

## **SAP NetWeaver Delivers Innovation Without Disruption for Customer Landscapes**

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## 2. INTRODUCTION

This section provides some basic definitions and considerations that are relevant for dual-stack deployments.

### 2.1 SAP NetWeaver 7.4 - Optimized for SAP HANA

SAP HANA offers in memory technology that can substantially accelerate business processes, improve analytics, and simplify system landscapes. With the release of SAP NetWeaver 7.4, SAP delivers a new SAP NetWeaver enhancement package that optimizes programmatic access to native SAP HANA artifacts, such as SAP HANA analytical views and database procedures written in SQL Script, enabling customers to implement SAP HANA functionality natively in their ABAP-based SAP solutions. The enhancement package approach to enabling access to SAP HANA functionality is similar to the approach that SAP has followed with updates to SAP Business Suite -- it allows existing customer ABAP code to run without change, enabling customers and partners to decide which programs to optimize for SAP HANA step-by-step.

SAP provides guidelines and best practices on SCN for making the necessary changes to existing programs and for creating new programs that leverage SAP HANA. SAP HANA will optimize many queries by default, but developers must partly revise the traditional program pattern used to load data from database tables into internal ABAP tables and process them on the application server in order to push code to the database level. In addition, while, in the past, all SAP logic was expressed on the ABAP level, with modern HTML5-based browsers and mobile devices, parts of the UI logic move to the front-end layer while some of the data-driven logic moves to the SAP HANA database layer.

SAP doesn't intend to limit the benefits of native, on-premise support for SAP HANA to the ABAP side of the house. SAP is also carefully analyzing the use cases of Java-based SAP NetWeaver hubs, such as SAP NetWeaver Application Server Java and SAP NetWeaver Portal, SAP NetWeaver BPM and Process Integration running directly on SAP HANA. SAP is working closely with user groups to evaluate the need for this support and add it to the SAP NetWeaver roadmap.

### 2.2 Bridging on premise and on demand solutions

SAP provides a platform as a service (PaaS) offering for Java development -- SAP HANA Cloud -- that fully embraces standards and open source technology for fast, simplified application development and deployment. SAP HANA Cloud offers an on-demand runtime platform for Java to enable customers and partners to build, deploy, and manage innovative cloud applications. The platform is managed by SAP and provides developers with Eclipse-based tools and full access to predefined services such as database persistence based on SAP HANA and classical SAP databases.

To use SAP HANA Cloud for application development, a developer simply installs a local Eclipse release and then refers to SAP's update site, which provisions the on-demand tool plug-ins. The tools include a lean Java server based on open source components that can be used for local testing. Once the newly developed

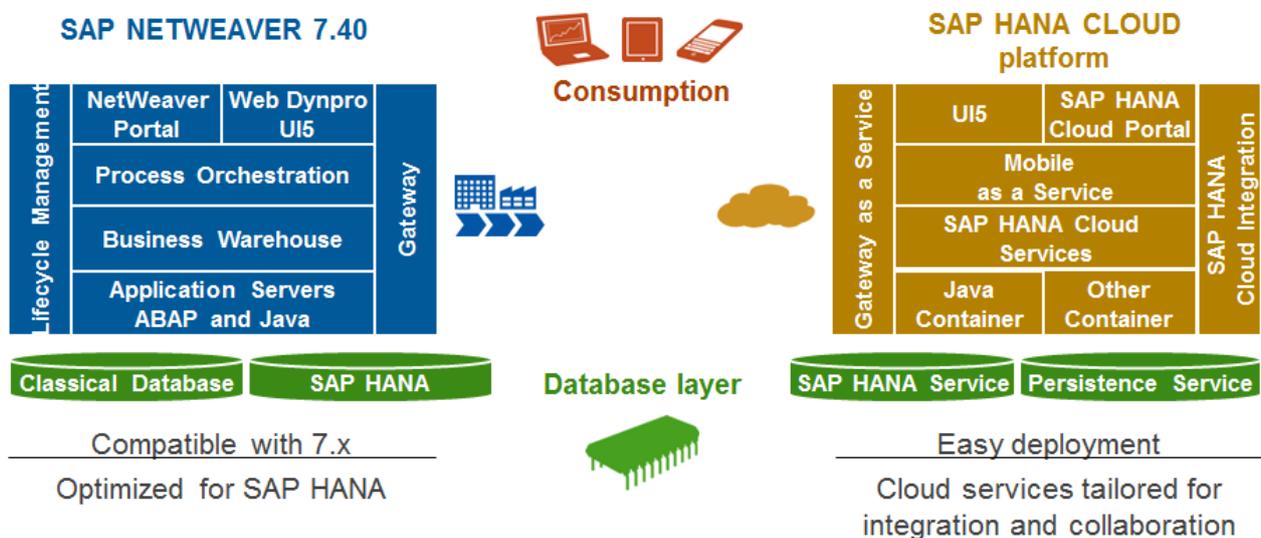
application is ready, the developer can deploy and run it in the SAP HANA Cloud, where a corresponding virtual machine instance is created that executes the application.

SAP HANA Cloud is completely based on open source components. Applications for SAP HANA Cloud run in their VM container cleanly separated from each other. The underlying lean Java stack follows OSGI principles requesting services and system resources on an as needed basis. SAP HANA Cloud runs on SAP Java Virtual Machine (SAP JVM) which not only fulfills all standard requirements of a Java Virtual Machine but also trims any running Java application to highest performance and minimal resource consumption.

SAP HANA Cloud brings in a rich set of services for identity management, persistence, collaboration, integration, secure connectivity and documentation. NW Cloud offers schema access to SAP HANA and Sybase ASE. A major use case is the development of innovative mobile applications that use the Mobile as a Service layer for onboarding and application management. The Gateway as a Service component facilitates service definition and consumption of services typically offered by on premise solutions such as SAP NetWeaver 7.4 and the Business Suite.

SAP HANA Cloud acts as a bridge and integration hub spanning SAP and non-SAP on demand and on premise solutions. SAP HANA Cloud connector guarantees the access security from any SAP HANA Cloud application to an existing on-premise system. It combines an easy setup with a clear configuration of the systems that are exposed to SAP HANA Cloud.

In addition to Java other languages such as Java script (in particular node.js) are in preparation to be provisioned by SAP HANA Cloud in the near future.



**Figure 1** SAP NetWeaver bridges on-premise and on-demand landscapes

### 3. NETWEAVER END-TO-END WITH DEDICATED SCENARIOS

As we have seen market trends such as In Memory, Cloud and Mobile heavily impact the SAP NetWeaver end-to-End portfolio in 2013. Instead of following each trend individually NetWeaver end-to-end Scenarios in 2013 assume that these trends are combined in reality requiring a thorough and consistent approach to get the most out of their innovation potential.

In this part the SAP NetWeaver end-to-end scenarios are quickly introduced. All scenarios are interconnected exposing the strong coherence of the SAP NetWeaver offerings in 2013.

### **3.1 The HANA Scenario**

The HANA scenario basically is intended to leverage the speed and capabilities of SAP HANA both in on premise and on demand use cases. This means in first place “optimized for HANA” and addresses the optimal integration of HANA with the existing application servers – driven by Suite on HANA as the frontrunner use case. For the “optimized for HANA” evolution a new NetWeaver Enhancement Package, NetWeaver 7.4, was introduced.

One major benefit of the “optimized for HANA” development is the ability of the application developer to push down code from the application server to the database level and to consume native HANA artifacts (like views and database procedures) within the application servers.

From a development tool perspective Eclipse is used to develop the code and to tightly integrate with the HANA studio where the HANA artifacts are defined. To harmonize the development environment each tool follows the rules of the SAP Release Train for Eclipse, meaning it can be installed from a central update site and supports the current and last Eclipse release. In the SAP HANA Cloud context HANA capabilities can be accessed via JDBC/JPA. HANA Application Services (HANA XS) are also covered by the scenario. The HANA XS use case contributes to service implementations for HTTP, SMTP, SSL, web sockets (push channel) and OData feeds.

The HANA scenario offers a rich collection of use cases to experience the power of HANA such as Rules on HANA or Operational Process Intelligence to name a few examples. Support of HANA in this context means full lifecycle awareness and support for all major software lifecycle management scenarios such as EHP and SP implementations and transporting of HANA artifacts.

TBC: Java on HANA use case

Further reading: <http://scn.sap.com/community/abap-for-hana>

### **3.2 Developer Scenario – Ease of Use**

The developer scenarios emphasize the importance of an end-to-end developer experience when working with NetWeaver technology platform no matter whether you develop in the on premise or on demand context. The goal is to ease application development of end-to-end scenarios for customers and partners, so that developer productivity increases significantly on the platform, be it HANA, HANA Cloud or NetWeaver 7.4. The focus is clearly set on the needs of application developers.

The scenarios come in three flavors:

- Developing a Java based application with SAP HANA Cloud
- Develop an ABAP based application using ABAP in Eclipse in the context of NetWeaver 7.4
- Develop a hybrid application that connects from the on demand to the on premise world

All flavors are based on the well-known EPM (Enterprise Procurement Model) and illustrated by a “Customer buys Products from Retailer” demo WebShop application. To put the various pieces together SAPUI5 is used to represent the user interface. The HANA database is used to represent the persistence layer. The business logic is exposed as OData services based on the EPM entities modeled in JPA. Mechanisms for user authentication and single-sign-on are introduced in a stepwise approach. The Developer Scenarios are not just linking the various development tools and technologies but making sure that contextual documentation and hints are available during the entire development process and that all the development tools involved work seamlessly together to avoid implementation silos.

Further reading: <http://scn.sap.com/community/developer-center/cross-technology>.

### **3.3 Integration**

Enterprise application integration has always been a strategic topic for companies. SAP has recognized this already 10 years back by providing strong on-premise integration capabilities as part of the SAP NetWeaver platform. The recent rise of cloud infrastructures now allows customers to extend their classical on-premise solution landscapes with new innovative applications running in the cloud. As a consequence strong integration capabilities between the on-premise and on-demand world becomes vital.

Leveraging the SAP integration technology portfolio customers will be provided with a set of process integration options to integrate SAP and non-SAP, on-premise and on-demand applications with one consistent lifecycle management approach:

- **Direct point-to-point integration** covers simple integration scenarios between two SAP applications, with easy ways to configure, to customize and to monitor the integration process.
- **SAP NetWeaver Process Orchestration** Today, SAP Suite and process orchestration portfolio are successfully deployed by customers all over the world and in all industries to achieve “best run business” with focus on standardization and automation of processes like financial closing, people payroll management, manufacturing and material management, order to cash and the like. Automation with transactional processing delivers a good degree of cost reduction and process efficiency.

Process Orchestration enables this goal of cost saving and efficiencies even along the end to end process chain, which involves a multitude of LOB focused applications , customers, suppliers and partners. From an IT perspective, implementing and operating such end to end orchestrations at low cost was a key ROI component and led to adoption of platform strategies: over time an increasing number of orchestration scenarios run on the same platform will provide the benefits of economies of scale, aggregating the cost of building out skills, implementation, operations and licenses.

- **SAP NetWeaver Gateway** is a technology that provides a simple way to connect devices, environments and platforms to SAP software based on market standards. The framework enables development of innovative people centric solutions bringing the power of SAP business software into new experiences such as social and collaboration environments, mobile and tablet devices and rich internet applications. It offers connectivity to SAP applications using any programming language or model without the need for SAP knowledge by leveraging REST services and OData/ATOM protocols.
- **SAP HANA Cloud Integration** Integration is key to achieving the benefits of the Cloud. SAP HANA Cloud Integration is an integration platform hosted in the SAP HANA Cloud that facilitates the integration of business processes spanning across different departments, organizations, or companies. Thereby it enables for end-to-end process integration across cloud and on-premise. It also contains a data service part that allows for efficiently and securely use ETL tasks to move data between on-premise systems and the cloud.
- **SAP Financial Services Network** based on SAP HANA Cloud Integration, FSN is a new innovative on-demand solution that connects financial institutions and other financial service providers with their corporate customers on a secure network owned and managed by SAP. The network offers multi-bank and multi-corporate routing as well as multi-format documents. As key benefits, the solution simplifies connectivity, automates financial transactions, reduces payment rejection rates, eases reconciliation and provides enhanced visibility to corporate treasury.

Customers already using SAP NetWeaver Process Orchestration on-premise have the choice to leverage the on-demand integration capabilities provided by SAP HANA Cloud Integration for specific integration requirements. To make this transition a lot more seamless SAP ensures a consistent integration content development and integration flow modeling across the two stacks. Consequently, existing SAP NetWeaver Process Orchestration customers have the flexibility to leverage the new capabilities built on SAP HANA Cloud Integration but at the same time also ensure that their most critical assets namely the integration content can be leveraged across the multiple deployment options.

SAP is addressing customers with A2A and B2B integration needs spanning SAP and non-SAP, on-premise and on-demand applications. It provides a vehicle for SAP ecosystem partners to develop integration content and adapters specifically focusing on integrating of non-SAP applications.

Further reading on SAP HANA Cloud Integration: <http://scn.sap.com/docs/DOC-40396>

Further reading on SAP Financial Services Network: <http://scn.sap.com/docs/DOC-40696>

Further reading on SAP NetWeaver Gateway: <http://scn.sap.com/community/netweaver-gateway>

Further reading on SAP NetWeaver Process Orchestration: <http://scn.sap.com/docs/DOC-27464>

Further reading on B2B Integration with SAP NetWeaver Process Orchestration:

<http://scn.sap.com/community/b2b-integration>

### 3.4 Mobile Scenario

The core of the mobile scenario is centered around SAP HANA Cloud. As an alternative to traditional on-premise installations of the SAP Mobile Platform (SMP) all infrastructure components required to develop and run a mobile app are also available in the cloud as a service. SMP cloud version is tightly integrated into HANA Cloud as-a-service offering which significantly lowers TCO at customer side. The most obvious mobile use cases are B2C type of apps that try to access an SAP backend using native, HTML5 based or hybrid mobile applications. Especially the hybrid apps allow to package HTML5 based applications into the Hybrid

Web Container resulting in a native-like user experience and full administration capabilities. Depending on his or her preferences the developer can use SAP UI5 library or external solutions from different partners to develop those HTML5 based applications. Besides using the traditional on-premise Gateway Hub alternatively Gateway as a service can be used to access on premise applications through the OD-OP connector.

Another core scenario is to use the HANA cloud based mobility solution as the mobile consumption channel for all SAP HANA Cloud based applications. The infrastructure components in the cloud greatly simplify the developer's work and therefore significantly reduce the TCD.

Further reading <http://scn.sap.com/community/mobile/blog/2013/03/29/sap-mobile-platform-on-hana-cloud-released>

### 3.5 Gateway Services

The Gateway Services scenario describes both the platform agnostic part as well as the intended implementation of Gateway capabilities on the different platforms following the timeless principle. Instead of prefabrication of content services can be derived from existing and widely used frameworks in the Business Suite such as BOL, BOPF, HANA models etc. The Gateway outside consumption tools allow to define service definition and application generation. Services are exposed in conformance with the OData specification. SAP has developed an extension to this standard (OData4SAP). The Gateway qualities determine rules of access such as coherent versioning and exploration of services. In addition more advanced features such as Publish and Subscribe, federation, user mapping and supportability options such as logging and tracing define the quality of a Gateway Services implementation. Behavioral aspects such as metering of service consumption, common APIs, the combination of platform agnostic tools with platform specific adaptation. Since user interface and business logic evolve at different speeds Gateway Services aims to decouple UI and backend access. This also reduces TCD for external communities with little SAP skills.

Gateway Services implementations are delivered with SAP HANA Cloud and NetWeaver ABAP 7.4 including access to SAP HANA to expose typical HANA artifacts.

From a developer perspective Gateway Services come with rich design time tools for service definition, graphical modeling of entities, signature and format alignment between providers and consumers, support of several methodologies (outside in versus inside out), extensibility concept, mocked data support, and service validation.

Further reading: <http://scn.sap.com/community/netweaver-gateway>

### 3.6 Business Continuity

Reducing business downtime, independently whether planned or unplanned, becomes more and more a crucial task for all customers. Furthermore, direct end-user access via mobile devices, systems providing services globally, while system consolidation and pressure for cost reductions increases, makes it almost impossible to schedule a maintenance windows to keep the system up-to-date. Also unplanned system outages have immediate impact to end-users and customers, and has to be minimized.

In 2013, the software lifecycle tools for SAP NetWeaver based systems have been greatly improved with special focus on business downtime reduction, in particular:

- Downtime Minimization features within Software Update Manager, i.e. near-Zero Downtime Maintenance (Record&Replay) option, and integration of customer transports
- Near-Zero Downtime Maintenance tool for SAP NetWeaver Process Integration
- Near-Zero Downtime Maintenance tool for SAP NetWeaver Portal (currently available as consulting service, but planned to be available soon as standard tool)

In order to further minimize unplanned downtime, SAP introduced the HA-Interface Certification to further improve the integration of High Availability solutions of partners and SAP NetWeaver based systems.

These improvements help customers to further minimize business downtime and optimize operations of their mission critical SAP systems.

Further reading: <http://scn.sap.com/community/business-continuity>

### **3.7 Virtualization - Cloud provisioning of SAP NetWeaver based on-Premise solutions**

The ever increasing availability of virtualization and cloud infrastructure offers completely new ways to deliver ready-to-use software solutions to customers. SAP Cloud Appliance Library is a service from SAP to provision images from a predefined SAP image library and deploy it to the public cloud for immediate use by end users. Thus customers can order a certain image via the SAP Store and get a customized and tested SAP system. The available image types are: NetWeaver ABAP 7.4, BW on HANA, BPM/Process Integration (Java only), NetWeaver Portal. The flexibility of these offerings allows customers and partners to access systems in an ad hoc fashion at variable cost and speed up the adoption rate dramatically. Customers and partners can leverage the cloud for training, evaluation, proof of concept and production purposes.

Further reading: <http://www.sap.com/cloudappliance>

### **3.8 One Identity and Access Management**

The customer's system landscapes consist of many application servers, SAP and non-SAP, both on-premise as well as more and more on-demand. Scenarios usually consist of more than one application, running on different application servers.

The task of managing users in these complex landscapes confronts organizations with many challenges, high maintenance effort and long delays until employees can seamlessly, and with minimal effort, work with the applications they need. Often employees have to remember their authentication credentials for every application they need to access. User IDs may vary for each system and passwords are often complex in order to comply with company policies. As a result, many users strain to remember all their passwords and end up noting-down and storing their passwords in unsafe locations – an obvious security risk. This risk may be mitigated through a company helpdesk to reset forgotten passwords, but this in turn creates an administrative overhead that can quickly become a considerable cost factor in larger enterprises.

The One Identity and Access Management scenario describes a straight-forward approach to set up harmonized user management and single sign-on for heterogeneous system landscapes using SAP NetWeaver Identity Management and SAP NetWeaver Single Sign-On. The ultimate goal is to bring as much automation as possible to the user management lifecycle as well as the implementation of secure and transparent single sign-on methods that allow users to access all relevant systems using only one login.

Further reading: [Identity Management](#) and [Single Sign-On](#)

#### **4. SUMMARY**

SAP responds to the needs of its customers to reduce the cost of development and operation and to bring innovation into existing landscapes without disrupting business processes and further minimizing business downtime. SAP has invested significantly in the cloud market, in in-memory technology, and in innovative mobile technology and applications. SAP NetWeaver 7.4 and SAP HANA Cloud form an application infrastructure and technology platform that provides powerful support for these investments. It enables customers to optimize applications for SAP HANA and, using tools based on the popular Eclipse development environment, quickly and easily build lightweight applications that not only run on the cloud, but integrate with SAP Business Suite back-end systems, bringing innovation across your landscape to your mobile users.

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