

ECONOMIC VALIDATION

The Economic Benefits of Modernizing Compute Environments with Cisco UCS X-Series and Intersight

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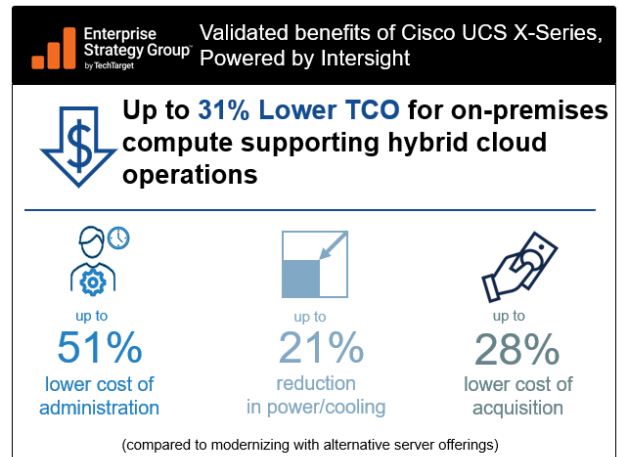
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Executive Summary

Modernizing data centers to increase business agility requires a simplified, flexible, and scalable architecture coupled with a management interface that simplifies IT operational workflows through proactive monitoring, automation, and orchestration. Essentially, this boils down to providing a cloud-like operating model for deploying, configuring, and maintaining resources, as organizations have discovered when using public cloud infrastructure services.

The Cisco UCS X-Series, powered by Intersight, can support the hybrid cloud environments many organizations have in order to promote consistency at both the infrastructure and IT operations levels when supporting both traditional and modern workloads. Through our economic analysis, TechTarget's Enterprise Strategy Group validated that Cisco's combination of disaggregated infrastructure and management system can help organizations shorten their path to modernization, improve operational efficiency, and reduce overall business risk. Our modeled economic scenario revealed that the UCS X-Series, power by Intersight, can lower overall TCO over three years by up to 31% versus alternative server technologies.



Introduction

This Enterprise Strategy Group Economic Validation focused on the quantitative and qualitative benefits that enterprise organizations can expect when they modernize their private and hybrid-cloud compute environments with UCS X-Series infrastructure, powered by Intersight.

Challenges

With the continued adoption of public cloud infrastructure services, organizations have implemented more hybrid cloud environments, which itself can contribute to the continued complexity in IT environments today. In fact, Enterprise Strategy Group (ESG) research uncovered that 53% of survey respondents consider their IT environments equally, if not more, complex than they were two years ago.¹

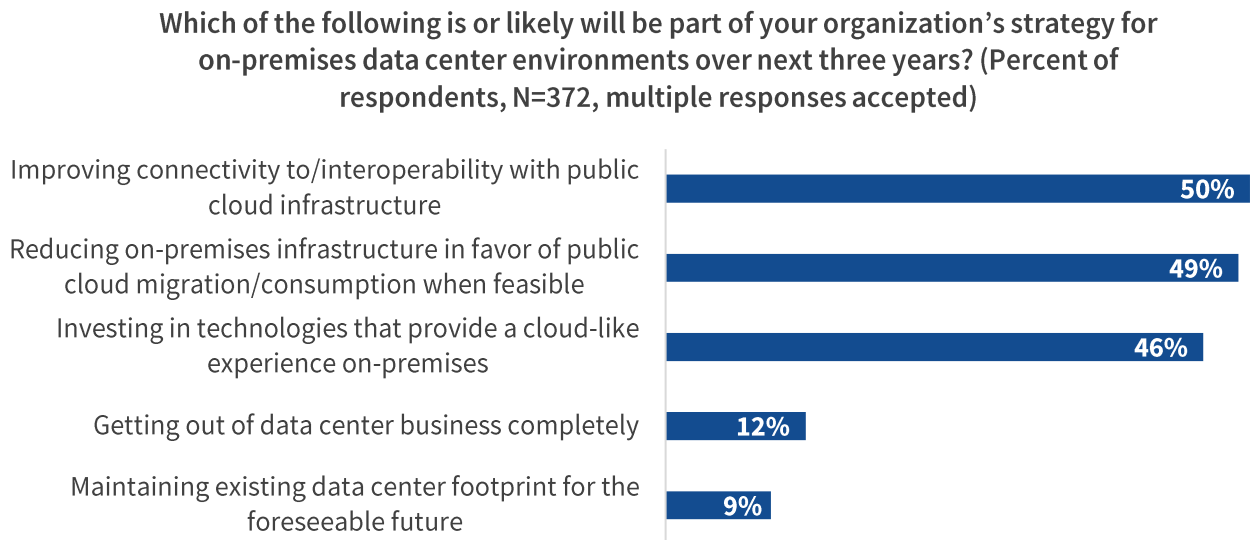
Such complexity has complicated how quickly IT can deploy, scale, or migrate new workloads onto on-premises or public cloud resources to meet business needs. To address this concern, ESG research found that 97% of organizations describe their digital transformation initiatives as being in progress, mature, or in the planning stage, with 54% stating that becoming more operationally efficient is a top objective of those initiatives.² One such approach is to modernize on-premises data center environments. In terms of their organizations' strategies for modernizing data centers, 50% of survey respondents said they would like to improve connectivity to or interoperability with public cloud infrastructure, while 46% indicated they would invest in technologies that provide a cloud-like experience on-premises over the next three years.³

¹ Source: Enterprise Strategy Group Research Report, [2023 Technology Spending Intentions Survey](#), November 2022. All Enterprise Strategy Group research references and charts in this economic validation have been taken from this research report, unless otherwise noted.

² Source: Enterprise Strategy Group Complete Survey Results, [2023 Technology Spending Intentions Survey](#), November 2022.

³ Source: Enterprise Strategy Group Research Report, [Application Infrastructure Modernization Trends Across Distributed Cloud Environments](#), March 2022.

Figure 1. Top Strategies for On-premises Data Center Environments



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Organizations currently using the Cisco Unified Computing System have benefited from the lower capital and operational expenses incurred as they have consolidated legacy on-premises workloads, reducing overall footprint and power consumption while simplifying overall hardware and software management and administration. Yet, to support modern workloads in today’s hybrid cloud environments requires a more comprehensive approach than just installing more powerful hardware. Organizations must consider how to best incorporate other tools and technologies that can further increase operational efficiency, such as automation and visibility, while considering how they can address the growing importance of environment and sustainability goals.

The Solution: Cisco UCS X-Series, Powered by Intersight

Cisco UCS X-Series powered by 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 using a unified form factor, eliminating the need for multiple IT silos as the number and diversity of applications increase. The architecture of UCS X-Series enables organizations to scale infrastructure and leverage new technologies (such as next-generation Intel processors and increases in GPU processing power) without performing any standalone upgrades of compute and networking resources. The ability to support multiple CPU- and GPU-based workloads helps organizations increase operational efficiency and agility while minimizing current and future capital and operational expenses.

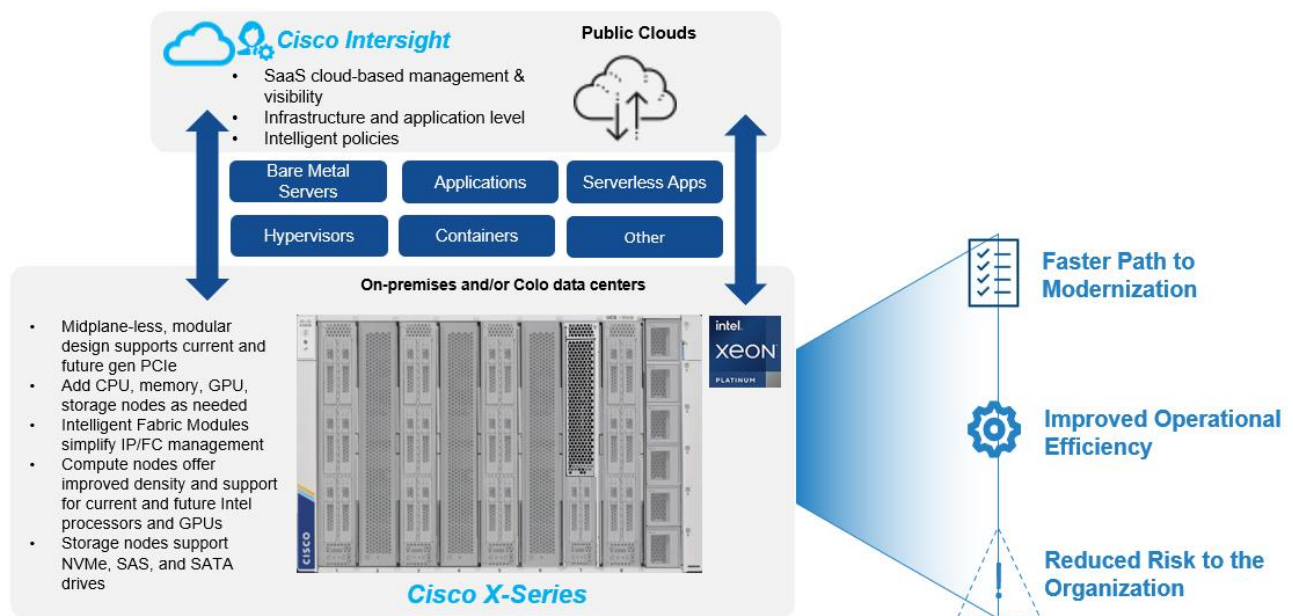
All server nodes, accelerators, and networking resources are offered as individual modules. To establish I/O connectivity, vertically oriented compute and accelerator nodes intersect with horizontally oriented I/O connectivity modules in the rear of the chassis. Cisco has designed the UCS X-Series to help organizations’ sustainability via the overall reduction of power consumption, a decrease in the need to purchase components (e.g., cables, adapters, and switches) over time, and the reusability of such components in light of CPU and GPU refreshes.

Cisco’s UCS X210c M6 Compute Node is the first released compute node for the Cisco UCS X-Series, combining the density and cabling advantages of a blade server and the expandability of a rack server. This compute node can support one or two third-generation Intel Xeon Scalable Processors with up to 40 cores per processor. Optimized for cloud, enterprise, HPC, network, security, and IoT workloads, this processor has been designed to increase core performance, memory, and I/O bandwidth using built-in workload acceleration features such as Intel

Deep Learning Boost (specifically for artificial intelligence [AI]-based applications). To address evolving security needs, Intel Xeon processors are built with Intel Crypto Acceleration and are designed to enhance data protection and privacy without sacrificing performance.

To simplify IT operations associated with Cisco UCS X-Series (along with other Cisco UCS and Hyperflex infrastructure), organizations can use Cisco Intersight, a SaaS-based management system that supplies correlated visibility and management at both the application and infrastructure layers, covering bare-metal servers, hypervisors, containers, and serverless and application components. With Intersight, organizations can simplify the deployment, configuration, and operation of servers, VMs, storage, and networking devices throughout their lifecycle, such as applying templates and policies to configure Cisco UCS and Hyperflex servers or automating hardware fault detection. Users can also monitor the real-time status of both Cisco UCS X-Series deployments, as well as other global Cisco and third-party infrastructure across on-premises, public cloud, and edge environments through a single cloud-based or on-premises GUI.

Figure 2. Cisco UCS X-Series Powered by Next Gen Intel Processors and Intersight



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Enterprise Strategy Group Economic Validation

Enterprise Strategy Group (ESG) completed a quantitative economic analysis of UCS X-Series, powered by Intersight. A focus was placed on the economic benefits organizations can expect when consolidating legacy workloads and modernizing existing environments.

ESG's Economic Validation process is a proven method for understanding, validating, quantifying, and modeling the economic value propositions of a product or solution. The process leverages ESG's core competencies in market and industry analysis, forward-looking research, and technical/economic validation. ESG conducted in-depth interviews with end-users to better understand and quantify how Cisco X-Series and Intersight has impacted their organizations, particularly in comparison with previously deployed and/or experienced solutions. The qualitative and

quantitative findings were used as the basis to validate and review the results of a simple economic model comparing a Cisco UCS X-Series deployment to an alternative configuration from a competitive vendor.

Cisco UCS X-Series Economic Overview

Enterprise Strategy Group's (ESG's) economic analysis revealed that modernizing on-premises compute environments with UCS X-Series and managing hybrid cloud environments with Intersight helped to lower both cost and complexity of the environment while also increasing business agility. Based on interviews with current UCS X-Series customers and Cisco subject matter experts, ESG found that Cisco can help achieve significant savings and benefits in the following categories:

- **Faster path to modernization** – By using the UCS X-Series, organizations can now deploy infrastructure in a more flexible and scalable way across both on-premises and public cloud infrastructure for meeting business needs with a cloud-like experience, without sacrificing performance of legacy or modern workloads. No longer do organizations need to maintain separate rack and blade server infrastructures.
- **Improved operational efficiency** – Achieving this cloud-like experience requires the operational efficiency provided by using UCS X-Series for deploying, scaling, and managing legacy and modern workloads. With the UCS X-Series consolidated infrastructure and Cisco Intersight, organizations can automate daily configuration, management, and upgrade tasks, while achieving both infrastructure and workload visibility across a hybrid cloud using the single Intersight interface. Cisco Intersight further improves operational efficiency by automating and orchestrating operational tasks for performing routine tasks (e.g., configuration deployments for similar workloads) and remediating service-affecting issues.
- **Reduced risk to the organization** – Supporting both traditional enterprise and modern workloads on the Cisco UCS X-Series helps organizations to reduce overall risk, as the flexible architecture enables organizations to support a wide variety of processing requirements and I/O bandwidth needs. Organizations can add GPU processing power to existing CPU-based server modules or configure interface cards with different port speeds via software. Automation and orchestration of IT operations tasks (such as deployment of infrastructure configuration for a workload or policy deployment across similar workloads) minimizes errors, further decreasing risk that workloads will not function as expected.



Faster Path to Modernization

By using the UCS X-series, organizations can deploy infrastructure for both traditional and modern workloads without the need to purchase and configure separate rack and blade server environments for satisfying a wide variety of processing power and I/O bandwidth requirements. The savings and benefits that organizations can expect include:

- **Improved business agility** – With the UCS X-Series disaggregated hardware infrastructure, organizations need to add only what is required when adding new workloads with different compute, storage, or networking requirements. Also, the need to purchase separate hardware components to support the wide variety of I/O bandwidth requirements is eliminated, as interface cards can be software-defined, minimizing the time spent on purchase, configuration, testing, and deployments. With Cisco Intersight, organizations can also identify available resources that may be running idle (such as CPU, RAM, storage, or GPU) and that can be reallocated when needed.
- **Faster time to value** – Because the UCS X-Series architecture is flexible and easily scalable with fewer hardware components, organizations can simplify and accelerate the deployment and migration of workloads. Less time getting workloads up and running translates into faster time to value, as the workloads help organizations to fulfill business and customer needs in less time.

“Standing up massive VMs takes four to five hours per node—at a minimum—with traditional blades. With UCS X-Series, it takes 25 minutes. That’s a game changer for us.”

-Director of Engineering, Global Training and Consulting Company

- **Faster path to hybrid cloud** – With Cisco Intersight, organizations can realize a unified hybrid cloud strategy in less time, as Intersight supplies the single tool to manage applications and infrastructure. Organizations no longer need design workarounds that cobble together insights from on-premises and public cloud monitoring tools. The improved visibility also helps organizations find root causes of issues impacting application and infrastructure availability, reliability, and performance.
- **Modern platform for virtualization** – Since Cisco Intersight offers a single point of view for infrastructure, hypervisors, and public cloud resources across hybrid clouds, organizations can evaluate how current infrastructure can be optimized to better support their workload mix or determine workloads to migrate to other infrastructure, minimizing the need to purchase and deploy new and separate hardware islands.
- **Better ensure application service-level agreements (SLAs)** – Using the Cisco Intersight Workload Optimizer, organizations can optimize performance by calculating the right amount and mix of infrastructure, public cloud resources, and hypervisors. Application performance can subsequently be optimized to meet business requirements without wasting infrastructure costs.

“As we conduct 8-12 engagements per week, it is critical to increase our sustainability awareness. With Cisco UCS X-Series, we are actively working to reduce our power consumption and footprint.”

-Director of Engineering, Global Training and Consulting Company

- **Faster achievement of sustainability initiatives** – The consolidated UCS X-Series hardware infrastructure helps organizations to better meet environment, sustainability, and governance initiatives with its smaller footprint, resulting in lower power requirements, while leveraging Cisco and Cisco partners’ responsible and sustainable practices.



Improved Operational Efficiency

Through interviews conducted with UCS X-Series customers, Enterprise Strategy Group (ESG) found that organizations can improve operational efficiency when deploying this disaggregated infrastructure as part of their digital transformation efforts. Benefits that we uncovered include:

- **Unified platform for all workloads** – The UCS X-Series offers organizations a single hardware platform that can be configured to support any mix of traditional and modern workloads, all with varying performance and I/O requirements. And with Cisco Intersight, this combination helps to reduce management complexity since there is only one platform and management interface to learn and operate.
- **Reduced footprint** – Since organizations can consolidate workloads on the UCS X-Series, the number of rack units decreases, resulting in less management effort and, more importantly, savings in floorspace and power and cooling consumption.
- **Single management interface** – Cisco Intersight provides visibility into all Cisco UCS, Cisco HyperFlex HCI, hybrid, and public cloud workloads via a single management interface. Organizations reduce management complexity as the number of disjointed tools decrease, thus simplifying operations.
- **Improved overall visibility** – Cisco Intersight’s interface also improves the breadth and depth of overall visibility into both the infrastructure and the support applications. Organizations can decrease the time and effort for identifying issues affecting performance, reliability, and availability, making it easier and faster for organizations to react and remediate.
- **Improved efficiency through automation and orchestration** – By using Cisco Intersight to automate and orchestrate IT operations workflows, organizations can reduce the amount of manual effort spent when

“With the single pane of glass, Intersight just makes it so much easier to troubleshoot issues. It helps to associate an identified issue back to the affected hardware, like the storage network or compute, so that we can proactively resolve it vs being reactive.”

-IT Operations Manager, Electrical Construction and Engineering Company

deploying and managing workloads. Workflows are less error-prone and reduce any business risk. Intersight also uses AI to better support organizations when encountering issues affecting the performance and availability of the Cisco UCS X-Series.

- **Less time spent tuning workloads** – Cisco Intersight uses AI to optimize the performance of hybrid cloud workloads, using performance data collected from other applications deployed across the UCS X-Series and public cloud infrastructure.

“Most vendors try to mimic Cisco at the Technical Assistance Center (TAC) and support levels, but they cannot compete.”

-IT Operations Manager, Electrical Construction and Engineering Company

- **Simplified maintenance and support** – Time and effort typically spent on maintaining UCS X-Series hardware and software decreases as Cisco Intersight proactively tracks and addresses uncovered hardware and software issues. Intersight can issue alerts when updates and upgrades are available in the Cisco software repository. Organizations can simplify hardware maintenance since Cisco Intersight tracks when hardware components degrade and issues return materials authorizations (RMAs) proactively. Intersight can proactively issue trouble tickets should other service-affecting issues arise.



Reduced Risk to the Organization

Without a stable infrastructure, organizations risk degraded application performance and downtime, thus preventing them from meeting business objectives and fulfilling customer needs. Ultimately, organizations risk generating revenue. Enterprise Strategy Group (ESG) found that the Cisco UCS X-Series reduces organizational risk via:

- **Improved reliability and availability** – With the UCS X-Series overall design and reconfigurable hardware components, combined with Cisco’s integrated and intelligent support and Cisco Intersight’s visibility and automation capabilities, organizations can experience shorter and fewer maintenance windows and reduce risk of manual operational errors. Workloads continue to run and unnecessary downtime is avoided. Any negative business impact is minimized.
- **Improved security** – Improved visibility and quicker identification of potential issues can be communicated faster to security operations, thus helping to minimize time to identification and remediation. Workloads running on Cisco UCS X-Series server blades also benefit from enhanced data security provided by Intel Crypto Acceleration built into the Intel Xeon Scalable processors.
- **Futureproof technology** – UCS X-Series’ midplane-less chassis design does not limit the future speed of the system. The disaggregated infrastructure means that each component can be replaced with newer technology independent of other blades. Organizations can take advantage of new technologies earlier, as the Cisco UCS X-Series roadmap is constantly evolving.

“Our IT environment is moving quicker than ever before. Now there is a need to work with virtual reality and different stream rates. With Cisco UCS X-Series, I can add GPU power to an existing blade, without having to deploy standalone rack servers.”

-Director of Engineering, Global Training and Consulting Company

Enterprise Strategy Group Analysis

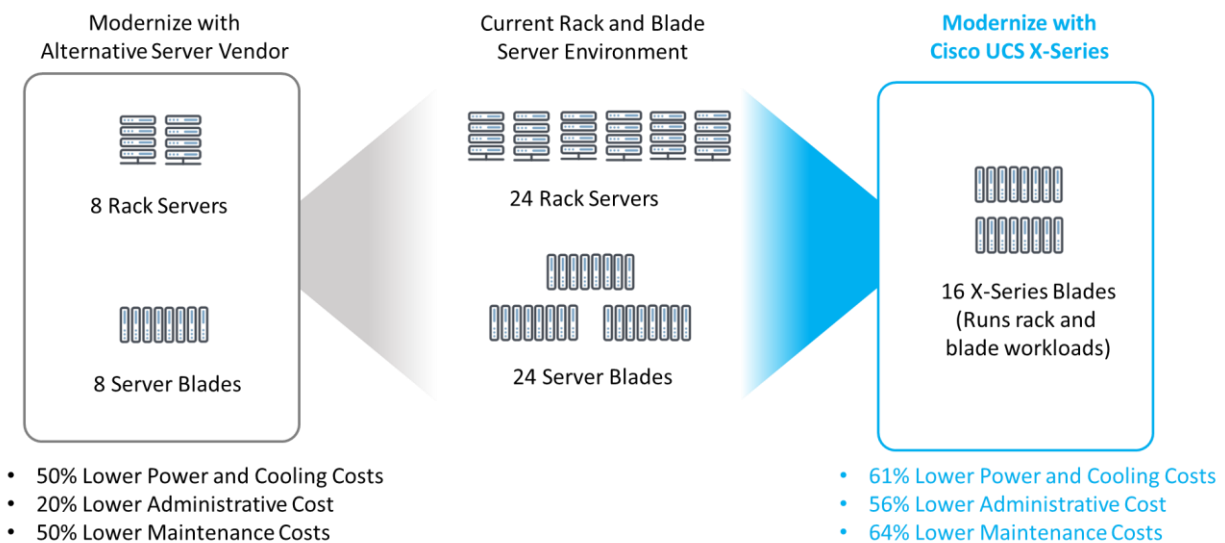
Enterprise Strategy Group (ESG) leveraged the information collected through vendor-provided material, public and industry knowledge of economics and technologies, and the results of customer interviews to review, audit, and contribute to a Cisco produced three-year TCO/ROI model that compares the costs and benefits of using Cisco UCS X-Series instead of a modernized solution from an alternative server and networking technology vendor. ESG’s interviews with customers who have recently made the transition, combined with experience and expertise in

economic modeling and technical validation of UCS X-Series and Intersight, helped to form the basis for our contributions to the administrative benefits within the modeled scenario.

The model assumed that an organization was looking to modernize its existing bare-metal rack server workloads (running on 24 previous generation rack servers) and virtualized blade server workloads (running across 24 previous generation server blades). The model found that an equivalent number of compute cores and memory could be provided using a 3-to-1 consolidation ratio for both UCS X-Series and the alternative solution. The UCS X-Series solution was able to run and manage both rack and blade workloads in the UCS X-Series blades using a single Intersight management GUI. The alternative solution required 8 rack-mounted servers and 8 server blades in a chassis, each using a different management software.

When compared to the previous-generation solution, both the alternative server vendor and UCS X-Series provides significant benefits as a result of consolidating and modernizing the environment. As summarized in Figure 4, the alternative solution helped to cut the expected power and cooling and maintenance costs in half and reduced the operational complexity of the environment by 20%. UCS X-Series was able to provide an even greater benefit of modernization by lowering power and cooling by 61%, maintenance costs by 64%, and operational complexity by 56%, compared to the original solution. The details of the consolidation scenario are shown in Figure 3.

Figure 3. Expected Benefits of Modernizing Current Server Environment



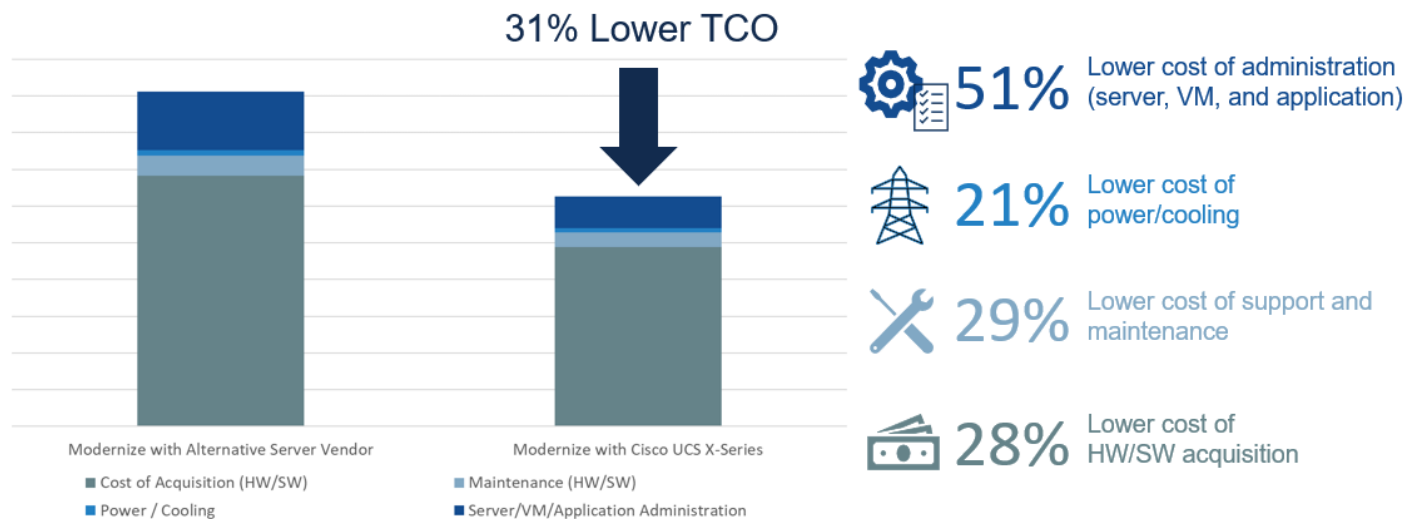
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

We then compared the expected total cost of ownership over the next three years for the alternative solution against the UCS X-Series solution. Because the UCS X-Series solution can run both the bare-metal rack server and virtualized blade server workloads in efficient blade server chassis, the Cisco UCS Advanced TCO/ROI comparison models estimated that the UCS X-Series could provide a 28% lower cost of acquisition, 21% lower power and cooling costs, and 29% lower cost of support and maintenance. These models considered the costs of the servers, chassis, fabric interconnects, out-of-band management switches, and management software.

ESG then leveraged the results of our interviews with UCS customers to model the expected cost of administration over the next three years. Our model considered the time required to deploy, install, and configure the servers, as well as the daily operations, such as managing the servers/VMs/applications, performing updates/maintenance, optimizing servers/network/apps for performance, responding to support tickets, and evaluating and predicting

future resources. Cisco Intersight provided significant advantages in each of these areas from a single tool instead of forcing organizations to use multiple tools and consolidate information across them. Our model predicted that Cisco X-Series with Intersight could provide a 51% lower cost of administration. The results of our analysis are shown in Figure 4.

Figure 4. Expected Total Cost of Ownership for Cisco UCS X-Series versus Alternative Offering



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Issues to Consider:

While Cisco and Enterprise Strategy Group’s models are built in good faith upon conservative, credible, and validated assumptions, no single modeled scenario will ever represent every potential environment. We recommend that you perform your own analysis of available solutions and consult with your Cisco representative to understand and discuss the differences between the solutions through your own proof-of-concept testing.

Conclusion

As organizations have moved toward hybrid cloud environments, the need for modernizing their on-premises data centers has become clear. Organizations can no longer afford to use two different operating models to deploy applications. While public cloud infrastructure services enable simpler and faster deployment, configuration, and scalability of cloud resources, organizations still contend with the traditional model of purchasing, testing, and deploying both hardware and software in data centers. The more applications that organizations need to deploy, the more they are forced to contend with the disjointed infrastructure and complex environments they must operate, upgrade, and maintain. The ability to maintain a high level of business agility for meeting customer needs and generating revenue when operating and managing a hybrid cloud is inconsistent.

The Cisco UCS X-Series has been designed to support organizations that operate hybrid cloud environments with simplified infrastructure and increased operational efficiency. Instead of deploying separate blade and rack server environments to support both traditional and modern workloads, organizations can consolidate both workload types into a single chassis. With Cisco Intersight, organizations gain the breadth and depth of visibility into both the infrastructure and supported applications for management and monitoring purposes, all through a single interface. Cisco Intersight also provides visibility into both the applications and supporting resources running in the public

cloud. UCS X-Series, powered by Intersight, supplies a cloud-like operating model for deploying, configuring, and maintaining data center resources, while supplying the visibility required to manage and monitor a hybrid cloud environment.

Enterprise Strategy Group (ESG) validated, via customer interviews, that the combination of UCS X-Series and Intersight enables organizations with hybrid cloud environments to:

- **Build a faster path to modernization** by empowering them to meet business needs with a cloud-like experience, without sacrificing performance of legacy or modern workloads. Organizations no longer need to maintain separate rack and blade server infrastructures and manage the resulting IT environment complexity.
- **Improve operational efficiency** by using Cisco Intersight to automate routine configuration, management, and upgrade tasks, while achieving both infrastructure and workload visibility across a hybrid cloud using the single Intersight interface. With Intersight, organizations can also find and remediate hardware, software, and related application issues more quickly.
- **Reduce business risk** since the flexible UCS X-Series architecture enables organizations to support a wide variety of processing requirements and I/O bandwidth needs with its disaggregated hardware. Automation and orchestration of IT operations tasks minimize errors, further decreasing risk that workloads will not function as expected.

Using insights from customer interviews, ESG created a modeled scenario to estimate the savings that organizations could achieve when modernizing their data centers with UCS X-Series, power by Intersight. Based on a comparison with alternative infrastructure technologies and related management systems, our analysis revealed that over a three-year period, organizations can lower administration costs (for servers, VMs, and applications) by 51%, reduce power and cooling costs by up to 21%, decrease maintenance and support costs by up to 29%, and lower hardware and software acquisition costs by up to 28%. ESG's analysis revealed an overall TCO reduction of 31% when modernizing an IT environment with Cisco UCS X-Series with Intersight.

ESG's analysis supports our view that modernizing a data center with Cisco UCS X-Series, powered by Intersight, can help organizations achieve improved business agility with a lower overall three-year TCO. However, ESG urges you to further examine these Cisco products if you face the challenge of deploying and maintaining workloads with cloud-like agility, without sacrificing performance and availability.

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