Capgemini

SAP HANA

Lesson Name: SAP HANA Studio or Eclipse

Lesson Objectives

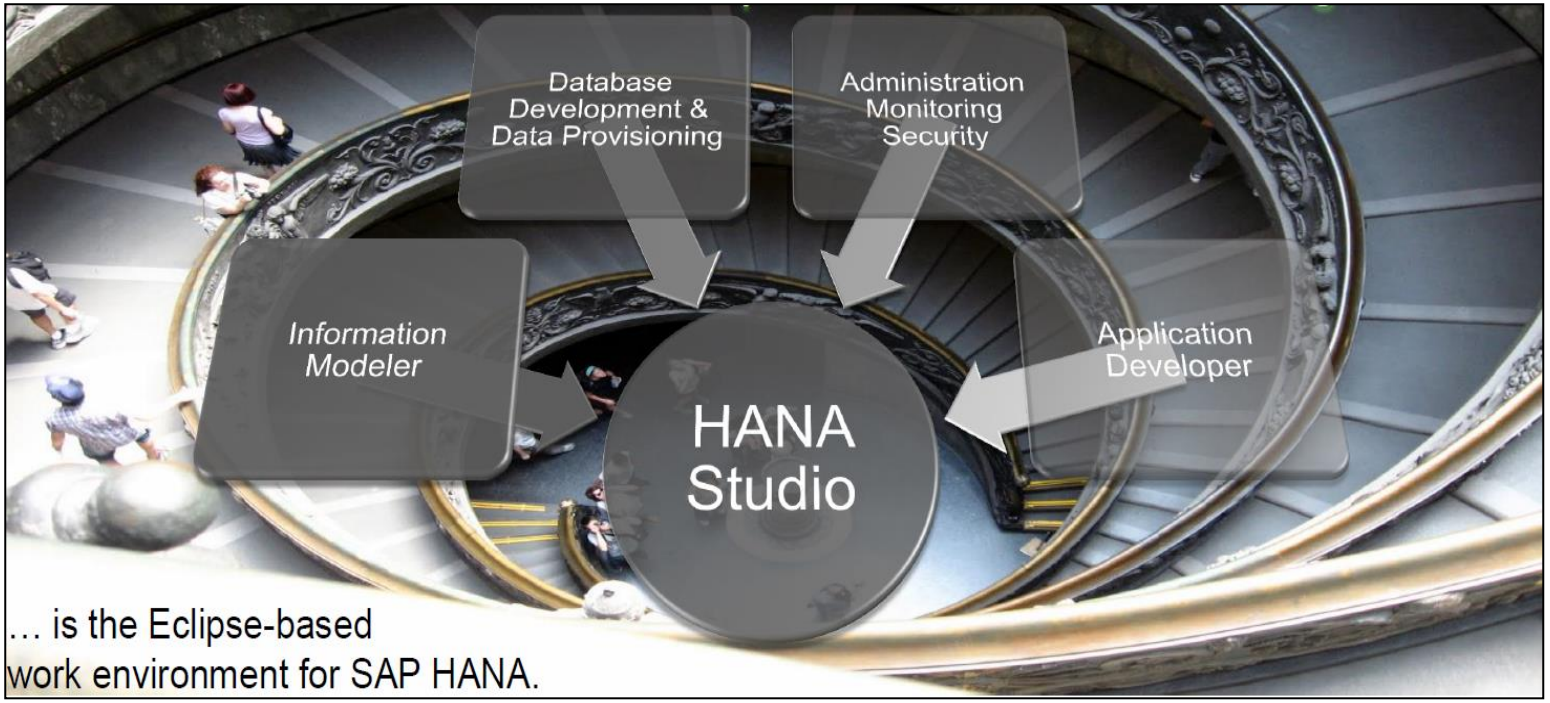
After completing this lesson, participants will be able to -

- Know SAP HANA Studio
- Different Features of HANA Studio
- Installation, Configuration and Navigation.
- SAP HANA Studio Workflow
- SAP HANA Studio's System Environment
- SAP HANA Studio Perspectives
- Different kind of Views associated with Perspectives in HANA Studio.

SAP HANA Studio - Logic

SAP HANA Studio is an Eclipse-based tool. SAP HANA Studio is both, the central development environment and the main administration tool for HANA system.

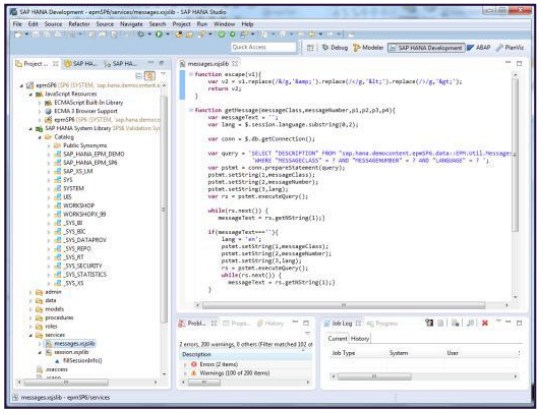
Different Perspectives of the Same Thing….



SAP HANA Studio - Overview

What is SAP HANA Studio ?

- Eclipse Open Integrated Development Environment (IDE) integrates different tools in a unified environment, big ecosystem of tools
- Extensibility, Multi-platform, broad adoption, …
- Eclipse IDE-based developer environment for SAP HANA
- Integrated Environment for Administration and end-to-end application and content development for the SAP HANA Platform

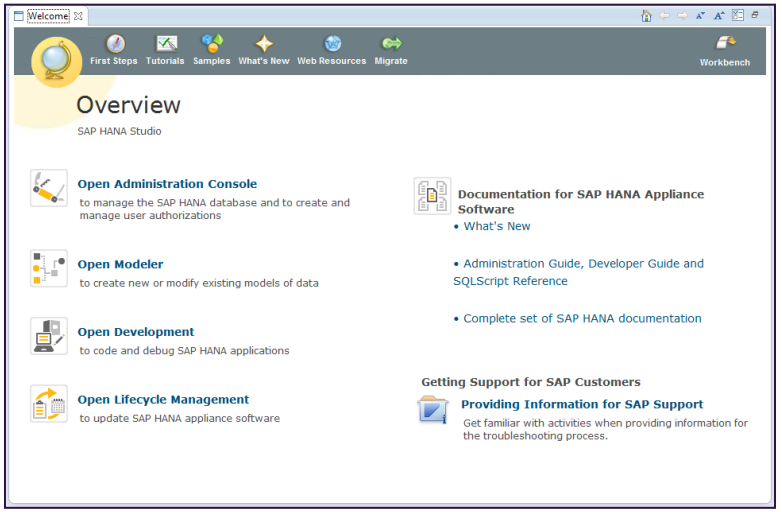


SAP HANA Studio - Overview

- Tools and Plug-Ins for working with SAP HANA

  - SAP HANA Studio Tools: basic components for design-time SAP HANA repository interaction and access to run-time objects in SAP HANA database catalog

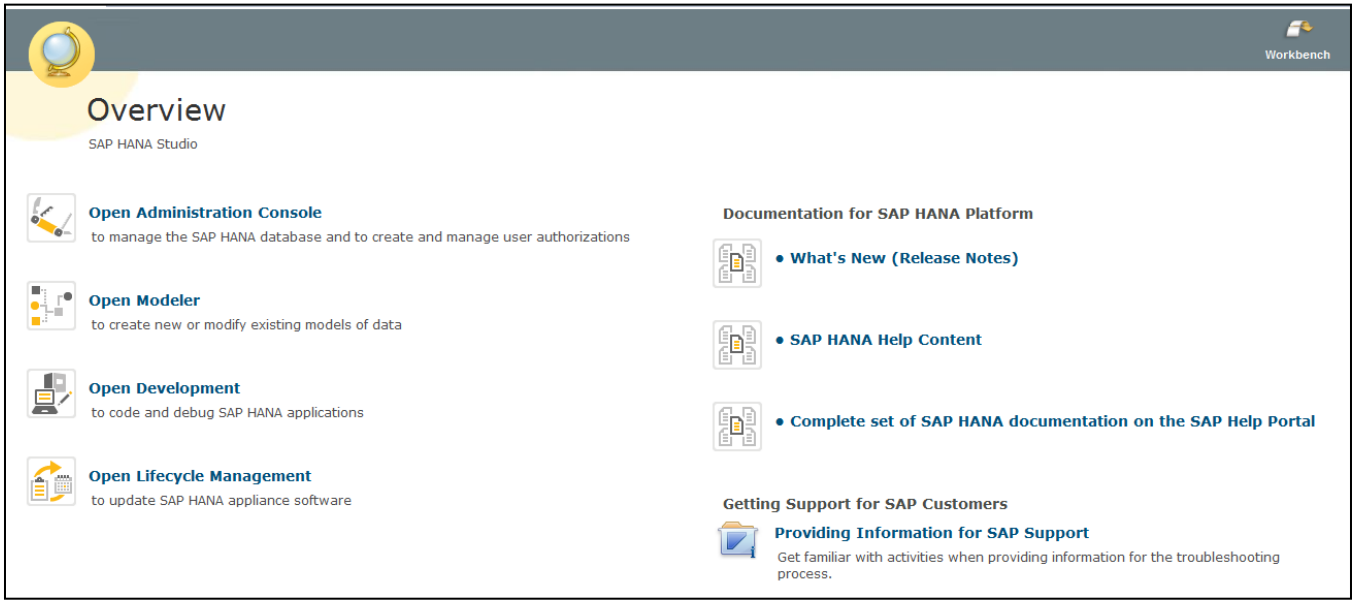
  - Domain specific editors for HANA development artifacts, composed in eclipse perspectives like Administration, Development, Modeler, …



SAP HANA Studio - Overview

Additional features are:

- It is a client tool, which can be used to access local or remote HANA system.
- It provides an environment for HANA Administration, HANA Information Modelling and Data Provisioning in HANA database.



SAP HANA Studio – Supported Platforms

***Supported Platforms*:**

The SAP HANA Studio runs on the Eclipse platform 3.6. We can use the SAP HANA Studio on the following platforms:

- Microsoft Windows x32 and x64 versions of: Windows XP, Windows Vista, Windows 7
- SUSE Linux Enterprise Server SLES 11: x86 64-bit version

Note: For Mac OS, HANA Studio is available but there is no HANA client for that.

Depending on HANA Studio installation, not all features may be available. At the time of Studio installation, specify the features you want to install as per the role. To work on most recent version of HANA Studio, Software Life Cycle Manager can be used for client update.

SAP HANA Studio – System Requirements

System Requirements:

Java JRE 1.6 or 1.7 must be installed to run the SAP HANA Studio.

The Java runtime must be specified in the PATH variable.

Make sure to choose the correct Java variant for installation of SAP HANA Studio:

- For a 32-bit installation, choose a 32-bit Java variant.
- For a 64-bit installation, choose a 64-bit Java variant.

SAP HANA Studio – Installation Paths

Installation Paths:

If we do not specify an Installation Path during installation, the following default values apply:

- Microsoft Windows 32-bit -> C:\Program Files\sap\hdbStudio
- Microsoft Windows 64-bit -> C:\Program Files\sap\hdbStudio
- Microsoft Windows 32-bit (x86) -> C:\Program Files (x86)\sap\hdbStudio
- Linux x86, 64-bit -> /usr/sap/hdbStudio

Note: Refer guide for installation and configuration of HANA Studio and to add the system and project.

Installation Procedure

[SAP HANA Academy - SAP HANA Express: Setup - Connecting with SAP HANA Studio (Eclipse)]

SAP HANA Studio – How to Open?

How to Open SAP HANA Studio?:

In Microsoft Windows:

- Go to start menu
- Start > All Programs > SAP HANA > SAP HANA Studio

The SAP HANA Studio starts.

In Linux:

- Open a shell and go to the installation directory, such as /usr/sap/hdbStudio
- Execute the following command "./hdbStudio".

The SAP HANA Studio starts.

Configuration Procedure – Needed Plug-ins

SAP HANA Academy - Installation and Update: SAP HANA Studio - Plugin

SAP HANA Academy - SAP HANA Express: Installation - VM method

SAP HANA Academy - SAP HANA Express: Setup - Create Tenant Database

SAP HANA Studio – HANA Client

HANA Client is the piece of software which enables you to connect any other entity, including Non-Native applications to a HANA server.

This "other" entity can be, say, an NW Application Server, an IIS server etc.

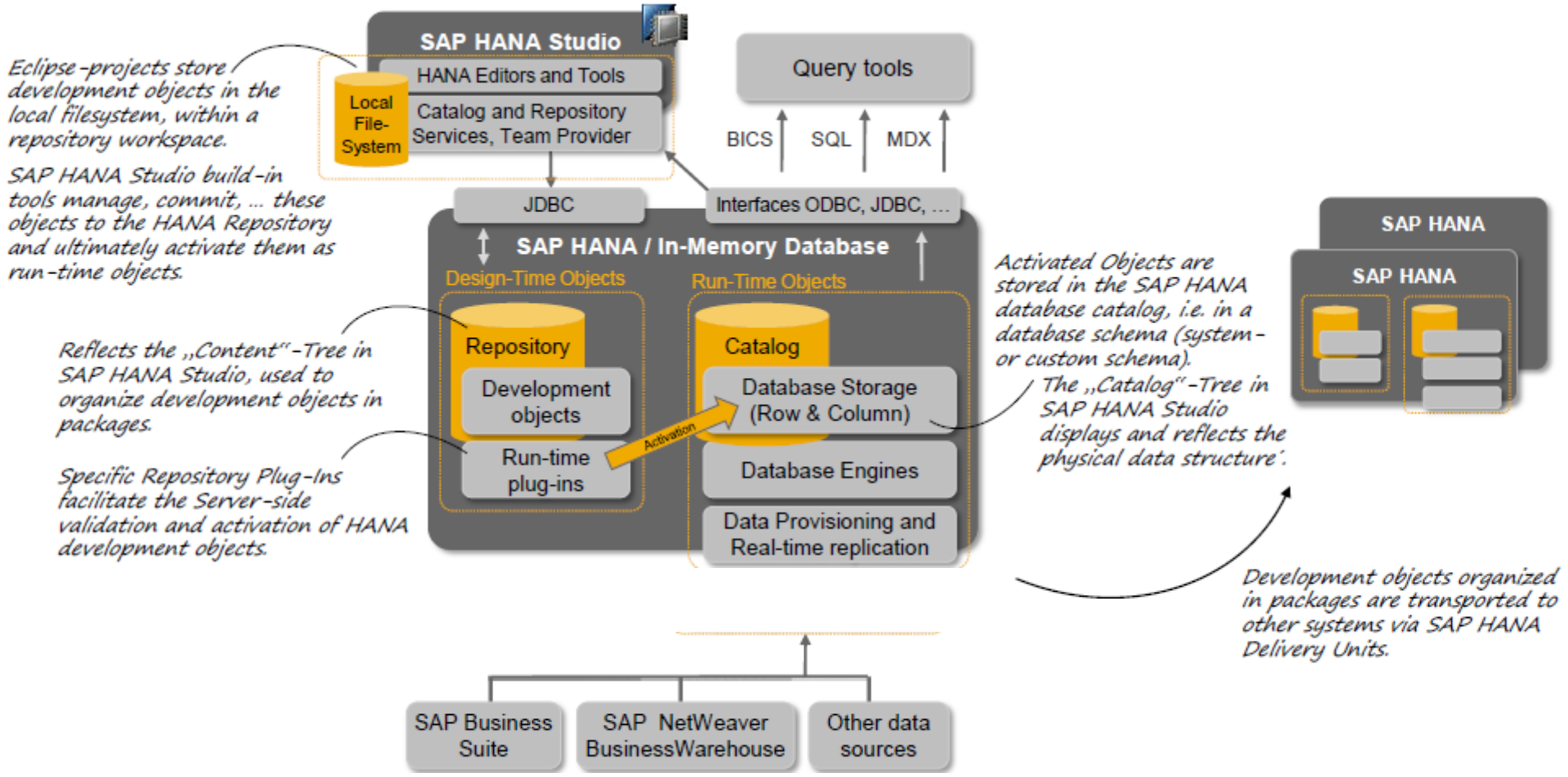
The HANA Client installation also provides JDBC, ODBC drivers.

This enables applications written in .NET, Java etc. to connect to a HANA server, and use the server as a remote database.

So, consider client as the primary connection enabler to HANA server.

HANA Client is installed separately from the HANA Studio.

SAP HANA Studio - WorkFlow



SAP HANA Studio - View

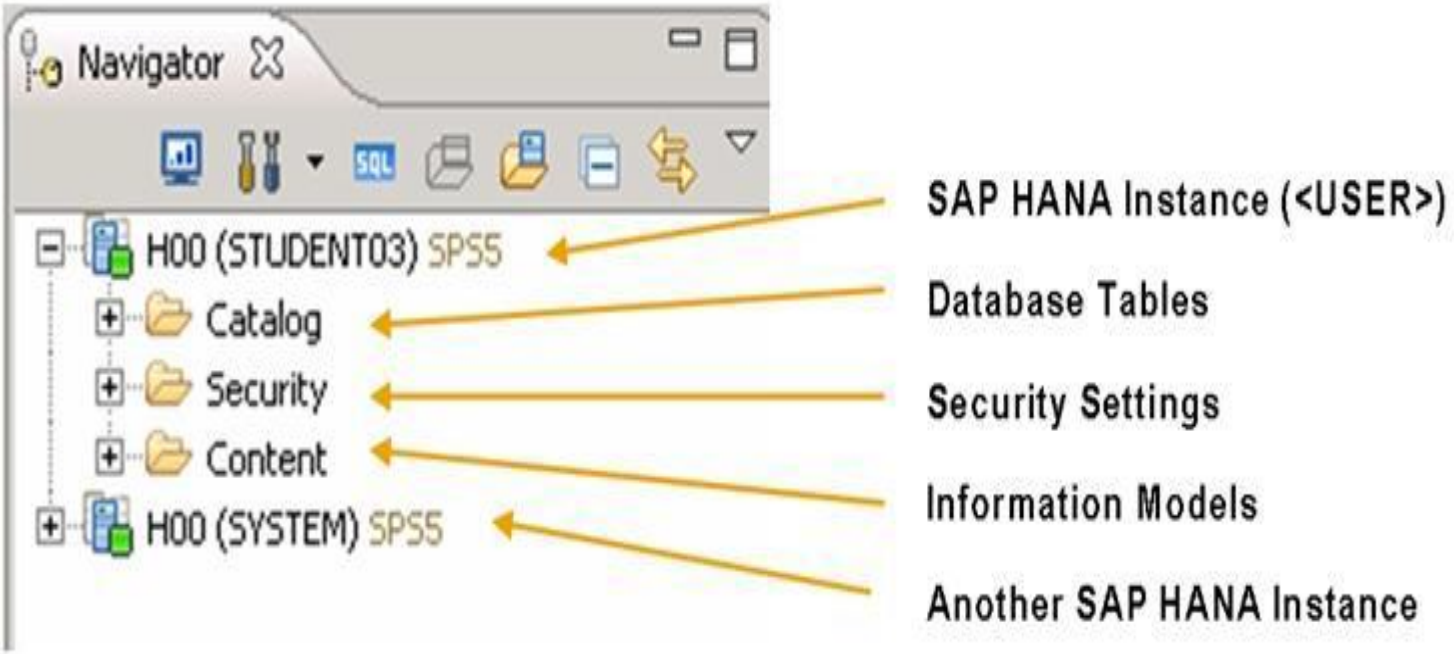
The ***SAP HANA Systems view*** *is one of the basic elements within SAP HANA Studio.*

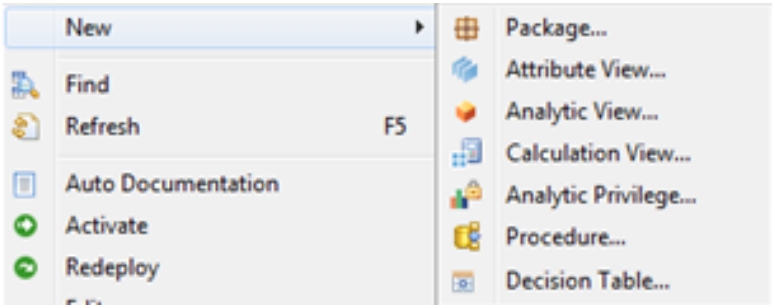
You can use the *SAP HANA Systems view to display the* ***contents*** *of the SAP HANA repository that is hosting your development project artifacts.*

The **catalog** displays the database objects that have been activated, for example, from design-time objects or from SQL DDL statements. The objects are divided into schemas, which is a way to organize activated database objects.

Context menu provides easy access to all functions

SAP HANA Studio – System Environment

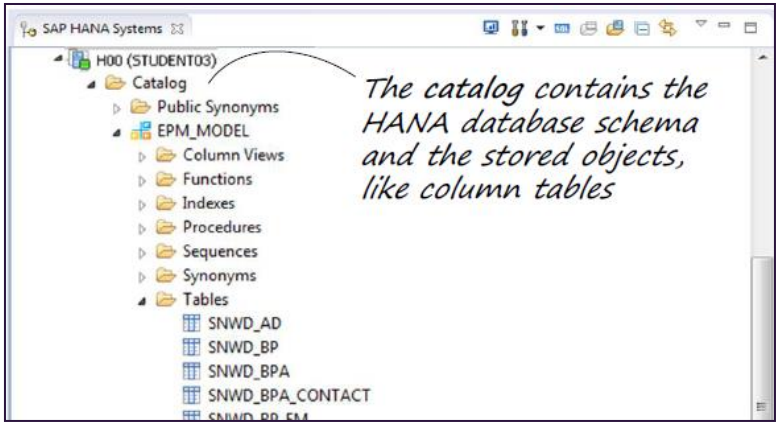




From ***Content –> New –> Package structure, the Editor to build new HANA Views can be called.***

SAP HANA Studio – Catalog and Content

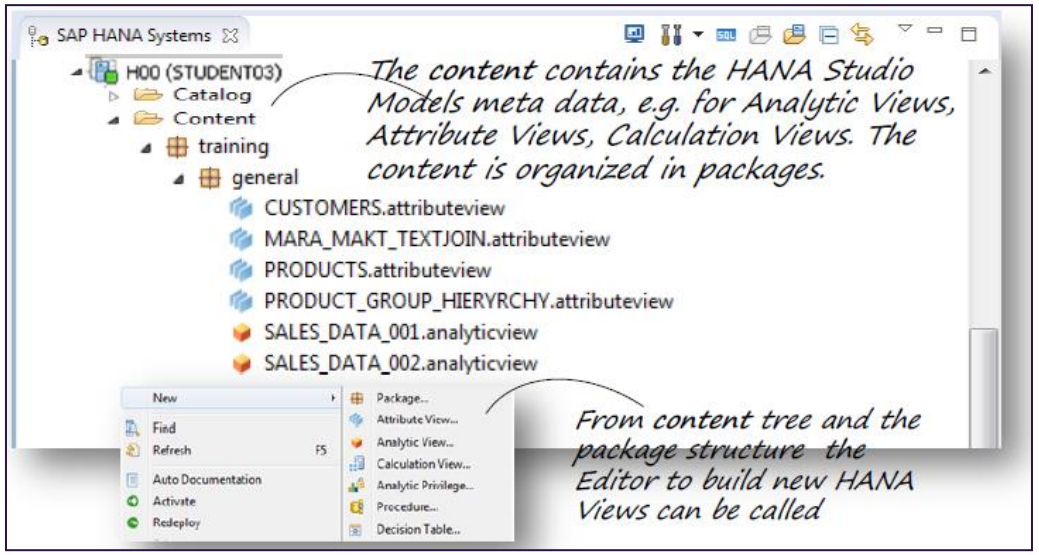
The Catalog represents SAP HANA's data dictionary, i.e. all data structures, tables, and data which can be used



SAP HANA Studio – Catalog and Content

The Content represents the design-time repository which holds all information of data models created with the Modeler.

The Models are organized in Packages. The Contents node just provides a different view on the same physical data.



SAP HANA Studio – Catalog

The Catalog represents SAP HANA's data dictionary, i.e. all data structures, tables, and data which can be used.

All the physical tables and views can be found under the Catalog node.

This node contains a list of Schemas which is used to categorize tables according to user defined groupings.

SAP HANA Studio – Content

The Content represents the design-time repository which holds all information of data models created with the Modeler.

Physically these models are stored in database tables which are also visible under Catalog.

The Models are organized in Packages. The Contents node just provides a different view on the same physical data.

Addition of System – System Environment

SAP HANA Academy - SAP HANA Express: Setup - Start and Stop HANA

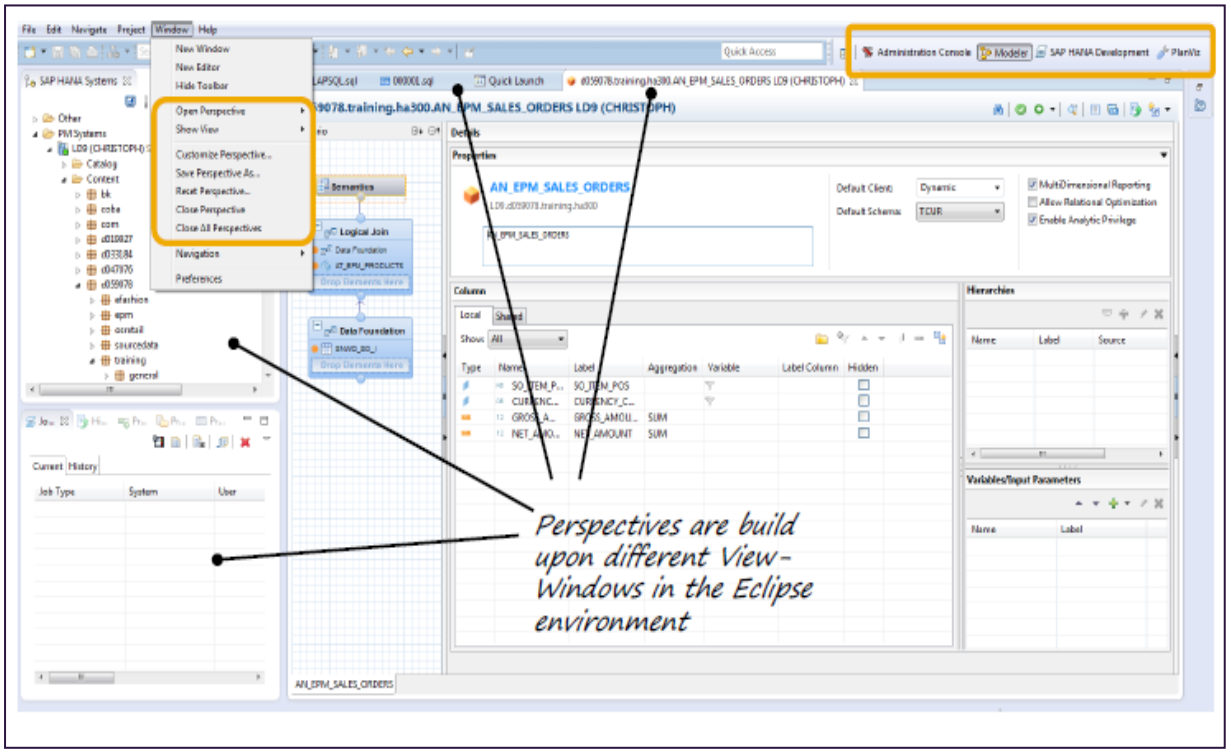
SAP HANA Studio – Perspectives

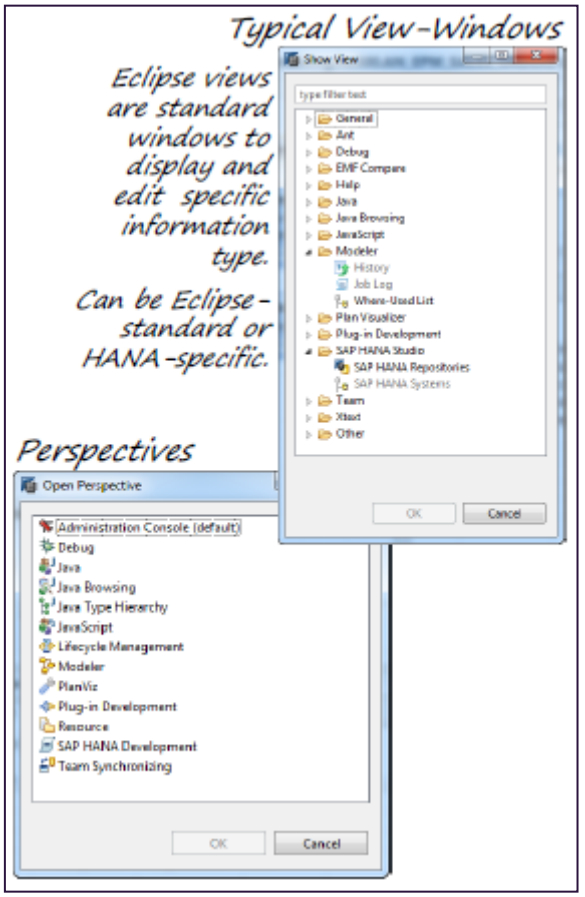
The SAP HANA Development-**Perspective** builds on two additional major views:

- The SAP HANA Repositories view enables you to browse the contents of the repository on a specific SAP HANA system; you can display the package hierarchy and use the Checkout feature to download files to the workspace on your local file system.
- The SAP HANA Repositories view is a list of repository workspaces that you have created for development purposed on various SAP HANA systems. Generally, you create a workspace, check out files from the repository, and then do most of your development work in the Project Explorer.
- The Project Explorer view shows you the development files located in the repository workspace you create on your workstation.
- You use the Project Explorer view to create and modify development files. Using context-sensitive menus, you can also commit the development files to the SAP HANA repository and activate them.

SAP HANA Studio – Eclipse Perspectives

What is an SAP HANA Studio Eclipse-perspective?





SAP HANA Studio – Eclipse Perspectives

The Modeler perspective

- Provides views and menu options that enable you to define your analytic model, for example, attribute, analytic, and calculation views of SAP HANA data.

The SAP HANA Development perspective

- Provides views and menu options that enable you to perform all the tasks relating to application development on SAP HANA XS, for example: to manage application-development projects, display content of application packages, and browse the SAP HANA repository. You can also define your data-persistence model here by using design-time artifacts to define tables, views, sequences, and schemas.

The Debug perspective

- Provides views and menu options that help you test your applications, for example: to view the source code, monitor or modify variables, and set break points.

The Administration Console perspective

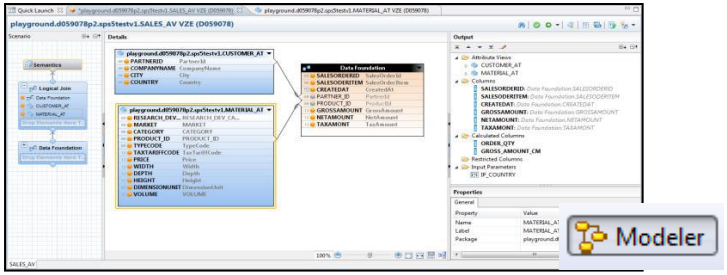
- Provides views that enable you to perform administrative tasks on SAP HANA instances.

SAP HANA Studio – The Modeler Perspective

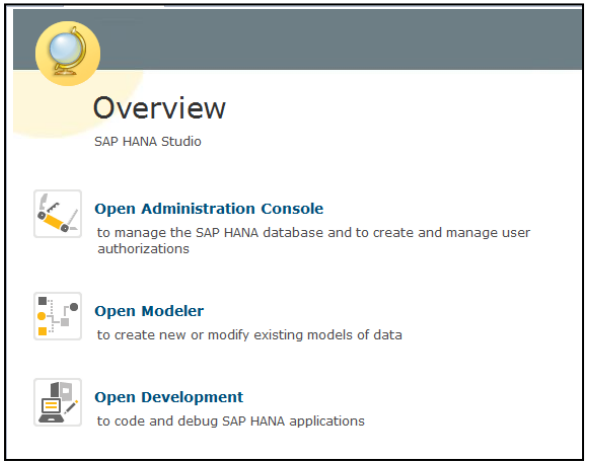
Eclipse-perspective targeting Power Users for Content Design

Graphical Information Model Design Environment for HANA optimized Models

- Attribute-, Analytic- and Calculation Views
- without materialized aggregates
- Development of advanced Calculation Models



- SQL & SQLScript-based, Use of Application Function Library- and SQLScript-based Stored Procedures

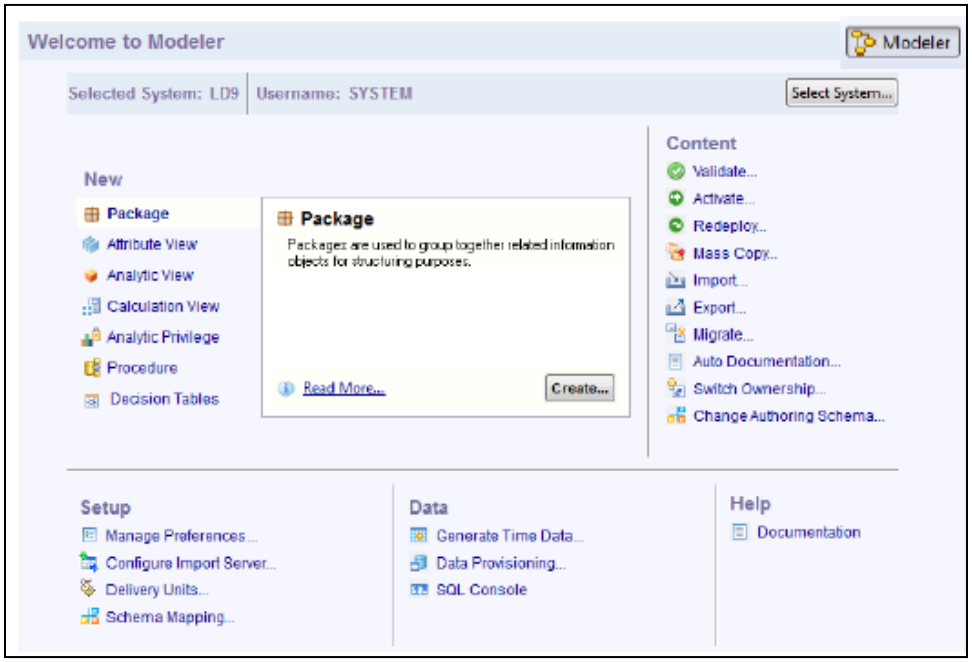


SAP HANA Studio – The Modeler Perspective

The SAP HANA Modeler-perspective within the SAP HANA Studio

Quick Launch access to common modeling tools

Wizards for creating / graphical designing HANA Content objects as Information Models



Actions or wizards for working with content

Managing the work environment and system connections

Actions or wizards for working with data or working with a SQL console

SAP HANA Studio – Modeler Views Overview

SAP HANA Studio – Modeler Views Overview

SAP HANA Information Models are optimized HANA Views for the HANA Engine and Calculation Operators. There are three HANA Views

- Attribute View:
  - Master data modeling: Join master data tables as 'Attribute Views'.
  - If required, join text tables to each other.
- Analytic View:
  - Represents an OLAP Cube-like view.
  - Includes a 'Data Foundation' based on a Fact Table with measures (key figures).
  - Attribute View(s) are joined to the Fact Table in a Star Schema like dimensions.
  - Joins and calculated measures are evaluated at run time.
  - Is used for calculation and aggregation.
- Calculation View:
  - Performs complex calculations not possible with other views.
  - It has at least one measure.
  - It is defined as graphical or scripted view (SQL Script).

SAP HANA Studio – Modeler Views Overview

Unified Graphical Editor

Standardized graphical editing across different HANA Database view types

Build of different common panels

–Scenario provides Overview

–Semantic node provides better summary of output structure of the model + editor view of output objects + general view properties

–Logical-Join- and Data Foundation-Nodes are specific to Attribute- and Analytic Views

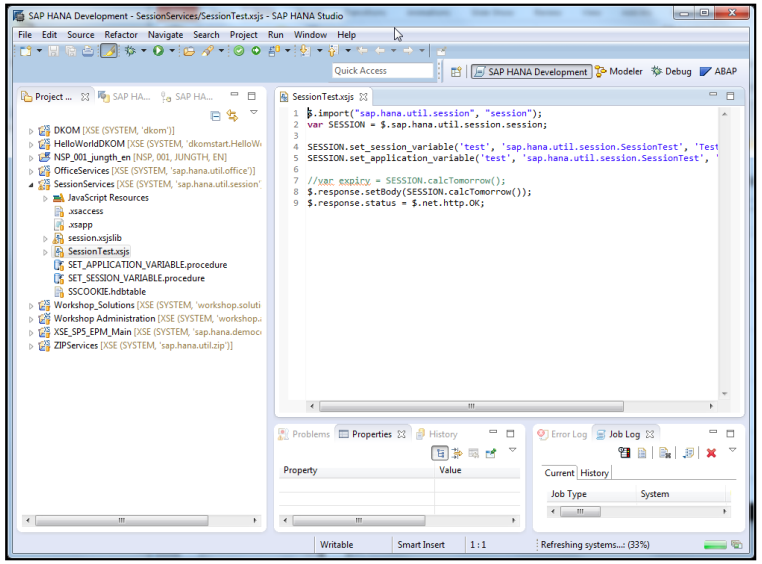
–Calculation-View* supports different nodes

* - Attribute and Analytical Views are now depreciated in new version.

SAP HANA Studio –Development Perspective

The SAP HANA Development-perspective within the SAP HANA Studio

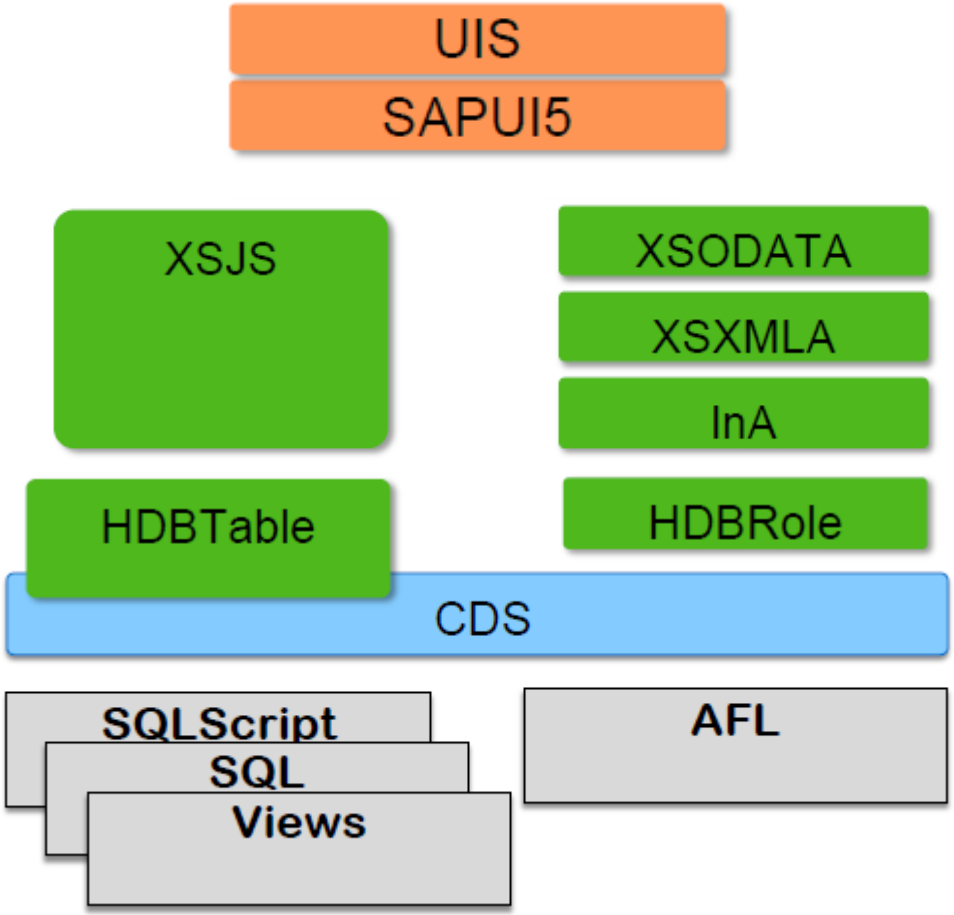
- Enables all HANA-related development scenarios and workflows
- Supporting all development artifacts necessary for building a HANA application, covering development, testing, debugging, supportability and lifecycle management.
- Integration into standard Eclipse IDE improves interoperability with external development tools and emerging new tools
- Decoupling of domains and infrastructure via file system and team provider allows re-use
- Read access to complete data model of back-end provided by service APIs
- Target Persona: HANA Application Developer Including content development scenarios incl. SQLScript Stored Procedure development



SAP HANA Studio – Development Model

The SAP HANA Native Development Model

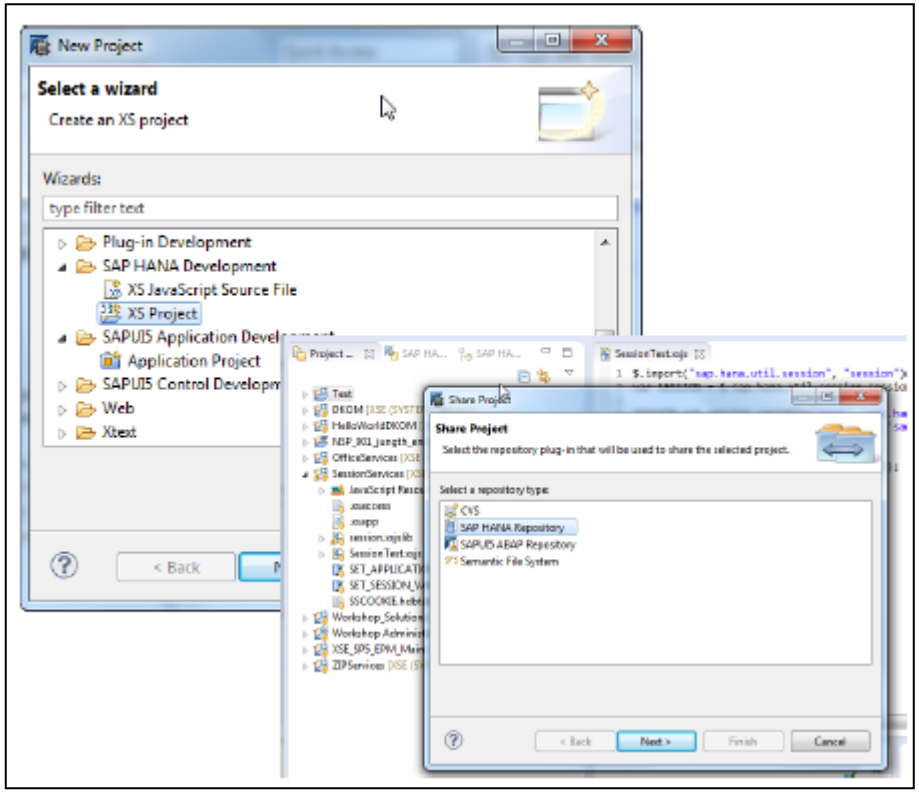
- UI Rendering completely in the Client
- Server-side procedural logic in JavaScript
- All artifacts stored in the SAP HANA Repository



SAP HANA Studio – Application Development

The SAP HANA Development-perspective within the SAP HANA Studio

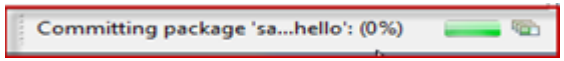
- Utilizes standard Eclipse projects – HANA Specific, General SAP Projects, and even 3rd party ones
- Projects are linked to the HANA Repository
- Specific HANA packages are added as folders



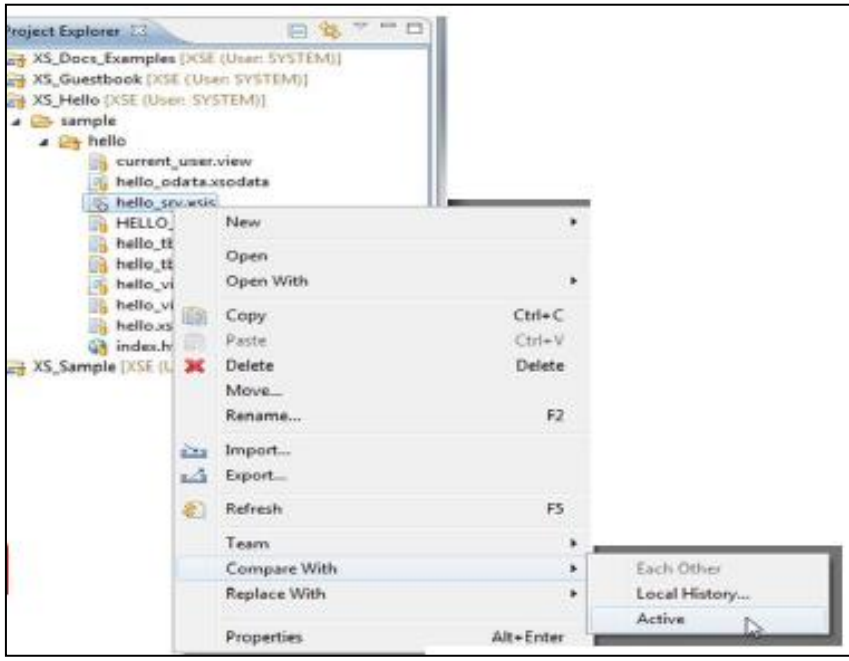
SAP HANA Studio – Application Development

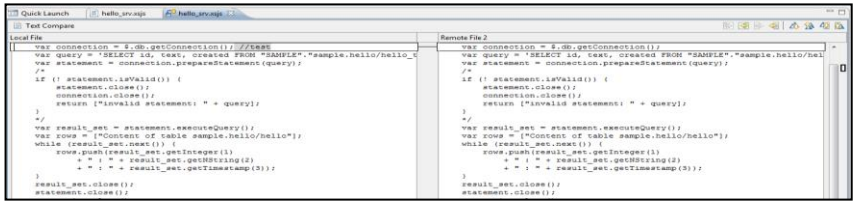
The SAP HANA Development-perspective within the SAP HANA Studio

- Standard Eclipse Team Provider interface for storing all objects into the SAP HANA Repository
- The HANA Repository is then treated like Git or Perforce and Eclipse checks out the content for editing
- Entire Projects can be Check out from the Repository Browser Repository content is copied to the developer's machine to be edited edited locally and offline
- Upon saving in any Eclipse editor, a commit back to HANA Repository is done automatically



- Full source merge, rebase, conflict resolution, and version management is built in





SAP HANA Studio – Application Development

Editors utilized as part of the SAP HANA Development Perspective

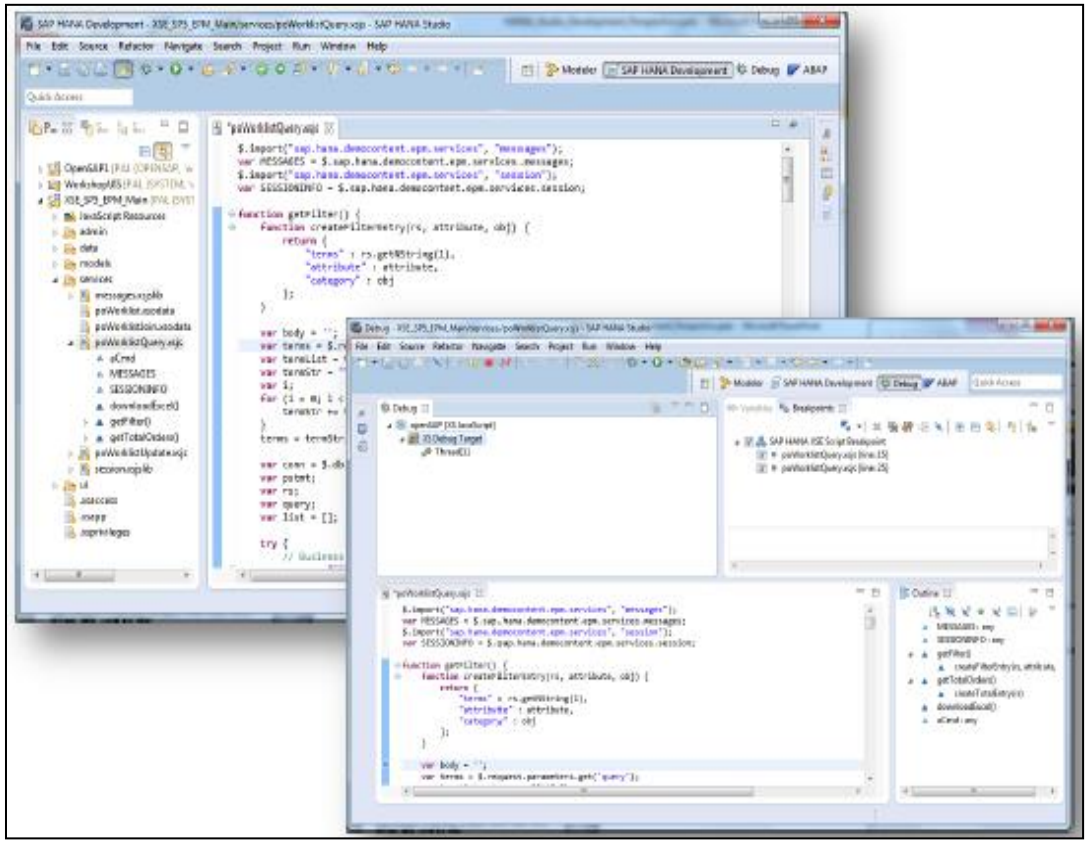
Standard Eclipse editors

HANA Specific Editors and Debugger Enhancements, e.g.:

- XSJS – Server Side JavaScript

- SQLScript

Direct interaction with other Eclipse based tools such as ABAP Development Tools, SAPUI5 or HANA Modeler Editors.



SAP HANA Studio – Application Development

SQL Script Procedure-Artifact type in HANA Development menu

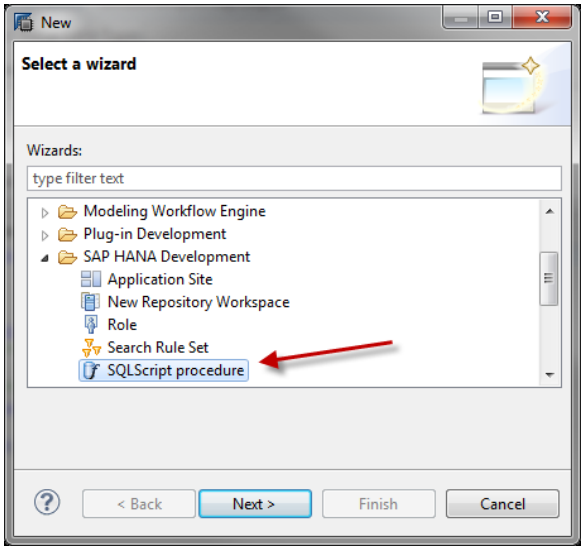
Allows for consuming procedure templates

Integrates with Debug Perspective

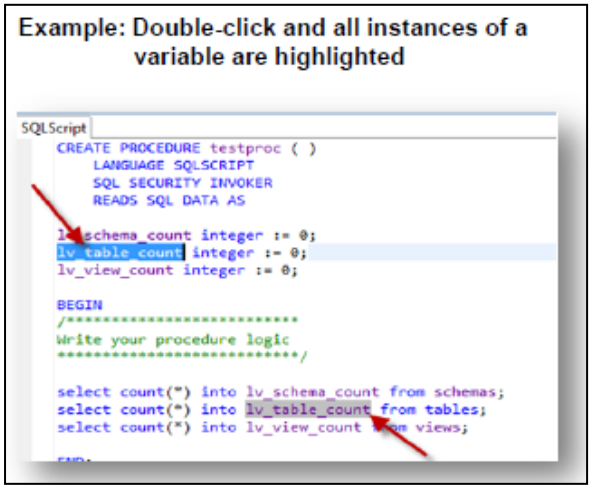
Syntactic code completion

Semantic object checks

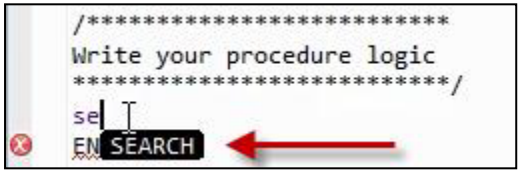
Highlight variables

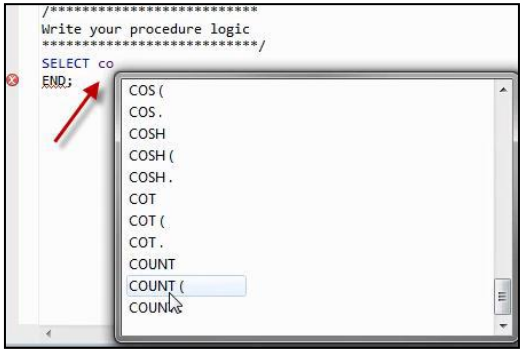


Example: Double-click and all instances of a variable are highlighted



Example: Syntactic code completion



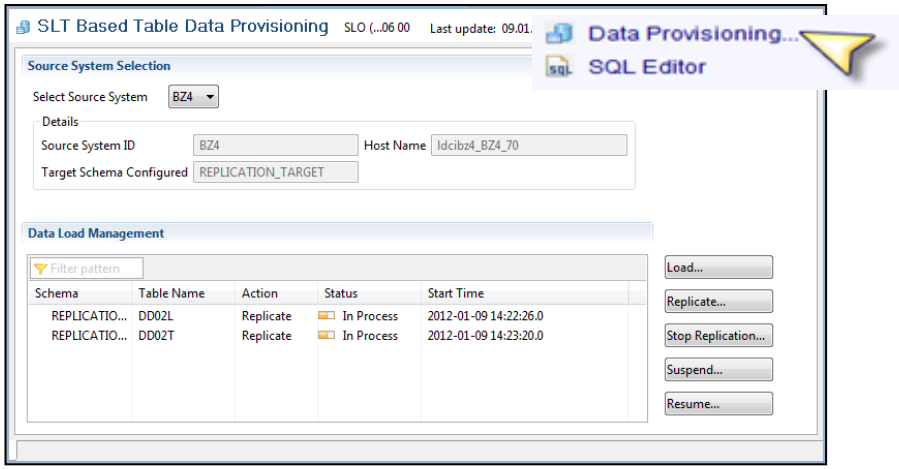


SAP HANA Studio – Data Provisioning Editor

The SAP HANA Studio Data Provisioning Editor provides a unified model for different data source environments and tools

Data Provisioning supports

- SAP LT Replication Server
- SAP Direct Extractor Connections
- SAP Data Services
- Flat file Upload



Open unified Architecture with Administration, Monitoring API Services for all Data Replication Components (ex: SLT, DS, SRS, ESP, DXC etc.) with a common UI.

Leverages SAP HANA Repository for authoring runtime metadata storage objects (e.g. source connectivity).

SAP HANA Studio – Data Provisioning Editor

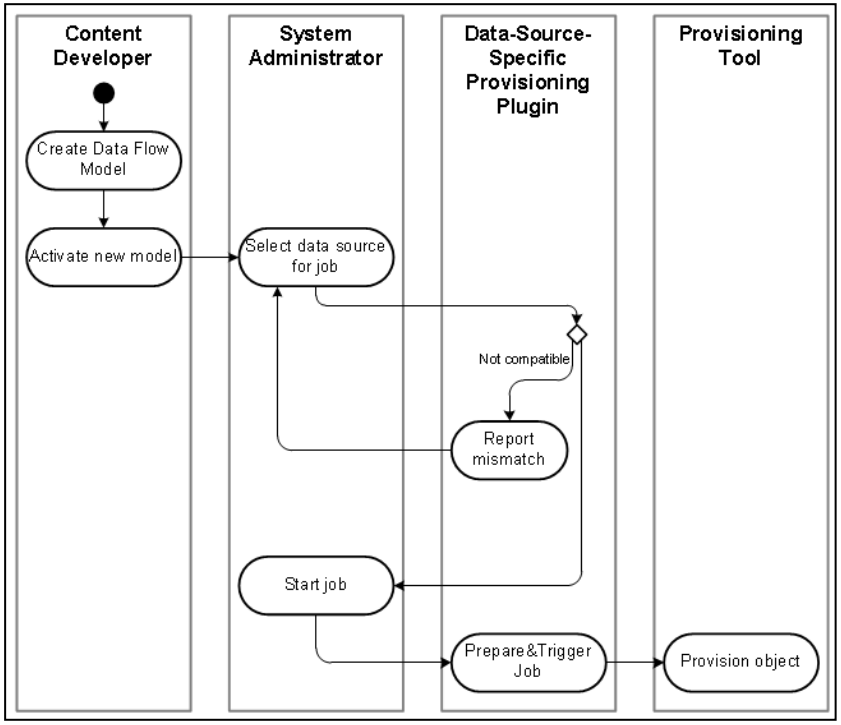
The SAP HANA Studio Data Provisioning Editor provides a unified model for different data source environments and tools

Capabilities to create configure and define the replication flow, from which data source table needs to be replicated

Repository/DT objects for storing metadata at run-time these object will be referenced

Administration and monitoring is a runtime process and it is bound to specific data source

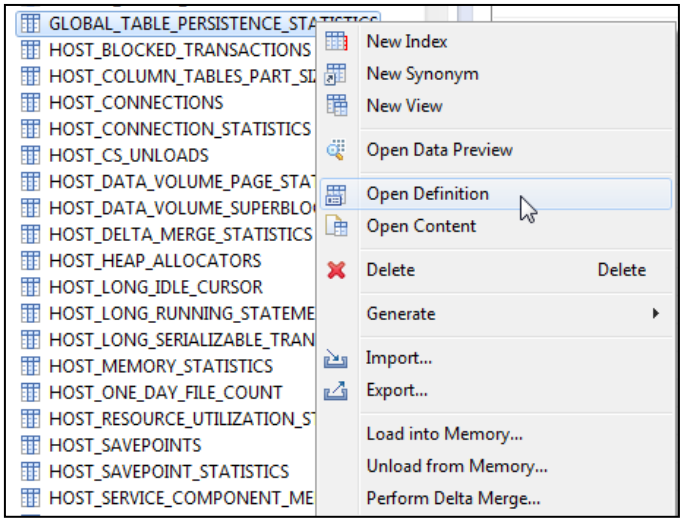
Data Provisioning Job associates a data flow with a data source and triggers the provisioning via the provisioning technology for that specific source.

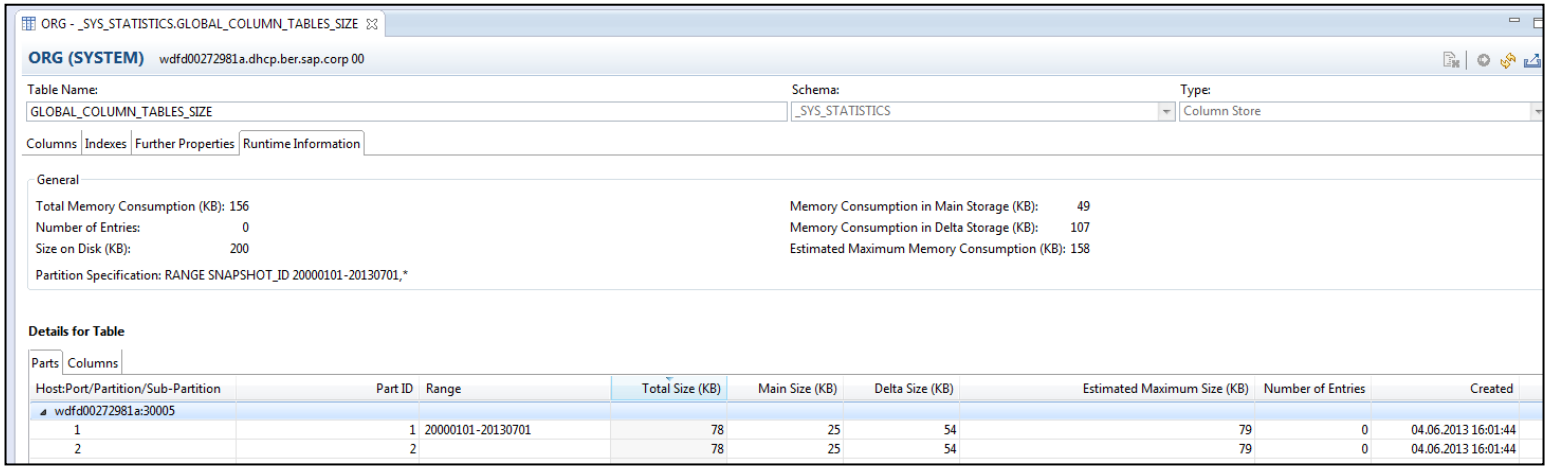


SAP HANA Studio – Table Administration

SAP HANA Studio Table Administration provide tools for managing

- In-Memory tables
- Table definition - provides information about the table's structure and properties (for example, schema, type, column properties, and indexes).
- Table content & Data Preview Particularly useful for analyzing system views.





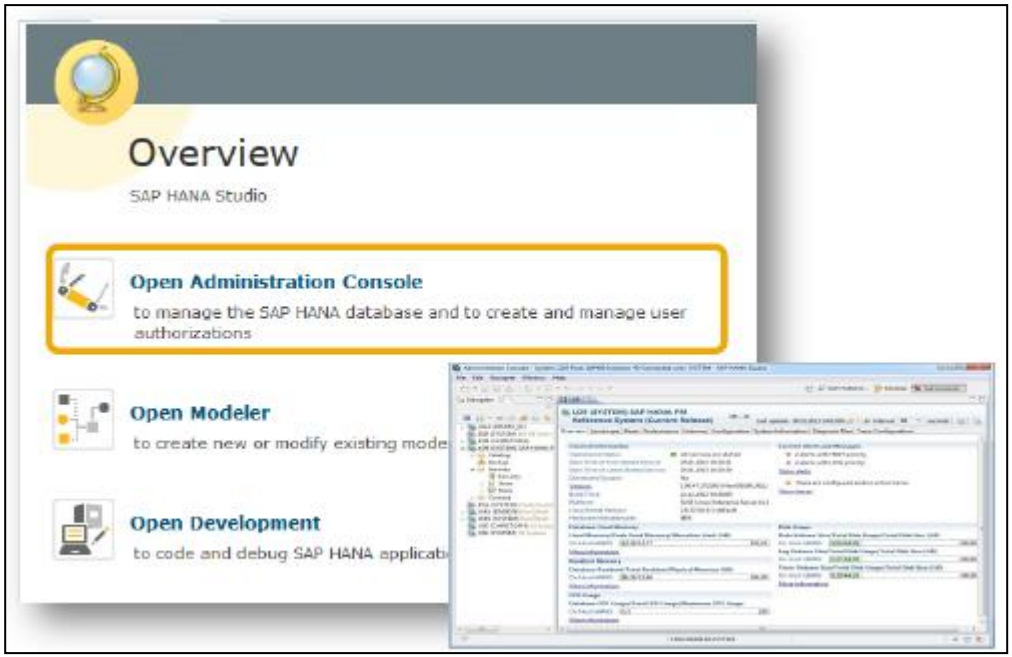
SAP HANA Studio – Administration Perspective

The SAP HANA Administration perspective within the SAP HANA Studio

The Administration Console in SAP HANA Studio

Administrators can use the SAP HANA Studio, for example, to start and stop services, to monitor the system, to configure system settings, and to manage users and authorizations.

Database administration and monitoring features are contained primarily within the Administration Console perspective.



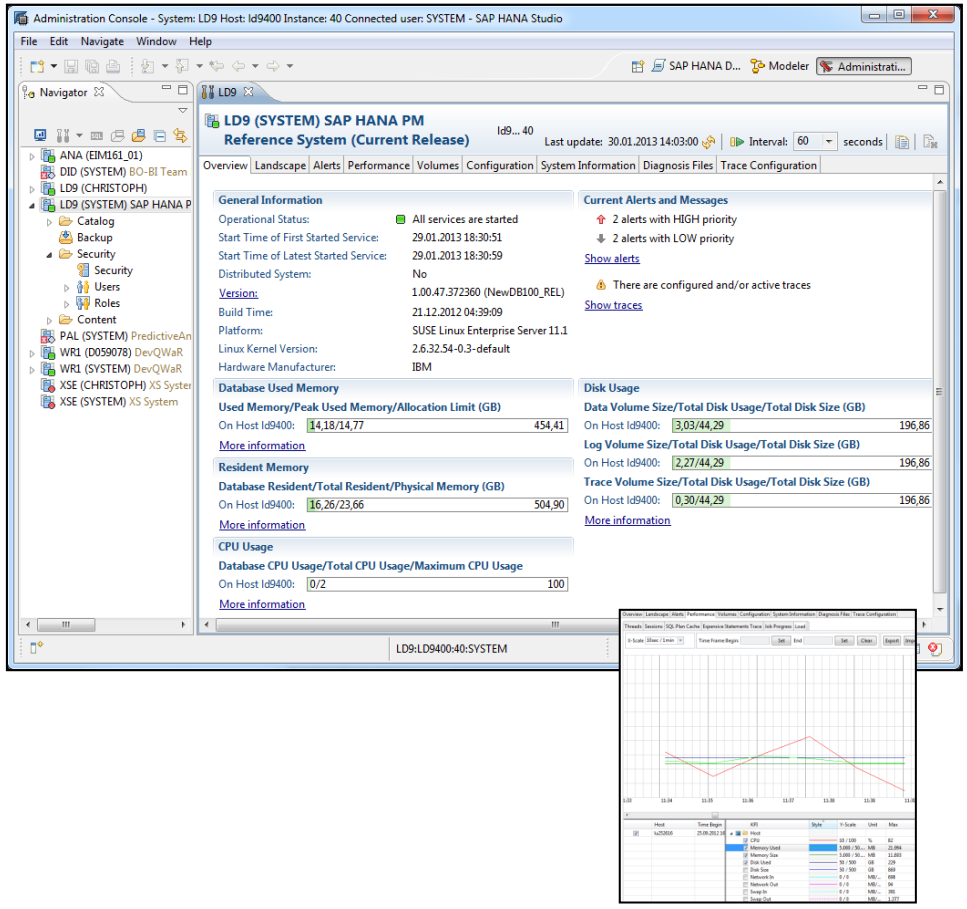
SAP HANA Studio – Administration Perspective

The SAP HANA Administration perspective within the SAP HANA Studio

The Administration Console in SAP HANA Studio

Eclipse-perspective targeting HANA DB- and System Administrators

- Provides advanced administration and monitoring features
- Backup and Recovery
- Lifecycle management
- User Management & Authentication
- Authorization (Roles, Privileges)
- Logging & Monitoring



SAP HANA Studio – Administration Perspective

The SAP HANA Administration perspective within the SAP HANA Studio

Administration Tasks in the SAP HANA Systems View

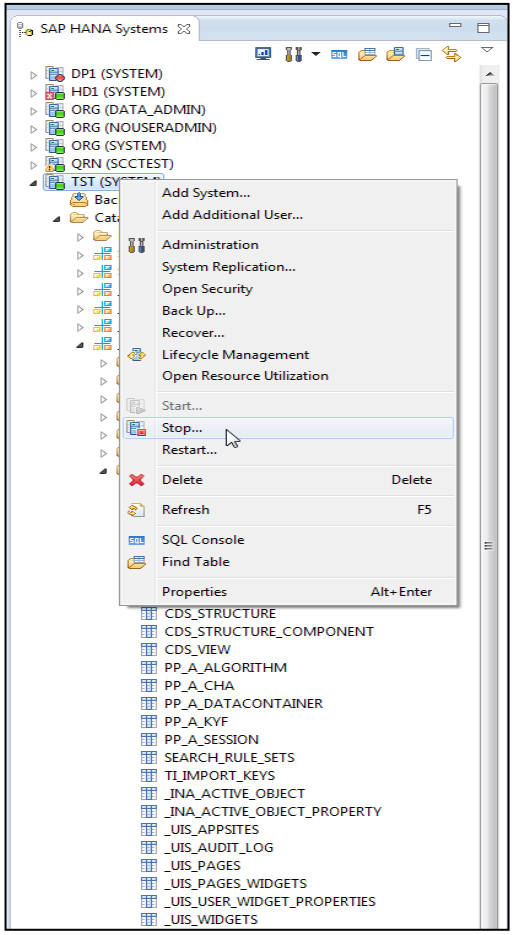
Hierarchical view of all the SAP HANA systems managed and their contents (database catalog, users, roles).

Provides status view of managed systems at glance.

Central access point for performing system-specific administration and monitoring activities.

From the context menu, you can access a range of both system-specific and object-specific functions, for example:

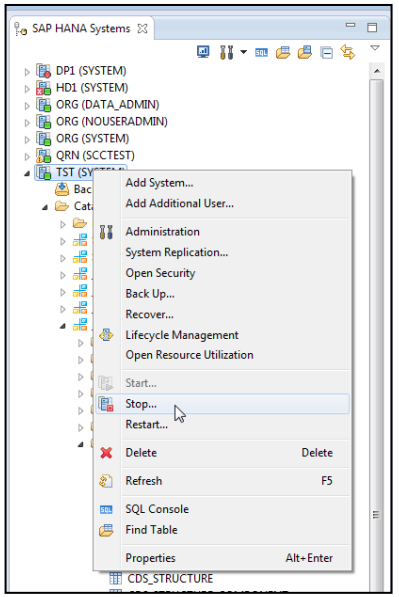
- Add system, Open system properties
- Stop, start, restart system
- Back up and recover the system
- Import and export catalog objects
- Open SQL console,
- Find table, Open table definition

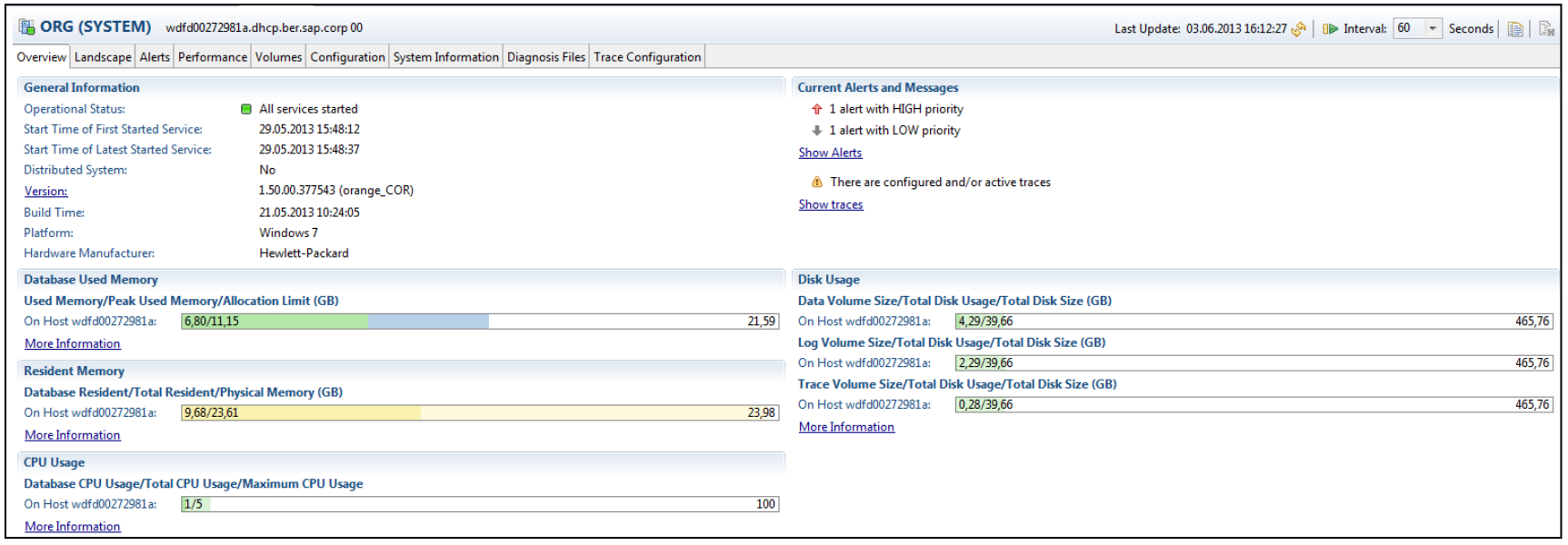


SAP HANA Studio – Administration Perspective

The Administration editor is available in the Administration Console perspective and is the main tool for performing administration and monitoring activities.

The functions of the Administration editor are available across several tabs:

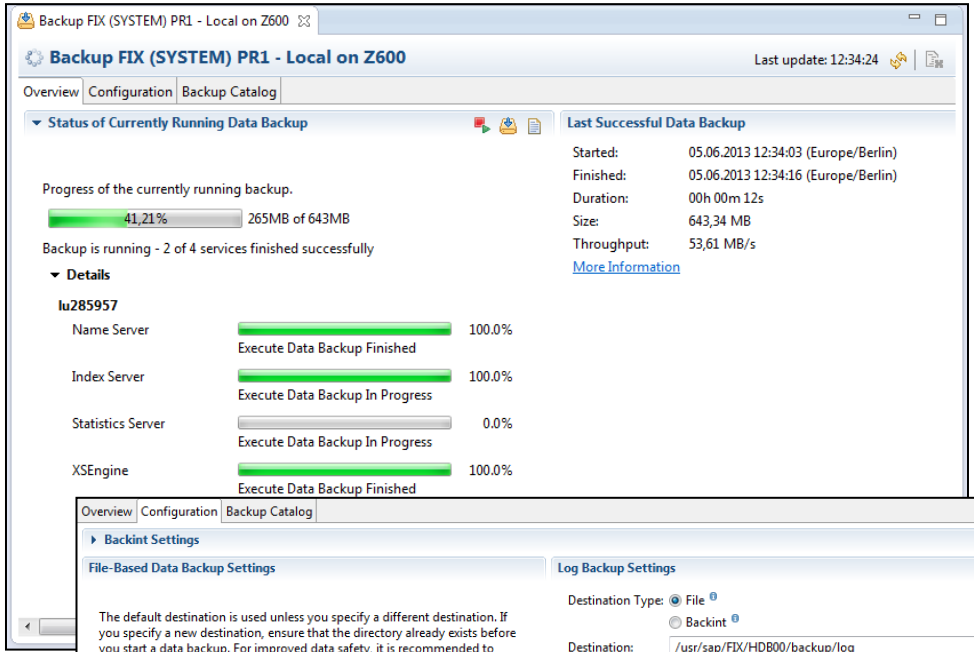


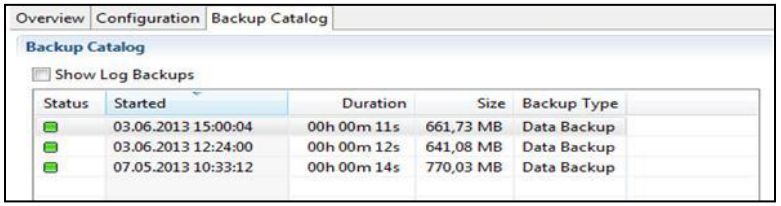


SAP HANA Studio – Administration Perspective

SAP HANA Studio Backup Wizard

- Backup Overview - Progress info on the currently running data backup, with information on the services included in the backup
- Last successful data backup with info
  - Start/end time, duration, size, and throughput
  - o display more detailed information on this data backup, click More Information
  - Backup configuration
  - Backup catolog, with history information on backups



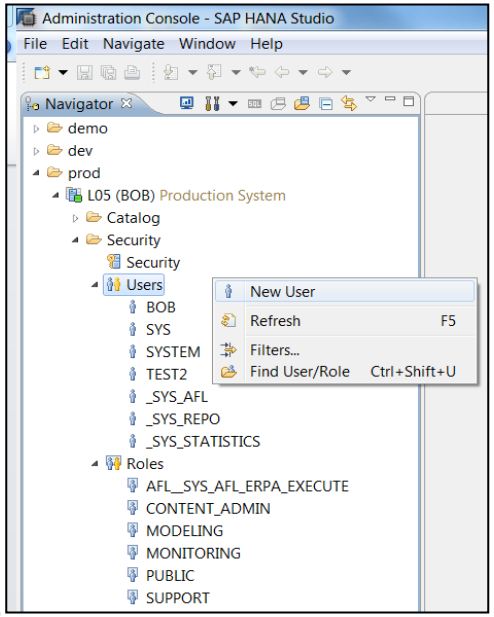


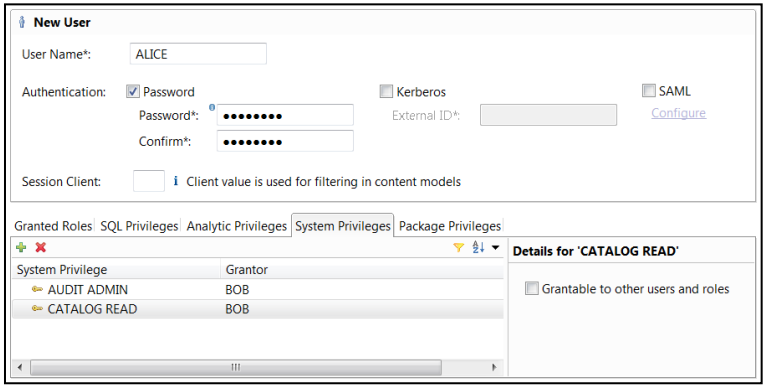
SAP HANA Studio – Security Administration

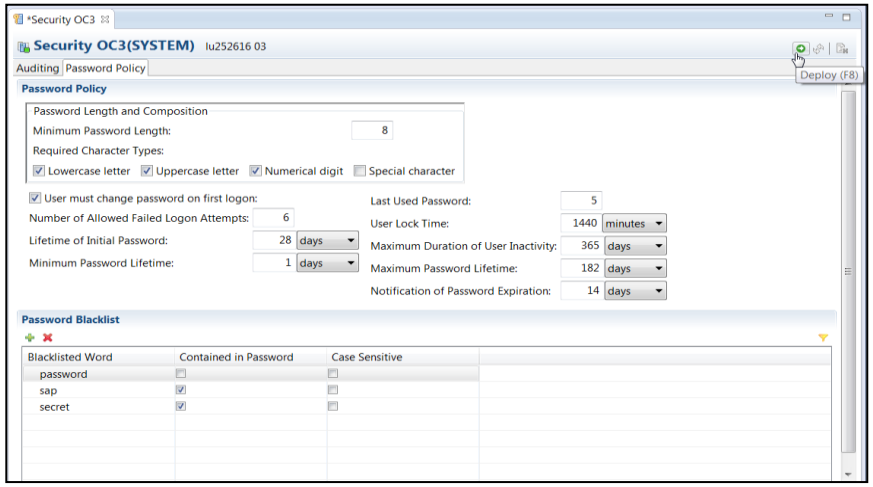
Security-related administration tools are integrated into the SAP HANA Studio

User and role management

- Definition of analytic
- privileges
- Creation of audit policies
- Configuration of password
- policy and authentication service



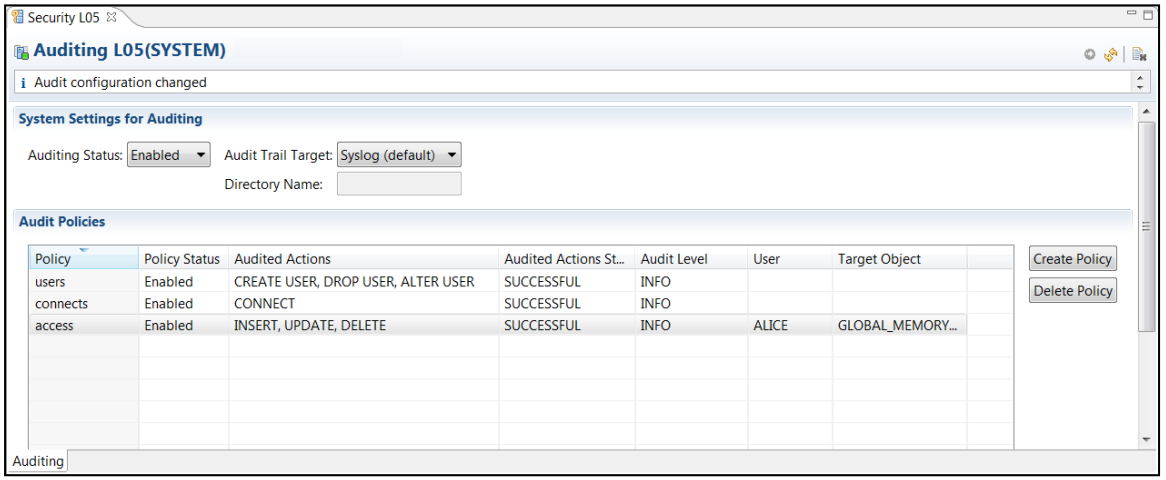




SAP HANA Studio – Security Administration

The auditing feature of the SAP HANA database allows you to track actions performed in the database: who did what (or tried to do what), and when. SAP HANA provides audit actions for critical security events and for access to sensitive data. Both successful and unsuccessful events can be logged. The audit trail is written to Linux syslog.

- Auditing can be configured in SAP HANA Studio or using SQL statements.
- Auditing can be enabled and disabled for the entire database only.
- Audit policies define which actions in the database are logged:
- They can be explicitly enabled or disabled.
- Audited user(s) can be specified.
- They are stored in the database catalog.



Features & Navigation – Perspectives, Views

SAP HANA Elearning -- Basic operations in HANA Studio Part1
SAP HANA Elearning -- Basic Operations in HANA Studio Part2

SAP HANA Modeling Demo:
SAP HANA Modeling

SAP HANA Studio – Links and Shortcuts

http://tools.hana.ondemand.com/

Edit	
Ctrl+Shift+A	Open development object
Ctrl+F2	Check development object
Ctrl+F3	Activate development object
Ctrl+Shift+F3	Activate all inactive objects
Ctrl+Space	Code completion
Ctrl+1	Quick fix proposal
Ctrl+<	Add comment
Ctrl+Shift+<	Remove comment
Shift+F1	Format source aka pretty printer
Help	
F1	ABAP keyword documentation
F2	Show code element information
Ctrl+3	Search for commands & views
Ctrl+Shift+L	List all keyboard shortcuts

Navigate	
F3	Open definition
Alt+Left	Backward history
Alt+Right	Forward history
Ctrl+T	Quick hierarchy
F4	Open Type Hierarchy
Ctrl+O	Quick outline
Ctrl+Shift+G	Where-used list
Run, Debug	
F8	Run current ABAP object
Alt+F8	Select & run ABAP application
Ctrl+Shift+B	Toggle breakpoint
F5, F6, F7, F8	Step into, over, return, resume
Ctrl+Shift+F10	Execute ABAP unit tests
Alt+F9	Profile development object

Summary

In this lesson, you have learnt:

- Basics of SAP HANA Studio
- Different Features of HANA Studio
- SAP HANA Studio Workflow
- SAP HANA Studio's System Environment
- SAP HANA Studio Perspectives
- Different kind of Views associated with Perspectives in HANA Studio.
- Modeler Perspective
- Development Perspective
- Data Provisioning Editor and Table Administration
- Administration Perspective
- Security Administration
- Links and Keyboard Shortcuts

SAP HANA Studio – References

For more information about the SAP HANA Studio, see the documentation and help for the specific topic of interest, which you can access:

- Directly in the SAP HANA Studio from the Help menu
- On SAP Help Portal at http://help.sap.com/hana_appliance
- https://**help.sap**.com/**hana**

Other useful documentation available on SAP Help Portal:

- SAP HANA Studio Installation Guide
- SAP HANA Administration Guide
- SAP HANA Development Guide
- SAP HANA Modeling Guide

Review Question

SAP HANA server can be accessed by _____.

SAP HANA Studio is based on _____.

Shortcut to open Keyboard shortcuts _____.

Navigation to Open Quick View is _____.

Information required to add an SAP HANA System in HANA Studio is _____.

Methods to add system are _____.

Capgemini

Thank you