MARKET PERSPECTIVE

Cisco Bets Big on Hybrid Cloud, Introduces UCS X-Series Powered by Intersight

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EXECUTIVE SNAPSHOT

FIGURE 1

Executive Snapshot: Key Cisco UCS X-Series Highlights

On June 2, 2021, Cisco introduced UCS X-Series Modular System, a new range of computing platforms for the datacenter (aka servers) and specifically designed for a hybrid cloud, cloud-managed world. Known as UCS X-Series in short, this is perhaps Cisco's biggest product refresh since the introduction of the very successful Cisco Unified Computing System (UCS) range of servers in 2009. Cisco says that its UCS installed base spans more than 50,000 customers worldwide.

Key Takeaways

- UCS X-Series carries many of the key differentiating features of UCS. It brings together the best of rack and blade servers, supports the needs of modern applications, and helps businesses improve operational efficiency, agility, and scale with workload balance and versatility.

- Cisco UCS X-Series is designed to be future ready with support for new and faster interconnect technologies and new shared compute, memory, and storage nodes.

- UCS X-Series can be fully cloud managed for a true hybrid cloud experience. It seamlessly integrates with Intersight, Cisco's cloud-based predictive analytics, insight, and management service.

Recommended Actions

- Reduce operational complexity by focusing on cloud-based predictive analytics, insights, and management capabilities (Cisco Intersight).

- Increase investment protection by enabling seamless and incremental upgrades to new technologies as they become available (UCS X-Series, a future-ready platform).

- Focus on flexible/as-a-service consumption options that reduce initial acquisition costs for companies of all sizes, thus enabling them to adopt hybrid cloud as an operating model (Cisco Plus).

Source: IDC, 2021

NEW MARKET DEVELOPMENTS AND DYNAMICS

On June 2, 2021, Cisco introduced UCS X-Series Modular System (called UCS X-Series in short) powered by Intersight, a new range of computing platforms for the datacenter (aka servers) and specifically designed for a hybrid cloud and cloud-managed world.

Known as UCS X-Series in short, this is perhaps Cisco's biggest product refresh since the introduction of the company's very successful Cisco Unified Computing System (UCS) range of servers released in 2009. Cisco said that its UCS is in use by more than 50,000 customers worldwide, spanning dozens of industries. Cisco's introduction of UCS X-Series is noteworthy for the following reasons:

- **All benefits of 5108.** UCS X-Series is based on UCS and features Unified Fabric Profiles and Policies. It carries over the ability to deploy "stateless servers" that are software defined — which was a chief differentiator for UCS when it was launched.

- **Simpler management.** Unlike UCS, which required an on-premises management setup, UCS X-Series seamlessly integrates with Intersight, Cisco's subscription-based analytics and cloud management service. It also features an Intersight Managed Mode Fabric Interconnect, a new control plane that manages the UCS Fabric Interconnected systems through a Redfish-based RESTful interface for the management of servers, storage, networking, and converged infrastructure.

- **New chassis.** UCS X-Series features seven rack unit (7RU) chassis with several power and cooling innovations. It is energy efficient with support for high-watt processors and accelerators (e.g., GPUs). Cisco UCS X-Series is designed to be future ready, meaning that the internals can be swapped out for generational upgrades as they become available.

- **New compute node.** A new compute node (aka blade) features support for dual CPUs, more DIMMs and more internal drives (6xSFF, 2xM.2), and higher-bandwidth virtual network interfaces (2x VICs). The node also has more real estate (i.e., more PCIe slots) for future additions such as accelerators.

- **Faster Unified Fabric.** UCS X-Series will support 400G and 1600G (in aggregate) Ethernet connections (100G today), enabling organizations to scale their infrastructure as needed. Further, the design does not have a backplane, meaning that there are no scaling limitations as more compute and networking bandwidth is employed.

- **Future additions that include a new UCS X-Series Fabric and new node types.** UCS X-Series features a new fabric for low-latency traffic (with a choice of PCIe 5.0 and 6.0 and CXL when available). This is invisible and within the chassis. New node types, PCIe-only nodes, are for creating shared accelerator pools (aka JBOAs or JBOGs comprising GPUs or FPGAs, or both), shared drive nodes, and shared memory nodes for a true disaggregated infrastructure experience.

The Cisco UCS X-Series launch is part of a global launch that comprises of announcements related to Cisco's "hybrid cloud" vision and strategy. Other pertinent hybrid operations-related announcements include:

- **Intersight Workload Engine:** This is a versatile platform for modern, cloud-native workloads. Built on an open source Kubernetes and Kernel-based virtual machine (KVM) foundation using container-native virtualization, the Intersight Workload Engine is a Cisco operating system for HyperFlex, offering consistent software-as-a-service (SaaS) management.

- **Cisco Service Mesh Manager:** This is a new extension to the Intersight Kubernetes Service, bringing increased observability and simplified management with policy-based security to visualize the services topologies across K8s clusters on premises and in the cloud.
- **Intersight Cloud Orchestrator:** This is a low-code, easy-to-use framework to create and automate complex workflows. It enables ITOps to more easily orchestrate infrastructure and workloads and accelerate delivery of services.
- **Cisco Cloud Application Centric Infrastructure (ACI):** Cloud ACI's common policy and operating model enables significant reduction in the cost and complexity of managing hybrid and multicloud deployments. Cisco Cloud ACI is available on AWS and Azure and, beginning this fall, will be generally available on Google Cloud.

In addition, Cisco made the following announcements related to Observability and Insights:

- **Integration of ThousandEyes** internet and cloud intelligence with the Cisco Catalyst 8000 Edge Series for SD-WAN and Cisco Nexus 9000 switches for datacenters to provide customers with insights on network health and application performance, monitoring across campus, branch, datacenters, and every point of the WAN network between the user and applications
- **Nexus Dashboard Orchestrator,** which acts a single pane of glass for configuring and managing common policies across multiple on-prem ACI sites, AWS and Microsoft Azure regions and, beginning this fall, Google Cloud
- **Intersight Cloud Orchestrator,** which provides a low-code, easy-to-use framework to create and automate complex workflows so ITOps can easily orchestrate infrastructure and workloads and accelerate delivery of services

ADVICE FOR CISCO

Without a doubt, Cisco plays in a tough market. Although Cisco has managed to largely hold on to its installed base, the market is itself changing rapidly, making it harder and harder by the day for vendors like Cisco to make even modest share gains. This is exacerbated by public cloud service providers introducing hardware-based solutions such as AWS Outposts and Azure Stack, which can be used to extend cloud platforms to on-premises datacenters to create hybrid environments.

One of the biggest challenges for Cisco is to restore the faith of the market in blade servers. Companies have been steadily moving away from blade servers to standard rack servers. Software-defined infrastructure solutions (e.g., hyperconverged software platforms) that can be easily deployed on clusters of rack servers have come a long way in providing the scaling and service quality necessary for deploying business-critical applications. This has taken away some of the needs of these organizations to invest in blade servers, which they would consider to be more expensive and difficult to manage relative to new software-defined solutions.

Cisco has addressed quite a few issues with blade servers through UCS X-Series. It has managed to position UCS X-Series as a future-ready investment with support for newer fabric standards and computing technologies. It has made this solution a building block for composable infrastructure with hardware disaggregation that can be introduced as the technologies mature. It has added cloud-based insights and management and made the solution incredibly simple to deploy, manage, and scale. For that and that alone, Cisco has managed to achieve something its competitors have not been able to despite having "first-mover advantages."

IDC does not believe that Cisco will be able to shift the broad market shift away from blade servers with UCS X-Series. However, by focusing on the benefits of deploying UCS X-Series for a hybrid cloud operating model, IDC does believe that Cisco has an opportunity to carve a market share for itself among product lines similar to UCS and Intersight.

A few reasons why organizations have moved from blade servers to rack servers over the past few years and how Cisco UCS X-Series addresses them are discussed in the sections that follow.

Reduce Operational Complexity

Modern software-defined and hyperconverged solutions enable automation of deployment and management functions such as networking, compute, and storage. This reduces complexities with rack solutions that several customers faced early on. It also neutralizes some core benefits blade servers had over rack servers. This affinity with rack servers also helped allow rack servers to become the form factor of choice for those looking to introduce cloudlike IT operations.

Advantage Cisco: Intersight Software as a Service

Cisco saw a need to invest in a SaaS/cloud-based predictive analytics, insight, and management platform early on – when many of its competitors were focusing on on-premises management stacks. One of the key opportunities for Cisco is to showcase the capabilities of Intersight and how it enhances the value proposition of UCS X-Series as a hybrid cloud building block. Cisco needs to highlight the integration with its own HyperFlex software-defined and hyperconverged stack and container management and hybrid applications platforms. Cisco can discuss the way in which it streamlines the deployment and management of not only bare metal and virtualized workloads but also container workloads with its Intersight Kubernetes Service. Finally, Cisco is primarily a networking company. Cisco must highlight how UCS X-Series with Intersight solves many of the storage and application-related networking challenges.

Increase Investment Protection

One reason for organizations losing interest in blade servers is because the core architecture has not changed in nearly 10 years. This had tied the IT team to I/O interconnects that are showing their age. This really starts to be a problem when accelerated computing is introduced and/or when clusters need to rely on the midplane for inter-process communication or failover. Limited storage embedded on each compute blade has increased the need for additional I/O hops to storage nodes, thus introducing latency. This has made blades a bad fit for software-defined and hyperconverged solutions designed to pin virtual machines (VMs) and VMDKs to the same node. Finally, the processor and core density has grown rapidly over the past few years, thus reducing the compute density gap between blade and rack servers (in favor of rack servers).

Advantage Cisco: Next-Generation UCS X-Series Architecture

Cisco says that UCS X-Series brings together the best of rack and blade servers, supports the needs of modern applications, and helps businesses improve operational efficiency, agility, and scale with workload balance and versatility.

For example, Cisco has addressed internal storage and accelerator add-on issues in blade servers. UCS X-Series supports six drives per compute node (plus 2 M.2 drives), thus providing better support for SDI/HCI solutions and workloads that require "DAS" or internal storage. Massive increase to fabric speeds is also important here. UCS X-Series supports high wattage and liquid cooling, thus tilting the scales back to blades for some workloads, especially accelerated computing workloads that generate

massive heat. Cisco has also eliminated a midplane/backplane, introduced support for next-generation I/O fabrics and interconnects, and provided a massive increase to fabric speeds. Cisco UCS X-Series also provides additional slot capacity for adding accelerators to each node or creating a pool of accelerators with dedicated trays.

Reduce Initial Acquisition Costs

IT infrastructure costs are spiraling upward. Initial investments can be steep with blades. Many of Cisco's competitors are marching full steam ahead, each with their own unique infrastructure as a service and flexible consumption offering. Such offerings are becoming as important as technology improvements and new feature/functions. In other words, innovation is not just in hardware and software but also in consumption.

Advantage Cisco: Cisco Plus

Cisco Plus, Cisco's own everything-as-a-service offering, will be critical for the success of UCS X-Series. IDC has seen customers showing interest in consuming blade servers through an "as a service" contract to mitigate initial capital investment requirements. Cisco Plus solutions are designed to help solve for an organization's challenges with capital-intensive infrastructure procurement. Cisco intends to offer the initial cross-portfolio offerings for delivering hybrid cloud technologies and later plans to expand the service to a broader catalog of services that will be built and delivered with its partner ecosystem. Intersight is already as software-as-a-service offering and will nicely complement any infrastructure consumption packages that Cisco puts together for UCS X-Series. IDC recommends Cisco to insert and/or amplify its Cisco Plus messaging when marketing the capabilities of UCS X-Series.

As noted previously, Cisco's UCS X-Series represents one of the most important product refresh announcements in the company's history. The company has clearly taken the pulse of its large UCS installed base, leveraging the tight bonds it has with UCS customers and partners to ensure this refresh addresses their needs today and going forward. Indeed, UCS X-Series addresses the need for higher-performance compute resources via support for high wattage, liquid cooling, and massive increases to fabric speeds; it addresses the need for reduced operational complexity through a mix of improved density and automated infrastructure management software; it addresses concerns some customers have with the initial capital outlay requirements of blade servers through the company's Cisco Plus "as a service" program; and the company has ensured UCS X-Series will be a "future-proof" platform by eliminating the use of a midplane/backplane, supporting next-generation I/O interconnects, and providing a massive increase to fabric speeds. Whether they are measured one at a time or as a complete set of capabilities, the improvements Cisco has made with its new UCS X-Series servers align well with the needs of today's blade server customers and appear set to drive considerable real-world benefits.

IDC'S POINT OF VIEW

Since the advent of public cloud, IT OEM vendors have been playing a defensive strategy in terms of how they articulate the value proposition of their products and services. Up till now, they depended on enabling technology partners for an aggressive release cadence. However, it also meant that their own product development continues to be tied to the silicon partner's technology and process road map. Any upstream delays can dramatically impact OEM vendors' own product release plans. OEM vendors are left with no choice but to shift their innovation elsewhere. For example, a shift to enabling software

development and as-a-service delivery models have emerged as two areas where OEM vendors have been focusing their efforts off late.

This does not mean that we are stuck with old technology. Vendors like Cisco are demonstrating a resolve to combine hardware innovation with software development and as-a-service consumption models to deliver infrastructure solution for the next supercycle for enterprises: a de facto hybrid cloud environment.

Cisco UCS X-Series builds on UCS, Cisco's brand of blade servers, and Intersight, Cisco's cloud-based analytics and management platform. Both Cisco UCS and Intersight are very successful offerings, and when introduced, they set Cisco apart from the rest of its competitors. Both products focused on "what was to come" (i.e., operational models that were revolutionized by the introduction of these products). Cisco UCS, for example, set the stage for converged systems and formed the foundation for successful converged infrastructure solutions like VCE Vblock and NetApp FlexPod. Cisco envisioned a blade server form factor with "stateless computing" that it believed would form the basis for virtualization, convergence and, eventually, hyperconvergence. It also envisioned a dual bare metal and virtualized operating environment for business applications. Cisco Intersight similarly borrowed the playbook from Cisco's Meraki offering to deliver cloud-based predictive analytics and insights, recently complemented by adding management to it.

With UCS X-Series, Cisco is now setting the stage for similar differentiation by focusing on "what is yet to come." It envisions UCS X-Series as an answer to a complex hybrid cloud world that is only getting more complex by the day. If hybrid cloud as an operating strategy is here to stay, the only way it can be sustainable is if the solutions used to build it are simple and scalable to operate, support current and next-generation applications, and support various computing environments including bare metal computing, container hosts, and hypervisors. Architecturally, these platforms need to scale linearly, meaning they need to support open, high-bandwidth and ultralow-latency fabrics and an adaptable design for disaggregated and heterogeneous computing. In other words, the building blocks for hybrid cloud need to be enormously right fit, efficiently and economically scalable, and simple to operate, and for that to happen, they must also mask much of the complexity under the covers.

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- *IDC's Worldwide Storage and Computing Infrastructure Software Platforms Taxonomy, 2021* (IDC #US47545321, March 2021)
- *IDC's Worldwide Converged Systems Taxonomy, 2021* (IDC #US47513921, March 2021)

Synopsis

This IDC Market Perspective provides key highlights of Cisco's UCS X-Series.

Hybrid cloud operations require a solid on-premises infrastructure foundation coupled with cloud-based operational elements. Cisco UCS X-Series, which behaves like a hybrid between blade and rack-based servers, arguably offers an industry-leading value proposition as a building block for deploying a hybrid cloud operations model.

"Complete with Intersight, a cloud-based predictive analytics, insight, and management service, Cisco is making a compelling case for organizations to start their hybrid cloud infrastructure journey with UCS X-Series," said Ashish Nadkarni, group vice president, Infrastructure Systems, Platforms, and Technologies Group at IDC.

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