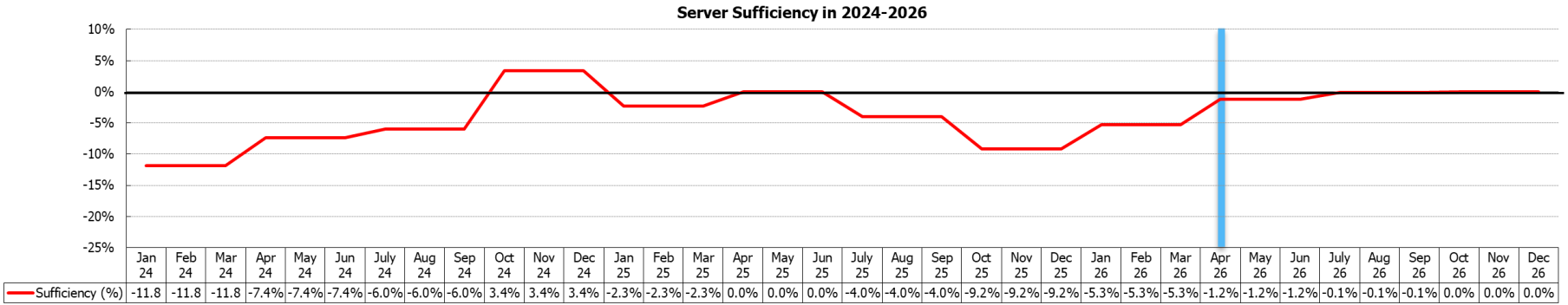
ASBIS BYOS 2026

KINGSTON TECHNOLOGY EUROPE CO LLP
Marcin Gaczor
Business Development Manager Cz/Sk

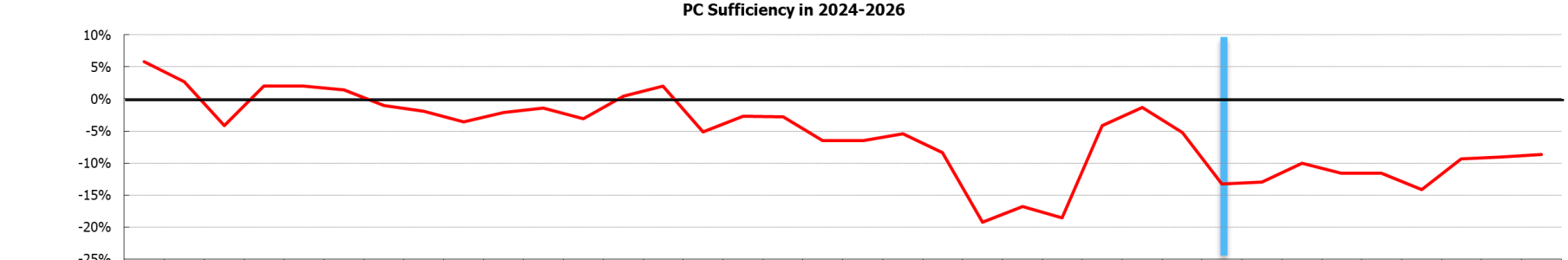
Kingston TECHNOLOGY
BUILT ON COMMITMENT

DRAM MEMORY UPDATE

Global Supply Sufficiency



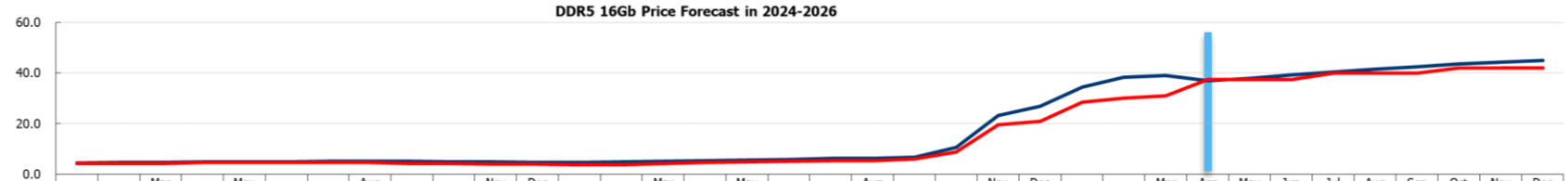
	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	July 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	July 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26	May 26	Jun 26	July 26	Aug 26	Sep 26	Oct 26	Nov 26	Dec 26
Sufficiency (%)	-11.8	-11.8	-11.8	-7.4%	-7.4%	-7.4%	-6.0%	-6.0%	-6.0%	3.4%	3.4%	3.4%	-2.3%	-2.3%	-2.3%	0.0%	0.0%	0.0%	-4.0%	-4.0%	-4.0%	-9.2%	-9.2%	-9.2%	-5.3%	-5.3%	-5.3%	-1.2%	-1.2%	-1.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%



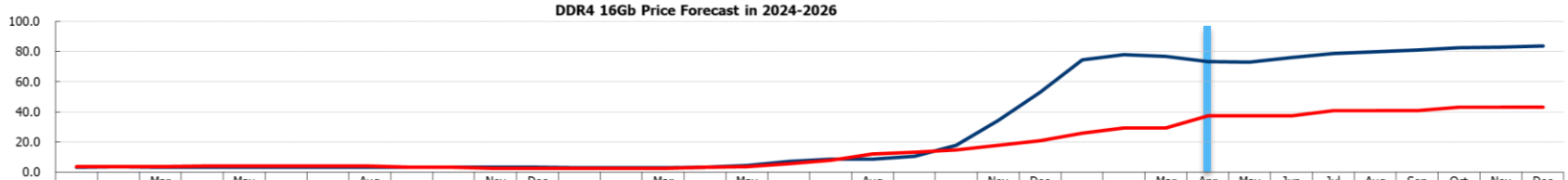
	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	July 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	July 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26	May 26	Jun 26	July 26	Aug 26	Sep 26	Oct 26	Nov 26	Dec 26
Sufficiency (%)	5.8%	2.7%	-4.2%	2.0%	2.0%	1.4%	-1.0%	-1.9%	-3.6%	-2.1%	-1.4%	-3.0%	0.4%	2.0%	-5.2%	-2.7%	-2.8%	-6.5%	-6.5%	-5.4%	-8.4%	-19.3	-16.8	-18.5	-4.1%	-1.3%	-5.3%	-13.3	-12.9	-10.0	-11.6	-11.6	-14.1	-9.3%	-9.0%	-8.7%

Source: Trendforce 4/2026

Price Forecast



	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26E	May 26F	Jun 26F	Jul 26F	Aug 26F	Sep 26F	Oct 26F	Nov 26F	Dec 26F
DDR5 16Gb, 2Gx8 Spot	4.38	4.67	4.70	4.78	4.89	4.85	5.00	5.14	5.00	4.87	4.79	4.72	4.68	4.77	5.10	5.40	5.52	5.85	6.11	6.12	6.57	10.66	23.22	26.95	34.34	38.25	38.98	37.02	37.80	39.30	40.40	41.50	42.50	43.50	44.30	45.00
DDR5 16Gb, 2Gx8 Contract	4.10	4.10	4.10	4.65	4.65	4.65	4.65	4.50	4.05	4.05	3.90	3.90	3.75	3.80	4.25	4.60	4.80	5.10	5.25	5.25	6.10	8.70	19.50	20.80	28.50	30.00	31.00	37.50	37.50	37.50	40.00	40.00	40.00	42.00	42.00	42.00



	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26E	May 26F	Jun 26F	Jul 26F	Aug 26F	Sep 26F	Oct 26F	Nov 26F	Dec 26F
DDR4 16Gb, 2Gx8 Spot	3.46	3.56	3.55	3.53	3.55	3.39	3.46	3.42	3.29	3.24	3.20	3.19	3.15	3.02	3.02	3.40	4.33	7.01	8.54	8.91	10.70	18.05	34.51	52.93	74.50	77.90	76.72	73.47	73.00	76.00	78.50	80.00	81.00	82.50	83.00	83.50
DDR4 16Gb, 2Gx8 Contract	3.60	3.60	3.60	4.20	4.20	4.20	4.20	4.10	3.20	3.20	2.55	2.55	2.55	2.55	2.55	3.20	3.60	5.50	8.00	12.00	13.20	14.80	18.00	21.00	26.00	29.50	29.50	37.50	37.50	37.50	41.00	41.00	41.00	43.00	43.00	43.00

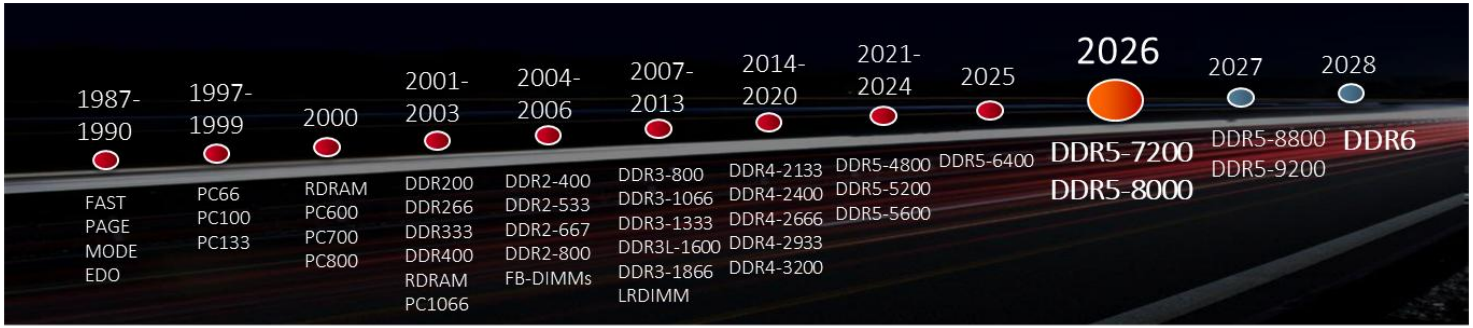


	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26E	May 26F	Jun 26F	Jul 26F	Aug 26F	Sep 26F	Oct 26F	Nov 26F	Dec 26F
DDR4 8Gb, 1Gx8 Contract	1.80	1.80	1.80	2.10	2.10	2.10	2.10	2.05	1.70	1.70	1.35	1.35	1.35	1.35	1.35	1.65	2.10	2.60	3.90	5.70	6.30	7.00	8.10	9.30	11.50	13.00	13.00	18.00	18.00	18.00	20.00	20.00	20.00	21.00	21.00	21.00
DDR4 8Gb, 1Gx8 Spot	1.72	1.82	1.79	1.79	1.75	1.72	1.82	1.81	1.73	1.65	1.56	1.47	1.46	1.45	1.50	1.70	2.18	4.08	5.08	4.92	5.49	7.76	12.78	19.69	28.52	31.47	33.65	33.74	34.30	34.70	35.50	36.20	36.90	37.40	37.90	38.20

Source: Trendforce 4/2026

KINGSTON SOLUTIONS

Memory Roadmap



Technology	Data Rate	Module Classification	Peak Bandwidth
DDR5 (1.1V)	9200	DDR5-9200 / PC5-9200	73,600 MB/s or 73.6 GB/s
	8800	DDR5-8800 / PC5-8800	70,400 MB/s or 70.4 GB/s
	8000	DDR5-8000 / PC5-8000	64,000 MB/s or 64.0 GB/s
	7200	DDR5-7200 / PC5-7200	57,600 MB/s or 57.6 GB/s
	6400	DDR5-6400 / PC5-6400	51,200 MB/s or 51.2 GB/s
	5600	DDR5-5600 / PC5-5600	44,800 MB/s or 44.8 GB/s
	5200	DDR5-5200 / PC5-5200	41,600 MB/s or 41.6 GB/s
	4800	DDR5-4800 / PC5-4800	38,400 MB/s or 38.4 GB/s
DDR4 (1.2V)	3200	DDR4-3200 / PC4-3200	25600 MB/s or 25.6 GB/s
	2666	DDR4-2666 / PC4-2666	21300 MB/s or 21.3 GB/s

DDR5 JEDEC Specifications

Form Factors

288-pin DIMM
262-pin SODIMM
CAMM2



Performance (in MT/s)

4400 / **4800** / **5200** / **5600** / 6000 / **6400** / 7200 / 7800 / 8000 / 8400 / 8800 / 9200

Power

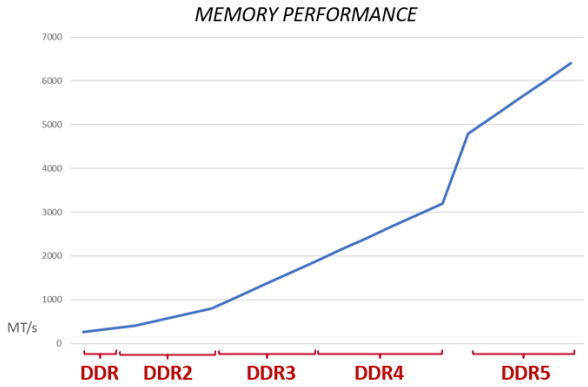
1.1V, 12V for Hybrid DIMM (3-pins)

DRAM Densities / DIMM Capacities

16Gbit, 24Gbit, 32Gbit (x4, x8, x16)
8GB, 12GB, 16GB, 24GB, 32GB,
48GB, 64GB, 96GB, 128GB, 256GB

Module Types

ECC Registered DIMM
ECC Unbuffered DIMM / SODIMM
Non-ECC Unbuffered DIMM / SODIMM
ECC/Non-ECC CUDIMM / CSODIMM
MRDIMM
LPDDR5X / DDR5 CAMM2



JEDEC Industry Standard Specifications

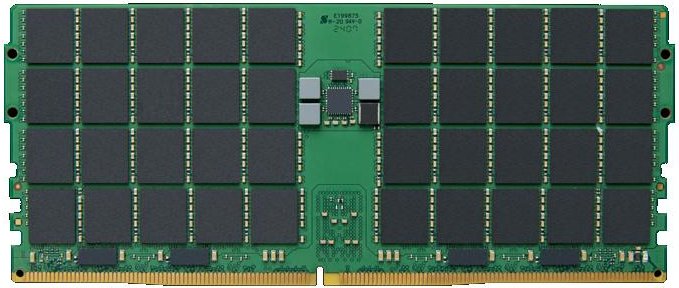
Description		DDR5
Data Rates (Speed in MT/s)		4000, 4400, 4800, 5200, 5600, 6000, 6400 MT/s
Monolithic DRAM Densities (Gbit)		8Gb, 16Gb, 24Gb, 32Gb, 48Gb, 64Gb
Package Type and Ballout (x4, x8 / x16)		BGA, 3DS TSV (78, 82 / 102)
Interface	Voltage (V_{DD} / V_{DDQ} / V_{PP})	1.1 / 1.1 / 1.8 V
	Internal V_{REF}	V_{REFDQ}, V_{REFCA}, V_{REFCS}
	Command/Address	POD (Pseudo Open Drain)
	Equalization	DFE (Dynamic Feedback Equalization)
	Burst Length	BL16 / BC8 / BL32 (optional)
Core Architecture	Number of Banks	32 Banks (8 Bank Groups) 8 BG x 4 banks (16-64Gb x4/x8) 8 BG x 2 banks (8Gb x4/x8) 16 Banks (4 Bank Groups) 4 BG x 4 banks (16-64Gb x16) 4 BG x 2 banks (8Gb x16)
	Page Size (x4 / x8 / x16)	1KB / 1KB / 2KB
	Prefetch	16n
	DCA (Duty Cycle Adjustment)	DQS and DQ
	Internal DQS Delay Monitoring	DQS interval oscillator
	ODECC (On-die ECC)	128b+8b SEC error check and scrub
	CRC (Cyclic Redundancy Check)	Read/Write
	ODT (On-die Termination)	DQ, DQS, DM, CA bus
	MIR ("Mirror" pin)	Yes
	Bus Inversion	Command/address inversion (CAI)
	CA Training, CS Training	CA training, CS training
	Write Leveling Training Modes	Improved
	Read Training Patterns	Dedicated MRs for user-defined serial, clock, and LFSR - generated training patterns
	Mode registers	Up to 256 x 8 bits
	PRECHARGE Commands	All bank, per bank, and same bank
	REFRESH Commands	All bank and same bank
	Loopback Mode	Yes

24Gbit & 32Gbit Compatibility

		24Gbit	32Gbit
PC / LAPTOP	Intel Ultra Series 2 / 800-Series Chipset	YES	YES
	Intel 14th Gen / 700-Series Chipset	YES	YES ON SELECT BOARDS WITH BIOS UPDATE
	Intel 13th Gen / 700-Series Chipset	YES	YES ON SELECT BOARDS WITH BIOS UPDATE
	Intel 12th Gen / 600-Series Chipset	YES	NO
	AMD Ryzen (AM5) / 800-Series Chipset	YES	YES WITH BIOS UPDATE
	AMD Ryzen (AM5) / 600-Series Chipset	YES	YES WITH BIOS UPDATE
SERVER / WORKSTATION	Intel Xeon 6 (Granite Rapids-SP/AP only)	YES	YES
	Intel 5th Gen Xeon SP	YES	YES WITH BIOS UPDATE
	Intel 4th Gen Xeon SP	YES	YES WTH BIOS UPDATE
	Intel W 3500/2500 Series / W790 Chipset Intel W 3400/2400 Series / W790 Chipset	YES	NO
	AMD 5th Gen EPYC	YES	YES
	AMD 4th Gen EPYC	YES	YES WITH BIOS UPDATE
	AMD Ryzen Threadripper/PRO 7000 Series / WRX90/TRX50 Chipsets	YES	YES WITH BIOS UPDATE

Multiplexed-Rank DIMM (MRDIMM)

MRDIMM is an acronym for Multiplexed-Rank Dual Inline Memory Module. This is a JEDEC industry standard DDR5 module type intended for use in server environments. MRDIMMs allow for increased data rates (speeds), greater bandwidth, and higher capacities than conventional DDR5 Registered DIMMs using Multiplex Registering Clock Drivers (MRCDs) and Multiplexing Data Buffers (MDBs) to operate at 2x the host interface, effectively doubling the transfer rates. There are two primary form factors for MRDIMMs: Standard Height and Tall Form Factor (TFF) at 56.9mm. The starting speed for first generation MRDIMM is 8800MT/s, and second generation is 12,800MT/s.

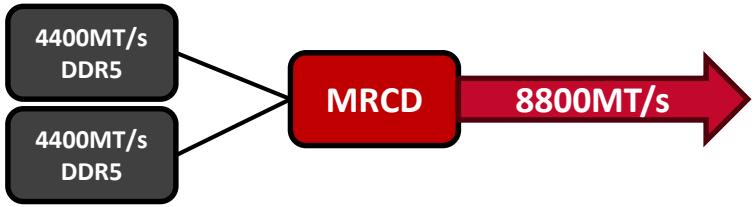


Tall Form Factor (TFF)



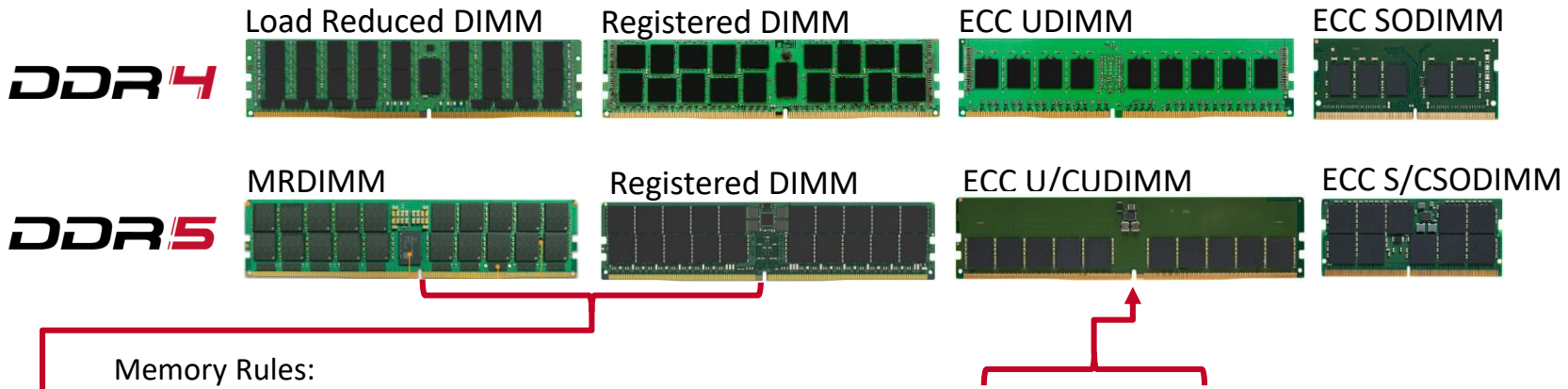
Standard Height

Multiplexing (aka muxing) is a process that allows multiple data signals to be combined and transmitted over a single channel. Without exceeding standard DDR5 RDIMM data rates, this process increases the bandwidth without the need for additional physical connections.



For 2025, compatibility limited to Intel Xeon 6 (Granite Rapids-SP/AP)

Module Types for Server/Workstation Platforms



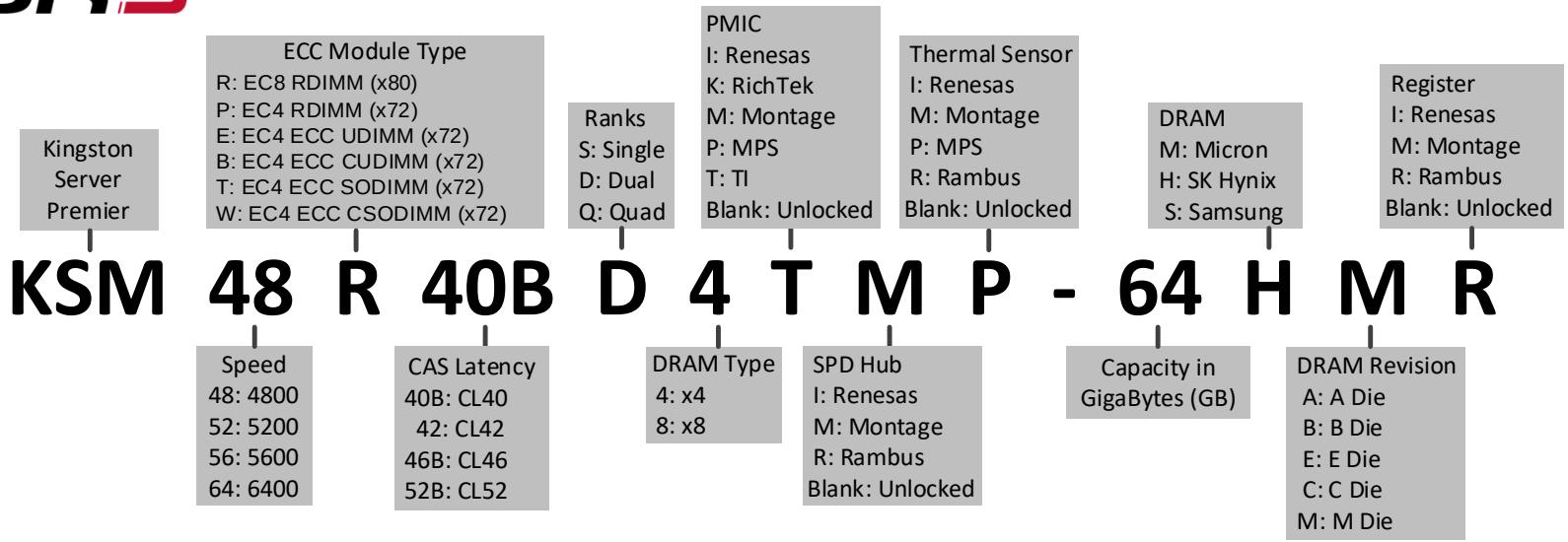
Memory Rules:

- DDR5 MR/RDIMMs feature a different module key than DDR5 ECC U/CUDIMMs, so physically cannot be mixed
- DDR5 is NOT compatible with DDR4 based systems (module will not fit)
- DDR4 is NOT compatible with DDR3 based systems (module will not fit)
- Install memory in kits of identical modules according to memory architecture (6-channel, 8-channel, etc)
- Configure *all* processors the same way for best memory optimization
- Do Not Mix Module Types (MR/RDIMM/LRDIMM/ECC UDIMM) on an Intel server platform. See AMD specific platform documentation for rules for mixing with EPYC.
- DDR4, do not mix x4 and x8 within the same server bank group (platform rules may override mixing support)
- DDR5, no mixing of any kind!

Industry Standard Part Decoder – Server / Workstation

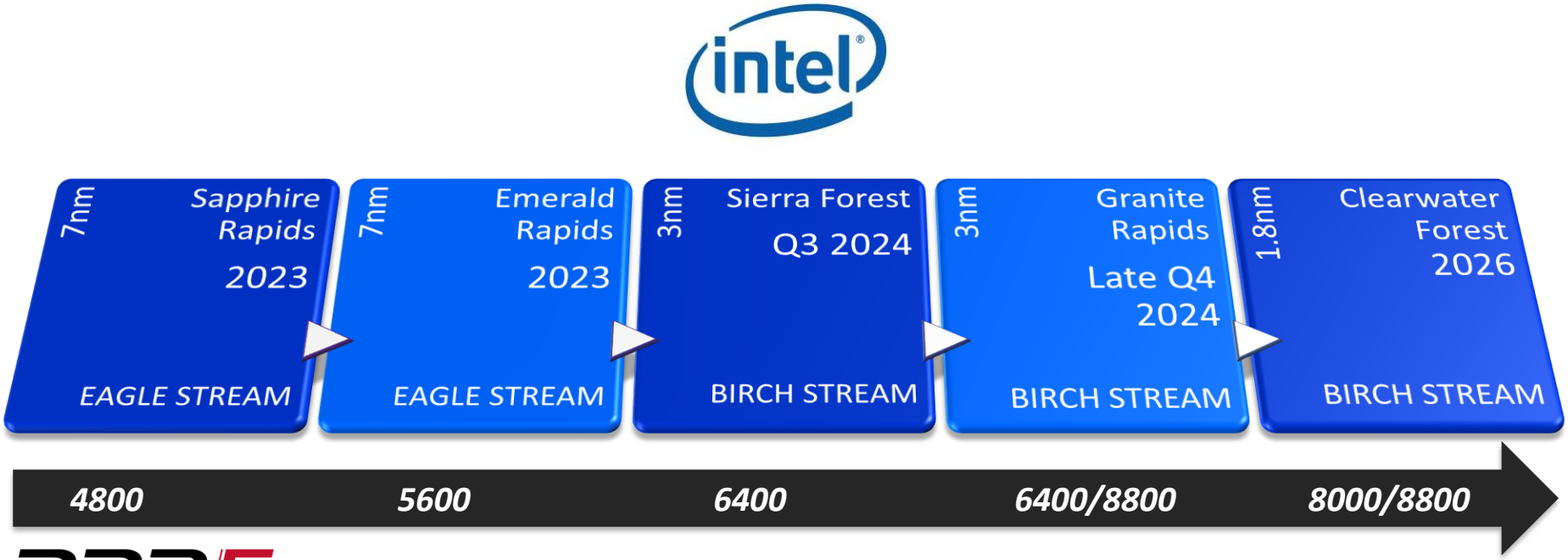
Kingston industry standard memory is built to the specifications outlined by JEDEC, the **J**oint **E**lectron **D**evice **E**ngineering **C**ouncil, on which Kingston holds a seat. Intel, AMD, and other compute chipset architects adhere to these standards for industry agreement and cross-platform compatibility. JEDEC provides the specifications for Pin Count, Form Factor, Speed, Power, and Memory Technology Types.

SERVER PREMIER DDR5



MEMORY CONFIGURATIONS FOR INTEL AND AMD SERVERS

Intel Server Microarchitecture Roadmap



Intel Xeon 6 Platform Overview

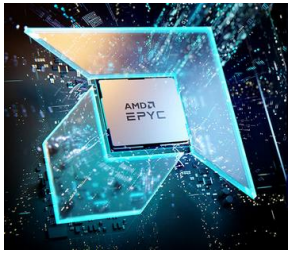
Intel Terminology
AP – Advanced Platform SP – Scalable Platform E-Core – Efficiency processors P-Core – Performance processors



BIRCH STREAM PLATFORM

Intel Xeon 6 6700E Series	Intel Xeon 6 6500P/6700P Series	Intel Xeon 6 6900E/6900P Series	Intel Xeon 6+
SIERRA FOREST-SP	GRANITE RAPIDS-SP	GRANITE RAPIDS-AP	CLEARWATER FOREST-SP
DDR5-6400 RDIMMs 8 Channel 2DPC / 16 sockets per CPU	DDR5-6400 RDIMMs DDR5-8000 MRDIMMs 8 Channel 2DPC / 16 sockets per CPU	DDR5-6400 RDIMMs DDR5-8800 MRDIMMs (P-Core only) 12 Channel 1DPC / 12 sockets per CPU	DDR5-8000 RDIMMs DDR5-8800 MRDIMMs (P-Core only) 12 Channel 1DPC / 12 sockets per CPU

AMD Servers Featuring “Zen” Microarchitecture

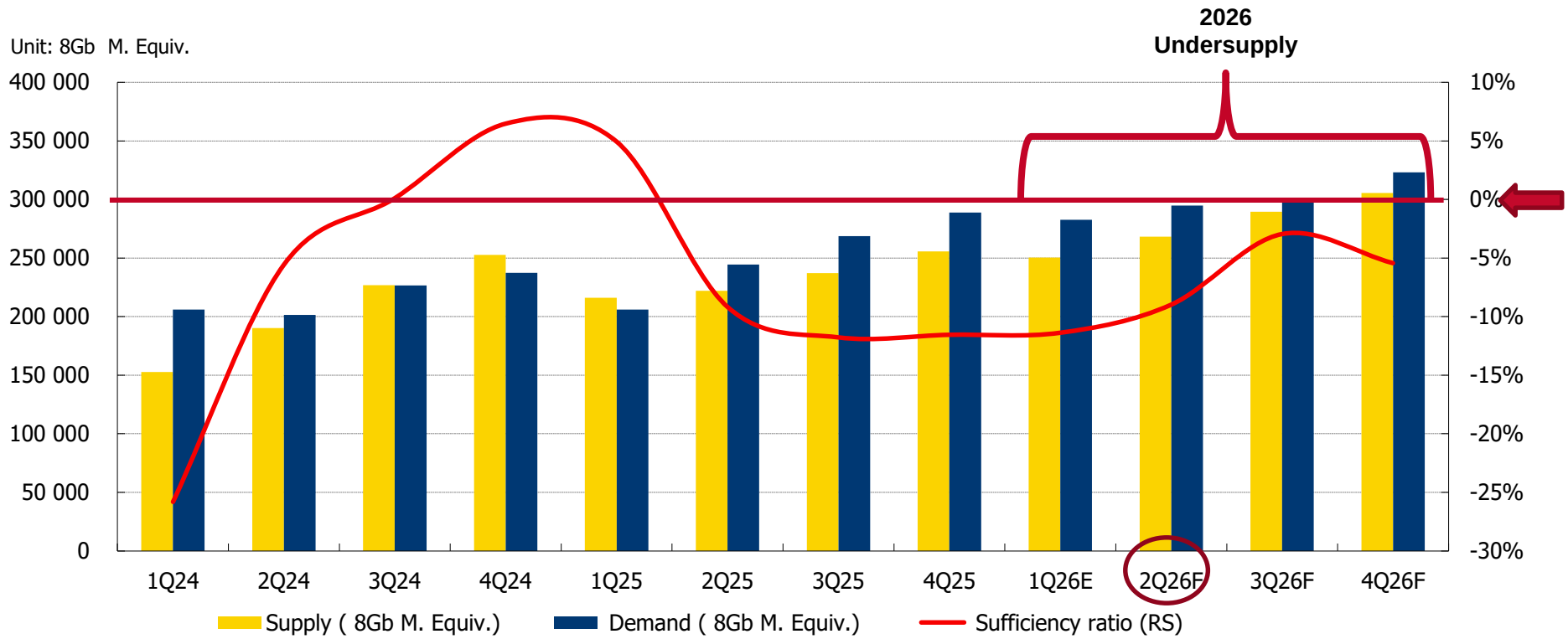




SSD

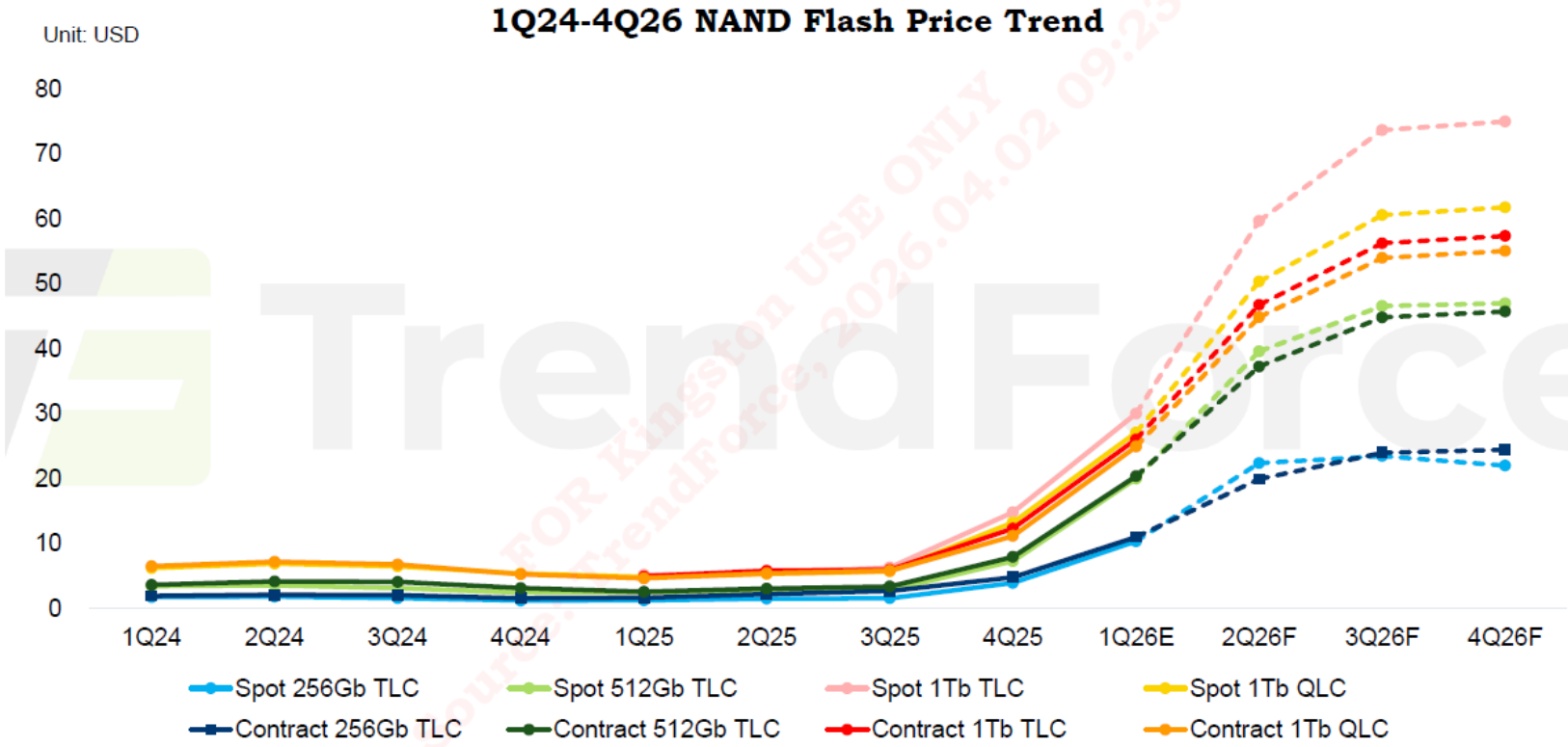
NAND SUFFICIENCY FORECAST

Source: TrendForce, Mar'26



Spot and Contract Prices

Source: TrendForce, Mar'26



TrendForce
FOR Kingston USE ONLY
Source: TrendForce, 2026.04.02 09:23

Kingston Solid-State Drives

Data Center/Enterprise SSD – Current Shipping Portfolio







	DC600M DC600ME	DC2000B	DC3000ME
Capacities	480GB – 7.68TB	240GB - 960GB	3.84TB – 15.36TB
Seq R/W *up to	560 MB/s 530 MB/s	7,000 MB/s 1,300 MB/s	14,000MB/s 10,000MB/s
FF/Interface	2.5” SATA	PCIe 4.0 NVMe M.2 2280	PCIe 5.0 NVMe U.2
4K Random R/W *up to	94K/78K IOPS	540K/47K IOPS	2.8M/400K
Application Examples	Database, OLTP, Cloud, Caching Tier	Server Boot	AI, OLTP, HPC, Cloud
DRAM Cache	Yes	Yes	Yes
Hardware PLP	Yes	Yes	Yes
TCG Opal/AES 256-Bit Encryption	Yes	Yes	Yes
Endurance (DWPD)	1 DWPD	0.4 DWPD	1 DWPD
Warranty	5 Year	5 Year	5 Year
Status	Shipping	Shipping	Shipping



Kingston Solid-State Drives

Client SSD – Current Shipping Portfolio

	Value		Mainstream	High Performance Gen 4		High Performance Gen 5	External Portable SSD
				EoL Jun'26 			
	NV3	**A400**	**KC600**	**KC3000**	**FURY Renegade**	**FURY Renegade G5**	**Dual Portable XS1000 | XS2000**
Status	Shipping	Shipping	2.5" = Shipping mSATA = Shipping	Shipping	w/ Heatsink = Shipping	Shipping	Shipping
Capacities	500G – 4TB	240GB – 960GB	256GB – 2TB	512GB – 4096GB	1TB – 4TB	1024GB – 8192GB	DPSD = 512G – 1TB XS1K = 1TB – 2TB XS2K = 500G – 4TB
Seq Read Speeds	Up to 6,000 MBs	Up to 500 MBs	Up to 550MBs	Up to 7,000 MBs	Up to 7,300 MBs	Up to 14,800 MBs	DPSD = Up to 1050 MBs XS1K = Up to 1050 MBs XS2K = Up to 2000 MBs
FF/Interface	PCIe 4.0 NVMe M.2 2280 & 2230 (up to 2TB)	2.5" SATA 6.0	2.5" SATA 6.0 mSATA	PCIe 4.0 NVMe M.2 2280	PCIe 4.0 NVMe M.2 2280	PCIe 5.0 NVMe M.2 2280	DPSD = USB 3.2 2x1 XS1K = USB 3.2 2x1 XS2K = USB 3.2 2x2
Cache Type	HMB	HMB	DRAM	DRAM	DRAM	DRAM	pSLC
Features	Affordable Performance Entry Level Gen 4	Affordable Performance HDD Upgrade	Mainstream Perf SATA 256-bit Encryption TCG Opal/AES/E-Drive	Graphene Alum Heat Spreader Gen 4 PCIe NVMe	Heat Spreader or Heatsink Gen 4 PCIe NVMe For Gamers!	Gen-5 PCIe NVMe Speeds Full Capacities	DPSD = No cable req XS = Pocket Sized USB Type-C Port + Cable
Warranty	5 Years	3 Years	5 Years	5 Years	5 Years	5-Years	5 Years

Kingston Industrial SSD Products

Key Differentiators: Lower Capacity, Smaller Form Factors, Controlled BOM, Industrial Operating Temperature **(-40°C to 85°C)**



2.5”, 7mm SATA
cTemp & iTemp



M.2 SATA 2280

cTemp & iTemp



M.2 SATA 2242



mSATA





M.2 PCIe NVMe 2230 & 2280

Thank You