IT Operations Analytics on Cisco UCS with Splunk: Apply Real-Time IT Operations Insights to Optimize Performance

What You Will Learn

Market dynamics now demand that IT infrastructures be integrated with more technologies—and support a growing number of strategic applications. But most infrastructures are burdened by complexity that undermines your IT organization's ability to meet the needs of the business.

The VP of IT Operations must deliver the outstanding application and infrastructure performance required in this Internet of Everything (IoE) era, helping to ensure that applications and infrastructure work flawlessly, separately and together. IT needs a comprehensive, real-time IT operations analytics solution that can bridge silos and speed insights, removing complexity and costs.

In this overview, you'll learn how an IT operations analytics solution, combining the innovations of Cisco Unified Computing System™ (Cisco UCS®) and Splunk Enterprise can help you optimize applications and infrastructure performance today—and in the future.

Market Transformations Are Demanding More from Complex IT Infrastructures

IT operations have never been more complex or more critical to the enterprise's mission. Yet, most IT infrastructures are so burdened by complexity that IT's ability to meet the needs of the business is undermined.

Figure 1.   Complex IT Infrastructures Struggle to Meet Increasing Demands
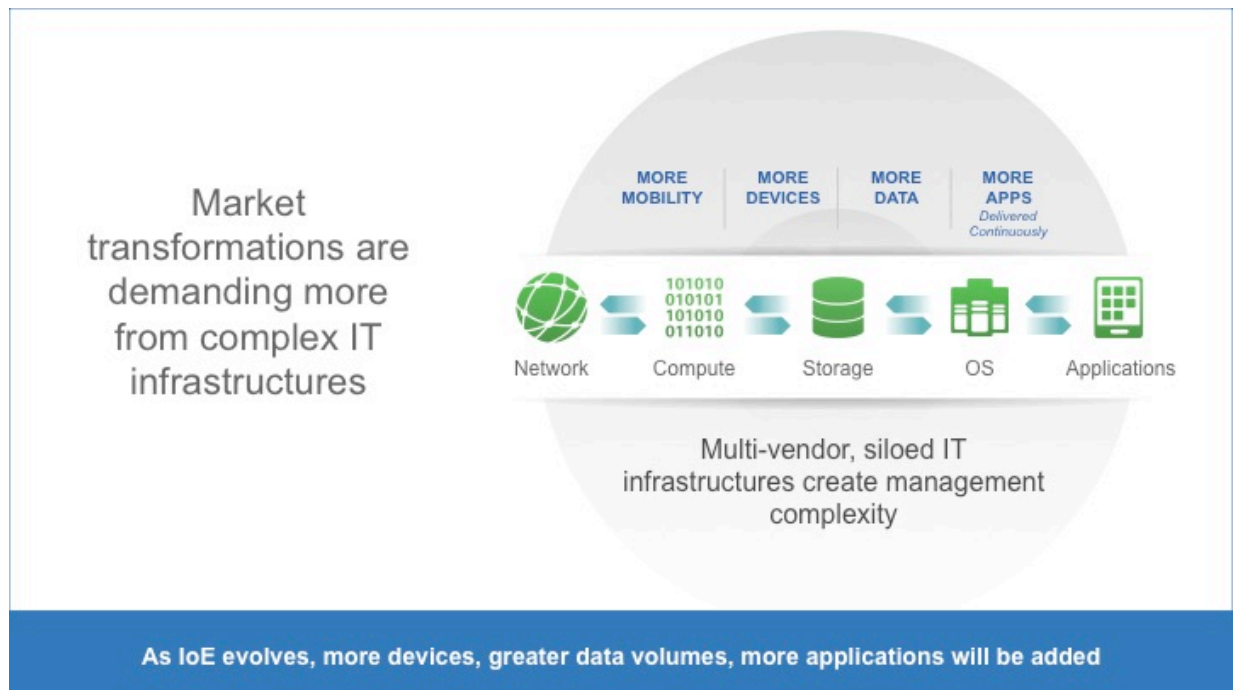
Most enterprise IT infrastructures have been built over time and include a wide variety of multivendor networks, compute platforms, operating systems, storage resources, and applications. This diversity creates management complexity that increases costs and hampers agility. To keep operations running smoothly, IT departments must rely on "siloed," vendor-specific solutions for each element of their infrastructure. In some cases, that includes rigid, batch-oriented business intelligence or data warehouse tools.

The stakes are only getting higher, however, as strategic initiatives and market transformations are demanding more from complex IT infrastructures (Figure 1). Competitive market dynamics are demanding that these infrastructures integrate with an increasing range of new technologies, and for the following reasons, they must act as the foundation for a growing number of strategic use cases and applications.
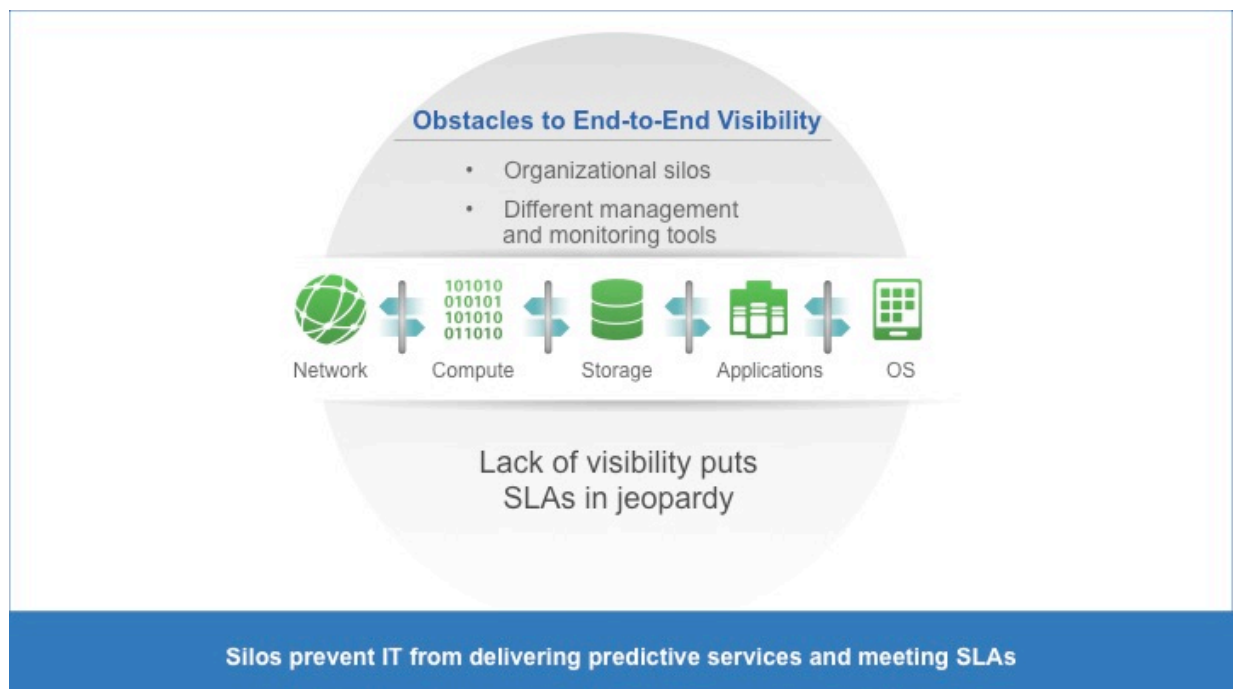
- The world is becoming more mobile and connected, introducing a growing number of mobile devices and sensors that are expanding IT's traditional boundaries—taking them into the cloud and to the far edges of the network.
- Organizations are coping with a deluge of data coming from new IoE connections and digital processes between people, processes, data, and things.
- Enterprises are supporting a larger number of applications that are "always on" and need to create and interact with data throughout the network—from the data center core to the network edge. These applications are also updated frequently, with some organizations releasing new code multiple times per day.

The pressure on the IT infrastructure will only increase as the IoE Era continues to evolve—adding more devices and applications and causing data volumes to increase exponentially.

Obstacles to High Application and Infrastructure Performance

Your VP of IT Operations remains accountable for delivering the outstanding application and infrastructure performance required in this IoE era, helping to ensure that applications and infrastructure work flawlessly and in concert. Consequently, IT managers need real-time, comprehensive visibility across all applications and every aspect of their infrastructure, so they can identify underlying issues and resolve a problem as soon as possible. But fragmented IT environments create obstacles (Figure 2).

Figure 2.   IT Silos Put SLAs in Jeopardy

Obstacles to End-to-End Visibility
- Organizational silos
- Different management and monitoring tools

Network   Compute   Storage   Applications   OS

Lack of visibility puts
SLAs in jeopardy

**Silos prevent IT from delivering predictive services and meeting SLAs**

- IT departments typically include organizational silos, which often leave the network team, server team, applications team, storage team, security team, and so forth, operating separately.
- Each team uses a wide range of different management and monitoring tools to view performance, troubleshoot, and perform capacity planning for their environment. As the number of tools increases, so does complexity and technology expenses.
- These organizational and technology silos prevent IT from obtaining "single pane of glass" visibility across all their applications and the end-to-end infrastructure stack. This lack of comprehensive visibility undermines IT's ability to deliver predictive services, meet their service-level agreements (SLAs), or reduce expenses.

A Single Analytics Platform for Comprehensive IT Operations Visibility and Real-time Insights

IT managers need a comprehensive, real-time IT operations analytics solution that can bridge silos and speed insights, removing complexity and costs. The ideal solution (Figure 3) should:

- **Be a single software platform** that integrates across infrastructure silos, replacing redundant tools while augmenting any other management tools that IT may want to continue to use
- **Allow visibility to operational data anywhere,** at the data center core, in the cloud, and at the edge
- **Adapt to change,** giving IT the flexibility to quickly identify and add new elements of the infrastructure or data sources into its analysis
- **Provide comprehensive management functionality,** including proactive monitoring and analysis of all IT systems throughout the network—along with more proactive and planning capabilities—so IT managers can identify and resolve problems quickly and make better decisions about future requirements
- **Improve IT productivity** with an easy-to-use solution that can be used by a wide range of individuals
- **Deliver fast time to value,** because the faster an IT operations analytics solution can deliver actionable insights, the faster IT can meet business-critical SLAs—and the greater return they can achieve on their solution investment

Figure 3.   Proactive IT Operations Require Comprehensive Visibility and Real-time Insights
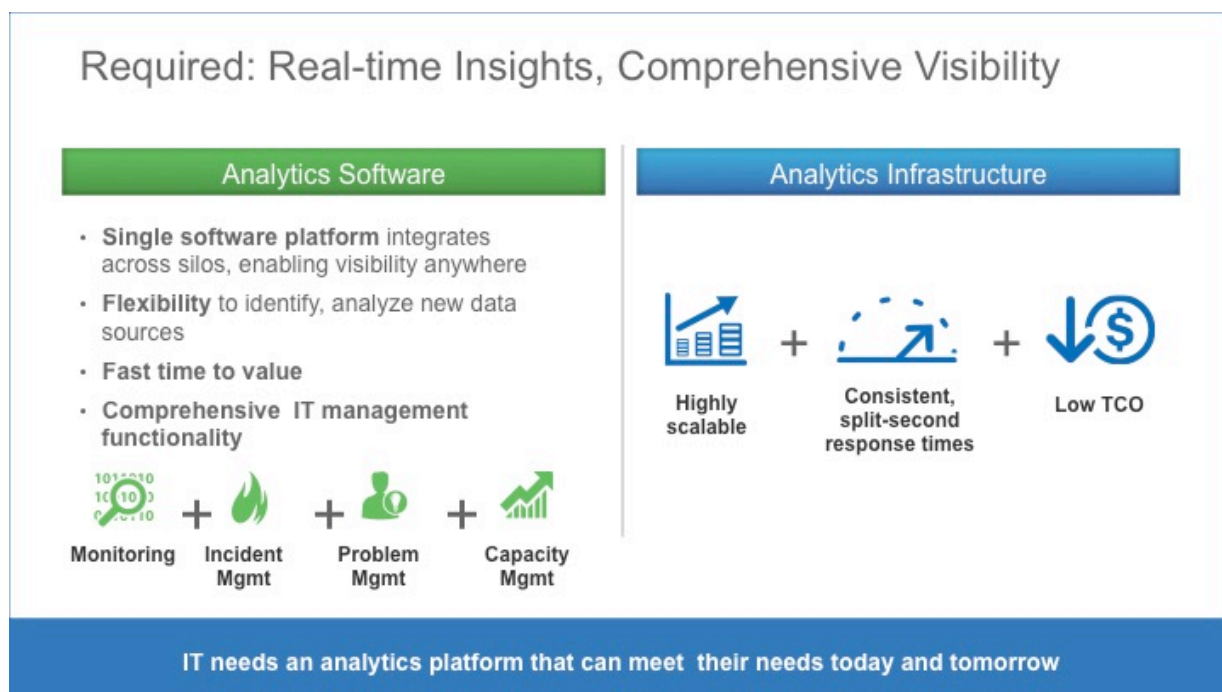
This level of innovation in the analytics software is critical, but software can only perform at its best when it is supported by an analytics infrastructure that can meet IT's requirements today and well into the future. Big data and analytics solutions must be able to support rapid growth—in the size and variety of data sources and in the rapid increase in the number of analytics workloads that often follow an initial deployment. Consequently, IT

managers must look at both the short- and long-term implications of the infrastructure they select. They must be confident that it will:

- **Be highly scalable** to keep pace with the rapid growth of data and users across the organization
- **Deliver consistent, outstanding performance** even as the volume of data, number of users, and types of use cases continue to increase
- **Deliver a low TCO,** because big data and analytics infrastructures tend to grow rapidly, which makes reducing all elements of operating expenses (OpEx) and capital expenditures (CapEx) critical

IT Operations Analytics on Cisco UCS with Splunk: Optimizing Application and Infrastructure Performance

Cisco and Splunk have developed a comprehensive and efficient IT operations analytics solution that helps IT improve the performance of all their applications and their infrastructure. This solution combines powerful analytics functionality with end-to-end, single-pane-of-glass visibility, outstanding scalability, and performance, all at a low TCO. This joint solution combines leading innovation in software—with Splunk Enterprise—and hardware, with the Cisco UCS Integrated Infrastructure for Big Data.

Splunk Enterprise: Powerful Analytics Software Platform for IT Operations and More

A leading player in the big data and analytics markets, Splunk has been shipping products for a decade, and these products have been proven by over 9000 customers across 100 countries (Figure 4).

Figure 4. Splunk Enables Comprehensive IT Operations Analytics Functionality
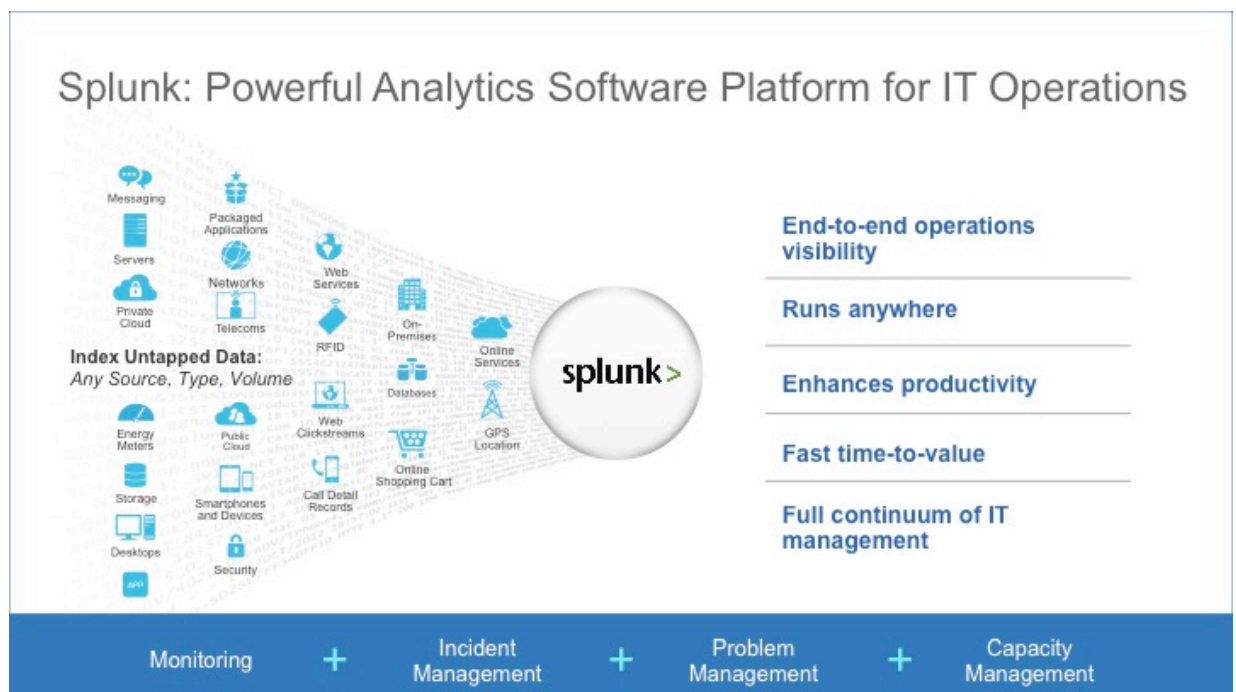
Splunk Enterprise is an industry-leading platform for machine data, providing organizations with a fast, easy, and secure way to analyze the massive streams of machine data generated by their IT systems and technical infrastructure, whether that data is physical, virtual, or in the cloud. This focus on machine data makes Splunk Enterprise ideal for promoting the capture and analysis of data related to IT operations. It offers the following advantages:

- **End-to-end IT operations visibility:** Splunk Enterprise ties together application, user, and infrastructure information to deliver comprehensive visibility.

- **Ability to collect and index any machine data from virtually any source, format, or location in real time:** Splunk Enterprise can support data streaming from packaged and custom applications, app servers, web servers, databases, wire data from networks, virtual machines, telecom equipment, operating systems, sensors, and much more—without requiring custom parsers, adapters, or a back-end database. After the data is indexed, organizations can use Splunk to correlate complex events that span diverse data sources and obtain insights by using its powerful search, analysis, and visualization capabilities.

- **The flexibility to run Splunk Enterprise software anywhere**—capturing data from the data center, in the cloud, or at the edge from endpoints.

- **Comprehensive management functionality:** Splunk Enterprise is a productivity-enhancing, easy-to-use operational intelligence solution. It addresses the full continuum of IT operational and management processes—from troubleshooting and analysis to proactive monitoring to capacity management. Because Splunk addresses this entire IT operations management lifecycle, organizations can achieve lower mean time to repair (MTTR) by finding and solving issues in minutes instead of hours. They can also reduce costs using tool consolidation and take advantage of vastly improved operational visibility to make better decisions. And because Splunk is easy to use, a wide range of different IT teams and business analysts with different levels of training can make the most of its capabilities, making it easy to apply Splunk to many other types of analytics use cases.

**Figure 5.** Data-Driven Insights Deliver Measureable Benefits
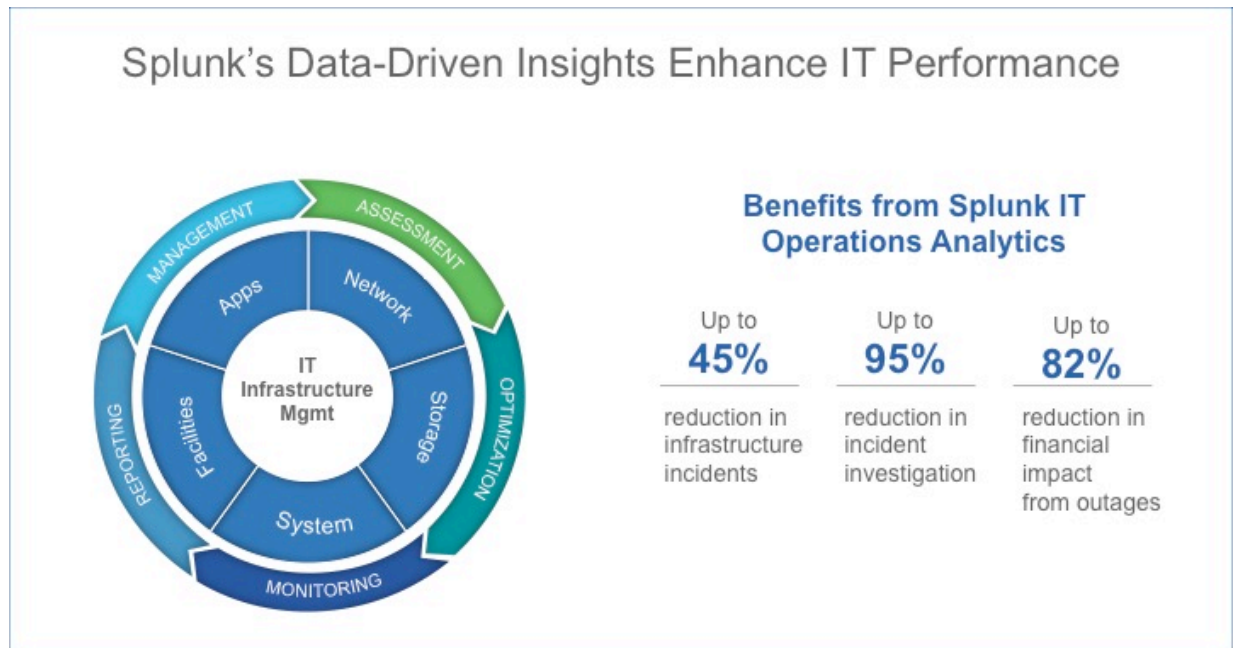
- A proven track record for delivering **fast time to value** (Figure 5):
  - Customers can start immediately by downloading a free version of Splunk software. Then they can visualize data and get insights about their IT operations environment within minutes.
  - Splunk software includes prebuilt panels, reports, and dashboards that make it fast and easy to deliver insights. You can click a button and instantly create a range of visualizations and dashboards.
  - The Splunk **app site** features more than 600 productivity-enhancing applications created by Spunk's vibrant ecosystem, including Splunk technology partners (like Cisco, NetApp, EMC, and others), channel partners, end users, and Splunk employees. These apps, which are fully customizable, help customers build out the functionality they need for a wide range of use cases.

Cisco UCS: A Powerful, Scalable, Analytics-Ready Foundation

Cisco UCS Integrated Infrastructure for Big Data provides a powerful and efficient foundation for an initial IT operations analytics solution deployment—and for the longer term, as data volumes and users increase and analytics use cases become more pervasive in an enterprise (Figure 6). Cisco UCS is a leading server platform: It is currently ranked number one in the Americas for market share in x86 blades[1], with more than 41,000 unique customers, including more than 85% of the Fortune 500.

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[1] IDC Worldwide Quarterly Server Tracker, 2014Q4, March 2015, Vendor Revenue Share

Figure 6.   Cisco UCS Provides Performance and Scalability to Meet Analytics Requirements Today and Tomorrow
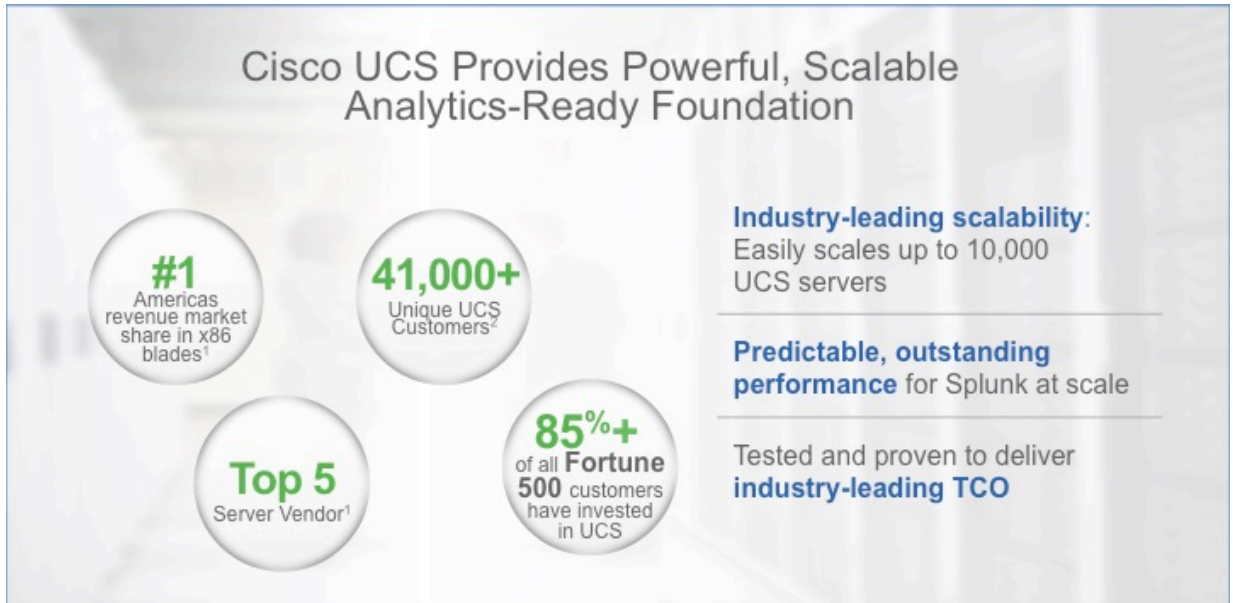
When it comes to big data and analytics solutions, Cisco UCS delivers tremendous benefits:

- **Industry-leading scalability:** As customers begin to use Splunk software for IT operations analytics, additional data sources and ideas for new use cases typically appear, quickly increasing data volumes. In addition, as analytics become increasingly business critical and are used for compliance and other use cases, organizations often expand their data retention periods from weeks to months or even a year or more. At that point, customers realize how important it is to be able to easily scale their infrastructure so they can support massive volumes of data. The Cisco UCS portfolio can scale up to 10,000 Cisco UCS servers, so enterprises can be confident that they can support and scale their analytics workloads as the volume of data grows exponentially.

- **Predictable and outstanding performance for Splunk at scale:** Performance is another factor affected by the typical fast growth of Splunk deployments. IT operations data is only useful if it is delivered in real time. As use of Splunk expands, and customers have a large number of "needle in a haystack searches"— or many people start using Splunk at the same time—it becomes critical to deliver outstanding and consistent performance.

The unified design of Cisco UCS—which integrates compute, network, and storage—allows it to deliver consistently outstanding performance, even for very large Splunk deployments. Fueled by innovations like application-specific integrated circuits (ASICs), which exploit the power of the Intel® Xeon® processor, and redundancies that enhance availability, Cisco UCS has won more than 100 world-record performance benchmarks. Perhaps the most relevant is the winning performance of the Cisco UCS in a new TPCx-HS benchmark, which provides enterprises with verifiable performance and price/performance metrics for big data systems. In this audited test, Cisco demonstrated outstanding performance, linear performance, and exceptional price/performance ratios for real-life big data workloads of 1 TB, 3 TB, and 10 TB. In addition, real-world customers have seen Cisco UCS deliver reliable performance for Splunk Enterprise environments with hundreds of simultaneous users and large numbers of needle-in-a-haystack searches.

- **Low TCO:** As Splunk environments expand, customers also realize how important it is to conserve CapEx and reduce OpEx, including having sufficient space to accommodate a growing Splunk deployment in the data center (Figure 7).

Figure 7.   Cisco UCS Redefines the Economics of Big Data and Analytics Infrastructure
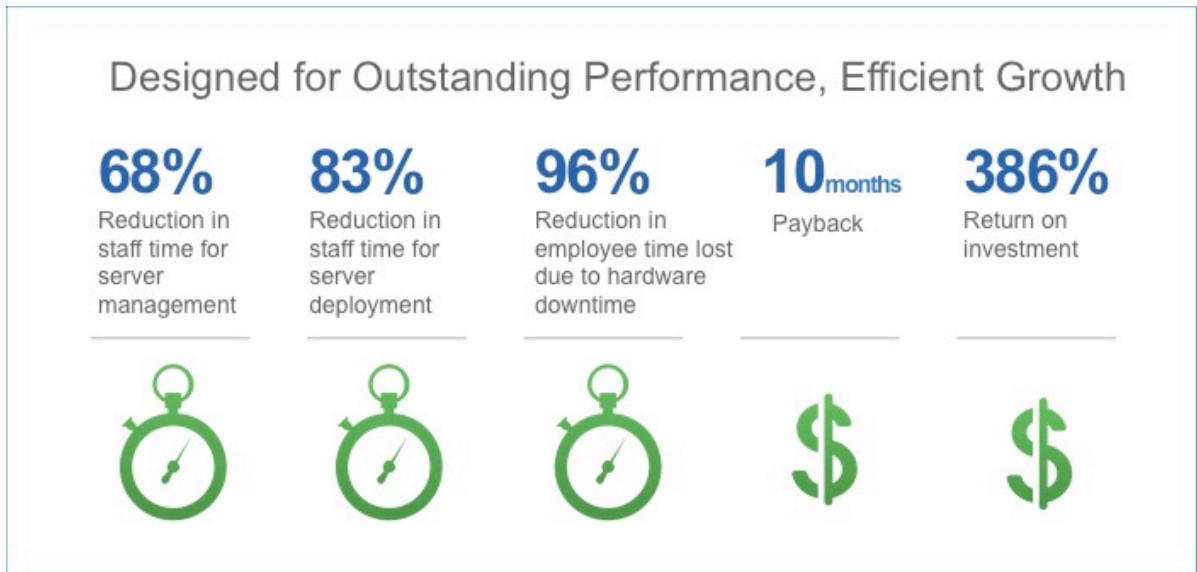
Cisco UCS Integrated Infrastructure for Big Data is designed—from the ground up—for efficiency. So it helps deliver outstanding price/performance and reduce OpEx through innovative management automation, lower power consumption, faster deployment times, and an efficient data center footprint.

In fact, a 2014 IDC study revealed that customers who deployed a high-performance, real-time analytics solution on Cisco UCS were able to:

- Reduce staff time needed for server management by **68.4 percent**
- Reduce staff time needed for server deployment by **83.8 percent**
- Reduce productive employee time lost due to hardware downtime and degradation by **96.3 percent**
- Deliver a five year total business benefit of **$4.79 million (US)**, ROI of **368 percent**, and payback period of just **10 months**.

Optimizing Application and Infrastructure Performance Today and Tomorrow

An IT operations analytics solution on Cisco UCS with Splunk provides enterprises with a single tested and proven platform that helps them optimize the performance of their applications and underlying infrastructure today—and as that infrastructure grows and evolves in the future (Figure 8). Even as the IoE era introduces new connections, applications, and tremendous volumes of data, this solution can help IT meet and exceed SLAs with full operational visibility and a proactive, predictive approach to IT.

In addition, the combination of Cisco UCS with Splunk can support IT on its analytics journey, because it is designed for efficient, big data scale, and it is capable of supporting a broad range of critical uses across the organization.

Figure 8.   Ensuring Application and Infrastructure Optimization for the Long-term
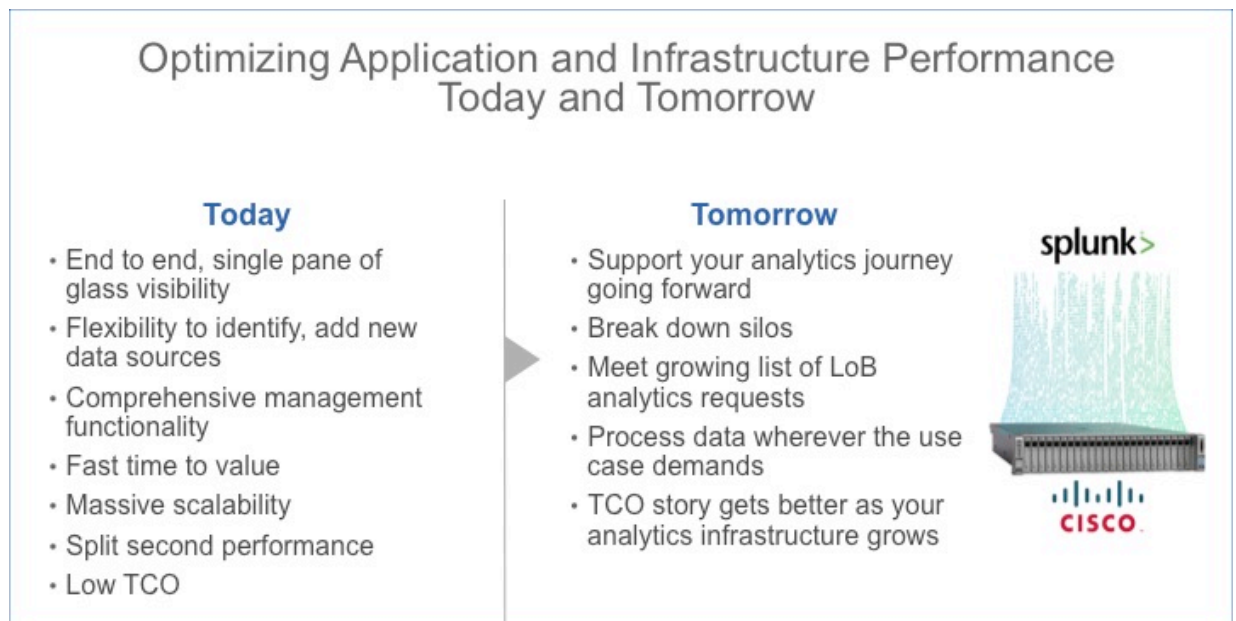
The Cisco UCS portfolio provides the flexibility to support a wide variety of new types of analytics use cases that enterprise line of business (LOB) managers will require in the future. The broad Cisco UCS portfolio provides enterprises with the right configuration to process data at the edge, in the cloud, and at the data center core. So they have the flexibility to process data wherever the use case demands. And as Cisco UCS is deployed throughout their networks, enterprises can benefit from a low TCO because the entire Cisco UCS portfolio uses the same highly efficient, unified architecture, runs the same management automation software, and is designed to conserve power and space.

Splunk Enterprise is robust analytics software solution that empowers users—not just in IT—but enterprise-wide. The combination of Splunk's powerful analytics functionality and ease of use I can not only help IT Managers use data-driven insights to empower the IT organization, it can also help IT managers break down internal silos and meet the growing list of analytics-driven solution requests they receive from LOB managers throughout the company.

It's Easy to Get Started

To accelerate solution deployment and minimize risk, Cisco has worked with Splunk to create a new, in-depth Cisco Validated Design (CVD). It provides customers with all the information needed to deploy a solution combining Splunk and Cisco UCS. Cisco has also created a pretested Cisco UCS Integrated Infrastructure configuration that is optimized for Splunk Enterprise.

Customers can contact Splunk's professional services organization for assistance with large, customized IT operations analytics deployments or other analytics use cases. And you can go to splunk.com now to download a free version and begin using Splunk Enterprise today.

For More Information

For more information on analytics solutions from Cisco and Splunk visit www.cisco.com/go/bigdata and www.splunk.com

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