

# SAP HANA\* Platform

## How to enable real-time analytics by reducing latency

Nobody likes latency. Remove data latency for analytics, and your business can operate at light speed with the insights that fuel rapid decision making in real time. Yet how do you streamline and speed up your data analytics deployment to multiple lines of business?

In-memory analytics is the game changer that makes this possible, delivering rapid access to visually rich data that can be interactively explored and quickly analyzed.

## What's your use case?

See if one of these top three use cases for the SAP HANA\* platform might work for your enterprise.



### Real-time predictive analytics

In-memory analytics with intuitive modeling and advanced data visualization



### Simplified, flexible data warehousing

Replicates data in real time, eliminating complexity and delays



### Real-time and granular operational reporting

Built-in extraction and migration reduce report wait times and planning cycles

# How does your use case work with the SAP HANA platform?

Benefits for analytics include:

- Quick integration with other big data tools such as the Apache Hadoop\* framework and enterprise data warehouse storage
- Ability to run predictive, spatial, and text analytics libraries across multiple data sources
- Management of data in a multi-core architecture that maximizes RAM by distributing data across the cores
- Effective in scale-out or scale-up scenarios



## Real-time predictive analytics

- Enables real-time predictive analytics in memory.
- Provides intuitive modeling and advanced data visualization via SAP\* Predictive Analysis software, which mines the data sets using native algorithms and integrated R software.
- Visualization offered via dashboards, alerts, and mobile devices.
- Supports line-of-business and data scientist users.



## Simplified, flexible data warehouse capabilities

- Replicates data from transactional systems in near real time by eliminating the complexity and delays of traditional data warehouse loading processes.
- Ability to combine operational data with other data sources (both SAP and non-SAP).
- No need to create and maintain complex data structures often required to enable sufficient performance in more traditional data warehouses.



## Real-time and granular operational reporting

- Uses fast, built-in data extraction and migration capabilities that significantly reduce report wait times and planning cycles by processing calculations in memory.
- Real-time data synchronization avoids performance degradation.
- In-memory business intelligence accelerates analytics deployments, with data modeling evolving from a mandatory to an optional activity.

*The SAP HANA\* platform is designed to provide real-time analytics for core business process acceleration, planning, and optimization.*

*In-memory analytics enables true real-time streaming of data for immediate results.*

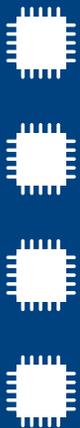


### Data Sources

Transactions, machine data, enterprise content, social data, third-party data



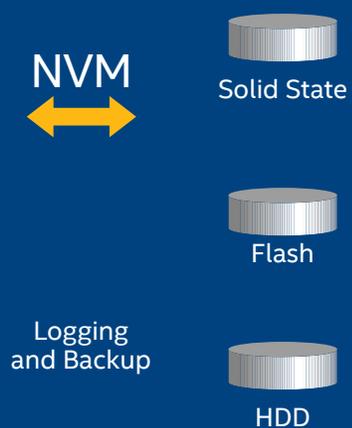
### CPU



### Memory



### Storage Disks



## Intel® Xeon® Processor E7 Family-Based Infrastructure



### Analytics Tools and Applications

Business intelligence, data mining, data discovery

# How does SAP HANA optimize Intel® technologies?

The SAP HANA platform takes full advantage of the latest hardware technologies by combining columnar data storage, massively parallel processing (MPP), and in-memory computing through optimized software design.



## Large, efficient memory capacity and cache hierarchy

- The Intel® Xeon® processor E7 family scales to two, four, and eight sockets natively within each server for extremely fast data access.
- All data can reside in main memory via high compression ratios, optimized memory-to-cache data transfers, and columnar and row-based table optimizations.



## High core counts and flexible multi-threading

- Up to 15 cores per 30 threads handle massively parallel processing via data partitioning and software parallelization.
- Intel® Hyper-Threading Technology (Intel HT)<sup>1</sup> enables each processor core to handle two instruction streams simultaneously. The SAP HANA\* platform performs work in parallel where possible and avoids sequential processing.



## Nonuniform memory access (NUMA)

- Decreases contention among processors for memory-access bandwidth.
- The SAP HANA\* platform leverages NUMA for processor affinity and data placement assignment.



## Faster core performance and highly optimized solution stack

- Intel® Turbo Boost Technology<sup>2</sup> allows processor cores to run faster than the base operating frequency under certain conditions and automatically with SAP HANA\*.
- Intel also delivers instruction set extensions, Intel Performance Counter Monitor (Intel PCM), and Intel software development tools.



## Advanced reliability, availability, and serviceability (RAS) capabilities

- Intel® Run Sure Technology<sup>3</sup> and Intel Solid-State Drives (Intel SSDs) enable high-speed persistent storage for logs and recovery and flexible failover options for high-availability/disaster-recovery (HA/DR) situations.



## Accelerated data encryption

- Intel® Advanced Encryption Standard-New Instructions (Intel AES-NI)<sup>4</sup> accelerates encryption without impacting performance.

## Case studies

Enterprises across the globe are using SAP HANA to process data on a large scale for a wide range of applications, such as flexible planning, optimizing travel costs and times, managing customer behavior, service-level management, incorporating sensor data, and more. Here are just a few examples.

### MKI

Drives research forward with rapid DNA analysis

Find out how Mitsui Knowledge Industry, one of Japan's leading technology consultancies, is using bioinformatics powered by the SAP HANA\* platform to create real-time solutions that analyze DNA samples rapidly and precisely to help researchers develop new drugs for diseases such as cancer.

Watch the case study >  
<http://bit.ly/1yQNiIW>

### Kaeser

#### Kompressoren

Improves service with more than 1M measurements daily

Read how one of the world's largest suppliers of compressed-air systems uses SAP HANA\* software for predictive maintenance of its systems, collecting more than a million measurements a day to anticipate potential downtime and improve customer service.

Watch the case study >  
<http://bit.ly/1yQNpy8>

### eBay

Trades USD 1,900 of goods per second with real-time insight

Watch how an online trading marketplace with 90 million users worldwide trades more than USD 1,900 worth of goods each second. eBay uses the SAP HANA\* platform to provide real-time insights and actionable business intelligence to its sellers using an early pattern detection system and predictive analytics.

Watch the case study >  
<http://bit.ly/1zWlvoY>

## Want to get started with real-time in-memory analytics?

Talk to your local SAP representative or contact SAP at +1-888-528-8892.

To find out more about the SAP HANA platform, visit [saphana.com](http://saphana.com).

Or visit the Intel IT Center for resources that will help you craft a smart big data strategy that creates advantages for your organization: [intel.com/bigdata](http://intel.com/bigdata).

1. Available on select Intel processors. Requires an Intel Hyper-Threading Technology-enabled system; consult with your system manufacturer. Performance will vary depending on the specific hardware and software used. For more information, including details on which processors support Intel HT Technology, visit [intel.com/info/hyperthreading](http://intel.com/info/hyperthreading).

2. Requires a system with Intel Turbo Boost Technology. Intel Turbo Boost Technology and Intel Turbo Boost Technology 2.0 are only available on select Intel processors. Consult your system manufacturer. Performance varies depending on hardware, software, and system configuration. For more information, visit [intel.com/go/turbo](http://intel.com/go/turbo).

3. No computer system can provide absolute reliability, availability, or serviceability. Requires an Intel Run Sure Technology-enabled system, including an enabled Intel processor and enabled technology(ies). Built-in reliability features available on select Intel processors may require additional software, hardware, services, and/or an Internet connection. Results may vary depending upon configuration. Consult your system manufacturer for more details.

4. No computer system can provide absolute security. Requires an enabled Intel processor and software optimized for use of the technology. Consult your system manufacturer and/or software vendor for more information.

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software, or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at [intel.com](http://intel.com).

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