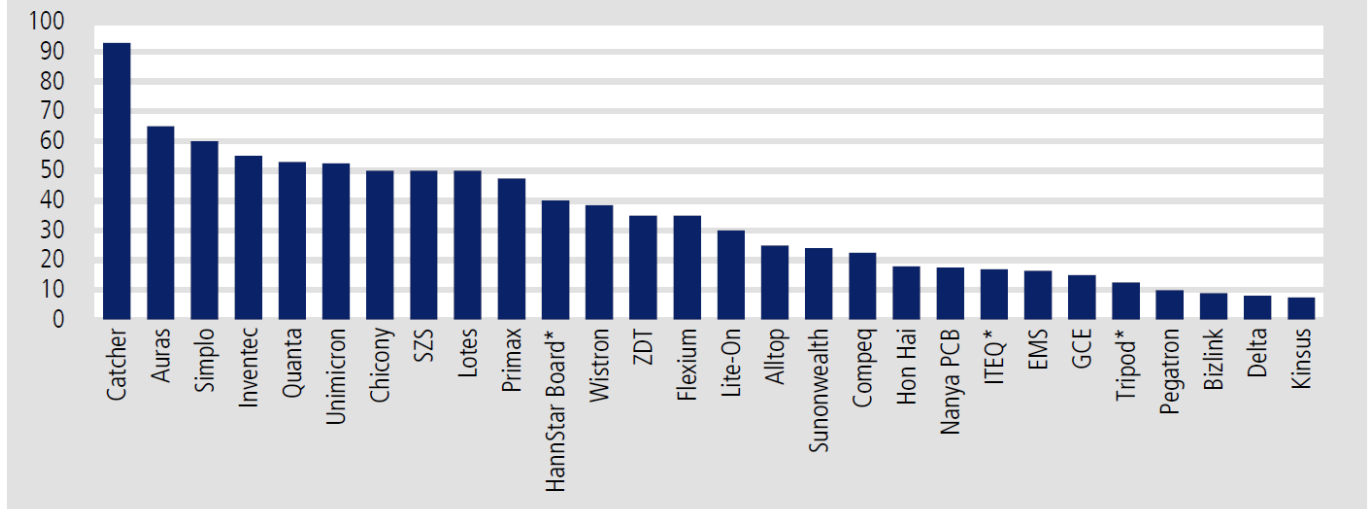
Figure 17: Intel & AMD NB CPU roadmap

	Intel						AMD					
	Alder Lake	Raptor Lake	Meteor Lake	Arrow Lake	Lunar Lake	Panther Lake	Ryzen 6000 (Rembrandt)	Ryzen 7000 (Phoenix)	Ryzen 8040 (Hawk Point)	Ryzen 300 (Strix Point)	Ryzen 9000 (Strix Halo)	Ryzen 400 (Sound Wave)
Time for launch	1H22	1H23	4Q23	2024F	2H24F	2025F	1Q22	1Q23	4Q23	3Q24F	2025F	2025F
Process (node)	Intel 7 (10nm)	Intel 7 (10nm)	Intel 4 (7nm)	Intel 20A	Intel 18A	Intel 18A	TSMC N6	TSMC N4	TSMC N4	TSMC N4	TSMC N4	TBC
Microarchitecture (P-Core)	Golden Cove	Raptor Cove	Redwood Cove	Lion Cove	Lion Cove	Cougar Cove	Zen 3+	Zen 4	Zen 5	Zen 5	Zen 5	Zen 6
DRAM	DDR4 / DDR5	DDR4 / DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR5	DDR 5
PCIe	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5	Gen 4	Gen 5	Gen 5	Gen 5	Gen 5	Gen 5

Source: Company data; KGI Research

Figure 18: Keyboard, hinge, power adapter & PCB plays will benefit from PC demand recovery in 2024F

Weighting of PC & NB in total sales, percent



*: Companies outside KGI Research's coverage universe

Source: TEJ; Bloomberg; KGI Research

Figure 19: IT hardware supply chain – Valuations

Company	Ticker	Related business	Market cap. (US\$mn)	Share price (LCY)	Rating	Target Price (LCY)	EPS (LCY)			EPS YoY (%)			PE (x)			PB (x)			ROE (%)			Cash yield (%)	
							2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F	2023	2024F	2025F	2023	2024
Asustek	2357 TT	Brand	10,820	478.5	Outperform	540.0	21.44	31.53	35.91	8.4	47.0	13.9	22.3	15.2	13.3	1.5	1.4	1.4	7.0	9.6	10.6	3.6	4.3
Acer*	2353 TT	Brand	4,268	46.0	Not rated	N.A.	1.64	2.05	2.41	(1.8)	25.2	17.4	28.0	22.4	19.1	1.9	1.9	1.8	7.0	8.5	9.5	0.0	3.7
MSI	2377 TT	Brand	4,565	177.5	Outperform	197.0	8.92	12.79	15.37	(24.4)	43.4	20.2	19.9	13.9	11.6	3.0	2.8	2.5	15.3	20.7	22.8	3.0	4.4
Gigabyte	2376 TT	Brand	5,419	280.0	Outperform	348.0	7.46	16.11	18.73	(27.5)	115.9	16.3	37.5	17.4	14.9	4.7	4.6	4.5	12.9	27.0	30.4	2.4	5.2
Asrock	3515 TT	Brand	781	211.0	Outperform	270.0	7.54	10.90	13.62	(13.2)	44.6	24.9	28.0	19.4	15.5	3.2	3.1	3.0	11.3	16.2	19.9	3.3	4.6
Inventec	2386 TT	ODM	5,635	51.6	Outperform	64.0	1.71	2.82	3.55	0.0	65.2	25.7	30.2	18.3	14.5	3.0	2.9	2.8	10.2	16.3	19.8	2.9	4.4
Quanta	2382 TT	ODM	34,923	297.0	Outperform	390.0	10.29	14.78	19.09	37.0	43.6	29.2	28.9	20.1	15.6	6.2	5.8	5.4	22.3	29.7	35.9	3.0	4.0
Wistron Corp	3231 TT	ODM	8,908	101.0	Outperform	150.0	4.08	6.18	8.86	1.7	51.5	43.3	24.8	16.3	11.4	2.8	2.5	2.2	11.4	15.8	20.0	2.6	3.9
Hon Hai	2317 TT	ODM	85,037	201.5	Outperform	270.0	10.25	11.92	15.10	0.4	16.3	26.7	19.7	16.9	13.3	1.9	1.8	1.7	9.7	10.8	12.9	2.7	3.1
Pegatron	4938 TT	ODM	8,515	105.0	Neutral	94.0	5.90	6.28	7.37	4.2	6.4	17.5	17.8	16.7	14.2	1.5	1.4	1.4	8.4	8.7	9.9	3.8	3.9
Compal*	2324 TT	ODM	4,434	33.1	Not rated	N.A.	1.76	2.40	2.87	5.4	36.2	19.5	18.8	13.8	11.5	1.2	1.1	1.1	6.5	8.2	9.1	3.6	4.7
Simplo Elec	2385 TT	Keyboard	3,725	161.0	Outperform	258.0	10.35	13.70	14.93	0.9	32.4	8.9	15.6	11.7	10.8	3.1	2.8	2.6	20.0	24.4	24.3	4.8	6.0
Primax	4915 TT	Keyboard	1,309	92.9	Outperform	103.0	5.50	6.30	7.38	(9.9)	14.7	17.0	16.9	14.7	12.6	2.5	2.4	2.3	14.9	16.4	18.1	4.3	4.6
SZS	3376 TT	Hinge	1,343	235.0	Restricted	N.A.	4.30	6.71	8.25	(50.5)	55.9	23.0	54.6	35.0	28.5	2.7	2.7	2.6	5.1	7.8	9.3	1.4	2.1
Delta Elec	2308 TT	Power	30,800	389.5	Outperform	490.0	12.86	14.21	18.13	2.2	10.5	27.6	30.3	27.4	21.5	5.1	4.5	4.0	17.3	17.4	19.6	1.7	1.8
Lite-On Tech	2301 TT	Power	7,575	106.0	Outperform	125.0	6.36	5.46	6.93	2.8	(14.2)	26.9	16.7	19.4	15.3	3.0	2.7	2.5	17.6	14.3	17.1	4.2	3.8
Sunonwealth	2421 TT	Thermal	845	101.5	Outperform	160.0	5.16	6.32	8.02	18.9	22.5	26.8	19.7	16.1	12.7	3.8	3.6	3.3	21.5	23.1	27.3	3.4	4.4
Auras	3324 TT	Thermal	2,104	760.0	Outperform	920.0	14.28	21.10	32.71	(2.7)	47.8	55.0	53.2	36.0	23.2	14.2	8.8	7.3	20.2	25.5	33.6	0.9	1.2
Simplo Tech	6121 TT	Battery	2,117	376.0	Neutral	490.0	30.67	30.53	34.76	(2.6)	(0.5)	13.8	12.3	12.3	10.8	2.0	1.9	1.8	16.9	16.2	17.5	5.8	5.8
Lotes	3533 TT	Connector/ socket	5,022	1,480.0	Outperform	1,860.0	50.65	78.76	100.01	(13.7)	55.5	27.0	29.2	18.8	14.8	5.9	5.1	4.4	22.1	29.3	31.9	1.8	2.7
Alltop Tech	3526 TT	Connector	418	231.5	Outperform	290.0	11.68	15.53	18.82	24.2	32.9	21.2	19.8	14.9	12.3	5.2	5.2	5.2	26.9	35.1	42.4	5.0	6.6
Argosy*	3217 TT	Connector	418	152.5	Not rated	N.A.	8.11	10.66	N.M.	19.3	31.5	N.A.	18.8	14.3	N.A.	3.2	3.1	N.A.	17.9	20.0	N.M.	3.5	5.4
Allied Circuit*	8155 TT	PCB	204	131.5	Not rated	N.A.	4.08	N.M.	N.M.	(63.5)	N.A.	N.A.	32.2	N.A.	N.A.	3.2	N.A.	N.A.	9.3	N.M.	N.M.	2.7	N.A.
Gold Circuit	2368 TT	PCB	3,174	212.0	Outperform	270.0	6.99	12.79	17.21	(21.1)	83.1	34.5	30.3	16.6	12.3	6.8	5.7	4.5	23.2	37.5	40.6	1.7	2.8
Compeq Mfg	2313 TT	PCB	2,921	80.5	Outperform	97.0	3.50	5.95	7.85	(47.9)	70.1	31.9	23.0	13.5	10.3	2.4	2.2	2.0	10.7	17.2	20.2	1.9	3.0
Elite Material	2383 TT	CCL	4,611	440.0	Outperform	615.0	16.35	28.51	32.87	7.3	74.4	15.3	26.9	15.4	13.4	5.6	5.0	4.4	22.5	34.3	34.7	2.3	4.0
Kinsus	3189 TT	Substrate	1,646	119.0	Neutral	96.0	0.10	5.22	9.57	(99.3)	4875.1	83.5	1134.9	22.8	12.4	1.6	1.5	1.4	0.1	6.8	11.8	0.8	2.1
Unimicron Tech	3037 TT	Substrate	9,030	194.5	Outperform	235.0	7.88	9.45	16.48	(60.7)	19.8	74.4	24.7	20.6	11.8	3.3	3.0	2.6	13.6	15.1	23.4	1.5	1.9
Zhen Ding Tech	4958 TT	FPCB	3,935	136.5	Neutral	160.0	6.55	9.07	11.43	(56.4)	38.5	26.0	20.8	15.0	11.9	1.4	1.3	1.2	6.4	8.8	10.5	2.5	3.3
Flexium Intercon	6269 TT	FPCB	891	90.8	Neutral	82.0	6.94	8.23	N.A.	(35.9)	18.5	N.A.	13.1	11.0	N.A.	1.1	1.0	N.A.	8.7	9.6	N.A.	3.9	4.4
Catcher Tech	2474 TT	Casing	4,339	209.5	Neutral	255.0	13.33	20.22	13.77	(12.0)	51.7	(31.9)	15.7	10.4	15.2	0.9	0.9	1.0	5.7	8.9	6.3	4.8	4.8
Foxconn Tech*	2354 TT	Casing	2,803	65.1	Not rated	N.A.	3.01	2.88	2.94	(0.3)	(4.3)	2.1	21.6	22.6	22.1	0.9	0.6	0.6	4.1	3.8	3.8	2.3	2.3

Source: KGI Research estimates; Bloomberg

*: Bloomberg consensus

Figure 20: Global PC shipments by brand

Vendor	PC (incl. Chromebook) shipments (mn units)																					
	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2Q24F	2018	2019	2020	2021	2022	2023	1H24	
Lenovo	20.9	20.4	20.2	21.9	18.4	18.1	16.9	15.7	13.0	14.3	16.2	16.3	13.9	14.8	59.9	65.6	75.1	83.4	69.0	59.8	28.8	
HP Inc.	19.3	18.6	17.6	18.6	15.9	13.6	12.7	13.2	11.9	13.5	13.5	14.0	12.1	13.7	60.7	62.8	68.2	74.2	55.4	52.9	25.7	
Dell	13.0	14.0	15.2	17.3	13.8	13.3	12.0	10.9	9.5	10.4	10.3	10.0	9.4	10.1	44.3	46.7	50.7	59.6	50.0	40.2	19.6	
Apple	6.4	5.8	6.9	7.8	7.3	5.3	8.3	5.9	5.2	5.1	5.8	6.3	5.5	5.5	18.5	18.3	22.0	26.9	26.8	22.4	11.0	
Acer Group	5.9	6.3	6.0	6.1	5.5	5.1	4.5	3.6	3.5	4.0	4.4	4.0	3.8	4.4	19.8	18.4	22.5	24.3	18.7	15.9	8.2	
Asus	4.6	4.9	6.0	6.1	5.6	4.7	5.5	4.9	3.8	3.9	5.1	4.3	3.4	4.3	15.9	15.2	17.9	21.6	20.7	17.2	7.7	
Top-6	70.1	70.1	72.0	77.8	66.5	60.0	59.9	54.2	47.1	51.2	55.3	54.8	48.1	52.9	219.2	227.1	256.4	290.0	240.6	208.4	101.0	
Other	13.4	12.4	12.5	13.4	12.3	11.5	10.7	9.1	8.3	8.4	8.5	8.7	8.2	7.8	55.5	51.4	51.8	51.7	43.6	33.9	16.0	
Total	83.5	82.4	84.4	91.3	78.8	71.5	70.6	63.3	55.3	59.6	63.8	63.5	56.3	60.7	274.7	278.5	308.2	341.7	284.2	242.3	117.0	
	YoY (%)																					
Lenovo	59.4	12.0	0.3	(7.2)	(12.0)	(11.5)	(16.5)	(28.4)	(29.2)	(20.7)	(4.2)	3.6	7.1	3.5	7.4	9.5	14.5	11.1	(17.3)	(13.4)	5.2	
HP Inc.	63.6	2.2	(5.9)	(4.2)	(17.8)	(27.1)	(27.9)	(29.1)	(24.7)	(0.8)	6.4	5.6	0.9	1.7	2.4	3.5	8.5	8.8	(25.4)	(4.4)	1.3	
Dell	23.0	15.3	26.4	8.4	6.1	(5.2)	(21.1)	(37.0)	(30.9)	(21.8)	(14.2)	(8.3)	(1.3)	(2.4)	5.6	5.4	8.6	17.4	(16.0)	(19.5)	(1.9)	
Apple	71.9	14.5	2.1	21.1	13.6	(8.8)	20.4	(24.1)	(28.4)	(3.2)	(30.2)	5.6	5.8	6.1	(2.3)	(1.0)	20.0	22.4	(0.4)	(16.5)	6.0	
Acer Group	56.2	12.0	(4.6)	(10.2)	(5.5)	(18.7)	(25.6)	(41.2)	(36.3)	(21.7)	(2.4)	11.1	7.3	11.2	(3.6)	(7.0)	22.1	8.0	(22.9)	(15.1)	9.3	
Asus	62.2	25.2	5.0	13.4	20.3	(4.4)	(8.2)	(20.0)	(31.7)	(17.4)	(6.8)	(10.9)	(10.8)	11.7	(13.0)	(4.5)	17.3	21.1	(4.5)	(16.9)	0.6	
Top-6	53.0	10.9	3.3	0.3	(5.2)	(14.3)	(16.8)	(30.4)	(29.2)	(14.7)	(7.6)	1.1	2.2	3.3	2.0	3.6	12.9	13.1	(17.0)	(13.4)	2.8	
Other	29.3	(3.4)	(12.0)	(7.1)	(8.4)	(7.3)	(14.1)	(32.1)	(32.6)	(27.0)	(20.4)	(4.3)	(1.1)	(6.6)	(8.4)	(7.5)	0.8	(0.2)	(15.7)	(22.2)	(3.9)	
Total	48.7	8.5	0.7	(0.9)	(5.7)	(13.3)	(16.4)	(30.6)	(29.7)	(16.7)	(9.6)	0.3	1.7	1.9	(0.3)	1.4	10.7	10.9	(16.8)	(14.7)	1.8	
	QoQ (%)																					
Lenovo	(11.6)	(2.2)	(1.0)	8.5	(16.2)	(1.6)	(6.6)	(6.9)	(17.2)	10.2	12.9	0.6	(14.4)	6.4								
HP Inc.	(0.8)	(3.5)	(5.3)	5.8	(14.9)	(14.5)	(6.3)	4.0	(9.6)	12.7	0.5	3.2	(13.7)	13.6								
Dell	(18.4)	7.9	8.5	13.4	(20.1)	(3.7)	(9.6)	(9.5)	(12.3)	8.9	(0.7)	(3.3)	(5.6)	7.7								
Apple	0.0	(9.7)	17.9	13.7	(6.2)	(27.5)	55.7	(28.3)	(11.5)	(2.0)	12.3	8.3	(11.3)	(1.7)								
Acer Group	(14.0)	7.1	(3.6)	1.1	(9.4)	(7.9)	(11.8)	(20.1)	(1.8)	13.2	10.0	(9.1)	(5.2)	17.3								
Asus	(13.4)	5.8	22.4	1.2	(8.1)	(16.0)	17.5	(11.7)	(21.5)	1.5	32.6	(15.6)	(21.4)	27.1								
Top-6	(9.7)	(0.1)	2.7	8.2	(14.6)	(9.7)	(0.2)	(9.5)	(13.1)	8.7	8.1	(0.9)	(12.2)	9.8								
Other	(7.4)	(7.6)	0.7	7.9	(8.8)	(6.5)	(6.7)	(14.7)	(9.4)	1.3	1.8	2.6	(6.4)	(4.3)								
Total	(9.3)	(1.3)	2.4	8.1	(13.7)	(9.2)	(1.3)	(10.3)	(12.6)	7.6	7.2	(0.5)	(11.4)	7.8								
	Global market share (%)																					
Lenovo	25.0	24.8	23.9	24.0	23.3	25.3	23.9	24.8	23.5	24.1	25.3	25.6	24.7	24.4	21.8	23.6	24.4	24.4	24.3	24.7	24.6	
HP Inc.	23.1	22.6	20.9	20.4	20.1	19.0	18.0	20.9	21.6	22.6	21.2	22.0	21.4	22.6	22.1	22.6	22.1	21.7	19.5	21.8	22.0	
Dell	15.6	17.0	18.0	18.9	17.5	18.6	17.0	17.2	17.2	17.5	16.2	15.7	16.7	16.7	16.1	16.8	16.5	17.4	17.6	16.6	16.7	
Apple	7.7	7.1	8.1	8.6	9.3	7.4	11.7	9.4	9.5	8.6	9.0	9.8	9.9	9.0	6.7	6.6	7.1	7.9	9.4	9.2	9.4	
Acer Group	7.0	7.6	7.1	6.7	7.0	7.1	6.4	5.7	6.4	6.7	6.9	6.3	6.7	7.3	7.2	6.6	7.3	7.1	6.6	6.6	7.0	
Asus	5.6	6.0	7.1	6.7	7.1	6.6	7.8	7.7	6.9	6.5	8.0	6.8	6.0	7.1	5.8	5.5	5.8	6.3	7.3	7.1	6.6	
Top-6	84.0	85.0	85.2	85.3	84.4	84.0	84.8	85.6	85.1	85.9	86.7	86.2	85.5	87.1	79.8	81.6	83.2	84.9	84.7	86.0	86.3	
Other	16.0	15.0	14.8	14.7	15.6	16.0	15.2	14.4	14.9	14.1	13.3	13.8	14.5	12.9	20.2	18.4	16.8	15.1	15.3	14.0	13.7	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Source: Gartner, KGI Research

Figure 21: Global NB shipments by brand

Vendor	Notebook (incl. Chromebook) shipments (mn units)																		
	1Q21	2Q21	3Q21	4Q21	1Q22	2Q22	3Q22	4Q22	1Q23	2Q23	3Q23	4Q23	1Q24	2018	2019	2020	2021	2022	2023
Lenovo	13.2	13.1	13.8	15.6	13.2	12.2	11.8	11.3	8.9	9.7	11.2	11.9	9.7	38.6	41.9	50.3	55.7	48.5	41.8
HP Inc.	11.3	10.9	12.7	14.1	11.2	9.3	8.4	8.8	7.9	8.9	9.6	9.9	7.9	37.8	38.1	43.6	49.0	37.8	36.3
Dell (Pre-EMC Merger)	7.9	8.0	10.2	11.8	8.2	7.8	7.1	6.7	5.9	5.9	6.5	6.2	5.7	24.4	24.5	30.4	37.9	29.8	24.5
Apple	5.9	5.3	6.4	7.3	6.8	4.9	7.7	5.6	4.9	4.5	5.1	5.7	5.2	15.8	15.7	20.2	25.0	25.0	20.1
Asus	3.7	3.9	5.2	5.2	4.8	4.0	4.8	4.2	3.3	3.3	4.6	3.8	3.0	14.3	13.6	15.0	18.0	17.8	15.0
Acer Group	3.3	3.6	3.8	4.0	3.6	3.0	2.6	2.2	2.1	2.3	2.7	2.5	2.3	11.9	11.4	13.2	14.6	11.4	9.6
Microsoft	1.4	1.3	1.2	2.0	1.4	1.4	1.3	1.3	1.1	1.2	1.0	1.1	0.9	5.1	5.5	6.4	5.9	5.4	4.4
Sharp	0.5	0.4	0.4	0.5	0.5	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.4	0.3	1.7	1.9	1.9	1.6	1.3
MSI	0.5	0.6	0.7	0.8	0.8	0.5	0.6	0.5	0.5	0.6	0.6	0.6	0.6	1.2	1.2	1.9	2.6	2.5	2.3
Samsung	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	1.7	1.7	1.6	1.5	1.6	1.3
Other	2.2	2.2	2.5	2.2	2.1	2.0	1.9	1.4	1.4	1.6	1.9	1.7	1.6	8.9	6.8	11.1	9.1	7.5	6.6
Top-10	48.2	47.5	54.7	61.7	51.1	43.7	45.2	41.4	35.2	36.9	41.9	42.6	36.0	151.1	155.2	184.6	212.0	181.3	156.7
Total	50.4	49.7	57.2	63.8	53.2	45.7	47.1	42.8	36.7	38.5	43.8	44.3	37.6	160.0	162.0	195.7	221.1	188.8	163.3
YoY (%)																			
Lenovo	57.3	2.5	0.5	1.5	0.3	(7.4)	(14.5)	(27.5)	(32.7)	(20.1)	(4.6)	5.5	9.1	8.4	8.6	19.9	10.8	(13.0)	(13.8)
HP Inc.	52.5	(11.0)	5.2	18.7	(0.8)	(15.0)	(33.4)	(37.6)	(29.8)	(4.4)	14.1	12.5	0.6	0.6	0.9	14.5	12.4	(23.0)	(3.9)
Dell (Pre-EMC Merger)	40.6	3.5	34.2	24.6	4.0	(2.9)	(30.0)	(43.0)	(27.9)	(24.8)	(8.9)	(7.1)	(4.2)	4.4	0.4	24.1	24.6	(21.2)	(17.9)
Apple	84.2	13.8	1.9	21.3	14.6	(8.2)	21.2	(24.3)	(28.2)	(8.0)	(34.0)	2.0	6.7	(0.4)	(0.8)	28.8	23.6	0.0	(19.3)
Asus	46.3	12.6	5.5	26.3	29.0	1.4	(6.4)	(18.4)	(30.8)	(17.1)	(5.8)	(9.2)	(10.6)	(12.0)	(5.0)	10.7	19.7	(0.8)	(15.8)
Acer Group	43.7	9.9	(2.8)	4.2	9.1	(17.1)	(31.5)	(43.2)	(42.5)	(22.1)	5.1	11.1	11.3	(9.4)	(4.6)	16.1	10.4	(21.9)	(15.9)
Microsoft	14.7	(24.5)	(26.6)	6.5	2.2	10.5	5.9	(35.6)	(24.2)	(17.8)	(21.4)	(10.6)	(14.7)	21.2	8.3	16.6	(8.8)	(7.9)	(18.6)
Sharp	53.6	3.7	5.2	(30.7)	4.3	(24.0)	(2.0)	(31.3)	(31.6)	(9.7)	(25.2)	2.2	17.1	N.M.	532.1	10.6	(0.3)	(13.2)	(18.3)
MSI	118.8	20.1	13.4	37.6	61.9	(6.5)	(16.7)	(35.4)	(40.6)	11.5	5.2	16.6	11.6	(3.8)	2.1	60.0	35.8	(4.9)	(6.5)
Samsung	(1.9)	(3.9)	(5.6)	(12.2)	1.1	12.3	1.8	(4.0)	(20.2)	(26.2)	(24.5)	5.2	3.5	(13.0)	(5.1)	(0.4)	(6.1)	2.6	(16.7)
Other	55.1	(33.0)	(37.5)	(10.3)	(2.9)	(8.6)	(24.6)	(34.8)	(33.6)	(17.8)	(2.1)	19.9	9.7	(19.9)	(24.4)	64.4	(18.3)	(18.0)	(11.1)
Top-10	52.1	0.7	6.3	13.6	6.0	(8.0)	(17.4)	(32.9)	(31.0)	(15.6)	(7.1)	2.9	2.3	1.2	2.8	18.9	14.9	(14.5)	(13.6)
Total	52.2	(1.5)	3.1	12.6	5.6	(8.0)	(17.7)	(32.9)	(31.1)	(15.7)	(6.9)	3.5	2.5	(0.2)	1.2	20.8	13.0	(14.6)	(13.5)
QoQ (%)																			
Lenovo	(14.2)	(0.4)	4.8	13.2	(15.2)	(8.0)	(3.2)	(3.9)	(21.3)	9.2	15.5	6.2	(18.6)						
HP Inc.	(4.9)	(3.6)	16.1	11.5	(20.5)	(17.4)	(9.0)	4.4	(10.5)	12.5	8.6	2.9	(20.0)						
Dell (Pre-EMC Merger)	(16.2)	1.3	27.5	15.1	(30.1)	(5.4)	(8.1)	(6.2)	(11.6)	(1.2)	11.3	(4.3)	(8.9)						
Apple	(1.8)	(10.8)	20.2	15.2	(7.2)	(28.5)	58.6	(28.0)	(12.1)	(8.4)	13.8	11.3	(8.0)						
Asus	(9.6)	5.5	32.0	0.3	(7.7)	(17.0)	21.8	(12.6)	(21.7)	(0.6)	38.5	(15.7)	(22.9)						
Acer Group	(13.0)	9.0	4.2	5.4	(8.9)	(17.2)	(13.9)	(12.6)	(7.8)	12.3	16.1	(7.6)	(7.7)						
Microsoft	(25.7)	(6.3)	(4.9)	60.9	(28.7)	1.4	(8.9)	(2.1)	(16.1)	9.9	(12.9)	11.2	(20.0)						
Sharp	(29.8)	(11.0)	(1.3)	12.5	5.5	(35.1)	27.3	(21.1)	5.0	(14.4)	5.5	7.7	20.4						
MSI	(15.1)	7.1	23.9	22.2	(0.1)	(38.2)	10.4	(5.2)	(8.1)	16.1	4.1	5.1	(12.1)						
Samsung	(6.3)	(13.9)	1.2	7.5	8.0	(4.4)	(8.2)	1.2	(10.2)	(11.5)	(6.1)	41.0	(11.7)						
Other	(9.1)	(2.1)	16.6	(13.5)	(1.6)	(7.9)	(3.8)	(25.1)	0.2	13.9	14.6	(8.3)	(8.4)						
Top-10	(11.2)	(1.3)	15.0	12.8	(17.2)	(14.4)	3.3	(8.3)	(14.9)	4.7	13.7	1.5	(15.4)						
Total	(11.1)	(1.4)	15.1	11.6	(16.7)	(14.1)	3.0	(9.0)	(14.4)	5.0	13.8	1.1	(15.1)						
Global market share (%)																			
Lenovo	26.2	26.4	24.1	24.4	24.9	26.6	25.0	26.4	24.3	25.2	25.6	26.9	25.8	24.1	25.9	25.7	25.2	25.7	25.6
HP Inc.	22.5	22.0	22.2	22.1	21.1	20.3	17.9	20.6	21.5	23.0	22.0	22.4	21.1	23.6	23.5	22.3	22.2	20.0	22.2
Dell (Pre-EMC Merger)	15.7	16.1	17.9	18.4	15.4	17.0	15.2	15.7	16.2	15.2	14.9	14.1	15.1	15.3	15.1	15.5	17.1	15.8	15.0
Apple	11.8	10.7	11.1	11.5	12.8	10.7	16.4	13.0	13.3	11.6	11.6	12.8	13.9	9.9	9.7	10.3	11.3	13.2	12.3
Asus	7.4	7.9	9.0	8.1	9.0	8.7	10.3	9.9	9.0	8.5	10.4	8.7	7.9	8.9	8.4	7.7	8.1	9.4	9.2
Acer Group	6.6	7.2	6.6	6.2	6.8	6.5	5.5	5.2	5.6	6.0	6.2	5.6	6.1	7.5	7.0	6.8	6.6	6.0	5.9
Microsoft	2.7	2.6	2.1	3.1	2.6	3.1	2.8	3.0	2.9	3.0	2.3	2.6	2.4	3.2	3.4	3.3	2.6	2.9	2.7
Sharp	1.0	0.9	0.8	0.8	1.0	0.7	0.9	0.8	1.0	0.8	0.7	0.8	1.1	0.2	1.1	1.0	0.9	0.9	0.8
MSI	1.0	1.1	1.2	1.3	1.6	1.1	1.2	1.3	1.4	1.5	1.4	1.4	1.5	0.7	0.7	1.0	1.2	1.3	1.4
Samsung	0.8	0.7	0.6	0.6	0.8	0.9	0.8	0.9	0.9	0.8	0.6	0.9	0.9	1.1	1.0	0.8	0.7	0.8	0.8
Other	4.4	4.4	4.4	3.4	4.0	4.3	4.0	3.3	3.9	4.2	4.3	3.9	4.2	5.6	4.2	5.7	4.1	3.9	4.1
Top-10	95.6	95.6	95.6	96.6	96.0	95.7	96.0	96.7	96.1	95.8	95.7	96.1	95.8	94.4	95.8	94.3	95.9	96.1	95.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Gartner, KGI Research

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