



The Memory Chip Market: Current Challenges and Solutions

At a Glance

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Current Situation

Since late 2025, global prices for DRAM and NAND memory have risen sharply. The primary driver is the unprecedented expansion of AI data centres, which is generating substantial additional demand for memory. In the short term, production capacity cannot scale at the same pace, leading to a structural supply shortfall.

Bitkom Assessment

The current market environment poses significant planning and cost challenges for IT system manufacturers, IT retailers, and public-sector buyers, as both prices and delivery times for key components have become difficult to predict reliably. From Bitkom's perspective, more flexible procurement and contracting models are needed to manage the current level of volatility in the memory market.

Key Points

- **Account for price and supply risks while maintaining competition.**

In volatile storage markets, reliable multi-year prices are almost impossible to calculate; without adjustment mechanisms, this leads to high risk premiums, fewer bids and supply risks.

- **Establish flexible contract models as standard practice.**

Price escalation clauses, discounts tied to list prices, and open-book models improve transparency and allow for fair price adjustments instead of blanket surcharges.

- **Improve predictability of framework conditions.**

Minimum purchase commitments, standardised configurations, and procurement-law-compliant delivery reservations—along with, where appropriate, mutual special termination rights—help mitigate excessive risk and stabilise supply capacity.

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1 Current Situation: Rising Prices and Challenges for Manufacturers and Distributors

Since late 2025, global semiconductor markets have seen a sharp and unusually rapid increase in prices for memory chips, particularly DRAM and NAND. DRAM is used for main memory, while NAND underpins storage products such as SSDs, USB drives, SD cards, and embedded storage solutions. This is not a niche issue affecting specialised components—DRAM and NAND are foundational to nearly all modern IT systems. As a result, price increases are reverberating across a wide range of products and infrastructures, from data centre servers and storage systems to PCs, laptops, smartphones, as well as network, industrial, and cloud infrastructure.

The DRAM and NAND market is traditionally cyclical. Following a period of historically low prices in 2022 and 2023, a recovery was widely anticipated. In that sense, some level of price increase in line with normal market fluctuations was expected. What stands out, however, is the speed and magnitude of the current surge.

The main driver of this development is the unforeseen and historically unprecedented massive expansion of AI data centres.¹ Building this infrastructure requires large volumes of high-performance DRAM and NAND flash, pushing demand far beyond what existing production capacities can accommodate in the short term.

At the same time, expanding manufacturing capacity for memory chips involves significant lead times. Even under optimal conditions, constructing a new semiconductor fabrication facility takes around three years. Additional constraints—such as bottlenecks in critical equipment like cleanroom technology—further delay capacity expansion. The result is a clear structural imbalance between supply and demand.

DRAM and NAND products have been particularly affected, with price increases of up to roughly 300% reported in some segments since late 2025.² There are no indications of near-term relief. Demand from the AI infrastructure sector is expected to remain strong, while additional production capacity will only come online gradually. Elevated price levels are therefore likely to persist until at least 2027-2028.³

At the same time, many memory and storage manufacturers have revised their pricing models: fixed upfront pricing is often no longer available, and long-term supply agreements with manufacturers of client, server, network, and storage systems have in some cases been discontinued. Instead, final prices are frequently determined only at

¹Handelsblatt (2025) | [Die nächste Lieferkrise – Speicherchips werden knapp und teuer](#); Heise online (2026) | [DRAM and NAND prices are rising massively: AMD considers AM4 comeback](#)

²ad-hoc-news (2026) | [RAM prices at record high: AI boom makes PC manufacturing massively more expensive](#); ComputerBase (2026) | [Memory shortage: HDD, SSD and RAM prices rise significantly](#)

³IntuitionLabs (2026) | [RAM Shortage 2025: How AI Demand is Raising DRAM Prices](#)

the point of delivery.⁴ Given lead times that can extend over several months, this means that the actual purchase price may be significantly higher than initially calculated at the time of order. In addition, buyers are often forced to rely on whichever components are available at the time of delivery, regardless of the original specification.

Similarly, investment in new AI data centres is leading to a significant shortage of traditional hard disk drives (HDDs). In the coming months, we can expect a similarly unpredictable situation (particularly for storage) to that seen with memory chips.⁵ Geopolitical developments, such as the war in Iran, further suggest that availability and pricing pressures may increasingly affect other IT components beyond memory.

This development poses significant challenges for manufacturers of PCs, servers and other IT systems, as well as for the IT retail sector. A reliable basis for calculating production costs and delivery capacity is increasingly lacking, as the prices of IT end devices (PCs, laptops, tablets, etc.) as well as servers and storage systems are largely determined by the components they contain, such as RAM modules, SSDs and HDDs. Manufacturers of PCs, servers and other IT systems, as well as the IT retail sector—particularly in their business with the public sector—have often entered into long-term contracts with fixed prices. These calculations were based on significantly lower storage and component prices and can no longer be justified economically under current market conditions. At the same time, it is not possible to conclude new framework agreements with reliable fixed prices, as the risk of further price increases before delivery is considerable. This is compounded by uncertainty as to whether the required components can be delivered at all, given the ongoing chip shortage. The resulting market distortions in the storage segment therefore have a direct impact on planning and investment certainty across the entire value chain. Procurement can no longer be planned reliably—neither in terms of price nor timing.⁶

2 Impact on the Award of Public Contracts

Due to component shortages, as well as the exceptionally sharp price increases and volatility in the storage market, it is currently not possible to reliably calculate prices and availability on a medium- to long-term basis (particularly for hardware products). This has a particularly strong impact on public procurement:

- Tender procedures are often lengthy, meaning that price calculations must be made well in advance of contract award or delivery. In addition, the public sector frequently uses multi-year framework agreements, where both the timing and

⁴ CRN (2026) | [Chips as a spot market: memory prices in a stock market-style format](#)

⁵ Heise online (2026) | [WD and Seagate confirm: Hard drives for 2026 sold out](#)

⁶ Handelsblatt (2026) | [AI boom driving up electronics prices](#)

volume of actual call-offs remain uncertain. Price calculations are sometimes further complicated by unilateral ordinary termination rights and extension options granted to the contracting authority.

- Given the demand and price developments described above, hardware manufacturers are in many cases unable to guarantee resellers (as bidders in public procurement procedures) stable prices over the full contract term. Currently, manufacturers' quotations are often valid only for a few weeks or even days.
- Companies incorporate cost uncertainties through risk premiums to safeguard the economic viability of their bids despite fluctuating cost developments. The greater the uncertainty, the higher these risk premiums must be to ensure a sound calculation. In procurement procedures, however, price is often the sole or at least the dominant award criterion. As a result, bids based on a higher risk tolerance are more likely to succeed.
- If price developments cannot be reliably anticipated, there is a risk that some market participants will reduce their involvement in public tenders or withdraw from procurement procedures altogether. This can reduce competition and may result in few or even no bids being submitted.
- If actual cost increases during contract execution exceed the risk premiums originally built into bids, this can create significant challenges in contract performance. In extreme cases, continuing to execute framework agreements based on outdated pricing assumptions can impose substantial financial burdens on companies. In the worst case, contractors may no longer be able to meet their contractual obligations—with serious consequences for both the contracting authority and the contractor.

Overall, the sharp price increases and high volatility in the storage market—combined with lengthy tendering and contract periods—are creating exceptionally high financial risks for companies. The price dynamics observed on global markets may lead to the inclusion of substantial risk premiums, weaken the competitive position of companies applying prudent cost calculations, and significantly increase the risk of service disruptions or even contract failures. Indirectly, this may also jeopardise security of supply in the public sector. Resilience in public procurement can be strengthened through long-term volume and allocation partnerships, combined with pricing models that are flexibly aligned with market conditions.

From Bitkom's perspective, the current situation in the storage market is a cause for concern. However, based on the experience of the digital economy, the public sector has so far failed to adequately reflect these developments in its procurement practices. Against this backdrop, it is essential to consider market-related price risks in tendering procedures. This can be achieved, for example, through flexible remuneration models, the use of price escalation clauses, and appropriately adjusted contract terms. Only in this way can competition, innovation and security of supply be ensured.

What Needs to Be Done from the Digital Economy's Perspective

For several months now, international memory markets have been characterised by significant price fluctuations and cost increases, short-term availability bottlenecks, and geopolitically driven supply chain risks. This volatility has a direct impact on the procurement of IT products by the public sector, as memory chips are used as key intermediate products in virtually all hardware components. Against this backdrop, reliable medium- and long-term costing is becoming increasingly impossible. The current market phase is structural and multi-year in nature – short-term market mechanisms are insufficient to provide security. This means that security of supply requires long-term strategic planning – not reactive procurement.

The following discussion outlines how public procurement instruments can be used to improve planning certainty and limit the adverse effects of volatile price dynamics in certain areas of the memory market. This is in line with the fundamental principle of a balanced and fair approach to unforeseen risks on the part of contracting authorities and companies.

Amendment of Existing Contracts

In many cases, it is not reasonable to expect companies to continue performing existing contracts unchanged where these have been significantly and strongly affected by market developments. Contracting authorities and contractors should therefore jointly assess which specific adjustments are required to ensure the continued economic viability of the contract. This applies in particular to contracts with longer remaining terms, where a review of the contractual framework is advisable.

Due to the substantial price increases in certain segments of the storage market, the economic equilibrium and underlying assumptions of a contract may be materially affected within the meaning of Section 313 of the German Civil Code (BGB). This is particularly relevant for contracts concluded at a time when stable prices for the procured products were still expected over the entire contract term. Where the legal requirements for an adjustment under Section 313 BGB are met, such an adjustment is not precluded by public procurement law. Adjustments based on a disruption of the contractual basis do not constitute a material modification within the meaning of Section 132(1) sentence 2 of the Act against Restraints of Competition (GWB), as they serve solely to restore the disturbed economic balance of the contract.⁷

A key prerequisite is that companies demonstrate the need for adjustment to the contracting authority in a transparent and comprehensible manner, particularly with regard to the specific services concerned and their price components. At the same time, it is equally essential that the public sector shows a willingness to engage in dialogue and work towards a mutually viable economic solution.

⁷ See Bundesrat (2025) | [Bundestags-Drucksache 377/25, S. 47](#)

Options for Structuring New Contracts

When designing and conducting procurement procedures for new contracts, contracting authorities must ensure that bidders are able to calculate their offers on a reliable basis so that the submitted bids remain comparable. Public procurement principles may be infringed if bidders are exposed to calculation risks that exceed a normal and reasonable level. Such an impermissible allocation of risk can be assumed where companies are required to factor in the risks arising from exceptional developments in the storage market.

To ensure reliable costing, the public sector has the following options in particular:

Incorporation of Appropriate Delivery Reservations

To enable robust and economically viable bids in the future, new IT procurement contracts should provide for appropriately structured delivery reservations. Such provisions can help to adequately account for exceptional, objectively unforeseeable market disruptions and avoid procurement risks that may threaten business viability.

This requires a clear, transparent, and procurement-law-compliant design. A delivery reservation should:

- be clearly specified in the tender documents,
- include objectively verifiable trigger conditions (e.g. demonstrable unexpected price increases, non-delivery by upstream suppliers despite proper planning, official export restrictions, or serious supply chain disruptions),
- define clear and proportionate legal consequences (e.g. reasonable extensions of deadlines, temporary suspension of performance obligations, or structured renegotiation), and
- not unduly shift the economic balance of the contract to the detriment of one party.

A properly designed delivery reservation does not serve to shift risk unilaterally, but rather to ensure fair and realistic risk allocation in a market environment shaped by exceptional external factors. It can help to prevent excessive risk premiums, stabilise participation in tendering procedures—particularly by small and medium-sized enterprises—and strengthen security of supply for the public sector.

Particularly in IT procurement, which is highly dependent on global semiconductor supply chains, consideration should therefore be given to developing standardised and legally robust models for delivery reservations and integrating them into procurement practice. This enhances predictability and competition, while also contributing to the resilience of public procurement structures.

Agreement on Minimum Purchase Quantities

Framework agreements are typically non-binding and either do not include purchase obligations or do not specify the configurations to be ordered. In the current market environment, this further increases the calculation risks faced by bidders and future contractors. By committing to minimum purchase quantities and defined configurations, contractors are better able to plan, calculate, and stock the agreed volumes.

Inclusion of Flexible Pricing Models, Price Adjustment clauses and Termination Options

The inclusion of price adjustment clauses in new contracts is—irrespective of the occurrence of exceptional circumstances—generally permissible and, from the perspective of the digital economy, an appropriate instrument for reducing planning and cost uncertainties in multi-year contracts.

A common mechanism is the so-called cost element clause. Such a price escalation clause must refer to clearly defined cost components—such as personnel, hardware, or energy costs—and be linked to a suitable index. This requires the contractor to break down the total price accordingly and to transparently disclose the proportion of costs subject to indexation.

The application of price adjustment clauses therefore generally entails greater transparency of the cost structure vis-à-vis the contracting authority and may—depending on index developments—also result in downward price adjustments. However, a full adjustment of the total price is only possible where a suitable index is available. Whether this is the case must be assessed individually, considering the specific service and the indices available.

In the current market environment, however, such standard price adjustment clauses are reaching their limits. Available indices lag significantly behind the pace of price developments and are therefore unable to adequately reflect calculation risks. In addition, adjustments under standard clauses are often only possible at longer intervals.

The NEVB-IT framework agreement model also generally provides scope for taking price changes into account. The model contracts allow for the contractual inclusion of price escalation clauses or index-based adjustment mechanisms. In practice, however, public contracting authorities have so far made only limited use of these options. In addition, the existing and relatively broadly defined adjustment mechanisms are only of limited suitability for accurately reflecting the specific and, in some cases, highly volatile price dynamics in the storage market. For example, such adjustment mechanisms are often capped (e.g. at a maximum of 5 per cent of the agreed remuneration). In light of price increases of up to around 300 per cent, such caps should be reviewed and either removed or at least set at a significantly higher level. Alternatively, a mutual special termination right could be considered if price increases exceed a predefined threshold.

The most effective way to address disruptive market developments is through flexible pricing or price adjustment models in new contracts. In this context, it is worth considering to what extent so-called open-book approaches can be applied. Under such models, the contractor discloses its procurement costs and pricing calculations to the contracting authority. Only the procurement costs are subject to adjustment and must be substantiated by the contractor (e.g. through manufacturers' price lists, invoices, or similar documentation).

When drafting the contract, the contracting authority and the tenderer may also assess on a case-by-case basis whether, and in what form, price reductions should be agreed. One possible approach is to link price reductions to a variable reference value, such as manufacturers' list prices. However, it should be considered that not all manufacturers

operate established list price models. To avoid restricting competition, alternative approaches may therefore need to be considered (e.g. open-book models).

Such a list price-based approach establishes a transparent and uniform basis for calculation for both the contracting authority and the bidder, as the reference price is clearly defined and equally verifiable for all bidders. At the same time, this model enables manufacturers and resellers to respond flexibly to exceptional market price movements within existing framework agreements, without jeopardising the economic viability of individual call-offs due to interim price increases.

To ensure that the model is compliant with public procurement law and practical to implement, it is recommended to clearly define the reference list price, to require documentation of the applicable list price in each individual case (evidence at the time of call-off), and—depending on the procurement object—to include provisions for product substitutions. In this way, the model can help to avoid excessive risk premiums, improve the comparability of tenders, and at the same time strengthen security of supply for the public sector in a volatile market environment.

Bitkom represents more than 2,300 companies from the digital economy. In Germany, these companies generate over €200 billion in revenue from digital technologies and solutions and employ more than 2 million people. Its members include more than 1,000 SMEs, over 700 start-ups, and nearly all global industry leaders. They provide software, IT services, telecommunications and internet services, manufacture devices and components, operate in the digital media sector, create content, run platforms, or are otherwise part of the digital economy. A total of 82 percent of Bitkom's member companies are headquartered in Germany, 8 percent elsewhere in Europe, and 7 percent in the United States, with a further 3 percent from other regions of the world. Bitkom promotes and advances the digital transformation of the German economy and advocates for broad societal participation in digital developments. Its objective is to position Germany as a high-performing and sovereign digital economy.

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