



Dell's SAP HANA™ Appliance

SAP HANA is the next generation of SAP in-memory computing technology. Dell and SAP have partnered to deliver an SAP HANA appliance that provides multipurpose, data source-agnostic, in-memory appliance software optimally configured on Dell hardware and delivered by Dell Global Services.



**Achieve more,
deliver quick results
and maximize
efficiency with Dell's
SAP HANA solutions.**

Overview of Dell's SAP HANA solution

For more than a decade, Dell has collaborated with SAP to deliver hundreds of solutions to customers across many industries. Dell helps organizations achieve rapid and sustainable business results with standards based solutions that are high-performing and end-to-end.

In addition to innovative, leading edge hardware platforms, Dell offers access to thousands of enterprise computing solutions consultants. Our knowledge experts incorporate lessons learned and experiences into an enterprise solution delivery model that spans hardware, consulting, implementation, hosting and application management services designed to enhance value for customer investments in SAP solutions.

Dell offers customers a portfolio of end-to-end solutions and services in support of SAP HANA applications. Our complement of assessment, implementation, management, data modeling, and use case assistance services can reduce IT costs while helping organizations transform their business. Dell's innovative platforms can dramatically increase the availability and speed of business information, leading to insightful decision-making using SAP HANA.

Dell's Unique SAP HANA value proposition

Dell and SAP have teamed up to offer an optimally configured SAP HANA solution that includes a hardware appliance, pre-loaded software and a full range of services. This solution is reliable, scalable and offered in multiple configurations to address your specific business needs. Dell's end-to-end solutions give your organization full access to the power of SAP HANA.

Dell's SAP HANA appliance solution includes:

A high performance in memory computing database and a powerful data calculation engine

Real-time replication service to access and replicate data from SAP ERP

Data integration services to access and index information from virtually any data source

A data repository to persist views of business information

Highly-tuned integration with SAP BusinessObjects BI solutions for insight and analytics

SQL and MDX interfaces for third-party application access

A unified information modeling and design environment

This solution is reliable and scalable and offered in multiple configurations to address your specific business needs. Dell's end-to-end and all-in-one solutions give your organization full access to the power of SAP HANA.

"We conducted extensive research before choosing Dell. We felt as though the SAP HANA platform from Dell offered the best value."

Bart van Dongen, Chief Technology Officer, Every Angle Software Solutions

The combination of Dell's PowerEdge R910 platform and SAP HANA software allows users to conduct analytics, performance management and operations in a single system. Together, the solutions help enable a business to react faster to events impacting operations today.

By implementing Dell's SAP HANA solution, an organization can be positioned to identify and analyze trends and patterns to improve planning, forecasting and price optimization. Enterprise customers taking advantage of Dell's SAP HANA platform get a cost-effective, optimized in-memory computing solution that can increase availability and reduce risk.

Dell's SAP HANA configurations - a complete portfolio

The Dell Solution for SAP HANA is offered in a wide variety of pre-configured and optimized sizes to meet virtually any customer need. Whether the dataset is large or small, Dell and SAP have worked together to provide solutions that are right sized for each data analysis environment.

The Dell PowerEdge Server R910 server platform is the foundational platform for the Dell Solution for SAP HANA, and is consistently used across all configurations. By utilizing the same powerful platform from smallest to largest configuration, customers can be assured of a stable environment for SAP HANA that will not require learning a whole new system as their needs grow. Instead, consistency of platform offers a migration path, rather than "rip and replace".

The Dell PowerEdge R910 provides:

- **Performance and reliability** in a scalable 4U, four-socket server allowing large workload consolidation and scale for the SAP HANA in-memory database.
- **Integrated diagnostics** with Intel® Advanced RAS (Reliability, Availability, Serviceability) Technology.
- **Robust infrastructure**, including performance resources, power efficiency, I/O, and memory scalability.
- **Processing power** using high performing Intel E7 Series processors, up to 512GB of DDR3 memory, and 2 x 10Gb Optional LOM with 10 PCIe slots.

Scale-out configurations

Dell's solution design lets customers start at 1TB and grow their systems as data processing needs grow, without disrupting their current operations. Customers can expand their SAP HANA system without changing architectures or removing existing system components.

The linear scalability of the SAP HANA software platform makes scaling to meet larger workload demands a very straightforward process. Dell has tested and certified larger capacity solutions that support 1, 2, and 4TB of compressed data processing, with expandability to support up to 8TB of memory capacity, SAP HANA's rated maximum.

All Dell SAP HANA configurations are based on the Dell PowerEdge R910 platform and utilize 10GbE networking and Dell Compellent SAN Storage.



Dell's SAP HANA Scale-Out Configurations

Dell offers multi-node configuration solutions to meet your scalability needs,

Component	1 TB Configuration	2 TB Configuration	4 TB Configuration
HANA Nodes	2 x Dell PowerEdge R910 active 1 x Dell PowerEdge R910 Standby <ul style="list-style-type: none"> • 4 X 10 core Intel E7-4870 • SLES 11 for SAP • 512GB RAM 	4 x Dell PowerEdge R910 active 1 x Dell PowerEdge R910 Standby <ul style="list-style-type: none"> • 4 X 10 core Intel E7-4870 • SLES 11 for SAP • 512GB RAM 	8 x Dell PowerEdge R910 active 1 x Dell PowerEdge R910 Standby <ul style="list-style-type: none"> • 4 X 10 core Intel E7-4870 • SLES 11 for SAP • 512GB RAM
Management Node	1 x Dell PowerEdge R620 <ul style="list-style-type: none"> • SLES 11 for SAP • Infrastructure management SW • SAP HANA Studio 		
Storage	1 x Dell Compellent SC8000, 6Gb SAS Dual Controller Array with (upgrade-ready for 2TB size HANA): <ul style="list-style-type: none"> • 2 x 24 bay 2.5" 600GB 10K RPM SAS with 48 spindles/per array • 1 x 24 bay 2.5" 200G SAS SSD with 13 total disks/per array 		
Storage Fabric	2 X 40 Port FC8 Switch		
Network	4 x PowerConnect 24 port x 10GbgE switches 1 x PowerConnect 48, 48 port x 1GbE switches - for management network		

To supplement the power, performance, and manageability of the Dell PowerEdge servers, Dell Compellent SAN Storage offers the additional benefit of the Fluid Data storage system, a virtualized environment that provides tremendous flexibility in storage management. Automated tiering of data - standard with Dell Compellent storage software - manages persistent storage to provide the quickest access to the data sets most needed for analysis, and high availability features that simplify backups, expansion, and data migration provide tangible enhancements to the SAP HANA analytics engine infrastructure.

Dell engineers these components end-to-end, to provide a completely integrated and fully supported ecosystem for high performance data analytics.

Dell's single-node SAP HANA appliance

The single-node SAP HANA appliance from Dell is fully contained in the PowerEdge R910 server, making use of fast internal disks for storage and solid state cards. Solid state technology from Dell offers high IOPs and low latency performance for the in-memory SAP HANA database. While solid state drives are used to maintain the system's logs, a RAIDed group of internal 10Krpm SAS disks is used to maintain a copy of the data image.

High Availability built in

The Dell™ PowerEdge™ R910 is designed for reliability and scalability for mission-critical applications. High availability features include:

- Built-in reliability features at the CPU, memory and hardware
- Intel advanced reliability, availability and serviceability (RAS) capabilities
- Redundant power supplies
- Remote iDRAC6 connectivity
- Integrated systems management, Lifecycle Controller and embedded diagnostics to help maximize uptime

Dell's focus on reliability starts with product design, and ends only when it has delivered a solution that meets strict testing and quality control standards.

Support infrastructure

Dell's SAP HANA appliance is designed to be an all-inclusive solution that comes as a pre-integrated unit with all necessary hardware, storage, and networking capabilities.



Single Node SAP HANA Configurations

Dell offers several different single-node SAP HANA appliances based on the Dell PowerEdge R910 platform.

	X-Small	Small+	Medium
Server	Dell PowerEdge R910		
Processor	2 X 10 core Intel E7-4870	2 X 10 core Intel E7-4870	4 X 10 core Intel E7-4870
System Memory	128 GB	256 GB	512 GB
Storage	<ul style="list-style-type: none"> 785 GB PCIe-Flash / SSD for Log volume 1 TB SAS for Data volume 3 x 1 GB NICs (trunk) or 1 x 10GB NIC 	<ul style="list-style-type: none"> 785 GB PCIe-Flash / SSD for Log volume 1 TB SAS for Data volume (expandable up to 2 TB) 3 x 1 GB NICs (trunk) or 1 x 10GB NIC 	<ul style="list-style-type: none"> 785 GB PCIe-Flash / SSD for Log volume 2 TB SAS for Data volume 3 x 1 GB NICs (trunk) or 1 x 10GB NIC
Software	<ul style="list-style-type: none"> Suse Linux Enterprise Server for SAP Applications 11 SAP HANA appliance software 		
Dell Services for SAP HANA	Dell ProSupport Mission Critical Services (3 years) SAP HANA Implementation Services <ul style="list-style-type: none"> Onsite deployment of Dell SAP HANA Appliance Configuration of Data Services Support for SAP HANA Go Live Tests Optional Services: Consulting Services, Roadmap Consulting, Rapid Deployment Solutions, SAP Business Warehouse on SAP HANA		

Additional software included

Dell's SAP HANA appliance is an end-to-end and all-in-one solution that comes pre-loaded with all of the software and management tools necessary.

Solution Support

Dell is an expert in SAP HANA system support. Dell has a strong systems management and support practice and an in depth understanding of SAP hardware and software solutions.

Dell's SAP HANA appliance comes with 3 years of Dell's award winning ProSupport Mission Critical services and a 3-year extended hardware warranty. Customers receive 24x7x365 phone support, escalation management and collaborative support leveraging Dell's global ProSupport infrastructure of more than 30,000 technicians supporting more than 100 countries in 55 languages.

Dell's ProSupport Mission Critical services are designed to accelerate rapid resolution by offering quick delivery of onsite parts and or labor and providing access to Dell's Critical Situation Process.

Key support features:

- **Onsite Response** – 4 hour onsite service with 6 hour hardware repair available 24x7, including holidays.
- **CritSit Procedures** – Severity level 1 issues will be reviewed by Dell and may be nominated for CritSit incident coverage through Dell Global Command Centers. During a CritSit incident, expert resource teams are mobilized to get you back up and running fast.
- **Emergency dispatch** – Onsite service technician dispatched in parallel with phone-based troubleshooting when you declare a Severity level 1 incident.

Dell SAP HANA services

SAP HANA services are also available to assist you with implementing the solution. Dell offers end-to-end solutions to support SAP HANA applications – helping you reduce IT costs and transform your business. Dell SAP HANA appliance is delivered fully installed and configured with all the required software for Dell SAP Service engineers to connect it to customer source system(s).



Dell's end-to-end SAP HANA Solution

Powerful technology	Dell's PowerEdge R910 incorporates Intel E7 technology, is certified for SAP HANA and includes everything needed to support your SAP HANA solution. This all-in-one solution includes powerful system management features that provide for seamless implementation and management.
Energy-efficient system design	Built with Energy Smart technologies, Dell PowerEdge servers include power management features that enable power capping, power inventory, and power budgeting within your SAP HANA environment. Carefully engineered layout of the internal components aids with airflow direction, helping to keep the server cool and offering potential savings in data center cooling costs.
Large-scale enterprise consulting expertise	Dell leverages its experience delivering enterprise IT and solving "big data" issues for global companies to provide actionable and real world technology, strategies and solutions. Dell's Center of Excellence (CoE) is well established for SAP HANA, BWA, and Mobility.
Established methodology	Dell's In-Memory Computing and Analytic Methodology (DIMCAM) incorporates best practices and guides customers through a streamlined and successful implementation process.
Comprehensive services	Dell's portfolio of SAP full lifecycle services leverage industry best practices to offer better business outcomes for SAP clients. Our SAP HANA Quick-Start Service includes installation, configuration and validation of the hardware and software, and post-installation documentation.
World-class support	Dell's ProSupport™ and Mission Critical Services help keep your SAP HANA solution running smoothly. For more thorough support, our SAP HANA Manager Services provide comprehensive management and support, including 24X7 monitoring, ongoing remote health checks, firmware and software upgrades, and assistance with problem tracking and resolution.

Dell provides the following SAP HANA services:

- **Quick-Start Services** that include installation, configuration and validation of the hardware, software and post-install documentation.
- **Managed Services** that provide ongoing management and support for the SAP HANA landscape. These services include 24x7 monitoring, ongoing remote health-checks, firmware and software upgrades, and assistance with problem tracking and resolution.
- **Rapid Deployment Solutions** for SAP HANA that drive quick results for database migration, reporting and industry-specific implementations.
- **Data Protection Services** that provide remote backup and recovery support for SAP HANA business continuity.
- **SAP Modernization Services** for SAP applications that enhance cloud computing, real-time analytics and mobile applications.
- **SAP Implementation Workshops** that facilitate planning and creation of an SAP HANA implementation strategy.

Dell SAP HANA Services coupled with Dell HANA Scale-Out Solutions provides the optimum in HANA capabilities, delivery, and support.

Dell offers customers a complete portfolio of end-to-end solutions in support of SAP HANA applications that help reduce IT costs while helping organizations transform their business.

Learn more at <http://www.dell.com/hana>.

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