

This update incorporates directional signals from Q4 channel checks, supplier commentary, downstream integrators, and market observation.

## Market Overview Entering 2026 with Structural Constraints

Across critical components, supply conditions continue tightening:

- Memory markets remain firm, driven by AI-capable products (DDR5, HBM3E, HBM4).
- High-capacity HDDs (18TB–32TB) appear set to remain on allocation throughout 2026; some buyers are unlikely to secure full-year coverage.
- Important materials that are tight: ABF substrates face material-driven shortages (Low T Glass and CCL), this constrains substrate output even before capacity bottlenecks are considered.
- CPU supply remains tight but manageable.
- SSD/NAND markets remain firm with potential upward movement entering Q1.

Overall signal: AI infrastructure demand continues outpacing the materials and packaging ecosystems that support it.

The December update shows a supply chain entering 2026 with several structural constraints, particularly across memory, substrates, high-capacity storage, and advanced packaging. AI-driven demand remains the dominant force shaping availability, pricing behavior, and allocation cycles. While some components exhibit relative stability, many remain in prolonged tightness or severe constraint, suggesting that 2026 will require disciplined procurement planning and early-volume commitments, especially for enterprise compute and storage customers.

### COMPONENT SNAPSHOT – DECEMBER 2025

Component	Pricing Trend	Inventory	Supply Dynamics	Demand Drivers
DDR5 DRAM	<div>↑</div> Steady	Very Low	Fab limits and hyperscaler pull	AI compute
HBM3E / HBM4	<div>↑</div> Steady	Very Low	Packaging-limited	AI accelerators
DDR4 DRAM	<div>↑</div> Slight	Tight	No incremental supply	Legacy platforms
ABF Substrates	<div>↑</div>	Low	Material shortages constraining build cycles	AI GPUs, CPUs, ASICs
Server CPUs	<div>↑</div> <div>↓</div>	Moderate	Cross-architecture hedging	Data-center deployment
Enterprise GPUs	<div>↑</div> Steady	Very Low	Allocation-based	Training / Inference
Enterprise SSDs	<div>↑</div> Modest	Moderate	Stable demand	Tiered storage
Gen3 SSDs	<div>↑</div>	Low	Active secondary market	SMB and Refurb
High-Cap HDDs	<div>↑</div> Steady	Low	Allocation through 2026	AI data / Archiving
MLCC / Power	<div>↑</div>	Low	AI power-design intensity	AI racks / Networking

## Market Overview: Structural Tightness Moving Into 2026

Conditions across core enterprise compute and storage components show sustained tightness heading into the new year. Memory markets remain firm, especially in DDR5, HBM3E, and early HBM4 activity, with suppliers maintaining disciplined allocation strategies. High-capacity HDDs between 18TB and 32TB appear locked in an allocation environment that is likely to continue throughout 2026, raising concerns about whether some enterprises and Tier 2 cloud buyers will secure their full requested volumes. Meanwhile, ABF substrate suppliers signal persistent material-driven constraints, limiting substrate output even in the face of nominal capacity expansions. GPU and accelerator availability remain tied to allocation programs, and CPU availability, while more balanced than earlier in 2025, still trends tight in several regions. SSD and NAND markets remain steady but show indications of upward pricing pressure entering Q1.

Overall, the market continues to show that AI-related demand is outpacing the underlying materials and packaging ecosystems that enable advanced compute.

## Lead-Time Dynamics

Lead-time conditions vary meaningfully across components but broadly remain constrained. HBM3E and HBM4 lead times sit at the tight end of the spectrum due to packaging throughput limitations, particularly 2.5D/3D processes such as CoWoS. DDR5 remains in very tight supply, with high-density modules seeing the strongest pressure and pricing bias upward into Q1. DDR4, though older in the product cycle, continues to face tight supply as wafer capacity is increasingly diverted toward DDR5 and HBM.

ABF substrate availability is very tight and trending toward severe, with material shortages rather than only capacity bottlenecks driving longer build cycles and reduced substrate throughput.

Server CPU availability remains tight but manageable, with buyers hedging across architectures (AMD and Intel) to mitigate deployment risk. Enterprise GPUs, particularly H100-class and upcoming B200-class models, remain tight with allocation-based availability expected well into 2026. Enterprise SSDs in the 24TB to 30TB class remain tight, and NAND volatility risks near-term pricing increases. Gen3 SSDs appear more balanced, with a tight-to-stable range depending on the region. High-capacity HDDs show severe tightness, with several signals suggesting that availability may not materially improve before late 2026. Key passives such as high-cap MLCCs remain very tight due to AI server and networking power demands.

### LEAD-TIME HEALTH SNAPSHOT – DECEMBER 2025

(Using: Normal → Extended → Constrained → Allocation)

Component	Lead-Time Assessment	Commentary
DDR5 DRAM (RDIMM)	Constrained	Densities above 64GB especially constrained; pricing bias upward
HBM3E / HBM4	Extended	Constrained by CoWoS-like packaging throughput
DDR4 DRAM	Extended	Legacy demands persists; no meaningful added supply
ABF Substrates (High-Layer)	Constrained-Allocation	Material shortages (ABF, resin film, glass fiber) limiting output and slowing substrate build cycles
Server CPUs (EPYC / Xeon / Turin)	Extended	Balanced but dependent on GPU pairing and rack-level builds
Enterprise GPUs (H100 / B200 Class)	Extended	Vendor-controlled allocation into mid-2026
Enterprise SSDs (24–30TB Gen4)	Extended	Pricing stable; NAND volatility may push Q1 quotes higher
Gen3 SSDs (8TB / 10TB)	Extended	Strong SMB demands in Asia
High-Cap HDDs (18–32TB)	Allocation	Allocation likely throughout 2026; non-strategic buyers could face partial fulfillment
MLCC (High-Cap, Power)	Constrained	AI server PDN requirements continue to absorb output

## Memory Market Update

The memory sector remains one of the most constrained across the compute supply chain. DDR5 continues to experience strong hyperscaler-led pull as qualification ramps into higher-density RDIMMs, leaving little availability for non-strategic customers. Pricing has been firm and appears positioned to move modestly higher in late Q4 and early Q1.

HBM3E and HBM4 remain deeply supply-bound as packaging processes determine effective availability. Even with upstream investment announcements, packaging throughput is not keeping pace with demand accelerated by next-generation GPUs, AI accelerators, and custom silicon. DDR4 demand remains steady across APAC, Tier 2 cloud, and legacy enterprise deployments. Combined, these factors reinforce the view that memory tightness will persist well into 2026.

## Compute & GPU Market Update

GPU availability continues to reflect a bifurcated pattern. A100 baseboards remain somewhat more accessible in Asia; however, this does not represent a meaningful easing of AI compute constraints overall. H100 and H200 GPUs remain tightly allocated, with customers reporting limited flexibility around delivery windows and quantities. Early Blackwell demand signals suggest that 2026 will remain constrained for high-end accelerators, with most major cloud operators pre-reserving capacity.

Server CPU supply has improved relative to mid-year tightness but still trends tight depending on configuration and pairing with accelerators. Buyers continue hedging across multiple architectures, AMD Genoa or Turin paired with Intel Sapphire Rapids or Granite Rapids to ensure deployment continuity. Overall, compute remains constrained, with only marginal improvements noted in specific geographies or SKU segments.

## Storage Market Update

High-capacity HDDs remain one of the most constrained parts of the entire data infrastructure stack. Allocation conditions now appear entrenched, with some OEM and distribution partners suggesting that even committed 2026 volumes may fall short for certain buyers not operating with long-term contracts. Constraints stem from a combination of strong hyperscaler demand, platter and head-stack production limits, and material dependencies within the mechanical drive supply chain. Pricing has risen steadily since Q3 and appears poised to stay elevated.

Enterprise SSDs in the 24TB–30TB range maintain steady demand, and pricing remains firm. Some upward pressure is expected entering Q1 as NAND contracts reset. Bidding activity in North America remains active but less aggressive than earlier in the year. Gen3 SSDs continue to exhibit a stable-to-tight profile, with sustained pull from markets in Asia.

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## Substrates, Packaging & Critical Passives

A central theme for December is renewed confirmation of material-driven constraints in ABF substrates used for AI GPUs, advanced CPUs, and high-complexity ASICs. Substrate output is increasingly limited by the availability of materials. These material shortages lengthen substrate build cycles and effectively cap near-term supply even when nominal capacity expansions are underway. As a result, substrate tightness appears likely to persist throughout 2026.

Advanced packaging capacity, particularly CoWoS-class technologies, continues to set the ceiling for HBM-based accelerator availability. These processes remain fully subscribed by major GPU vendors and hyperscaler partners. Additionally, high-cap MLCC and related power-delivery components remain tight, especially for AI rack and networking power systems.

## Forward Indicators to Watch (December–February)

Heading into 2026, several emerging indicators warrant monitoring. First, substrate material constraints will determine whether AI platform shipment growth outpaces substrate availability. Second, HDD manufacturers’ 2026 allocation strategies will reveal whether Tier 2 cloud and enterprise IT buyers will face significant shortfalls. Third, DDR5 contract pricing for January and February will indicate whether memory continues its upward trajectory. Fourth, NAND pricing stability or lack thereof may influence SSD cost structures in Q1. Finally, GPU vendors’ early-year allocation signals may clarify whether Blackwell supply will meaningfully improve or remain controlled.