

Make Better Decisions Faster with Real-Time Intelligence

The combination of SAP HANA™ appliance software and the Fujitsu HANA Infrastructure solution delivers instant business insight. Analysis can be completed within microseconds of updates to either SAP or non-SAP data.

EXECUTIVE SUMMARY

The rise of “big data” is changing business economics. For the first time ever, it is possible to sift through vast quantities of information and enjoy the commercial advantage of real-time decision making.

The computing environment to enable that success must combine raw power to crunch the numbers quickly, agile flexibility to reach smoothly into any data source, and mission-critical reliability to safeguard business customers' livelihoods. Integrated solution stacks based on SAP HANA™ appliance software and Fujitsu HANA Infrastructure solutions handles those requirements brilliantly. For implementations with multiple SAP HANA platform nodes, Fujitsu's HANA appliance relies on NetApp storage systems to provide access to shared storage.

This paper outlines the business and technical benefits that are available with the solution stack from SAP and Fujitsu. It consists of the following main sections:

- **Overview: Enabling Real-Time Business Innovation.** Capabilities of the new platform for real-time businesses of all types and sizes
- **Simplified Mission-Critical Deployment with Full Integration.** How the integrated solution simplifies deployment, minimizes disruption of existing environments, and lowers risk
- **SAP HANA Platform Provides Instant Insight.** Analysis within microseconds of updates to SAP or non-SAP data
- **Mission-Critical Computing with Low TCO: Fujitsu Infrastructure Solution for the SAP HANA Platform.** System-level engineering and optimization that delivers performance and value
- **NetApp FAS3200 Series Storage Devices Provide Reliability and Performance.** Industry-leading shared storage for cost-effective horizontal scalability

Instantaneous business intelligence is now simple to achieve, with minimal business disruption, using an integrated solution stack based on SAP HANA™ appliance software, Fujitsu PRIMERGY™ servers, and NetApp FAS3200™ Series storage devices.

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Overview: Enabling Real-Time Business Innovation

In years past, computing operations on massive volumes of business data were performed mostly as after-hours batch operations. Long-running jobs chugged along at night and were deemed successful as long as they delivered results before morning. That approach is still an important part of the data processing at many companies, but there is also an increasing need for business-operations support with data analysis performed in real time as business happens. This development is marked by a series of related requirements:

- **Novel questions in a flexible framework.** These new requirements often call for ad hoc queries, as opposed to conventional, preconfigured reports created by IT departments.
- **Real-time analysis.** As business intelligence (BI) has become exponentially more important, BI dashboards and other real-time tools have become a key part of the decision-making landscape.
- **More informed business decisions.** The value of identifying trends and drawing conclusions from ever-larger universes of data has become a distinct competitive advantage.

Conventional, disk-based database systems face a core limitation in providing the sort of real-time data analysis that this model calls for. Disk reads and writes inherently introduce latency into the system as a whole,

resulting in a delay of the decision-making process. That factor can dramatically reduce the value of a BI system by forcing the processes of data collection and analysis to remain separated in time. The results are available only after the solution has completed the computational process.

Even though advances in computing power continually shorten that time delay, a gap remains in these solutions between when a business data point occurs and when conclusions and decisions can be drawn from that data point.

As an alternative to conventional systems, in-memory computing with SAP HANA appliance software actually holds an entire copy of the live data in system memory. That factor takes the latency of disk reads and writes out of the critical path for data analysis. Therefore, data acquisition and analysis can, in effect, be performed simultaneously. Powerful Fujitsu PRIMERGY servers enable the analysis of big data in real time. What's more, the mission-critical-ready nature of the Fujitsu HANA Infrastructure solution helps to ensure that businesses can trust their core operations to these implementations.

“Working with Fujitsu, we have now created a very compelling hardware and software offering that will usher in a new era of real-time, highly informed business-decision making.”

- M. Sethu, Deputy CTO, SAP AG

The ability to base strategic and transactional decisions on real-time data models increases the value of business data. In fact, in many cases, it can help transform very large data stores from liabilities into key assets. For instance, when those data stores come up in a strategic evaluation, the conversation may shift from storage and processing overhead to discussion of how it can be used to generate insights that create competitive advantages.

A core part of that shift toward greater net value of large business-data stores is that the technical efficiencies of the in-memory computing solution have allowed real-world databases to be reduced in size substantially. The resulting lower infrastructural overhead is attractive in an era of shrinking budgets and helps produce greater strategic alignment between IT and the needs of the business as a whole.

Simplified Mission-Critical Deployment with Full Integration

SAP and Fujitsu have come together to collaborate closely on a tightly integrated and optimized solution stack to support real-time BI with in-memory computing technology. The basis of that stack includes the following core building blocks:

- **SAP HANA appliance software** is a flexible, multipurpose, data-source-agnostic, in-memory solution that combines SAP software components optimized to run on Intel-based hardware. It includes a number of integrated SAP software components including the SAP HANA database, real-time replication services, data services, data and lifecycle management, support for multiple interfaces based on industry standards, and easy-to-use data modeling tools for business and IT experts.

- **Fujitsu HANA Infrastructure solution** is designed for mission-critical data center environments while minimizing total cost of ownership (TCO). This appliance solution is based on PRIMERGY rack-optimized servers and, for environments with multiple SAP HANA platform nodes, NetApp FAS3200 Series storage. The Fujitsu HANA Infrastructure solution directly integrates mission-critical functionality, such as scalability, high availability, and readiness for backup and restore, as well as disaster resilience.

Because these solution components are tightly integrated through a deep engineering commitment among the three companies, customers can rest assured that the overall solution is fully validated together to work as a single system. Moreover, that collaboration enables companies to deploy in-memory computing smoothly, with minimal disruption to existing infrastructure and operations. Implementations can be undertaken rapidly, with the limited risk that comes with pre-proven solution stacks and guidance from industry leaders.

SAP brings to this collaboration its unparalleled experience in providing mission-critical solutions that power businesses of all sizes, all over the world. The company's products exemplify mature business software that performs quietly in the background—day-in, day-out—while also pushing the envelope in areas such as database design innovation and mobile-device support. The SAP portfolio includes industry-leading foundations of SAP HANA appliance software, such as SAP NetWeaver Business Warehouse.

As one of the world's top five providers of business servers and the world's third-largest IT services provider,¹ Fujitsu is well positioned to help power the future of global real-time business intelligence. Fujitsu provides comprehensive system support in the form of SolutionContract, which covers all elements of the hardware infrastructure (including NetApp storage), forming a solid foundation for SAP HANA appliance software to run on. The company acts as a single point of contact based on specific service-level agreements for all infrastructure-related support topics, including the solution's Novell® SUSE Linux Enterprise Server OS.

“Around the globe, enterprises of all sizes rely on Fujitsu’s expertise to optimize their SAP environments. Thus it should be no surprise that Fujitsu is already in a leading position with customer implementations of SAP HANA™ on Fujitsu platforms. Enterprises that want to experience the business impact of SAP HANA need look no further than the Fujitsu SAP HANA Global Demo Center, the world’s first. And regarding scalability, Fujitsu has scored another first with the SAP HANA multi-node solution, adding further resilience and failover to real-time decision making. When it comes to harnessing the powerful SAP HANA technology to provide a faster response to changing market conditions and gain a competitive edge, you need to rely on a competent platform partner like Fujitsu.”

- Jens-Peter Seick, Senior Vice-President,
Product Development Group at Fujitsu
Technology Solutions

Together, SAP and Fujitsu have a broad, worldwide ecosystem of sales personnel, system integrators, and support infrastructure to assist end customers at every stage of the solution lifecycle. Because that ecosystem extends from preliminary planning, through execution, to ongoing support, it helps present a smooth integration path for companies that choose to implement the solution stack.

In fact, that smooth path highlights the high degree of integration within the engineered system itself. SAP HANA appliance software is provided pre-installed on the Fujitsu PRIMERGY servers and integrated with the NetApp storage infrastructure. The robust design and planning that has gone into the solution before it ever reaches the customer decision point enables it to be installed and brought online in a matter of days, rather than months.

SAP HANA Appliance Software Provides Instant Insight

The solution created jointly by SAP and Fujitsu offers substantial business benefits with streamlined implementation. Companies that adopt this solution are able to analyze data within microseconds of updates to SAP and non-SAP data, reducing operational costs and optimizing flexibility in their IT infrastructures.

As mentioned earlier, the ability of the SAP HANA platform to generate extremely fast response times is rooted in its in-memory database operation. By storing a complete copy of live data in system memory, SAP HANA appliance software avoids the latency associated with disk reads and writes, which are a primary factor in limiting the performance and scalability of conventional database systems.

Today's 64-bit systems such as the Fujitsu PRIMERGY server platform are able to address increasingly large amounts of memory, and the prices of memory modules continue to fall. These factors help to position this model as a preferred, mainstream approach to BI that can improve customers' ability to address many of today's emerging business challenges.

- **Increased competitive pressure.** In the tough, modern business climate, rapid intelligence to avoid missteps can be vital to success, or even survival.
- **Rapid solution adoption.** As new software needs are identified, the data-source-agnostic flexibility of the SAP HANA platform can help companies accelerate the time to deployment.
- **Novel usage models.** Strategic initiatives are often only as valuable as IT's ability to support them. The power of SAP HANA appliance software significantly aids those strategic initiatives.

One aspect of the large data stores that many companies are accumulating is that the data is unstructured, such as free-form text from wikis and social media. Interpreting that information, compared to interpreting structured data such as statistics, is quite challenging with most BI systems. SAP HANA appliance software is designed specifically to accommodate unstructured data, wherever it resides. That functionality streamlines the effort to get value from such data.

Ultimately, any technology solution must sell itself through its benefits in financial terms. Here, the SAP HANA platform excels. In addition to the rapid deployment of the overall solution already noted, the

environment's ability to interact with any data source streamlines future integration efforts, slashing their cost and time to profitability. And in day-to-day operations, the system is designed so that users can obtain the business insights they need on an ad hoc basis, rather than requiring IT organizations to create specialized reports that can accumulate significant costs over time.

The in-memory operation of SAP HANA appliance software analyzes business data at blazing speed. Integration with the full solution stack built in collaboration with Fujitsu helps ensure that customers can deploy that functionality with confidence.

Mission-Critical Computing with Low TCO: Fujitsu Infrastructure Solution for the SAP HANA Platform

The SAP HANA platform infrastructure based on Fujitsu PRIMERGY servers is informed by many years of solution co-engineering between Fujitsu and SAP, as well as Fujitsu's status as a Tier-1 SAP partner. Because the components are pre-selected and validated, customers do not have to spend time choosing and integrating diverse components. That characteristic saves time, effort, and expense while decreasing the risk associated with solution deployment. It also paves the way for smooth scalability as business needs grow.

Fujitsu provides a broad choice of HANA-validated infrastructure environments with scalability for future growth up to 16 nodes and 8 TB of main memory. The total solution is also designed to support high-availability, backup and restore functionality, and two-site disaster recovery.

For less critical HANA use cases, Fujitsu offers single-node solutions for the SAP HANA platform from 128 GB to 512 GB main memory also based on the Fujitsu PRIMERGY RX600 server system, based on up to four Intel® Xeon® processors E7-4870.

The very high performance these features support helps ensure that businesses get optimal value from their SAP HANA platform deployments. Novell® SUSE Linux—the OS in the Fujitsu solution for the SAP HANA platform—is not only fully validated for the server but also highly optimized at the processor level through a deep co-engineering relationship between Novell and Intel. Those factors further contribute to the overall performance and stability of the solution stack, adding value to end customers at no additional cost.

Fujitsu HANA infrastructure massively reduces SAP HANA appliance software operational costs.

- **Automates SAP HANA platform installation and upgrade** including SUSE Linux as well as SAP HANA appliance software with all relevant parameters for a smooth integration into customer data center
- **Minimizes effort for SAP HANA platform system administration and maintenance** (i.e., infrastructure extensions or software updates)
- **Prevents or minimizes downtime** by sending critical traps to the Fujitsu support center so that Fujitsu solution support can take action before real downtime impacts the whole SAP HANA appliance software-based application

The relationship between Fujitsu and SAP has deep roots, with a co-engineering history that has been continuously active. As part of its

commitment to customers pursuing solutions based on the SAP HANA platform, Fujitsu has established a Global Demo Center, located in Neckarsulm, Germany. The infrastructure at this facility can be accessed remotely from anywhere in the world. Fujitsu uses it to provide real-world demonstration scenarios that help potential customers gauge the value of the Fujitsu and SAP solution stack. The Center is staffed by experienced consultants who assist organizations in jointly developing plans and insights related to how SAP HANA appliance software running on Fujitsu PRIMERGY servers can produce value through rapid business insight.

NetApp FAS3200 Series Storage Devices Provide Reliability and Performance

When scale-out requirements call for the use of multiple nodes for the SAP HANA platform, shared storage (with a shared file system) is required to provide concurrent access to all storage resources in the environment among all of the nodes. The SAP and Fujitsu solution stack uses NetApp fabric-attached storage (FAS) for this purpose—specifically the NetApp FAS3200 Series.

NetApp has a long history of leadership in the field of network file system (NFS)-based storage infrastructure, as well as extensive experience collaborating with Fujitsu on SAP solutions. In the case of the Fujitsu and SAP HANA platform solution stack, the NetApp FAS3200 Series meets the infrastructure's requirements without additional host-based prerequisites. This is a cost-effective approach that also allows additional NetApp storage systems to be implemented, for simple horizontal scaling.

NetApp Data ONTAP®, the operating system used by the storage systems, transparently manages data to help ensure that it is stored persistently and consistently, as an added measure to preserve data integrity. It also incorporates RAID 6 functionality to protect against double-disk failure within a RAID group, while affording administrators a great deal of configuration flexibility. Moreover, disks can be added easily to scale vertically without system downtime or performance impact. From a mission-critical perspective, redundant controllers can be added to provide fault tolerance and measure load balancing.

NetApp storage systems provide fast and efficient methods for data protection, disaster recovery, fault tolerance, and business continuity. Although the SAP HANA platform does not presently use this functionality, it could be incorporated in the future. Key functionality in this area includes the following:

- **Snapshot™**, which makes point-in-time copies of data while applications are running
- **SnapVault®**, a disk-to-disk backup solution that makes use of Snapshot copies
- **SnapMirror®**, a data-replication solution for disaster recovery
- **MetroCluster™**, clustering and mirroring software for high availability and disaster recovery

With shared storage for today and forward-looking features for tomorrow, the NetApp FAS3200 Series is an excellent addition to the integrated solution for SAP HANA appliance software running on the Fujitsu HANA Infrastructure solution.

Conclusion

SAP HANA appliance software running on the Fujitsu HANA Infrastructure solution is the foundation for a highly optimized solution stack that can power your business into the future with real-time business intelligence. Take full advantage of the data stores within your company, wherever they reside, and turn new data into instantaneous insight. The opportunity has arrived to increase your competitive advantage to the next level with business decisions that are informed by the best information available, a critical ingredient for high scalability and mission-critical infrastructure success.

The best place to start is the Fujitsu Global Demo Center for SAP HANA, which is designed specifically to uncover the needs and opportunities that any business faces in relation to in-memory computing. Remotely accessing the systems available at the Center will provide insights and pave the way for strategies that can propel your business forward. Expert consultants are on hand to help you make the most efficient and effective use of the opportunity. Contact your local sales contact or expert.sap@ts.fujitsu.com, and you'll be on your way.

For more information, visit

ts.fujitsu.com/hana

and

www.sap.com/hana



¹ www.fujitsu.com/global/about/profile/info/.

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