Applying real-time analytics for agile business operations

By Carey Dietert and Divyesh Vaidya

In a high-velocity business climate, immediate action on operational data is a competitive differentiator. SAP® HANA software optimized on Dell™ hardware speeds successful outcomes by enabling fast, cost-effective access to information for analysis.

Organizations amass a growing volume and variety of data in the course of daily operations. Analyzing vital information assembled from that data enables decision makers to heighten business intelligence with strategic insights that sharpen their competitive edge. But time is of the essence. To preemptively respond to changing conditions, leaders need insight into business operations as they happen.

However, that requirement calls for access to vast stores of operational data that often exceed the capacity of traditional disk-based systems to process immediately. Now, many organizations are looking for ways to obtain access to the detailed data they need for competitive purposes within a reasonable amount of time. Very often they are compelled to reduce or summarize the data from operational applications and external sources to feed their analytic models. The result is inadequate access to the full spectrum of information needed and unacceptable lag times between gathering data and deriving meaningful insights from it.

Real-time analytics can change the way a business operates. For example, a retail organization can be empowered to analyze purchase orders when they are placed to manage production demand with enhanced precision and avoid problems such as overstock. An apparel manufacturer can learn which suppliers provide the highest-quality, lowest-cost raw materials on time as soon as a reorder point is triggered at the store level. And a utility company may combine internal capacity-generation metrics with real-time consumption patterns from smart meters and then integrate that data with weather data to continuously optimize business and residential service and rates.

Immediate access to information and analytics

SAP HANA appliance software offers the next generation of SAP HANA in-memory computing technology, which is designed

to empower organizations with instant insight into business operations and external forces. It enables organizations to anticipate changing business conditions and allows business users immediate access to model and analyze transactional and analytical data in real time. This approach allows organizations to access data from virtually any data source, and in a single environment, without affecting existing applications or systems.

In addition, SAP HANA sets a solid technology foundation for advanced, innovative applications based on in-memory computing technology. It is designed to enhance development and execution of business strategy—including planning, forecasting, operational performance, and simulation—and provide dramatic benefits such as high performance and real-time access to large volumes of transactional information.

SAP HANA includes a robust in-memory computing database, a powerful data calculation engine, and a real-time replication service to access and replicate enterprise resource planning (ERP) data from the SAP ERP application. Its data integration services provide access and index information from virtually any data source, and it offers a data repository for persistent views of business information. Highly tuned integration with the SAP BusinessObjects BI Platform enables well-informed insight and analytics, and SQL and Multidimensional Expressions (MDX) interfaces provide for third-party application access. This integration offers a unified information modeling and design environment.

Innovation for an end-to-end analytics platform

Dell and SAP have worked together to optimize SAP HANA configurations. This approach offers solutions encompassing a hardware appliance that is configured with software and available with a wide range of services. Comprehensive Dell enterprise-class hardware and expert services combined with SAP HANA software allow business users to execute business analytics, performance management, and operations efficiently in a single system. This end-to-end approach offers cost-effective, optimized, in-memory computing capabilities that help enterprises increase availability and minimize the support and implementation challenges that multiple-vendor systems can create.

The Dell/SAP HANA solution comprises the following six key components, which are designed to offer a comprehensive platform for immediate access to and analysis of business information:

- **Innovative Dell PowerEdge™ servers:** The Dell PowerEdge R910 server, powered by the Intel® Xeon® processor E7 product family, is a 4U, four-socket rack server validated for SAP HANA. This robust server includes powerful systems management features that provide seamless and integrated implementation and management.
- **Energy-efficient system design:** PowerEdge servers include power management features and Energy Smart technologies that enable power capping, power inventory, and power budgeting within an SAP HANA environment. The layout of internal components facilitates efficient airflow to maintain cool operation and offer potential savings in data center cooling costs.
- **Large-scale enterprise consulting:** Actionable, real-world technology, strategies, and solutions leverage Dell experience in delivering enterprise IT and resolving the complexities that typically result from data deluge.
- **Established methodology:** Dell In-Memory Computing and Analytic Methodology (DIMCAM) implementation services can guide organizations through a streamlined implementation process.
- **Comprehensive services:** The Dell portfolio of SAP comprehensive life-cycle services leverages industry best practices to enhance business and organizational outcomes. Dell offers workshops, readiness assessments, and industry-specific solutions.
- **Rock-solid support services:** Dell ProSupport, and its Mission Critical option, helps organizations keep their SAP HANA deployments running smoothly.

Scalability for an integrated analytics ecosystem

Dell offers a wide range of SAP HANA appliances based on the Dell PowerEdge R910 server platform, which is designed to provide high performance, reliability, and scalability for mission-critical applications. SAP HANA is offered in prespecified sizes, validated by SAP,[1] and engineered by Dell to meet specific analytics needs. Single-server configurations start at 128 GB RAM and scale up to 512 GB for in-memory data analytics capability.

The SAP HANA software platform is designed to deliver linear scalability to support large workload demands in a straightforward process. In addition, Dell has tested and is planning to offer SAP-certified, large-capacity solutions that support 1 TB, 2 TB, and 4 TB of compressed data processing, with expandability to support up to 8 TB of memory capacity.[2] Using PowerEdge R910 servers, Dell plans to combine the exceptional scalability and reliability, availability, and serviceability (RAS) features of this hardware platform into a multinode configuration. This configuration utilizes 10 Gigabit Ethernet (10GbE) networking and data sharing across

[1,2] Based on tests performed September 2012 by Dell engineers at Dell Labs on Dell PowerEdge R910 servers powered by Intel Xeon E7-4870 processors and running SAP HANA test suites to show key performance indicators (KPIs) necessary for SAP accreditation—500 MB throughput and 40,000 I/Os per second (IOPS) for each HANA node. For more information about these tests, configuration information, and the results, visit qrs.ly/fe2gck2.

Dell Compellent™ Storage Center™ storage area network (SAN) arrays.

Compellent SAN virtualized storage is built on the Dell Fluid Data™ architecture, a set of capabilities designed to automatically and intelligently optimize data storage. Its automated tiering of data manages persistent storage to provide quick access to the data sets needed for analysis. Compellent storage is designed to provide high-availability features that help simplify backups, expansion, and data migration—all of which enhance the SAP HANA analytics engine infrastructure.

Comprehensive support services

Dell provides global, extensive SAP HANA support with a strong systems management and support practice that leverages an in-depth understanding of SAP hardware and software. Collaborative support provided by Dell, SAP, and SUSE through standard and enterprise support agreements offers organizations a responsive service and support experience. (For additional services offerings for SAP HANA, see the sidebar, "Enriching business intelligence and analysis.")

The Dell/SAP HANA appliance comes with the Dell ProSupport Mission Critical option along with an extended hardware warranty for three years. Organizations receive 24/7/365 phone support, escalation management, and collaborative support that leverage the global Dell ProSupport infrastructure. The Dell ProSupport Mission Critical option accelerates resolution by providing rapid delivery of parts and/or labor on-site. It enables access to Dell's field-tested Critical Situation Process (CritSit), which offers the following key support features:

- **On-site response:** Two-, four-, or eight-hour on-site service with six-hour hardware repair is available 24/7, including holidays.
- **CritSit procedures:** Severity level 1, business-critical problems are 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 organizations back up and running fast.
- **Emergency dispatch:** On-site service technicians are dispatched in parallel with phone-based troubleshooting during a severity level 1 incident.

Enriching business intelligence and analysis

The volume, variety, and velocity of data entering an organization through mobile devices, point-of-sale kiosks, transaction-intensive applications, and other routes can be complex to harness. As a result, a comprehensive approach to business intelligence takes thoughtful planning and evaluation. Dell offers a set of optional services to help organizations put an infrastructure for information analysis into place quickly and cost-effectively:

- **SAP HANA executive workshop:** In this workshop, decision makers can develop the use case and business justification for implementing SAP HANA, to help determine whether it is the right approach for their situation.
- **SAP HANA proof of concept:** Using Dell In-Memory Computing and Analytic Methodology (DIMCAM) and the IMPROVE jump-start process, organizations can quickly assess the value that SAP HANA may bring to the decision-making process.
- **SAP modernization services:** This portfolio of Dell-developed services for SAP applications features cloud computing, real-time analytics, and mobile applications.
- **SAP HANA implementation workshops:** These workshops facilitate planning and creation of the business justification for a comprehensive deployment.
- **Analytics factory:** Dell offers global business intelligence consulting and support services to help organizations cost-effectively augment and enhance data center operations.

Competitive edge

Gaining insight into business operations as they happen allows organizations to be responsive to changing conditions. Data volumes acquired throughout the course of business operations offer a rich information resource for strategic analysis. SAP HANA appliance software offers an innovative solution that embraces Dell PowerEdge servers together with extensive Dell services support to provide sophisticated information analysis. This business intelligence helps organizations realize successful outcomes and sharpen their competitive edge. PS

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