



Supercharge Your Microsoft SQL Server Databases

With Cisco UCS and AMD EPYC 7003 Series processors

Imagine gaining better performance from your Microsoft SQL Server deployments to speed business insights and optimize costs. Cisco UCS rack servers and AMD EPYC processors deliver.

There are many parameters that contribute to an optimal database deployment. Two that are often at the forefront of decisions are cost and performance. The Cisco UCS® C245 M6 Rack Server and Cisco UCS C225 M6 Rack Server with AMD EPYC™ 7003 Series processors can help you achieve excellent performance to deliver business insights quickly. When you select the right processor and server for your workloads, you can save capital costs and help reduce Microsoft SQL Server license costs.

Managed by Cisco Intersight™ platform, you gain the trifecta of easy deployment and management, excellent performance, and a cost-effective solution.



Benefits

- Get more done and faster, across multiple workloads
- Rightsize your processing power and hosting model to reach your performance and agility goals
- Help protect stakeholders with advanced security features, on premises or in the cloud
- Help reduce data-center cost, power, and space

Managing the future

When sizing infrastructure for databases, it can be difficult to optimize for both today and through the next three to five years. None of us has a crystal ball so we do our best to find the right combination of processor cores, speed, and memory, to optimally power Microsoft SQL Server without overpaying for processor cores or software licenses. Typically, if you don't size your infrastructure correctly from the beginning, adding hardware to scale can be difficult and costly. Address this issue up front by adding manageability to your list of considerations because it can help maintain performance and reduce operational costs.

Choose the right server

Whether you want to deploy a standalone database server with massive amounts of internal storage, or a server connecting to enterprise-shared storage, we offer Cisco UCS rack servers with AMD EPYC processors to meet your needs:

- Choose the [Cisco UCS C245 M6 Rack Server](#), a 2-socket, 2-rack-unit (2RU) system when you want large amounts of internal storage. With up to 28 front-panel-accessible small-form-factor disk drives plus the option of four rear-accessible NVMe drives, you can meet all of your database performance and storage needs.
- Choose the [Cisco UCS C225 M6 Rack Server](#), our 2-socket, 1RU system for small-to-medium-size databases with internal storage and those using enterprise-shared storage. This server is single-socket-optimized so that even if you

install just one processor, you have access to all of the server's I/O capabilities.

Choose the right processor

There are many reasons to choose [AMD EPYC processors](#) to power your Microsoft SQL Server databases:

- **Scalability:** Microsoft SQL Server scales extremely well with the number of processor cores, so you can choose from 8 to 128 cores per 2-socket server to power the database management system with just the right amount of processing power.
- **Advanced security features:** Protect your business-critical data with AMD Infinity Guard features that help secure the boot process, encrypt main memory with secure memory encryption (SME), and secure virtualized environments and containers with secure encrypted virtualization (SEV). Now with features supporting encrypted state and secure nested paging, AMD EPYC processors can help cryptographically isolate and secure your data better than ever.
- **High-frequency processors:** In addition to AMD's standard server processor product line, you can choose from a set of high-frequency processors that use a smaller number of cores but with increased performance due to higher clock frequencies. This is achieved with the AMD multichip architecture, where active cores are distributed across separate chips within the processor. This changes thermal characteristics so that each core can run faster and speed database performance. Use these processors

when you want to get the most out of your licensing costs.

- **Low total cost of ownership (TCO):** You can optimize TCO by striking the right balance between processor and licensing costs. The [3rd Gen AMD EPYC processors](#) use the "Zen3" core that delivers up to 19 percent more instructions per cycle than the previous generation.

In addition, 3rd Gen AMD EPYC processors feature 128 lanes of PCIe Gen 4 I/O, an integrated security processor on the chip, up to 32 MB of L3 cache per core, and 4-6-8 memory channel interleaving, designed for better economics and performance in multiple DIMM configurations. New in the 3rd Gen processors is clock synchronization between internal fabric and memory, to speed data access.

Benefit from AMD testing

AMD has performed extensive testing to determine the optimal use of processor and licensing costs. Summarized in Table 1, you will see that for all but the largest databases, AMD recommends lower-core-count, higher-frequency processors denoted with "F" in the CPU model. For the largest databases, AMD recommends the highest-performing processor with the highest number of cores, the 64-core EPYC 7763.

In general, the lower the number of cores the higher the clock frequency can be, so, for example, you could use two 8-core EPYC 72F3 CPUs for the best performance when 16 cores are required.

Comprehensive lifecycle management

With the Cisco Intersight platform, you can manage all of your Cisco infrastructure from the cloud through a single interface. Intersight is a software-as-a-service (SaaS) infrastructure lifecycle management solution that simplifies configuration, deployment, visibility, maintenance,

and support. With Intersight, you get all the benefits of SaaS delivery and the full lifecycle management of servers and third-party storage systems distributed across data centers, remote sites, branch offices, and edge environments.

The Cisco Intersight platform is modular, so you can adopt the set of services you need to meet your requirements (Figure 1, on next page). The platform significantly simplifies IT operations

Table 1. AMD EPYC processor recommendations for Microsoft SQL Server (data courtesy of AMD)

Type	Size	Capacity	AMD sizing recommendations		
			Cores	Processor	Memory
DSS	Small	Up to 300 GB and 5 users	8	1 x EPYC 72F3	128 GB
	Medium	300 GB–1 TB up to 10 users	16	1 x EPYC 73F3 or 2 x EPYC 72F3	256 GB
	Large	1–3 TB, up to 20 users	32	1 x EPYC 75F3 or 2 x EPYC 73F3	512 GB
	Very large	>3 TB and >20 users	128	2 x EPYC 7763	1–4 TB
OLTP	Small	Up to 100 GB, up to 50 users	16	1 x EPYC 73F3 or 2 x EPYC 72F3	256 GB
	Medium	100–300 GB, up to 100 users	32	1 x EPYC 75F3 or 2 x EPYC 73F3	512 GB
	Large	300 GB–1 TB, up to 200 users	64	1 x EPYC 7763 or 2 x EPYC 75F3	1–2 TB
	Very large	>3 TB and >200 users	128	2 x EPYC 7763	1–4 TB

IT infrastructure should never be the reason for poor or flat database performance.

The combination of AppDynamics®, Cisco Intersight Workload Optimizer and Cisco Tetration™ helps give you visibility into your database’s performance metrics to inform decisions so that your IT infrastructure can meet the needs of your database and application environments.

Sizing specifications

The supplied sizing specifications should be considered a starting point in estimating sizing requirements. Many factors can influence this selection, and we recommend that you use Cisco technical-solution architects to determine the best combination of Cisco UCS and AMD technologies to meet your specific business needs.

Learn more

Explore the following resources to learn more about powering your Microsoft SQL Server database with Cisco UCS servers and AMD EPYC processors:

[Microsoft® SQL Server Tuning Guide for AMD EPYC™ 7003 Series Processors](#)

[Cisco UCS C245 M6 Rack Server](#)

[Cisco UCS C225 M6 Rack Server](#)

[Cisco Intersight platform](#)

by bridging applications with infrastructure, providing visibility and management from bare-metal servers and hypervisors to serverless applications, thereby reducing costs and mitigating risk. This unified platform uses an open REST API to provide a common interface that natively integrates with third-party platforms and tools.

Power your SQL Server database

Cisco and AMD have teamed up to bring you two powerful systems that can supercharge your Microsoft SQL Server databases while reducing capital and software licensing costs. These flexible systems and processors deliver the best

possible performance per core, enabling you to rightsize your deployment from the start. As your business needs more power, it is easy to replace the current server with one that is more powerful and redeploy the old server for other applications or smaller databases.

With the Cisco Intersight platform, you can know how your databases are running and have the visibility to predict when your current server is likely to need to be replaced. Cisco and AMD are here to help you succeed.

Act now

Contact your Cisco sales representative and ask how you can improve performance, reduce costs, and easily manage your Microsoft SQL Server infrastructure through Cisco Intersight.

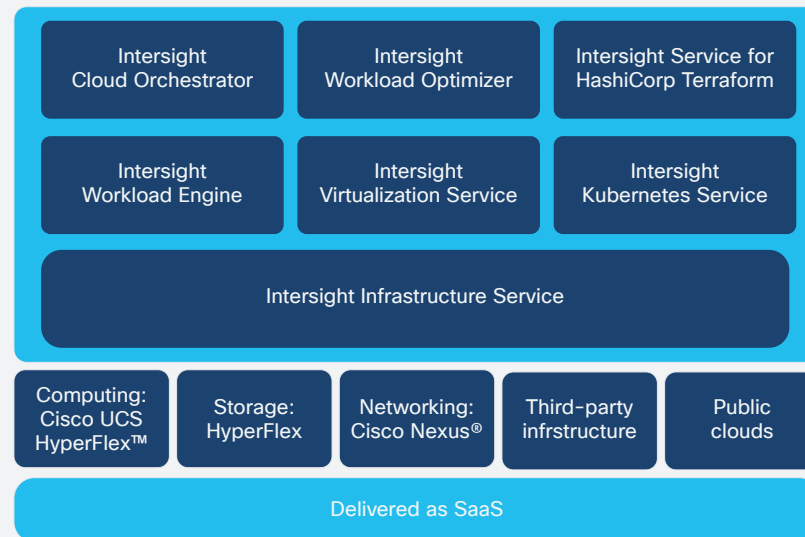


Figure 1. Cisco Intersight is a modular, SaaS platform that delivers comprehensive infrastructure lifecycle management