Frequently Asked Questions
SAP solutions for the Internet of Things

Connect, Transform, and Reimagine: SAP® Solutions for the Internet of Things

SAP® solutions for the Internet of Things (IoT) can help your company take advantage of the hyperconnected global economy. With this comprehensive portfolio of IoT solutions, packaged applications, and strong innovation software from SAP, you get up and running quickly in the IoT revolution.

What is the Internet of Things?

The Internet of Things (IoT) is the network that connects people, data, processes, and physical objects including machines, devices, and appliances. This hyperconnectivity is already delivering new capabilities, richer experiences, and unprecedented economic opportunity for businesses, individuals, and cities.

How does IoT relate to machine-to-machine communication and Industry 4.0?

Machine-to-machine (M2M) communication is a key enabler of the IoT. It is a set of technologies and networks that provide the connectivity needed to allow machines to communicate with each other.

Industry 4.0, a German interpretation of this technology, is a subsegment of the IoT and mainly refers to the automation of manufacturing and production operations.

Are there any IoT standards committees we should watch?

Yes, the Industrial Internet Consortium (IIC). As a member of this committee, SAP collaborates with other leading partners, such as Cisco and Intel, to define standards for IoT-related topics including data privacy and reference models.

Why is the IoT important?

By 2020, experts predict that 30 billion devices, appliances, machines, and other physical objects will be connected.[1] Communicating over the Internet through embedded sensors, these objects are expected to help generate 403 trillion gigabytes of data per year by 2018.[2] As a result, the IoT will cause a major shift in how we conduct our personal and work lives.

Between now and 2022, the IoT is expected to generate US$14.4 trillion in the combined value of revenue and cost savings.[3] This will impact industries in many ways – driving, for example, more profitable businesses, better healthcare, and more scalable and sustainable cities in the future.

Sources:

1. "Finding Success in the New IoT Ecosystem: Market to Reach $3.04 Trillion and 30 Billion Connected 'Things' in 2020, IDC Says," IDC, 2014.
2. "Cisco Global Cloud Index: Forecast and Methodology, 2013–2018," Cisco, 2014.
3. Joseph Bradley, Joel Barbier, and Doug Handler, "Embracing the Internet of Everything To Capture Your Share of $14.4 Trillion," Cisco, 2013.

What are SAP solutions for the IoT?

Offered for both on-premise and cloud deployment scenarios, SAP solutions for the IoT are a comprehensive portfolio of IoT solutions that includes a platform, applications, underlying technical services, and access to one of the largest business networks in the world. All of this integrated technology is the fruit of years of working with companies worldwide to enable "thing-driven" business processes.

For your company, this means mature technology that is cost-efficient and scalable, as well as a secure platform that offers the insight, flexibility, and efficiency you need to succeed with the IoT in any geography and industry you choose.

SAP solutions for the IoT are built on the SAP HANA® platform, which gives access to a wide range of applications, development tools, and integration services. In addition, you gain the ability to process extremely large volumes of IoT data in real time.

At the core of SAP HANA is a full set of natively integrated processing engines to support data streaming, predictive analysis, relationship modeling, geospatial processing, on-the-fly complex calculations, machine learning, and text processing. This is further enriched by an ability to process transactional and analytical workloads from the same data set. This rich set of features provides a foundation for supporting unpredictable workloads of IoT data and solutions.

Specifically, SAP HANA supports:

- **Smart data streaming** – Manage and analyze diverse information streams in real time with submillisecond processing for mission-critical systems.
- **Smart data access** – Streamline data management and access with intelligent data and query federation capabilities that enable a single entry point.
- **Dynamic tiering** – Optimize the use of in-memory computing for extremely large data volumes.
- **Smart data integration and quality** – Work with diverse data and help ensure quality by supporting integrated data loading, transformations, cleansing, and enrichment.
- **Series data** – Measure data and forecast trends with a native series of data storage and processing.
- **Multitenant database containers** – Optimize the efficiency of technical resources by processing disparate data sources and multiple business processes concurrently.
- **Graph engine modeling** – Discover, manage, and analyze complex relationships for proximity- and location-based analytics.
- **L2 delta optimizations** – Scale to support high-volume transactions.
- **Advanced and predictive analytics** – Detect patterns and predict trends with a comprehensive set of mathematical, statistical, and analytical libraries.

ON-PREMISE DEPLOYMENT

In addition to the features described above, the on-premise version of our IoT platform also includes technology services to help you connect to physical objects located at the edge of your network.

These include:

- **SAP SQL Anywhere® solutions** – Capture and store data locally on connected devices and exchange diverse data using highly scalable, session-based synchronization technology.
- **SAP Event Stream Processor** – Capture machine data at the source with a stand-alone, complex event processing engine.
- **SAP IQ software** – Manage data volumes at the petabyte scale with a high-performance, columnar-structured analytical database.
- **Integration to Apache** – Directly access the Hadoop distributed file system and the MapReduce programming model with user-defined functions in SAP HANA.

CLOUD DEPLOYMENT

For cloud deployments, we offer the SAP HANA Cloud Platform for the IoT. This comprehensive solution portfolio includes a full-featured version of SAP HANA delivered in the cloud, following the platform-as-a-service (PaaS) model and available through a monthly subscription.

With SAP HANA Cloud Platform for the IoT, there is a wide range of additional features designed to empower you to take full advantage of the IoT. By integrating the cloud platform with analytical applications, you can consolidate data from IoT assets and other business systems, access the information on almost every mobile device, and deliver data sets in a secure, protected way.

IoT Services for the Cloud

The SAP HANA Cloud Platform for the IoT is extended with a rich set of services that facilitate the management, administration, and processing of IoT data.

These services support critical activities such as:

- **Remote device management** – Manage the device lifecycle – from onboarding to decommissioning – to build device and data models, receive device information, remotely configure devices, and send commands to control device behavior.
- **Message management** – Collect and store sensor data and manage messaging activities with support for various transport protocols and message formats.
- **Application enablement** – Use functions supporting remote device management and message management in your IoT applications through application programming interfaces (APIs).

Together, these services give you control over the core aspects of your daily IoT activities to help you move forward quickly and capitalize on everything the IoT has to offer.

Applications

In addition to the platform offerings described above, SAP also offers the following applications for IoT scenarios:

- **SAP Connected Logistics software** – Integrate real-time data with distribution analytics and reshape the supply chain process. This application provides full visibility into freight, containers, and shipped goods; identifies and fixes logistic bottlenecks before they happen; and provides real-time visibility into road conditions to improve traffic flow.
- **SAP Connected Assets software** – Gain full visibility into the health of your current assets. This application helps you predict failures and apply preventive measures by analyzing sensor data combined with business data.
- **SAP Connected Manufacturing software** – Improve manufacturing operations with the support of SAP HANA, an enhanced user experience, extended enterprise mobility, and end-to-end enterprise integration for deeper manufacturing transparency.
- **Augmented reality solutions from SAP** – Use wearable technology, such as smart glass devices, to enable hands-free operations. These solutions include the SAP AR Warehouse Picker and SAP AR Service Technician mobile apps.

How do SAP solutions for the IoT complement SAP Business Suite software and SAP S4/HANA? Do I have to deploy SAP Business Suite and SAP S4/HANA?

No, you are not required to implement SAP Business Suite or SAP S4/HANA. However, since SAP solutions for the IoT process data from the edge of your network, you can derive business insights that impact business processes and workflows enabled by SAP Business Suite. The solutions also extend and deliver IoT-enabled core processes running in SAP Business Suite and IoT scenarios operating in SAP S/4HANA.

How can companies benefit from IoT solutions from SAP?

Companies using SAP solutions for the IoT have achieved considerable improvements in their core business operations such as faster response to service requests, improved customer service, lower maintenance costs, higher equipment uptime, higher utilization of assets and infrastructure, and more-efficient operations. Many have also enhanced their ability to innovate by creating new business models and transforming themselves into service organizations – delivering additional sources of revenue for their businesses.

For more information about how our customers are taking advantage of the IoT, visit www.sap.com/pc/tech/internet-of-things/case-studies.html.

Who is SAP partnering with for the IoT?

With diverse strengths and capabilities, our unique ecosystem of partners is critical for scaling our IoT business. Ecosystem partners fall into the following categories:

- **Business consulting partners** to help grow our overall IoT market position by articulating our IoT strategy
- **Partners for IoT applications** to complement our IoT solution portfolio by developing applications
- **OEM partners** to scale our IoT platform business by delivering platform and application services
- **IoT technology partners** to build a comprehensive IoT platform by extending and completing the IoT stack

While this ecosystem will continue to expand over time, a large number of partners are already fully engaged with SAP in IoT-related activities, including:

- Jasper
- T-Systems
- Siemens
- Accenture
- Huawei
- GEA

Where can I find out more about SAP solutions for the IoT?

For more information about how SAP solutions for the IoT can support your company, please visit us online at www.sap.com/IoT and follow us at @SAP_IoT.

The Best-Run Businesses Run SAP®