SAP HANA on Cisco UCS

Q. What problem does SAP HANA solve?

A. Information is an asset that companies can use to make better decisions. The capability to capitalize on this asset remains one of the highest priorities for organizations of all types. SAP HANA in-memory computing provides the speed and agility needed to power analytics at outstanding performance levels. SAP HANA delivers:

- **Speed and agility:** Today's businesses need to respond rapidly to change. The need to get all the right information to business users, without the delays typical of enterprise data warehouses, is critical to the use of data as a competitive differentiator.

- **Performance and cost:** New hardware technologies and advances in software have dramatically improved performance, with similar reductions in costs, especially compared with proprietary reduced instruction set computing (RISC) or mainframe systems, making new computing models possible.

- **Alignment of business and IT objectives:** Business requirements demand that business analysts have the flexibility to define their views of information and applications. Efficient IT departments strive for low redundancy and high reuse of system, information, and human resources.

- **More efficient data processing:** Traditional disk-based data warehouses are limited in their ability to benefit from major technology trends such as multicore CPUs, in-memory processing, and columnar storage. The SAP in-memory computing engine provides a foundation that can truly fulfill the promise of real-time business both now and in the future.

- **Power for business analytic applications:** All industry-specific solutions and functional areas of business share common information needs. At the same time, every organization is unique in the way it can use data to shape its business in new ways. Customers need to be able to apply powerful technology to easily use all their data, so they can flexibly model their businesses in a rapidly changing, competitive environment.

Q. What is SAP HANA?

A. SAP HANA is a modern platform for real-time analytics and applications. It enables an organization to analyze business operations based on large volumes and a variety of detailed data in real time, as that data is collected. SAP also delivers a new class of real-time applications, powered by the SAP HANA platform. The platform can also be delivered through the cloud. SAP in-memory computing is the core technology underlying the SAP HANA platform.

Q. What is the SAP HANA architecture?

A. SAP HANA provides a flexible, multipurpose, data-source-independent architecture that combines SAP software components optimized to run on Intel-based hardware delivered by Cisco. It includes a number of integrated SAP software components, including

- SAP HANA database
- Real-time replication services
- Data services
- Data lifecycle management
- Support for multiple interfaces based on industry standards
- Easy-to-use data modeling tool called SAP HANA Studio

Q. I thought Cisco was a networking company. Why is Cisco teaming with SAP on HANA?

A. Cisco is the worldwide leader in networking, transforming the way that people connect, communicate, and collaborate. In 2009 Cisco introduced the Cisco Unified Computing System™ (Cisco UCS®) server platform: a new model for data center efficiency and agility. Cisco UCS is designed with the performance and reliability to power memory-intensive, mission-critical applications, as well as virtualized workloads. Cisco UCS takes advantage of Cisco Nexus® networking, which provides low-latency and high-bandwidth communication between SAP HANA nodes as well as reliable and dependable performance between nodes, allowing SAP HANA to scale transparently. SAP and Cisco have optimized SAP HANA on the next-generation Cisco UCS platform, giving SAP HANA customers a competitive edge with intelligent infrastructure designed from the foundation to meet today's challenging business requirements.

Q. What unique value does Cisco bring to SAP? Why are they working together?

A. The Cisco UCS and SAP HANA architecture is a flexible, multipurpose, data-source-independent, in-memory platform that combines SAP software components optimized for Cisco UCS and delivered by Cisco. Architecture matters. Cisco UCS is an excellent platform for SAP HANA. It delivers industry-standard Intel® Xeon® x86-architecture with unified networking, management, computing, and storage access. The Cisco UCS platform offers stateless computing capabilities with dynamic server provisioning and comprehensive management across both physical and virtual environments. Cisco's end-to-end innovation in networking with Cisco UCS greatly reduces latency, increases performance, and scales transparently as data needs grow, especially for data-intensive workloads. The radical simplicity of Cisco UCS reduces complexity and eases management, resulting in a lower total cost of ownership (TCO). In addition, Cisco UCS is the only SAP HANA platform that has been certified with both EMC and NetApp storage, enabling data centers to use their preferred storage from vendors they trust.

Q. What are the benefits to Cisco and SAP customers?

A. Cisco and SAP are uniquely positioned as global leaders in technology, providing innovations for many shared customers. Together, Cisco and SAP provide differentiated, scalable, and secure end-to-end solutions, at the same time reducing deployment risks, complexity, and TCO. Customers can use SAP's in-memory computing technology, gaining the speed to power analytics at exceptional performance levels while maintaining a system that is agile, scalable, highly available, and cost-competitive with industry-standard Cisco UCS. As the customer's SAP applications are updated to take advantage of SAP HANA, the entire Cisco UCS infrastructure, regardless of the applications running on it, can be managed in the same way, using known data center best practices and processes.

The IT process automation (ITPA) software integrated with Cisco UCS and SAP will be of interest to joint customers, providing automation and scheduling to the solution. Cisco UCS using the SAP software and ITPA is certified by SAP as a Whole Offer Solution. SAP HANA enables customers to get information immediately, without the delays typical of enterprise data warehouses, by using the benefits of Cisco UCS and ITPA.

Q. Can a customer who does not use SAP applications use SAP HANA?

A. Yes. SAP HANA works with both SAP applications and third-party applications. For example, during the ramp-up and pilot phases of the solution, customers using third-party applications successfully used SAP Business Objects Data Services to load data from non-SAP systems into SAP HANA and used SAP Business Objects Business Intelligence tools to gain better insight into their data at very high speeds.

Q. How do SAP and Cisco work together with SAP HANA?

A. Customers purchase the software licenses from SAP, and they purchase the infrastructure platform, preloaded with the SAP software, from Cisco. Cisco does not compete with SAP in any way. The companies provide solutions that are unique to each company.

Q. Is Cisco UCS certified for SAP HANA?

A. Yes. The Cisco® servers that are certified for SAP HANA are listed in the SAP Product Availability Matrix (PAM) at http://scn.sap.com/docs/DOC-52522.

Q. Is Cisco offering an 8-socket server for SAP workloads?

A. Yes. Cisco now offers the Cisco C880 M4 Server, an 8-socket server powered by the Intel Xeon processor E7-8800 product family. It is sold specifically to support SAP HANA environments. It can be deployed with either 2 or 6 TB of memory in both scale-up and scale-out configurations. In a scale-up configuration it is deployed with 15 or 37 TB of disk storage (respectively) using the Cisco C880 M4 Storage Subsystem. Scale-out configurations can be deployed using enterprise shared storage through the SAP HANA Total Datacenter Integration (TDI) engagement model. All four server configurations are fixed.

Q. I don't see the Cisco C880 M4 on the Cisco UCS product pages. How do I learn more?

A. The Cisco C880 M4 is sold only for SAP HANA environments and is managed by Cisco UCS Director. You can learn more about the Cisco C880 M4 on the SAP Solutions page (http://www.cisco.com/go/sap).

Q. Is the Cisco C880 M4 supported like any other Cisco server?

A. The Cisco C800 Series is backed by Cisco SMARTnet™ Service and SAP HANA solution support. Installation, business continuity, and lifecycle management services also available from Cisco Advanced Services teams.

Q. How does SAP HANA compare to the solutions that currently exist in the market?

A. SAP HANA is an innovative technology that provides cost-effective management for large volumes of data and simultaneously allows analysis of information to provide immediate answers to any question in real time.

Q. I am an existing SAP NetWeaver Business Warehouse (BW) and BW Accelerator (BWA) customer. How can I use SAP HANA?

A. The high-performance SAP in-memory computing engine of SAP HANA is the next generation of in-memory computing. It complements today's SAP NetWeaver BWA with enhancements and additional functions, including the replication and acceleration of transactional data for real-time analytics. Customers can use SAP HANA as the software platform for delivering accelerated analytical solutions. Current SAP NetWeaver BW and BWA customers can use the power of SAP HANA in a number of ways. The current SAP NetWeaver BW and BWA landscapes can remain as implemented, with SAP HANA deployed alongside the current implementations, replicating the data in SAP HANA for analysis. SAP HANA can also replace the existing SAP

NetWeaver BW and BWA landscape and become an in-memory, highly available SAP NetWeaver BW and BWA system for analysis and reporting purposes.

Q. Who will be installing the Cisco UCS for SAP HANA solution? What will the qualification process be?

A. Cisco will integrate the SAP HANA solution into the customer's data center landscape and will use its highly skilled channel and system integrator partners for solution installation. A list of these partners can be found at Cisco.com or by asking your Cisco® account manager.

Q. What is the rationale and history leading to SAP HANA?

A. SAP was an early pioneer in the use of in-memory technology for improving performance and columnar databases to gain high data compression rates. TREX and SAP Enterprise Search were the first solutions to use these concepts. Building on the strength of these early products, SAP then released the very successful SAP NetWeaver BWA.

With SAP NetWeaver BWA firmly established in the market, SAP expanded its vision to use this in-memory technology to further benefit its customers. SAP's focus on business intelligence led to the combination of the business intelligence functions of SAP BusinessObjects with the in-memory analytical engine of SAP NetWeaver BWA, creating an accelerated business intelligence solution called SAP BusinessObjects Explorer. With a focus on openness and heterogeneity, SAP then evolved SAP BusinessObjects Explorer by including data integration, which allows the solution to access and accelerate any data, and all information beyond structured data, in SAP NetWeaver BW. This latest version of SAP BusinessObjects Explorer, the accelerated version, was released in Q210.

Building on the success of this accelerated business intelligence solution, SAP is now embarking on the delivery of SAP HANA that will eventually underpin many of SAP's applications. The first release of SAP HANA is focused on providing real-time analytical capabilities for SAP Business Suite applications. It directly replicates transactional data through a real-time replication service and exposes it to business intelligence tools, including SAP BusinessObjects and Microsoft Excel, for real-time analysis and data exploration.

Q. What is SAP HANA block certification with EMC?

A. Cisco and EMC recently developed and released a new EMC VNX-based storage technology that provides enhanced throughput as well as compatibility with disaster tolerance solutions. This storage solution uses the block API co-developed by EMC and SAP and available for all SAP HANA providers to use. It enables writing directly to disk, using block-based protocols. To date, only EMC has implemented block certification based on the SAP-recommended block API.

One advantage of the new block technology is that a single EMC VNX storage device can now support up to six active computing nodes. This support increases the purchasing value of the EMC VNX storage device by 50 percent, delivering greater value to our customers. Further, this technology uses the standard XFS driver included with the SUSE Linux operating system.

Q. What is the SAP HANA TDI deployment model?

A. Businesses have been asking for choice in their SAP HANA deployments. SAP, in response to these requests, has developed three basic deployment models that application data center managers can use to implement SAP HANA:

- **SAP HANA Appliance model:** Comes prebuilt with preinstalled SAP HANA software and all necessary components provided by certified SAP HANA hardware partners

- **SAP HANA Tailored Datacenter Integration model:** Enables the use of enterprise storage and networking components that already exist in your data center rather than requiring customers to purchase additional storage and networking resources to be used only for the SAP HANA environment
- **SAP HANA Cloud model:** Deploys SAP HANA using the infrastructure-as-a-service (IaaS) or hosted offerings of SAP and certified cloud providers

SAP HANA TDI provides the first evolutionary step away from the constraints of a very controlled standalone appliance model toward a model in which application data centers can be configured using existing SAP certified enterprise storage. SAP HANA TDI using shared enterprise storage was publicly released with SAP Service Pack 7 and is generally available from SAP. SAP has extended this model to allow these same data centers to use existing enterprise networking resources with SAP Service Pack 8.

Q. Are there support differences between the SAP HANA Appliance deployment model and the SAP HANA TDI deployment model?

A. With the SAP HANA TDI deployment model, the customer is responsible for the deployment and support of the end-to-end SAP HANA environment. However, this does not mean that the customer has to deploy and support the solution alone. Cisco and our partners are available to help customers with these tasks.

Q. What is SAP HANA disaster tolerance certification with EMC?

A. Disaster tolerance is one aspect of business continuity. It refers to the steps taken to help ensure that businesses can continue to operate after a catastrophic failure. Other aspects of business continuity include reliability, redundancy, high availability, and disaster recovery.

SAP has defined disaster tolerance as a solution for SAP HANA through which a local production system that experiences a catastrophic failure initiates a remote system to take over the workload without losing any committed database changes, including write, copy, delete, edit, and other database changes. The current SAP HANA disaster tolerance solution uses synchronous replication.

SAP has not specified a time for remote system recovery, but general industry expectation is between 30 minutes and one hour for a cold recovery scenario as defined by SAP.

The disaster tolerance solution with EMC is based on the EMC VNX technology and the EMC MirrorView software package. This solution uses consistency pairs (local and remote) to help ensure that the storage devices remain synchronized as changes are made to the local production system. The connection between the local and remote systems is accomplished with a pair of dedicated 8 Gbps Fibre Channel connections per EMC VNX pair (consistency pair). An additional 10 Gigabit Ethernet connection is required for control communication between the local and remote configurations.

An additional feature unique to the Cisco and SAP HANA solution is the capability to use the Cisco UCS investment at the remote location for activities not related to disaster tolerance when the capability is not needed for disaster recovery, greatly reducing cost. Additional EMC VNX devices are required to maintain the test, development, and quality assurance data not related to disaster tolerance at the remote site. In the event of a failure, the service profiles of the nonproduction system are saved, the production profiles are loaded on the blades, data is loaded from the disaster tolerance storage resource, and business commences within minutes. This capability enables customers to use their disaster tolerance solution for more than capturing synchronous data from the local production system. The EMC disaster tolerance solution is expected to be generally available mid CYQ313.

Q. What is SAP HANA disaster tolerance certification with NetApp Storage?

A. The basic tenants of business continuity and the value of the disaster tolerance solution apply to the Cisco UCS with NetApp Storage for SAP HANA solution. The disaster tolerance solution with NetApp is based on NetApp MetroCluster technology that is enabled on NetApp FAS3250 devices. The NetApp disaster tolerance solution clusters the local and remote NetApp FAS3250 controllers into a clustered pair, and as changes are made to the local storage devices, those changes are also mirrored on the remote storage device. This solution helps ensure that any database changes made to the local system are fully mirrored on the remote system, helping ensure data integrity and completeness. Dual 10 Gigabit Ethernet connections for each NetApp MetroCluster pair are required to connect the local and remote systems.

The Cisco UCS with NetApp Storage for SAP HANA solution also enables customers to use their Cisco UCS investments at the remote location for activities not related to disaster tolerance when the capability is not needed for disaster recovery. Additional NetApp FAS3250 devices are required to maintain the test, development, and quality assurance data not related to disaster tolerance at the remote site. In the event of a failure, the service profiles of the nonproduction system are saved, the production profiles are loaded on the blades, data is loaded from the to maintain the test, development, and quality assurance data not related to disaster tolerance storage resource, and business commences. This capability enables customers to use their disaster tolerance solution for more than capturing synchronous data from the local production system. It allows them to get the best value for their investment.

The NetApp MetroCluster disaster tolerance solution is expected to be generally available late CYQ213 or early CYQ313.

Q. What is the relationship between SAP NetWeaver BWA and SAP HANA?

A. The high-performance SAP in-memory computing engine of SAP HANA is the next generation of in-memory computing. It complements today's SAP NetWeaver BWA with enhancements and additional functions, including the replication and acceleration of transactional data for real-time analytics. Customers can use SAP HANA as the platform for delivering accelerated analytical solutions.

SAP plans are to continue to support both SAP BWA and SAP HANA for the foreseeable future. Customers with SAP NetWeaver BW performance problems can still benefit from SAP NetWeaver BWA if they are not yet ready to migrate to SAP HANA.

Q. What is the relationship between the SAP BusinessObjects Explorer, accelerated version, and SAP HANA?

A. The SAP BusinessObjects Explorer, accelerated version, currently uses a data-source-independent version of SAP NetWeaver BWA to provide in-memory acceleration of analytic data. The high-performance SAP in-memory computing engine of SAP HANA is the next generation of in-memory computing. It complements today's SAP BusinessObjects Explorer, accelerated edition, with enhancements and additional functions, including a more complete suite of business intelligence tools and the replication and acceleration of transactional data for real-time analytics. By substituting SAP HANA for the data-source-independent version of SAP NetWeaver BWA, customers can gain substantial acceleration, along with additional calculation capabilities. Customers can use SAP HANA as the platform for delivering accelerated analytical solutions.

Q. How does Sybase IQ fit into SAP's overall in-memory strategy, especially SAP HANA?

A. SAP HANA and Sybase IQ are intended for different uses and will continue as independent products into the foreseeable future. SAP HANA is the main foundational component of SAP's next-generation application platform for delivering analytics, planning, and transactional applications. Sybase IQ is a foundational

component of SAP's data management platform. Over time, Sybase IQ will be powered by in-memory computing technology from SAP, and it be used to provide extreme-performance data management solutions.

Sybase IQ is the preferred solution for customers who are building data warehouse or data mart solutions, and who are not already running SAP Business Suite or SAP NetWeaver BW. SAP HANA is the preferred solution for customers with SAP Business Suite and SAP NetWeaver BW.

Q. Where can I find up-to-date information about Cisco Solutions for SAP HANA?

A. Please visit http://www.cisco.com/go/sapnow and http://www.sap.com.

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