HANA Cloud Platform for IoT
Everything you need to build Enterprise Apps in the Cloud
Pierre Wagner, PreSales HANA Cloud Platform
4.11.2015
SAP HANA Platform
The data management and application platform for all applications

<table>
<thead>
<tr>
<th>All Devices</th>
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<tbody>
<tr>
<td>SAP, ISV and Custom Applications</td>
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</table>

SAP HANA Platform

- Application Services
- Database Services
- Integration Services

All Data

ONE open platform
OLTP + OLAP
ONE copy of the data
From the Leader in Enterprise Applications

SAP HANA Cloud Platform is an open platform-as-a-service providing unique in-memory database and business application services. Quickly build, extend and integrate modern, mobile-first apps – simply - to meet your business needs now.
SAP HANA Cloud Platform
The Platform-as-a-Service for Powering Cloud Applications

Build

Extend

Integrate
Secure and Compliant Infrastructure
SAP HANA Cloud Platform runs in secure and certified Environments

- Certified operations
- World-class data centers
- Advanced network security
- Reliable data backup
- Built-in compliance, integrity, and confidentiality

<table>
<thead>
<tr>
<th>IT operations</th>
<th>QM</th>
<th>HA</th>
<th>Energy Efficiency</th>
<th>International Accounting Regulations</th>
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<tbody>
<tr>
<td>ISO 27001 CERTIFIED</td>
<td>ISO 9001 CERTIFIED¹</td>
<td>BS25999 CERTIFIED¹</td>
<td>GREEN IT CERTIFIED¹</td>
<td>ISAE3402 TESTIFIED²</td>
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<td>SSAE16 TESTIFIED</td>
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1: certification for Germany-based SAP data center that hosts SAP HANA Cloud Platform
2: formerly SAS 70 Type II

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Global data center presence with customer choice
SAP HANA Cloud Platform runs in SAP Datacenters

- World-class Tier-3 and 4 data centers
- SAP managed data centers and selected partners operating according to SAP standards
- Customer choice in which data center applications run and data is stored
The PaaS from SAP – SAP HANA Cloud Platform

On-Premise / Managed Cloud
- SAP S/4 HANA
- SAP Business Suite
- SAP Business Warehouse

SaaS
- SAP S/4 HANA
- SuccessFactors
- C4C
- Ariba
- Concur
- Hybris

IaaS Layer

Build

Extend

Integrate
What Can You Do With SAP HANA Cloud Platform?

On-Premise / Managed Cloud

- SAP S/4 HANA
- SAP Business Suite
- SAP Business Warehouse

SaaS

- SAP S/4 HANA
- SuccessFactors
- C4C
- Ariba
- Concur
- Hybris

IaaS Layer

Seamlessly Integrate with SAP and non-SAP Applications
Engage Every Customer and Empower Every Employee
Get Mobile
Personalize S/4 HANA
Deliver Beautiful UX
Analyze and Visualize Mission-Critical Data
SAP HANA Cloud Platform – Overview Current State

On-Premise / Managed Cloud
- SAP S/4 HANA
- SAP Business Suite
- SAP Business Warehouse

IaaS Layer

SAP HANA Cloud Platform (PaaS)

Platform Services
- Integration
- IoT
- Security
- Analytics
- UX
- Mobile
- Collaboration

Runtimes / Languages

Data & Storage Services
- ASE
- HANA

Big Data Services

Dev & Ops

SaaS
- SAP S/4 HANA
- SuccessFactors
- C4C
- Ariba
- Concur
- Hybris
The XSJS Runtime enables developers to build native applications on SAP HANA in the cloud. The runtime uniquely leverages the application performance capabilities of SAP HANA.

**Key capabilities**
- Develop and scale XSJS applications in a cloud environment
- Eclipse-based tools for connecting to your SAP HANA instance on SAP HANA Cloud Platform
- Use of SAP HANA studio features for SAP HANA development

**Benefits**
- Native SAP HANA development
- Leverage the unique in-memory capabilities of SAP HANA
- Use SAP HANA functional libraries like SAP HANA Business Function Library (BFL) and the SAP HANA Predictive Analytics Library (PAL)
Java Runtime

The Java Runtime enables developers to leverage existing knowledge and use that to bring applications on SAP HANA and the cloud.

**Key capabilities**
- Develop, deploy and use Java applications in a cloud environment
- Applications run on a runtime container where they can use the platform services APIs and Java EE APIs according to standard patterns

**Benefits**
- Standards-based Java development
- Java SE 6/7 and Java EE 6 Web Profile certified
- Supports a wide-spread Apache Tomcat Web container
HTML5 Runtime

The HTML5 Runtime enables developers to leverage existing knowledge and use that to build modern applications on SAP HANA in the cloud.

Key capabilities

- Develop and run lightweight HTML5 applications in a cloud environment
- Leverage the SAPUI5 JavaScript library
- Connect to OData and on-premise or on-demand REST services

Benefits

- Standards-based HTML5 development
- Develop once, deploy everywhere: Run on any device - mobile, tablet, and desktop
- Benefit from SAPUI5 code templates and SAP best practices to rapidly build applications
Other Runtimes

By leveraging Cloud Foundry, we plan to support additional runtimes (i.e. programming languages and frameworks) in SAP HANA Cloud Platform.

Key capabilities

- Leveraging Cloud Foundry enables developers to choose from various programming languages and frameworks
- Cloud Foundry system and custom buildpacks (Java, Node.js, Go, PHP, Python, Ruby)
- SAP supported build packs based on Cloud Foundry system buildpacks (Java, Node.js)

Benefits

- Cloud Foundry system and custom buildpacks offered with community support
- SAP forked Cloud Foundry system buildpacks offered with full SAP support

Develop with other runtimes
Developer Experience
Standards based development environment

- Leveraging open source projects from Eclipse and Apache
- Eclipse plugins “SAP HANA Tools” and “SAP HANA Cloud Platform Tools”
- HANA native, HTML5 & Java apps
  One IDE & one platform
- SAP is a strategic developer member at Eclipse & also contributes to various projects
SAP Web Integrated Development Environment (SAP Web IDE)

Enable developers, business experts and designers to build new user experiences that work with SAP business application.

Simplify SAPUI5 development and support end-to-end application lifecycle with one tool:

- Prototype
- Develop
- Test
- Package / Deploy
- Extend
The Value of HANA Cloud Platform-as-a-Service is Clear

Open  Simple  Flexible  Secure

Mobile  TCO  Comprehensive
SAP HANA Cloud Plattform: Proven and Reliable

1,800+

Customers

250+

Partners

850+

Apps on SAP HANA App Center
SAP HANA Cloud Platform – Overview Current State

SAP HANA Cloud Platform (PaaS)

Platform Services
- Integration
- IoT
- Security
- Analytics

Runtimes / Languages
- UX
- Mobile
- Collaboration

Data & Storage Services
- ASE
- Big Data Services
- HANA

On-Premise / Managed Cloud
- SAP S/4 HANA
- SAP Business Suite
- SAP Business Warehouse

Dev & Ops

IaaS Layer

SaaS
- SAP S/4 HANA
- SuccessFactors
- C4C
- Ariba
- Concur
- Hybris
IoT Technology Stack

- **Applications**
  - SAP or Partner
  - Application Enablement
    - Develop, Deploy & Run
    - Application Integration
  - Device Management
    - Configuration
    - Monitoring
  - Connectivity
    - Network
  - Hardware
    - Embedded Hardware

- **Analytics**
  - SAP
  - Application Services
  - Event Processing
  - Cloud Services
  - Machine Data Collection
  - Software Management
  - Access
  - Device Lifecycle

- **IoT Security**
  - Partner
  - Event Processing
  - Application Integration

- **IoT Services**
  - Derived from IDC’s Worldwide M2M Taxonomy

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SAP HANA Cloud Platform Internet of Things (IoT) services

End Customer (On site)

Device Integration

SAP HANA Cloud Platform IoT Services

HANA Cloud Platform

IoT Applications
(e.g. Predictive Maintenance and Service)

HANA Cloud Integration

Business Suite Systems (ERP, CRM, etc.)

Manufacturer (SAP Customer)

Process Integration

Device

Data Processing

In-Memory Engines

Extended Storage

Hadoop

∞ Storage

Streaming

HANA Big Data Platform
Platform Services: Internet of Things
Internet of Things services

The SAP HANA Cloud Platform, Internet of Things (IoT) services can be used to connect devices to the HANA Cloud Platform in order to use data from these devices in applications.

**Key capabilities**

- Connect to remote devices to manage life-cycle from onboarding till decommissioning
- Receive device data and send commands to remote devices
- Use IoT message management capabilities to collect sensor data and store it in the HANA Cloud Platform persistence layer (HANA or ASE)

**Benefits**

- Use data from real-world processes in applications by using device management and message management functionalities

Read more: Internet of Things services
Platform Services: Internet of Things
Remote Data Sync Service

SAP HANA Cloud Platform Remote Data Sync Service provides a service for synchronizing huge numbers of remote databases into a consolidated SAP HANA database in the cloud.

Key capabilities

- Remote Data Sync service is a synchronization technology for exchanging data between relational databases
- Source database needs to be SAP SQL Anywhere or UltraLite
- Data synchronization with remote databases
- Example: store sensor data in remote databases, consolidate in SAP HANA Cloud Platform, e.g. for analytics and monitoring

Benefits

- Ensures transactional integrity over unstable networks
- Sophisticated strategies for resolution of data change conflicts

Read more: Remote Data Sync Service
SAP HANA Cloud Platform IoT Services
Architecture overview
SAP HANA Cloud Platform IoT Services
The IoT Services Cockpit

Used to manage devices, device types and message types

Used to deploy and update MMS
Customer - Examples

Pirelli, Formel 1, Fussball
McLaren analyze data from the various components during racing to make better decisions with SAP® HANA

3TB of Data
Gathered and processed per race

14000x faster
Process the data using SAP HANA

Improve accuracy of prediction to make a decision during the race

150 Sensors
SAP HANA (DRAM)

Analytics Reports, ad-hoc Analysis

10 years of Historic Database
Beispiel: SAP Player Performance / TSG Hoffenheim

- Sammlung von Geo-Daten mit Hilfe von Sensoren im Spielgerät und der Kleidung der Spieler

- Berechnung von Leistungsattributen in Echtzeit, wie z.B. “Anzahl der Sprints” oder “prozentualer Ballbesitz”

- Berechnung taktischer Spielzüge wie z.B. der Zeit vom Ballgewinn bis zum Abschluss des Spielzugs
Live - Demo 1

Python Prog. – Slider – https -> HCP Dashboard
Live - Demo 2

TI SensorTag (10 Sensoren) – Bluetooth iPhone – Evothings (JavaScript) -> HCP
Rotwein Demo
Get Started with SAP HANA Cloud Platform

Find out more about HANA Cloud Platform: hcp.sap.com


Try a partner application powered by SAP HANA: www.sapappcenter.com

Contact SAP – e.g. pierre.wagner@sap.com
SAP HANA Cloud Platform for the Internet of Things

Getting started

FREE

SAP HCP Developer Edition

The best way for developers to get their feet wet in a shared HCP environment to learn how to create apps with SAP HANA Cloud Platform

For Non-Productive Use
1 User
Shared 1GB HANA DB
Includes: Cloud Connector, Cloud Portal, Mobility

FREE

IoT Starter Kit

- Connecting devices to HCP
- Sending messages from the device
- Consuming messages sent from the device
- Pushing messages to the device
- Receiving messages sent to the device
- Integrated examples for IoT Devices

https://hanatrial.ondemand.com
https://github.com/SAP/iot-starterkit
Thank You!

For more information about HCP IoT please contact:

Pierre Wagner – PreSales HANA Cloud Platform
pierre.wagner@sap.com
+43.664.620.7561