Cisco UCS Integrated Infrastructure for Big Data and Cisco ACI with SAP HANA Vora

Solution Brief
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Integrate massive amounts of unstructured data with operational business information to give your decisions greater context.

Information is most powerful when it is turned into real-time insight. That's why many organizations use Hadoop and Apache Spark to mine big data stores to identify trends and empower decision makers. Now you can add contextual awareness to your big data deployments and run all of your big data and analytics operations on Cisco UCS® Integrated Infrastructure for Big Data combined with Cisco® Application Centric Infrastructure (Cisco ACI™). Our solution gives you access to more precise decision making, democratized data access, and simplified big data ownership. You can extend your SAP data hierarchy to include petabytes of data processed by SAP HANA Vora.

Although your enterprise data and big data have value separately, the capability to bring them together presents new opportunities for your data scientists and analysts. Running on the Apache Spark framework, SAP HANA Vora is an in-memory query engine that enables you to easily bring new insights into your SAP landscape. By combining your business information with data from other sources—including streaming, interactive queries, and machine learning—you can accelerate and add context to your decision-making processes for better business outcomes.

Infrastructure Matters for SAP HANA Vora Deployment

Cisco solutions continue a long history of delivering innovative IT infrastructure for SAP landscapes with certified reference architectures that reduce cost and risk. Because our solutions are based on industry standards, they interoperate with the data center and the SAP environment you have today. Our solutions use industry-standard architectures and best practices, so no special IT processes are needed to incorporate or maintain the solutions in your data center. These powerful and innovative solutions are designed to support data center readiness requirements, including high availability, reliability, and business continuance so that you can have confidence in your big data solutions.

Highlights

Tested Performance

- Cisco UCS® has set more than 100 world records on industry-standard benchmarks with six records specifically for big data workloads. We offer a full range of scale-up and scale-out solutions to help you meet your specific performance goals.

Lower TCO

- Our simplified architecture saves capital costs and our integrated management saves operational costs, yielding lower TCO than other approaches.

Policy Based Automation

- We offer the only policy-based infrastructure certified by SAP.
- Cisco UCS Management uses role- and policy-based automation so you can deploy your SAP infrastructure quickly and accurately, with no risk of configuration drift.
- Cisco® Application Centric Infrastructure (Cisco ACI™) deploys an application-aware, policy-based interconnection to speed and secure the flow of data from your SAP HANA Vora environment to your SAP HANA and SAP landscape applications.

Cisco UCS Integrated Infrastructure for Big Data

The foundation for Cisco solutions for SAP HANA Vora is Cisco UCS Integrated Infrastructure for Big Data. This highly scalable architecture is offered in a complete and easy-to-order package that includes computing, storage, connectivity, and unified management capabilities. Automated infrastructure deployment saves time and helps reduce total cost of ownership (TCO). You can scale the system up to 80 nodes in a single management domain and scale it out to 6000 nodes by interconnecting domains.

Cisco UCS C-Series Rack Servers

The Cisco UCS C240 M4 Rack Server supports a range of computing, I/O, and storage-capacity demands in a compact design. This high-density server uses dual Intel® Xeon® processor E5-2600 v3 series CPUs and supports up to 1.5 terabytes (TB) of main memory and a range of hard disk drive (HDD) and solid-state disk (SSD) drive options. Up to 24 small-form-factor (SFF) disk drives are supported in the performance-optimized option, and 12 large-form-factor (LFF) disk drives are supported in the capacity-optimized option. The server includes a Cisco UCS Virtual Interface Card (VIC) 1227 or 1387 that is designed to optimize high-bandwidth and low-latency cluster connectivity.

Cisco UCS 6200 Series Fabric Interconnects

Cisco UCS 6200 Series Fabric Interconnects provide high-bandwidth, low-latency connectivity for servers, with integrated, unified management provided for all connected devices by Cisco UCS Manager. Deployed in redundant pairs, Cisco fabric interconnects offer the full active-active redundancy, performance, and exceptional scalability needed to support the large number of nodes that are typical in clusters serving big data applications.

Cisco Nexus 9000 Series Switches

Cisco Nexus® 9000 Series Switches are the next generation of data center switching infrastructure. With two modes of operation, these switches support current infrastructure designs and build on software-defined networking (SDN) solutions. With the massive east-west scalability of the leaf-and-spine network architecture created with Cisco Nexus 9000 Series Switches, you can deploy big data solutions that span multiple Cisco UCS domains to support more SAP users, applications, and big data services.

Cisco Application Centric Infrastructure

Cisco ACI brings massive scalability, security, and policy-based automated deployment to networking. Cisco ACI can speed the flow of data between SAP Vora and the SAP HANA environment that it augments. Automated deployment means fewer configuration errors that can interrupt data flow. Encapsulating flows helps ensure security and compliance with the traffic that your administrators choose to allow. Real-time performance monitoring allows the fabric to reroute traffic in real time to optimize performance and increase bandwidth utilization. All of this contributes to better business insights in less time.

Your SAP applications are secure within policy-based network containers that isolate applications and tenants from one another. Other software-defined networks hide the network under a layer of software, obscuring the hardware that may be responsible for performance or connectivity problems. Cisco ACI unifies the software overlay so that virtual networks can be viewed in the same way as physical networks, with the capability to view application health in real time correlated with the underlying hardware that supports every network connection. This application-centric support goes far beyond what generic server and switching infrastructure can provide. Cisco's own IT organization predicts a 44 percent average IT staff savings in technology provisioning and network operations using Cisco ACI.

Simplified Management

Cisco provides a unified, simplified, and open approach to managing big data deployments, resulting in lower management costs, easier troubleshooting, and easier scaling. Cisco UCS management lets you tie your infrastructure to your SAP applications across virtual and physical resources. Automation, orchestration, and lifecycle management capabilities of Cisco UCS management and Cisco UCS Director simplify deployment and help enable your IT staff to easily operationally integrate your bare-metal and virtual infrastructure resources to address complex, time-consuming, manual, and compartmentalized processes.

Cisco UCS service profiles enable rapid and consistent server configuration, and automation simplifies ongoing system maintenance activities such as deploying firmware updates across the entire cluster as a single operation. Advanced monitoring capabilities raise alarms and send notifications about the health of the entire cluster so that you can proactively address concerns before they affect data analysis.

Cisco ACI provides policy-based, automated network infrastructure deployment to help accelerate the movement of data between SAP HANA Vora and your other SAP landscape applications.

Improving Business Insight

Cisco UCS Integrated Infrastructure for Big Data with SAP HANA Vora can help your business gain a new level of insight by bringing big data query results into the more static business data stored in SAP HANA. The following are just a few of the ways that the solution can help your staff get the information it needs:

- **Optimize your supply chain and increase visibility.** View your inventory and your supplier's inventory at the same time to quickly adapt to changing sales or production metrics.
- **Detect fraud.** Imagine being able to identify anomalies with easy access to your enterprise and historical data and contextual trends.
- **Conduct targeted marketing campaigns.** With a complete view of customer feedback and requirements, you can better adjust offerings and target marketing and sales campaigns for improved customer retention and satisfaction.
- **Improve IT capacity planning activities.** The capability to access data from multiple sources, analyze records, and explore the use patterns of your IT resources can help you more accurately allocate resources and plan the expansion of your IT infrastructure.
- **Improve patient care.** Access to historical patient data along with genomic and other healthcare test data provides a more complete medical profile that supports healthcare alternatives and suggested treatments.
- **Proactively maintain.** In capital-intensive industries (such as aerospace, oil and gas, pharmaceuticals, and automotive industries), use improved visibility into events, alerts, and operational data to maintain infrastructure before problems occur, potentially avoiding catastrophic events that can affect your business.
- **Manage adverse events and product recall activities**. By quickly correlating affected products and customers, you can get the right information to consumers and reduce business risk.

Working Together to Deliver Innovative Big Data Solutions

As global technology leaders and co-innovators, Cisco and SAP are uniquely positioned to provide high-

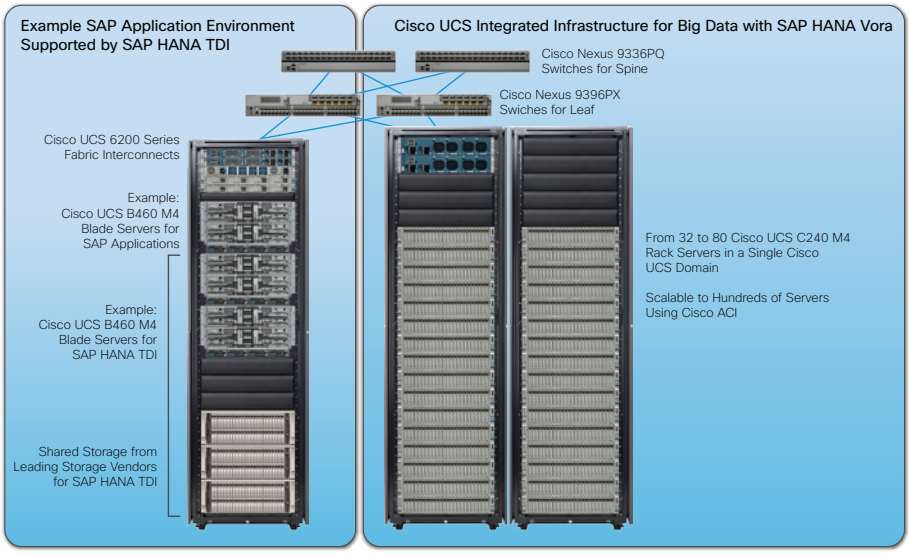

Figure 1. Cisco UCS Integrated Infrastructure for Big Data with Cisco ACI for SAP HANA Vora

quality, innovative products to your organization. Our scalable, highly secure, end-to-end solutions can help you transform the ways that people connect, communicate, and collaborate.

In a joint research and development lab that enables co-innovating with customers, Cisco and SAP engineers are working together to test real-world applications and environments. We have set up a multimillion-dollar customer lab with more than 100 nodes, 3 petabytes (PB) of storage, and an automated, policy-based infrastructure, so that customers can test and scope new solutions with real data in a state-of-the-art environment.

Helping Businesses Accelerate and Optimize Analysis and Operation

By deploying Cisco UCS Integrated Infrastructure for Big Data with SAP HANA Vora, you can:

- **Improve access to data and accelerate decision making:** Your data scientists and business analysts can access, process, and interpret your enterprise and Hadoop data with a single solution across multiple landscapes. With the capability to compile queries and accelerate data processing across nodes, your staff can accelerate and simplify online analytical processing (OLAP) analysis for thorough and fast results.
- **Simplify management:** Unified management is integrated into the system. This integration simplifies deployment and reduces the risk of configuration errors that can cause downtime. As a result, you can deploy big data servers in minutes, rather than the days or weeks required in traditional environments.
- **Reduce deployment risk:** With a validated solution and guidebook for implementation, your architects and administrators don't have to spend valuable time integrating components into a workable solution, reducing time, risk, and guesswork.
- **Reduce total cost of ownership:** Cisco UCS Integrated Infrastructure for Big Data solutions for SAP HANA Vora are substantially less complex than traditional IT infrastructure. Our superior economics and operations deliver direct benefits to SAP Applications, SAP HANA, and SAP HANA Vora solutions, with our customers reporting 84 percent shorter provisioning times, 77 percent less cabling, 61 percent lower management costs, and 54 percent lower power and cooling costs.

Conclusion

If you need enriched, interactive analysis capabilities, consider SAP HANA Vora running on Cisco UCS Integrated Infrastructure for Big Data.

- With more than 100 world-record benchmarks and six big-data specific ones, you can count on performance from Cisco UCS.
- With a simplified architecture and integrated management, you can count on lower total cost of ownership.
- And with policy-based computing and networking infrastructure, you can count on accurate, rapid deployment without the risk of configuration drift.

Our innovations allow you to unlock the intelligence in your data and interpret it with a new dimension of context and insight to help you create a sustainable, competitive business advantage.

For More Information

For more information about Cisco UCS Integrated Infrastructure for Big Data, visit http://www.cisco.com/go/bigdata.

Visit the Cisco UCS Big Data Design Zone at http://www.cisco.com/go/bigdata_design.

For more information about SAP solutions with Cisco UCS, visit http://www.cisco.com/go/sap.

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