

Cisco Delivers More Oracle RAC Options

With Cisco UCS X-Series 4-Socket Server and Intel Processors

Drive results with Oracle RAC on the Cisco UCS X410c M7 Compute Node powered by 4th Gen Intel Xeon Scalable Processors

Drive your Oracle RAC deployment with the Cisco UCS® X-Series Modular System using 4-socket Cisco UCS X410c compute nodes. Our solution is ready to serve your data center well into the future with an architecture designed to support many future generations of server, I/O, and networking technologies.

Powered by up to four 4th Gen Intel® Xeon® Scalable Processors, this 4-socket compute node is integrated into a system with 100-Gbps networking and can be integrated into your favorite converged infrastructure. Now you have even more powerful tools to take on the most challenging Oracle RAC workloads.

Maximize flexibility with Cisco UCS X-Series

The Cisco UCS X-Series Modular System simplifies your data center, allowing you to adapt to the unpredictable needs of your business—especially your database workloads. It reduces the number of disparate servers to maintain, helping improve operational efficiency and agility as it helps reduce complexity. You can run many business applications within a single Cisco

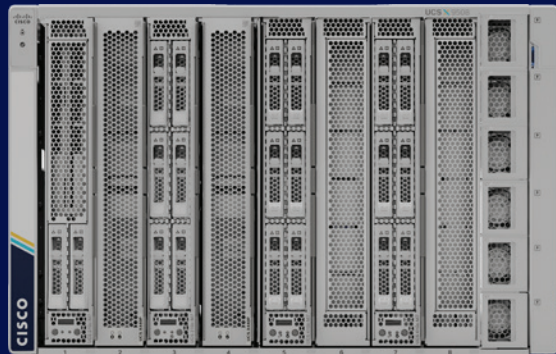
UCS X-Series chassis matching the right Cisco UCS X-Series nodes with your workload needs. Managed by the Cisco Intersight™ IT operations platform, it shifts your focus from administrative details to business outcomes—with infrastructure that is assembled from the cloud, shaped to your workloads, and continuously optimized.

Options and performance from Cisco UCS X-Series

- Maximize your Oracle RAC deployments
- Drive results with Oracle RAC on 4-socket Cisco UCS X410c compute nodes
- Reduce risk
- Invest in sustainability
- Make your data center future-ready

Cisco UCS X-Series Modular System

We can think of several reasons why our solution belongs in your data center:



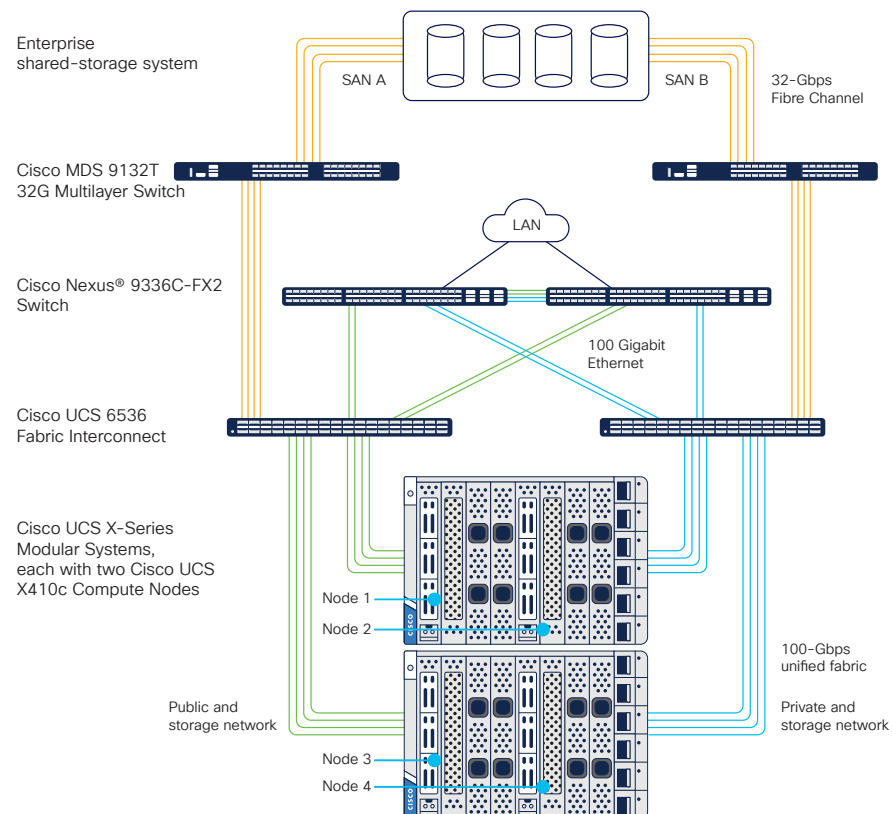
- Simplify your data center while adapting to the unpredictable needs of modern business
- Reduce the number of disparate server types, supporting a wider range of workloads with a single platform
- Shift IT focus from administrative details to business outcomes with a platform that is assembled from the cloud, shaped to their workloads, and continuously optimized
- Be ready for the future with a platform that is engineered to adapt to include new technologies as they become available

Simplify with cloud-operated infrastructure

We move management from the network into the cloud so that you can respond at the speed and scale of your business and manage all of your infrastructure. Shape Cisco UCS X-Series Modular System resources to workload requirements with the Cisco Intersight IT operations platform. Integrate third-party

devices including storage from NetApp, Pure Storage, and Hitachi. Gain intelligent visualization, optimization, and orchestration for all of your applications and infrastructure. Automation drives agility and consistency, helping you reduce time to market while lowering cost and risk.

Figure 1. Oracle RAC architecture



Cisco UCS X410c M7 Compute Node



This enterprise-class Cisco compute node delivers market-leading performance and density for mission-critical, memory-intensive, bare-metal, and virtualized applications with:

- Four 4th Gen Intel Xeon Scalable Processors
- Up to 16 TB of main memory
- Up to 6 hot-pluggable SSD or NVMe drives with enterprise RAID or passthrough controllers
- Two M.2 SATA drives
- Up to two Cisco® virtual interface cards (VICs) can occupy the server's modular-LAN-on-motherboard (mLOM) and mezzanine slots.
- Optional Cisco UCS X440p PCIe Node with up to four half-height or two full-height GPU accelerators

Performance you expect from Cisco

We are dedicated to delivering leading performance for your applications and workloads. Oracle RAC on this Cisco UCS X-Series modular node is no different. We ran a series of industry-standard workloads on a FlexPod converged infrastructure solution from Cisco and NetApp to give you a sense of what kind of performance you can expect with this combination of servers and 100-Gbps network architecture. The tests include FIO, Oracle Swingbench, and the Oracle Silly Little Benchmark (SLOB).

The test results below are simply a representation using a sample workload. Many factors impact results, and it is recommended that a proof-of-concept be run using your exact database setup to gain a more accurate forecast of Oracle results.

Industry-standard FIO

The Flexible IO (FIO) benchmark tests storage performance. It is highly configurable to simulate the read-and-write I/O loads you are likely to encounter with your application workloads.

For this test, we used both 8K and 512K data block sizes. For the 8K block-size test, the average I/O operations per second (IOPS) were 875,000 per server with a latency less than 0.8

milliseconds. For the 512K block-size test, the average throughput was between 140-Gbps and 180-Gbps with a latency less than 2.0 milliseconds.

Oracle Swingbench results

The Oracle Swingbench benchmark was designed to generate an Oracle workload and stress the database. We chose to test an online transaction processing (OLTP) order-entry workload. We configured Swingbench order-entry (SOE) with:

- A container database
- A 4-TB database
- Random 8K I/O
- Various ratios for read/write percent
- 128 to 640 users

This workload delivered up to 311,000 physical IOPS, 2.2 million transactions per minute (TPM), an average latency of less than 1 millisecond, and linear performance scale across the processors.

The Silly Little Oracle Benchmark results

The silly little Oracle benchmark (SLOB) is a toolkit that generates Oracle database schemas and workloads used to stress the system and demonstrate the system's capabilities.

SEAL Sustainable Product of the Year Award for 2023



The Cisco UCS X-Series Modular System has achieved [sustainable product of the year](#) status as a system that is purpose built for a sustainable future. We designed the

Cisco UCS X-Series with best-in-class energy efficiency in mind, helping balance performance needs with new sustainability demands on today's data centers. In a scenario where Cisco UCS X-Series is replacing 64 previous-generation servers:

- Customers can use 3.3x less hardware overall, saving precious rack space.
- They can also reduce almost 100,000 kilowatt hours (KwH) of energy, or the equivalent of powering 10 residential homes for a full year.
- The result is that we can help save almost 40 tons of carbon dioxide (tCO₂e) emissions per year.

We created and ran the test against an OLTP database with:

- A container database
- A 3-TB database

- A random 8K I/O workload
- Various ratios for read and write percentages

We scaled from 128 to 512 users generating up to 810,000 IOPS with less than 1 millisecond latency and linear scale across the 4 sockets.

Deliver seamlessly and reduce risk

Cisco computing and switching are key components of market-leading converged infrastructure solutions such as FlashStack and FlexPod. These solutions are tested and validated using best practices of Cisco, your favorite storage vendor, and Oracle Database, all encapsulated in a Cisco Validated Design that guides deployment and helps reduce risk.

Cisco Validated Designs help installations go quickly, reducing time-to-value, and realizing benefits faster. You can simplify operations using Cisco Intersight management across your converged infrastructure and the rest of your Cisco data center infrastructure. The Cisco UCS X-Series contributes to your sustainability with a focus on power efficiency, less waste in paint, packaging, and shipping materials,

Prepare for the future

With cloud-based lifecycle management through the Cisco Intersight IT-operations platform, you can simplify your data center in multiple ways. Simplify with cloud-operated infrastructure that can respond at the speed and scale of your business by shaping resources to workload requirements. Simplify with an adaptable system designed for modern applications—the system can meet the needs of AI and ML software as easily as it supports your enterprise applications. Simplify with a system engineered for the future. Cisco is known for blade server chassis

that stand the test of time, and the Cisco UCS X-Series is designed to serve your data center and Oracle RAC workloads well into the future by accommodating new technologies as they arise.

Learn more

- [Cisco UCS X-Series Modular System](#)
- [Oracle applications on Cisco UCS](#)
- [FlexPod](#)
- [FlashStack](#)