

Thermal sector

Vertiv positive on liquid cooling transition for AI servers

Key message

1. Vertiv posted 1Q24 earnings & 2Q24F guidance above consensus, and shared a positive 2024F outlook, reflecting strong liquid cooling demand.
2. Liquid cooling trend in AI servers will drive related companies to expand their cold plate, CDU & manifold capacity.
3. Taiwan's thermal module firms, Asia Vital Components (3017 TT, NT\$620, OP) & Auras Technology (3324 TT, NT\$770, OP), are also riding the liquid cooling trend, and will enjoy strong sales and earnings growth in 2024-25F.

Event

Vertiv (US) held an investor conference call on April 24. 1Q24 earnings came in above consensus, and the firm raised guidance on 2024F sales and earnings. Vertiv expects to see growing demand for liquid cooling in data centers, which echoes the view of Taiwan thermal suppliers.

Impact

Vertiv is a leading liquid cooling product provider. Vertiv, formerly known as Emerson Network Power, a subsidiary of Emerson Electric, became independent in 2016. The firm's two largest categories of products are power management and thermal management, which accounted for 33% and 30% of 2023 revenue, respectively. Additionally, 5-10% of the firm's revenue comes from IT systems, 0-5% from infrastructure solutions, and 20-22% from services. The firm's main power management products are UPS systems, power distribution / DC power products, transfer switches, and busbars. The firm's main thermal management products include air handlers, chillers, RDHx, coolant distribution units (CDU) and immersion cooling systems. 75% of the firm's clients operate data centers, including hyperscalers, co-location data center operators, & large enterprises with their own on-premise data centers, while 15% are communication network operators and the remaining 10% are industrial or commercial clients.

1Q24 results beat; higher 2Q24 & 2024 guidance from Vertiv. During Vertiv's earnings call, key takeaways included: (1) higher-than-expected 1Q24 earnings, driven by higher operating margin of 15.2%, beating consensus of 12.7%; (2) revised-up full-year sales growth and operating margin guidance, to 12% YoY and 17.5-17.9% respectively, up from previous guidance of 11% YoY and 16.9%, resulting in EPS guidance rising to US\$2.29-2.35, up over 30% YoY; (3) order growth of 60% YoY and 4% QoQ in 1Q24, with the expectation of continued YoY growth in 2Q24F, despite a QoQ drop from a high base; (4) Vertiv's book-to-bill ratio rose to 1.5x in 1Q24 and management expects it stay above 1x throughout this year, implying solid sales momentum; (5) AI orders more than doubled in the past 2 months, and strong AI and liquid cooling demand have prompted a CDU capacity expansion of 45x in the 12 months to 4Q24F, with CDU production started at two sites presently, and ramp-up to be completed at another three plants by end-2024F; and (6) on promising CDU sales growth, the firm targets long-term operating margin to rise above 20%, versus the present 15-16%.

Positive liquid cooling sales for Vertiv to mirror Taiwan thermal firms' bright outlook in 2025F. As the DGX GB200 superchip system design is more compact, it should be well suited to liquid cooling thermal solutions. Since Nvidia (US) introduced the GB200 NVL72 system, which includes 36 Grace CPUs and 72 Blackwell GPUs in a liquid-cooled design, the liquid cooling supply chain has become a hot topic in equity markets. Liquid cooling enhances performance while minimizing thermal constraints across a system. Such designs allow for more sustainable and energy-efficient operations, even under heavy computational loads. ODMs have showcased GB200/ B200 AI server designs with liquid cooling solutions. We expect the penetration rate of liquid cooling will grow significantly in 2025F, with benefits for thermal module companies offering cold plate modules, CDU, manifolds, and fan doors, such as Asia Vital Components (AVC; 3017 TT, NT\$620, OP), Auras Technology (3324 TT, NT\$770, OP) and Delta Electronics (2308 TT, NT\$306, N). Given this liquid cooling trend, we note that several companies are expanding their cold plate and CDU capacity, including AVC and Auras for cold plates, and Nidec CCI (6230 TT, NT\$276.5, NR), Kenmec (6125 TT, NT\$90.5, NR), Hon Hai (2317 TT, NT\$151.5, R), Vertiv and nVent (US) for CDU. All these makers would like to capture liquid cooling business opportunities, as total liquid cooling rack content value is high, at US\$40-80k depending on design, including US\$200-400 for each cold plate, US\$20-30k for each CDU, US\$10-15k for manifolds with quick dis-connectors (QD), US\$2-4k for fan doors and RDHx, and US\$5k for each rack. With higher-than-average gross margin on liquid cooling products, rising penetration of liquid cooling solutions will fuel gross margin and EPS growth for thermal companies in 2024-25F. Liquid cooling sales contributions for thermal companies will be low in 2024F, but will surge in 2025-26F.

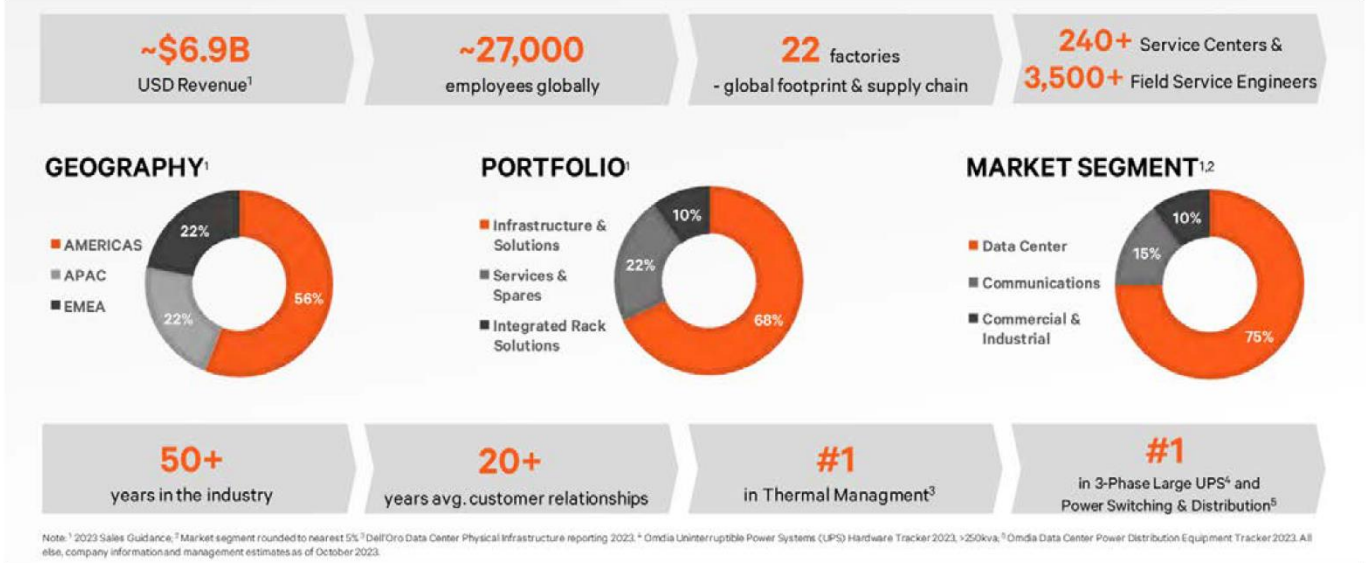
Stocks for Action

We are positive on the thermal industry, and expect thermal companies' 2024-25 EPS to grow strongly. 1Q24 earnings will be released in early May for AVC, Auras and Sunonwealth (2421 TT, NT\$110.5, OP) and we expect 1Q24F gross margin for AVC and Auras to widen YoY and QoQ, as well as 2Q24 sales and margin for all three firms to grow QoQ and YoY. We recommend investors accumulate shares during any near-term price dips.

Risks

Material price increases; NT-dollar appreciation; weak demand for servers and gaming NB.

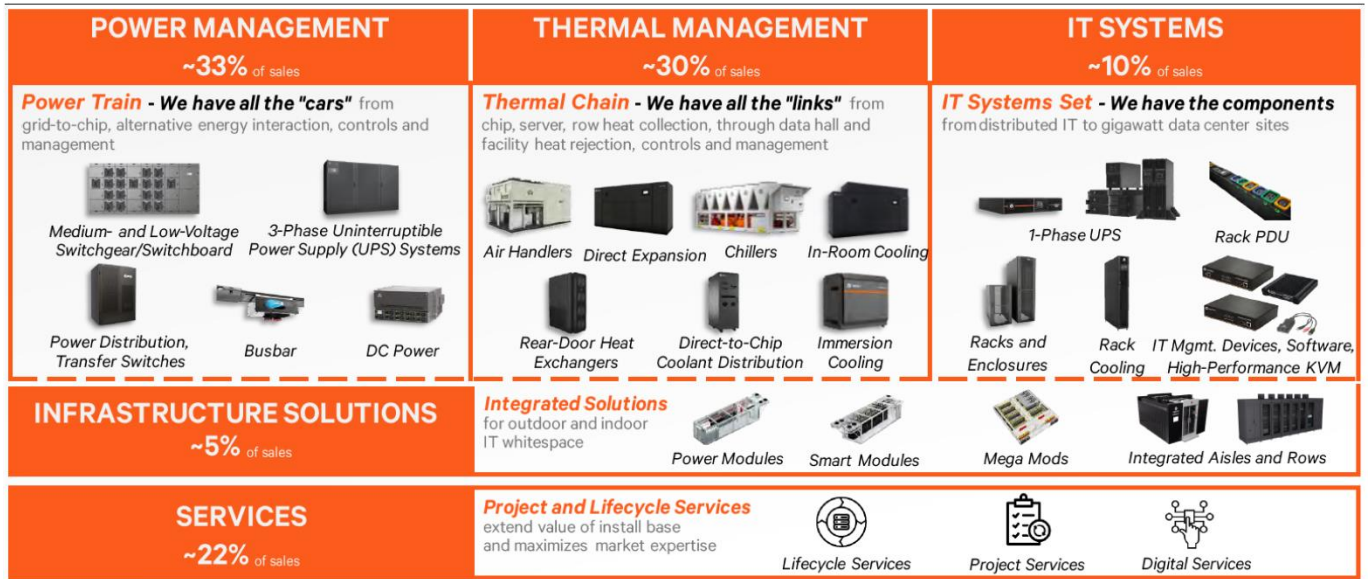
Figure 1: Company file - Vertiv



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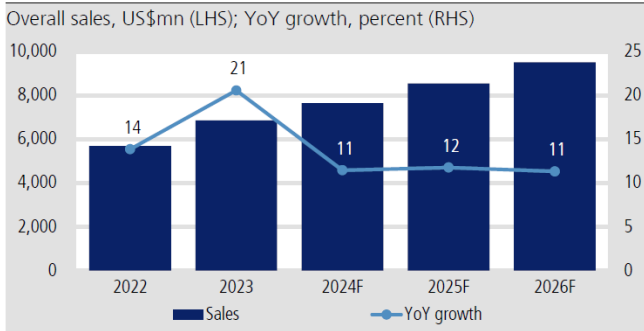
Source: Vertiv

Figure 2: Power management & thermal management products comprised 63% of Vertiv's 2023 sales



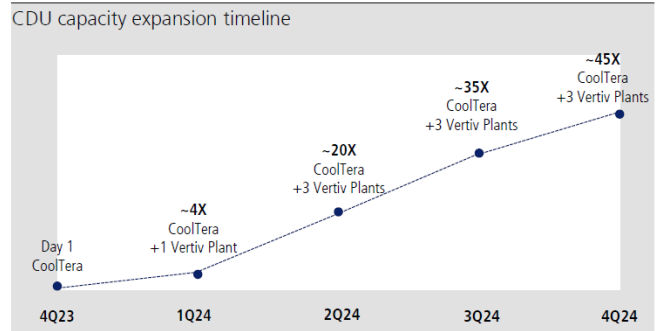
Source: Vertiv

Figure 3: Vertiv's overall sales to grow by 11-12% YoY in 2024-26F



*Bloomberg consensus
Source: Bloomberg; KGI Research

Figure 4: Vertiv targets 45x CDU capacity growth by end-4Q24F



Source: Company data; KGI Research

Figure 5: Several thermal plays plan to expand liquid cooling production capacity

Company	Liquid cooling CDU capacity expansion plans
Vertiv	Plans to expand CDU capacity by 45x in 12 months to end-4Q24F
nVent	Plans to double liquid cooling capacity by mid-2024F
Auras	Monthly capacity of 1-2k units currently in Thailand, and will expand to 2-3k units depending on clients' demand
AVC	Monthly capacity of 2k units currently in Vietnam, and will keep expanding
Nidec	Expects to increase monthly CDU production capacity 10x to 2k units by mid-2024 in Thailand

Source: Company data; KGI Research

Figure 6: Capacity plans by vendor – CDU

Capacity (k/month)	CDU					
	Current			Expansion		
	Taiwan	Vietnam	Thailand	Overseas		Schedule
AVC		2		To be announced	Vietnam	Under planning
Auras			1-2	2-3	Thailand	By 3Q24 (dependent on end-client demand)
Nidec CCI			0.2	2	Thailand	By June, 2024F
Kenmec	0.4			0.8	Taiwan	
Hon Hai				Begin CDU manufacturing		
Vertiv				Expanding by 45x in 3 plants		Within 12 months to end-2024F

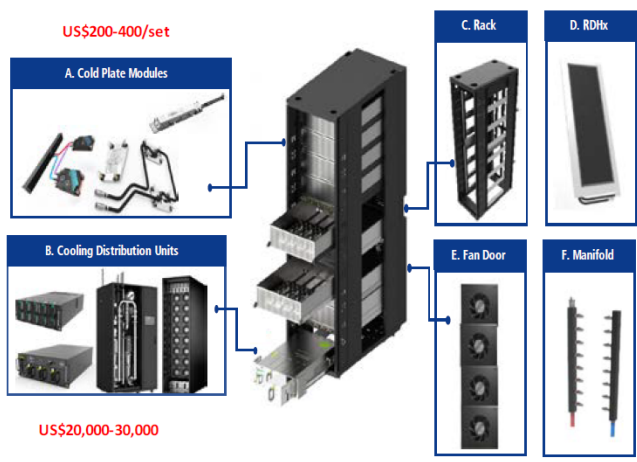
Source: Company data; KGI Research

Figure 7: Capacity plans by vendor – Cold plate

Capacity (k/month)	Cold plate					
	Current		Expansion			
	China	Vietnam	China	Vietnam	Thailand	Schedule
AVC	50	65	100	265		Dependent upon end-client demand
Auras	30		30		300	By 3Q24 (dependent on end-client demand)

Source: Company data; KGI Research

Figure 8: Thermal solution transition to liquid cooling to create much higher content value for thermal plays



US\$200-400/set

US\$20,000-30,000

US\$10,000-15,000

Parts of liquid cooling solution	Major supplier	Cost (US\$)
Cold plate module	Cooler Master	1,500-2,500
	CoolIT Systems AVC Auras	(per server)
CDU	CoolIT Systems	20,000-30,000
	Vertiv	(per rack; in-rack)
	nVent	
	AVC	
	Auras	
	Delta Hon Hai MGCooling	
Manifold & quick connector	CoolIT Systems	10,000-15,000
	AVC	(quick connector 4,000-6,000)
	Colder Product Co. (CPC)	
	CEJIN	
	Parker	
	Staubli Kori	
RDHx & fan door		2,000-4,000
Rack		5,000
Total		30,000-80,000

Source: Auras; KGI Research

Figure 9: TAM of CDU, CDM and racks is likely around US\$200-250mn in 2025F

	Scenario 1	Scenario 2
Shipments (units)		
Racks (NVL 72)	40,000	50,000
In-row CDU	5,000	6,250
Assumption: 1 in-row CDU to support 8 racks		
Market TAM (US\$m)		
CDU	100	125
CDM	75	94
Racks	25	31
Sales TAM (US\$m)	200	250
ASP assumptions (US\$)		
CDU	20,000	20,000
CDM	15,000	15,000
Racks	5,000	5,000
Subtotal	40,000	40,000

Source: Company data; KGI Research estimates

Figure 10: Peer comparison – Valuations

Sector	Company	Ticker	Market cap. (US\$m)	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	2024F
Cooling fan	Sunonwealth	2421 TT	927	110.5	Outperform	155.0	5.16	6.58	7.74	18.9	27.5	17.6	21.4	16.8	14.3	4.2	3.9	3.6	21.5	24.0	26.2	3.2	4.2
	Nidec Corp*	6594 JP	26,380	6,886.0	Not rated	N.A.	138.97	250.15	318.00	(40.2)	80.0	27.1	49.6	27.5	21.7	3.0	2.6	2.4	7.0	10.1	11.5	1.0	1.1
	Sun Max Tech*	6591 TT	59	54.0	Not rated	N.A.	3.77	N.M.	N.M.	(45.4)	N.A.	N.A.	14.3	N.A.	N.A.	1.1	N.A.	N.A.	7.5	N.M.	N.M.	4.1	N.A.
	Minebea Mitsumi*	6479 JP	8,030	2,926.5	Not rated	N.A.	181.92	124.37	187.20	7.0	(31.6)	50.5	16.1	23.5	15.6	2.0	1.8	1.6	13.2	7.8	10.9	1.4	1.4
Thermal module /cooling fan	AVC	3017 TT	7,293	620.0	Outperform	800.0	14.11	18.44	26.65	19.7	30.7	44.5	44.0	33.6	23.3	10.8	9.3	7.8	28.3	29.2	35.8	1.1	1.5
	Delta Elec	2308 TT	24,393	306.0	Neutral	297.0	12.86	13.10	15.15	2.2	1.9	15.6	23.8	23.4	20.2	4.1	3.7	3.4	17.5	16.7	17.6	2.1	2.1
	Vertiv	VRT US	32,303	84.6	Not rated	N.A.	1.75	2.35	2.93	776.0	33.8	25.0	48.3	36.1	28.9	17.3	15.2	14.4	40.8	39.5	48.2	0.0	0.1
	Dover Corporation	DOV US	23,552	171.4	Not rated	N.A.	8.77	9.06	9.87	17.3	3.4	9.0	19.6	18.9	17.4	4.9	4.2	3.8	23.5	21.7	20.7	1.2	1.2
Thermal module	Nidec CCI*	6230 TT	733	276.5	Not rated	N.A.	7.47	3.06	6.40	5.2	(59.0)	109.2	37.0	90.4	43.2	N.A.	N.A.	N.A.	10.9	4.5	8.7	N.A.	N.A.
	Auras	3324 TT	2,090	770.0	Outperform	660.0	14.28	20.66	27.06	(2.7)	44.7	31.0	53.9	37.3	28.5	14.4	9.0	7.7	20.2	25.0	28.3	0.8	1.2
	Foxconn Tech*	2354 TT	2,644	60.9	Not rated	N.A.	4.34	5.41	5.71	43.7	24.7	5.5	14.0	11.3	10.7	0.6	0.5	0.5	5.8	7.0	7.1	2.5	3.5
	Fujikura Ltd*	5803 JP	5,002	2,631.5	Not rated	N.A.	159.49	164.86	179.75	12.4	3.4	9.0	16.5	16.0	14.6	2.7	2.3	2.1	18.5	15.8	14.7	1.0	1.9
Furukawa Elect*	5801 JP	1,498	3,300.0	Not rated	N.A.	219.11	34.33	177.52	52.8	(84.3)	417.0	15.1	96.1	18.6	0.8	0.8	0.7	5.4	0.6	4.2	1.8	1.8	

*Bloomberg consensus

Source: Bloomberg; KGI Research estimates

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