First Look

Supporting Application Growth and Diversity with Cisco UCS X-Series Modular System Powered by Cisco Intersight

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IT Environment Challenges: [1]

79% The percentage that believes their organization's IT environment is **equally or more complex** than it was two years ago.

33% The percentage that considers an *increase in the number and type of applications used by employees* as a **top catalyst** of this complexity.

IT environments remain complex, and the ubiquity and quickly growing nature of applications can add to this. With application diversity comes disjointed infrastructure. These infrastructure silos can lead to unnecessary operational expenses. Additionally, with the continual adoption of public cloud services and organizations opting to host workloads in public clouds, DevOps and LoB owners are requesting increased flexibility, scalability, and agility in deploying compute, networking, and storage resources, both on premises and in hybrid cloud environments.

Cisco UCS X-Series powered by Intersight

Cisco UCS X-Series with Intersight is a modular system managed from the cloud or an on-premises appliance. The system has been designed to support both traditional enterprise and modern workloads running in a hybrid cloud environment that uses a unified form factor, eliminating the need for multiple IT silos as the number and diversity of applications increase. Cisco UCS X-Series enables organizations to scale infrastructure and leverage new technologies (such as increases in GPU processing power) without performing any standalone upgrades of compute and networking resources. Components include:

Cisco Intersight

Cisco UCS X9508 Chassis

Cisco UCS VIC 14425

Cisco UCS VIC 15231
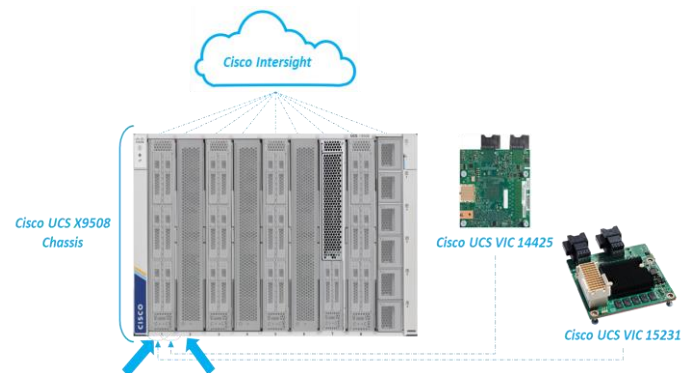
- **Cisco UCS X210c M6 Compute Node** – the first released compute node for the Cisco X-Series, combining the density and cabling advantages of a blade server and the expandability of a rack server. Up to eight X210c M6 compute nodes can reside in the seven-rack-unit (7RU) Cisco UCS X9508 Chassis. This compute node can support up to six 2.5-inch SAS and SATA RAID-compatible SSDs or six 2.5-inch NVMe PCIe drives, increasing the amount of internal storage compared to previous generations of blade servers.
- **Cisco UCS X9508 Chassis** – a midplane-free design with eight flexible slots to install a combination of compute nodes and resources such as GPU accelerator nodes, FPGAs, and storage. This chassis provides efficient power and cooling for any mix of traditional and modern enterprise workloads.
- **Cisco UCS X9108 Intelligent Fabric Modules (IFMs)** - enabling multiple end-to-end 100Gbps Ethernet and 32Gbps Fiber Channel connectivity per compute node.
- **Cisco UCS X9416 X-Fabric Module (XFM)** – used for connecting compute nodes to PCIe nodes via industry-standard PCIe Gen 4 connectivity when adding GPU processing power to the Cisco UCS X210c M6 compute node.
- **Cisco UCS X440p PCIe Node** – module for upgrading Cisco UCS X210c Compute Node with one to four GPUs via Cisco UCS X9416 X-Fabric Module.
- **Cisco UCS Virtual Interface Card (VIC) 14425 -** module that enables up to 50 Gbps of unified fabric connectivity to each of the chassis Intelligent Fabric Modules (IFMs) for 100Gbps connectivity per server. Designed to concurrently supporting Ethernet and Fiber Channel (FC) traffic.

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[1] Source: ESG Research Report: *ESG Research Report: 2022 Technology Spending Intentions Survey*, Nov 2021.

- **Cisco UCS Virtual Interface Card (VIC) 15231** - Ethernet/FC-capable modular LAN on motherboard (mLOM) designed exclusively for the Cisco UCS X210 Compute Node that supports full 100Gbps network flows to each IFM for 200Gbps connectivity. Designed to concurrently supporting Ethernet and Fiber Channel (FC) traffic.

Organizations can configure and manage Cisco UCS X-Series with Cisco Intersight, a cloud operations platform that is delivered as SaaS. Intersight provides organizations with visibility and management of bare-metal servers, hypervisors, containers, and serverless and application components.

ESG Demo Highlights

ESG performed hands-on testing of the Cisco X-Series and initially uncovered the following.

- ESG validated that the Cisco UCS X-Series Modular System helps organizations to add GPU processing power to compute resources simply and efficiently with minimal manual intervention. We observed the ease of augmenting a compute node with GPU modules in a matter of minutes.
- With Cisco Intersight, we saw how organizations can increase operational efficiency. Reconfiguring hardware within a Cisco UCS X-Series chassis is done via software by modifying profiles and related policies. Time related to maintenance windows and troubleshooting issues can decrease without introducing business risk.

- With the higher CPU processing power of the Cisco UCS X210c M6 compute node, we observed that a single instance of an Oracle 19c database application, generated using Oracle Swingbench, can support up to 2.8M TPM of 256 simultaneous users, while only consuming 56% of blade server resources (CPU processing power and internal storage). Based on these results, we can see how organizations can easily scale traditional enterprise applications on a single blade without sacrificing system efficiency and performance. ESG also observed how other applications, such as backup and recovery, can be supported via a blade form factor, without sacrificing the high amount of storage that is usually provided via rack servers.
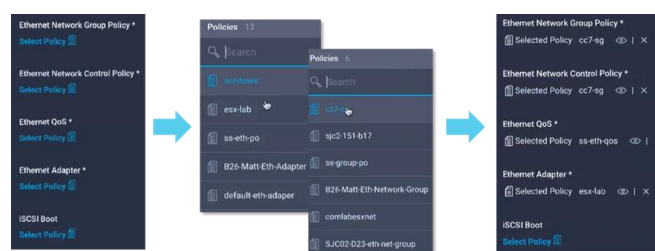
First Impressions

Increasing numbers and diversity of applications leads to disjointed infrastructure, as organizations deploy IT silos of compute, networking, and storage resources optimized for individual workload types. This is particularly true with GPU-based workloads or workloads needing larger amounts of storage that have traditionally been supported by rack servers. However, the resulting IT infrastructure sprawl leads to increased capital expenses, operational overhead, and administration costs.

ESG believes that the Cisco UCS X-Series Modular System can help organizations to reduce this sprawl, as multiple traditional and modern workloads can be consolidated in a unified 7RU form factor. When used in combination with Cisco Intersight, organizations can increase operational efficiency and agility leveraging the Cisco UCS X-Series flexible architecture while minimizing ongoing capital and operational expenses.