AMD EPYC processor features and specifications

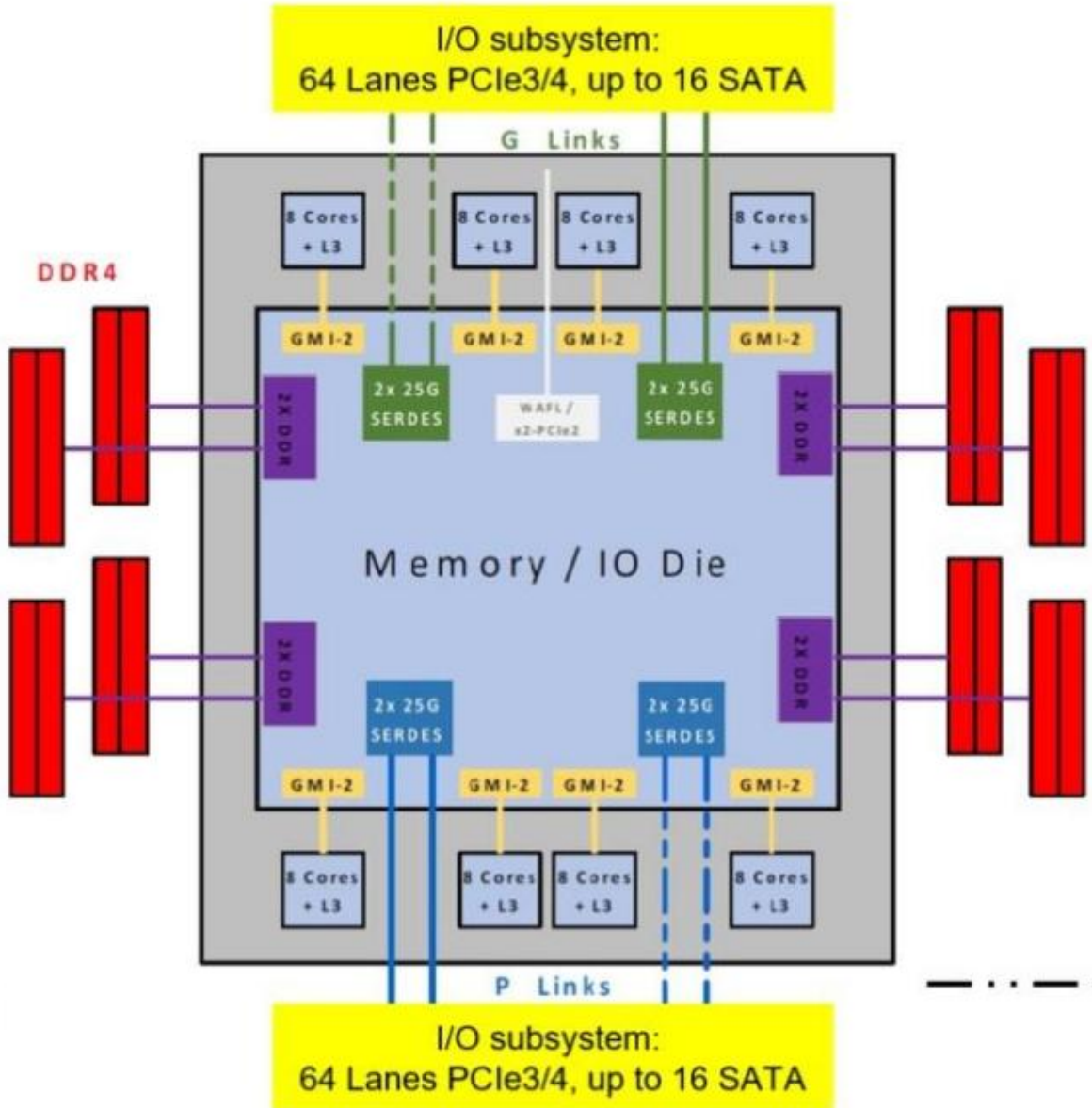
Features and technical specifications

Lenovo

AMD EPYC processor specifications

Feature	Specifications
Socket SP3	78.9 mm x 119.3 mm LGA, screw actuated
Module size	58.5 mm x 75.4 mm at 1.00 mm x 0.87 mm pitch > 4000 pins
Module type	Nine die MCM
TDP	120W, 155W, 180W, 200W, 225W, 240W, and 280W
Max cores / socket	64 cores / 128 threads 512 KB L2 per core, 16 MB L3 per four-core cluster
Memory channels / socket	Eight channels per socket
DIMM types supported	RDIMM, LRDIMM, 3DS DIMM, NVDIMM-N
Combo links / socket	Eight to 16 bit links
Coherent links	Configurable: three or four xGMI-2
PCIe per 1 socket system	PCIe 4: 128 lanes + PCIe 2: two lanes
PCIe per 2 socket system	PCIe 4: 128, 160 lanes + PCIe 2: two lanes (one per socket)
SATA3 per 1 socket system	32 lanes in lieu of PCIe
SATA3 per 2 socket system	32 lanes in lieu of PCIe (16 / socket)
Native I/O	Four USB3, two UART, six I2C, APML, SPI, LPC, RTC, Power control, etc.

AMD EPYC processor architecture diagram



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AMD EPYC product features

- Up to 64 cores
- Frequency improvement in many DDR4 DIMM configurations
- Reduced system diameter (1 hop) 2P systems resulting in significant average memory latency reduction
- Higher speed links
  - PCIe 4 at 16 Gbps, xGMI-2 at 16-20 Gbps. S-Link (CCIX 2.0) up to 20 Gbps, PCIe ESM up to 25 Gbps
  - USB 3.1 Gen 2 (10 Gbps)
  - Additional PCIe 4 in 2S systems with reduced number of xGMI-2
- Microarchitecture: IPC, power, RAS improvements
  - Core and un-core improvements. (Branch predict improvements, 256 b load store)
  - Cache hierarchy: Private L2, L3 shared by 4 cores; 2 L3/cluster
  - DRAM read retry
  - AMD SEV (Secure Encrypted Virtualization) Enhancements (#keys increased, SEV-IO, SEV-ES)
- Significant performance improvement over the previous processor version
  - Target ~70% throughput improvement (SPECint rate) at maximum core count (180-200W OPNs)
  - Target ~25% performance improvement at 32 cores (180W TDP)
  - 256 b internal AVX2 support. Target four DP FLOPS improvement at 64 cores

AMD EPYC series processor

AMD EPYC 7702P

- EPYC = Brand
- 7 = 7000 series; for high performance server use
- 70/50/40/30 = Model number; a higher number indicates higher levels of performance. No direct link to core counts, TDP, or frequency
- 2 = Generation (2nd generation: codenamed Rome)
- P = Single socket, not present in dual socket

AMD EPYC processor population rule

General CPU population rules

- When using the rear-bay and mid-bay storage configuration in a 3.5-inch chassis, only ≤155W CPUs are supported.
- When using mid-bay storage in a 2.5-inch chassis, only ≤155W CPUs are supported.
- If there is no mid-bay storage or GPU adapter, use an advanced heat sink.
- If the configuration includes either mid-bay storage or a GPU adapter, use a standard heat sink for ≤155W CPUs and an advanced heat sink for ≥180W CPUs.

Note: For more information, please refer to each system's Setup Guide on Lenovo Support.

Support list for AMD EPYC processors

Processor model	Core	Core speed	TDP	Part number
AMD EPYC ROME 7742 Processor	64	2.2 GHz	225W	SSA7A57418
AMD EPYC ROME 7702 Processor	64	2.0 GHz	200W	SSA7A57952
AMD EPYC ROME 7702P Processor (1P only)	64	2.0 GHz	200W	SSA7A57957
AMD EPYC ROME 7502 Processor	32	2.5 GHz	180W	SSA7A57419
AMD EPYC ROME 7502P Processor (1P only)	32	2.5 GHz	180W	SSA7A57958
AMD EPYC ROME 7452 Processor	32	2.2 GHz	155W	SSA7A57953
AMD EPYC ROME 7402 Processor	24	2.8 GHz	180W	SSA7A57959
AMD EPYC ROME 7402P Processor (1P only)	24	2.8 GHz	180W	SSA7A57954
AMD EPYC ROME 7302 Processor	16	2.8 GHz	155W	SSA7A57955
AMD EPYC ROME 7302P Processor (1P only)	16	2.8 GHz	155W	SSA7A57960
AMD EPYC ROME 7262 Processor	8	3.1 GHz	155W	SSA7A57956

Note: For the latest information, please refer to the Lenovo Press Web site.