

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.

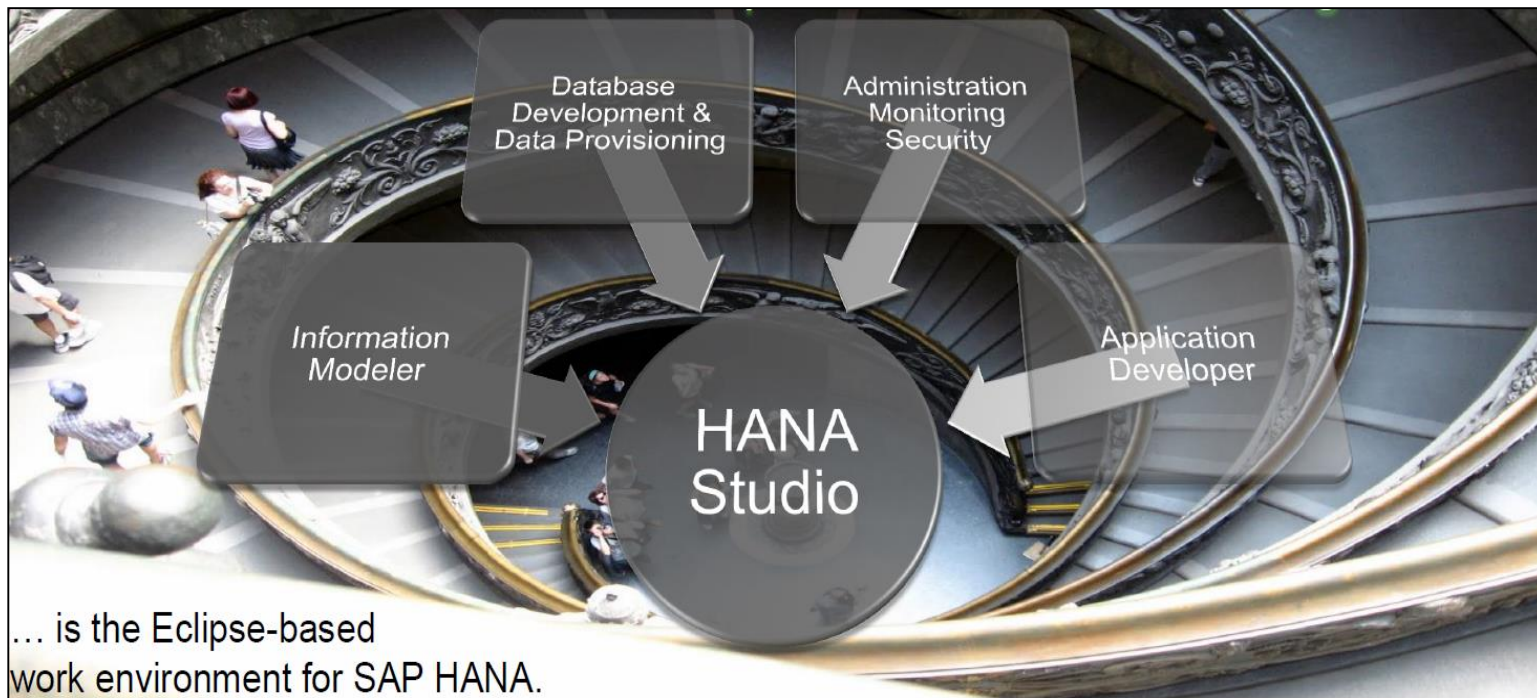


SAP HANA Studio - Logic



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....



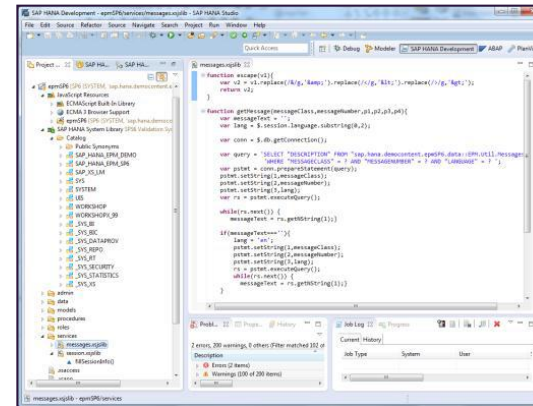
... is the Eclipse-based work environment for SAP HANA.

SAP HANA Studio - Overview



What is SAP HANA Studio ?

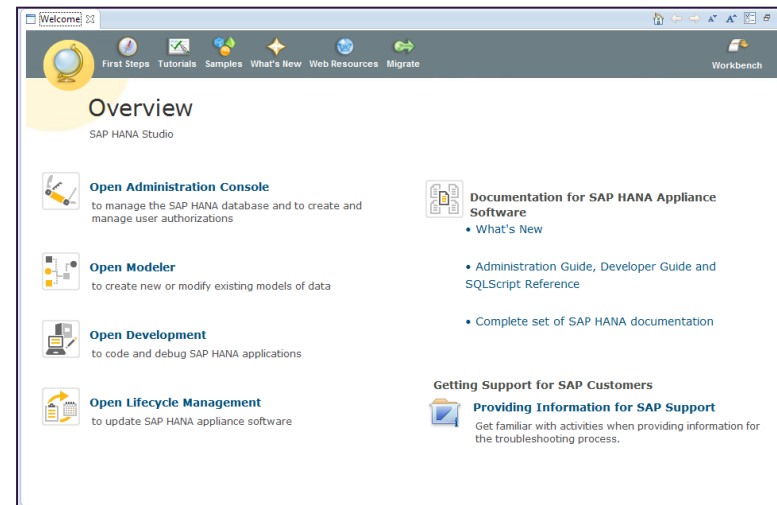
- Eclipse Open Integrated Development Environment (IDE) integrates different tools in a unified environment, big ecosystem of tools
- Extensibility, Multi-platform, broad adoption, ...
- Eclipse IDE-based developer environment for SAP HANA
- Integrated Environment for Administration and end-to-end application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



SAP HANA Studio - Overview



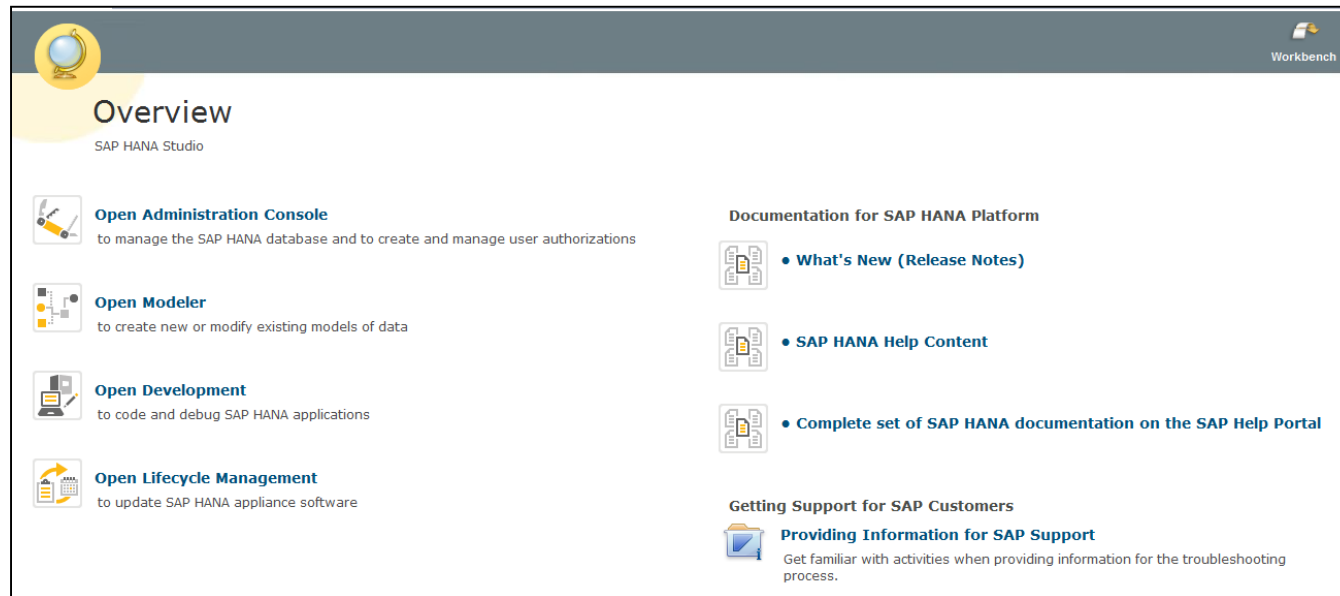
- Tools and Plug-Ins for working with SAP HANA
 - SAP HANA Studio Tools: basic components for design-time SAP HANA repository interaction and access to run-time objects in SAP HANA database catalog
 - Domain specific editors for HANA development artifacts, composed in eclipse perspectives like Administration, Development, Modeler, ...





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.





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.



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.



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.



[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](#)



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.

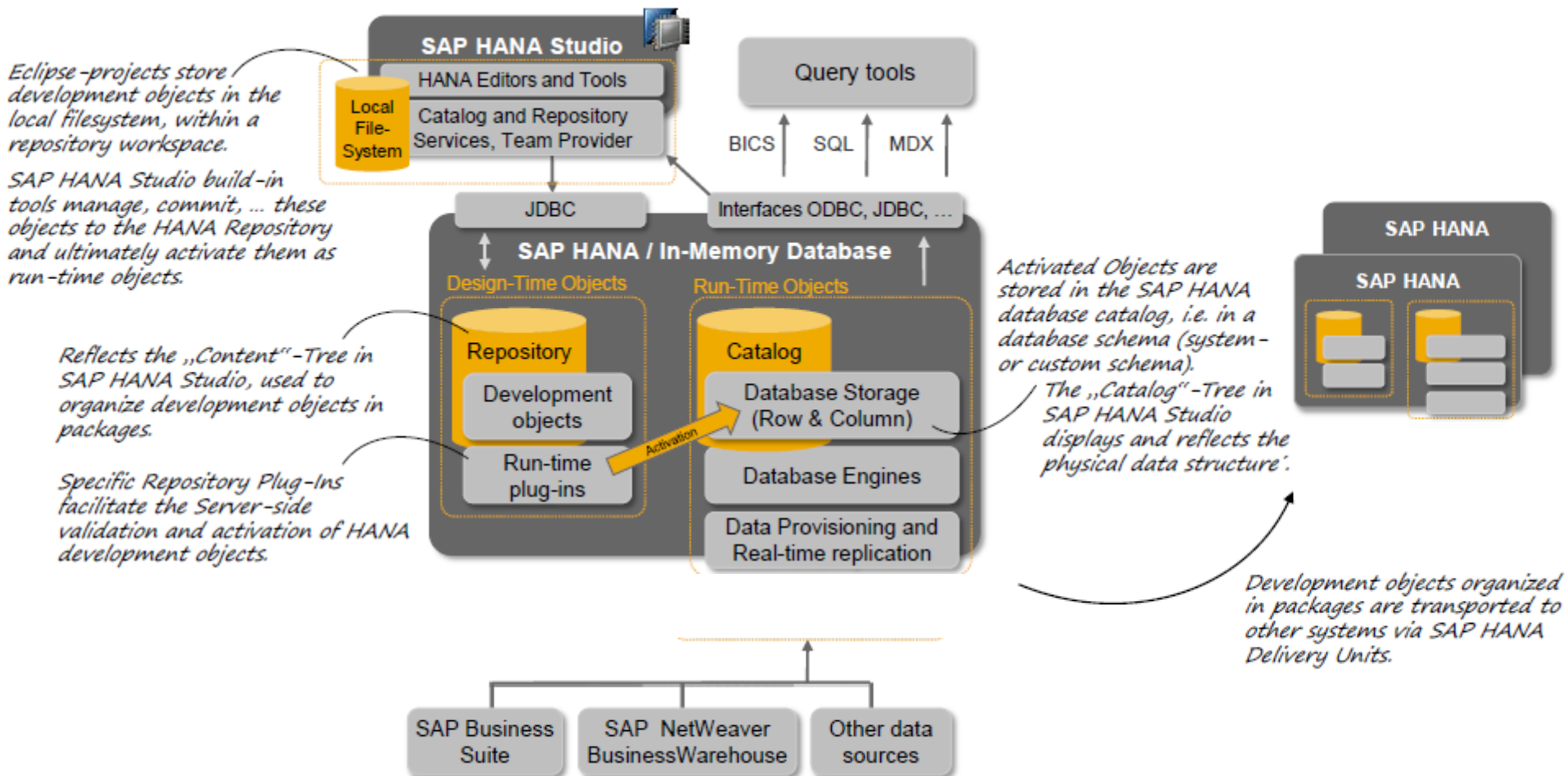
The HANA Client installation also provides JDBC, ODBC drivers.

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





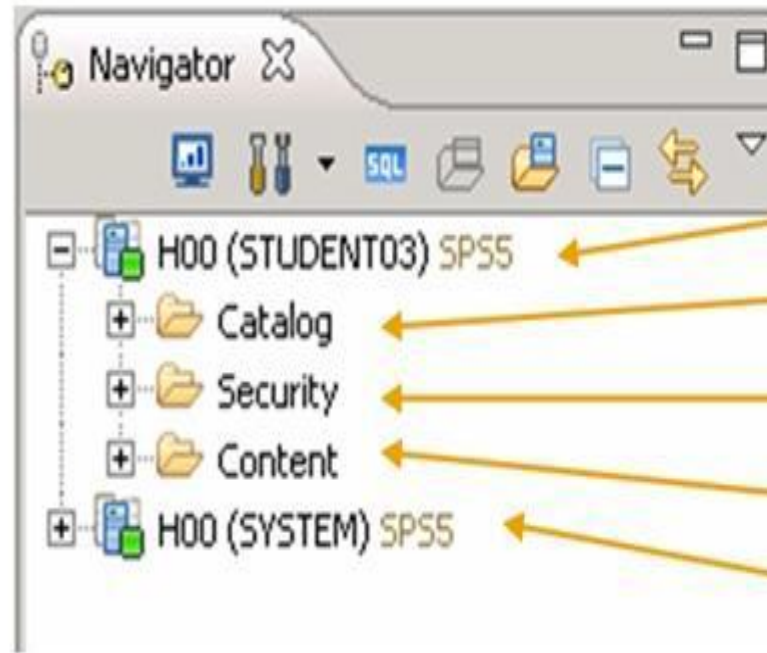
The **SAP HANA Systems view** is one of the basic elements within SAP HANA Studio.

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



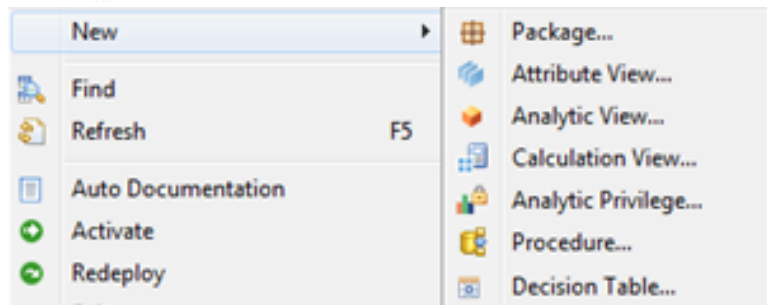
SAP HANA Instance (<USER>)

Database Tables

Security Settings

Information Models

Another SAP HANA Instance

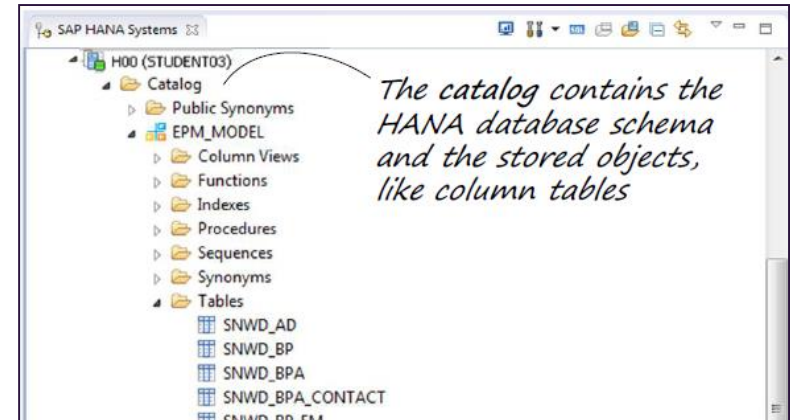


*From **Content** -> **New** -> **Package structure**, the **Editor** to **build new HANA Views** can be **called**.*

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

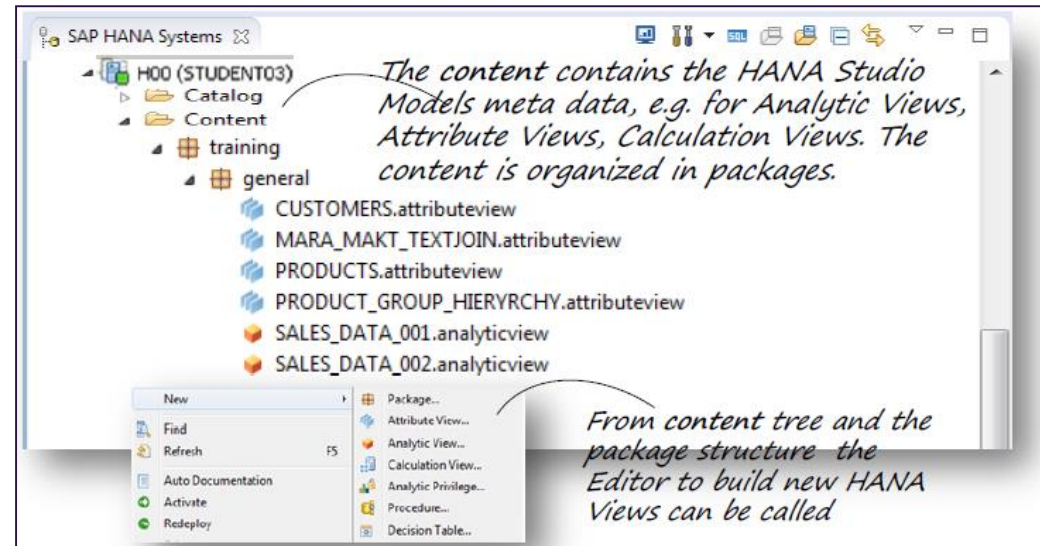


SAP HANA Studio – Catalog and Content



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.





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.



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.



[SAP HANA Academy - SAP HANA Express: Setup - Start and Stop HANA](#)



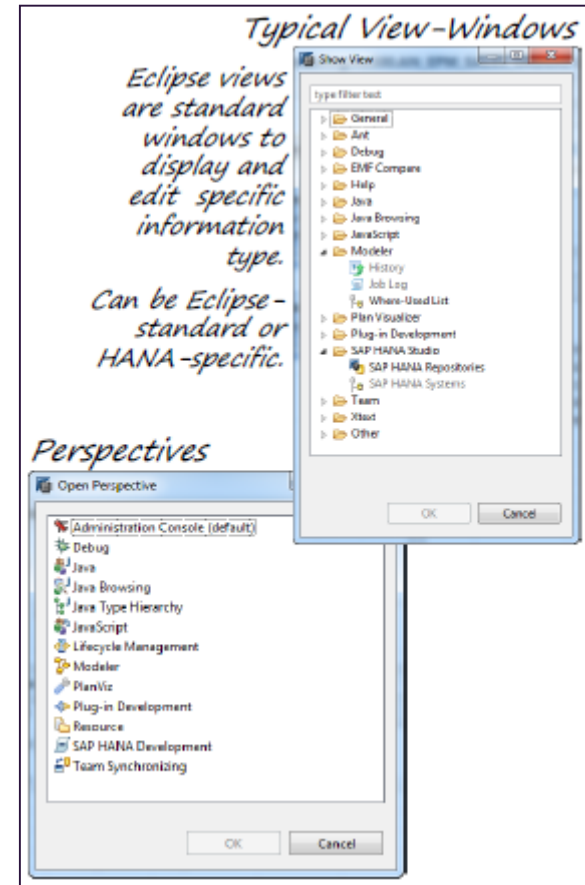
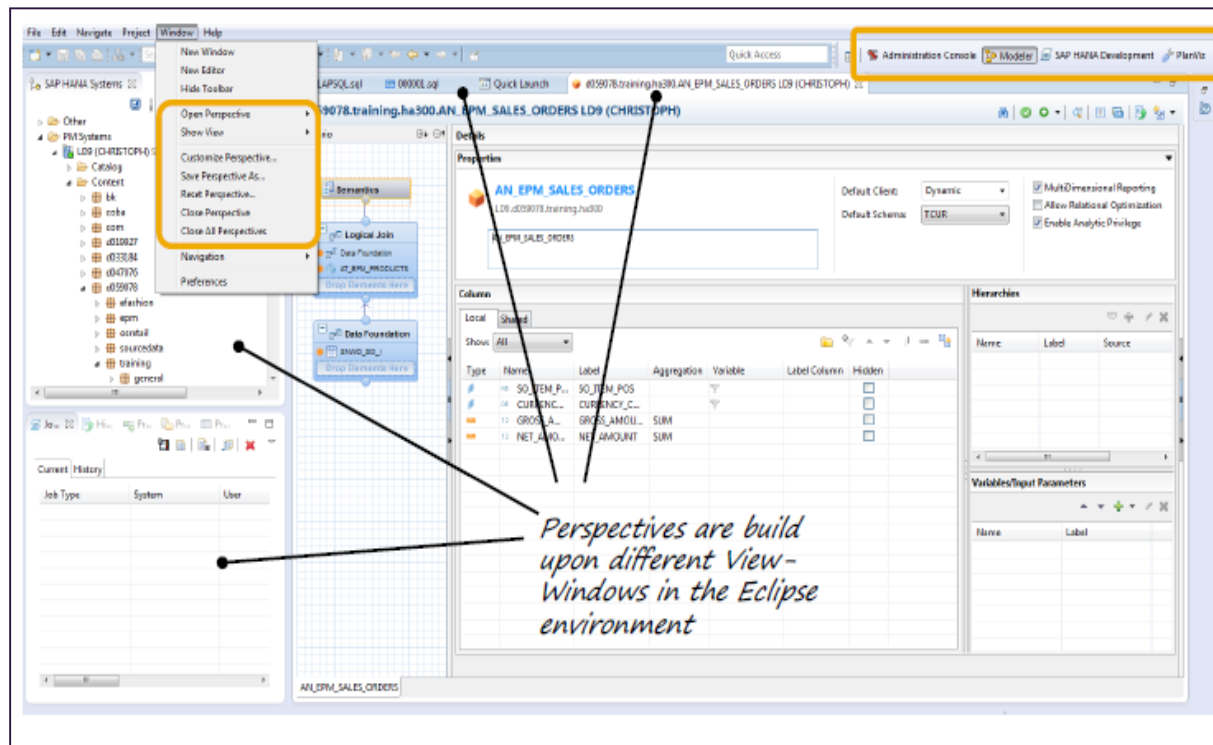
The SAP HANA Development-**Perspective** builds on two additional major views:

- 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?





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.

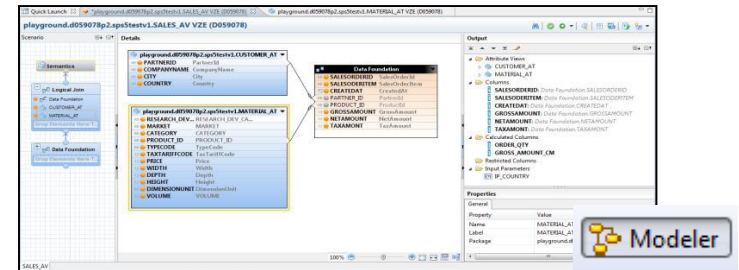
SAP HANA Studio – The Modeler Perspective



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



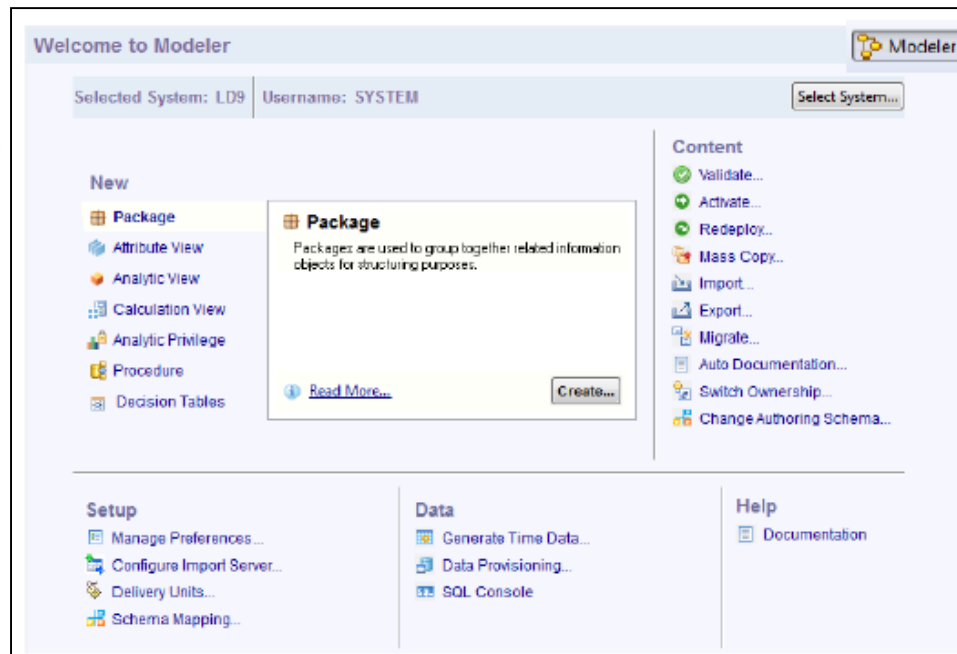
- SQL & SQLScript-based, Use of Application Function Library- and SQLScript-based Stored Procedures



SAP HANA Studio – The Modeler Perspective



The SAP HANA Modeler-perspective within the SAP HANA Studio
Quick Launch access to common modeling tools



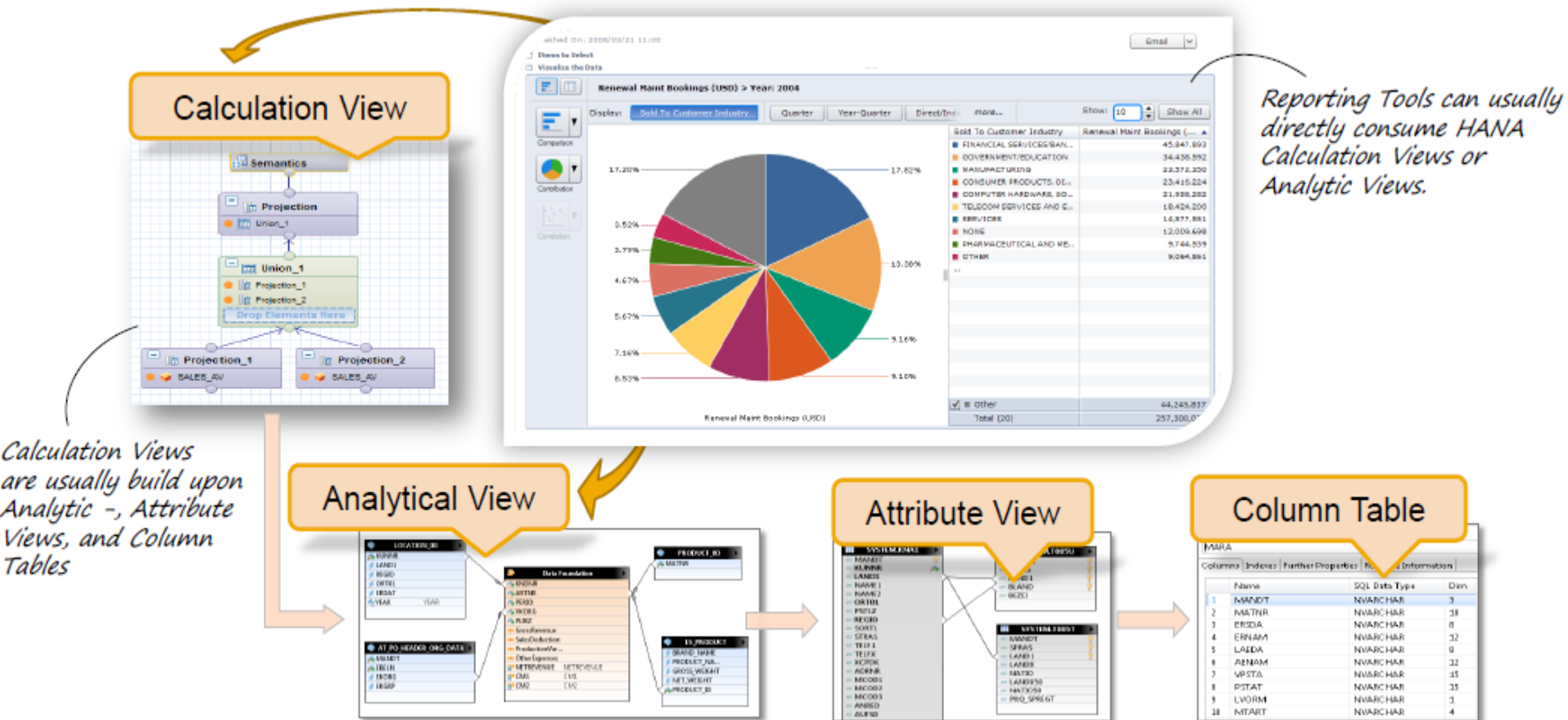
Actions or wizards for working with content

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

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

Managing the work environment and system connections

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).



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

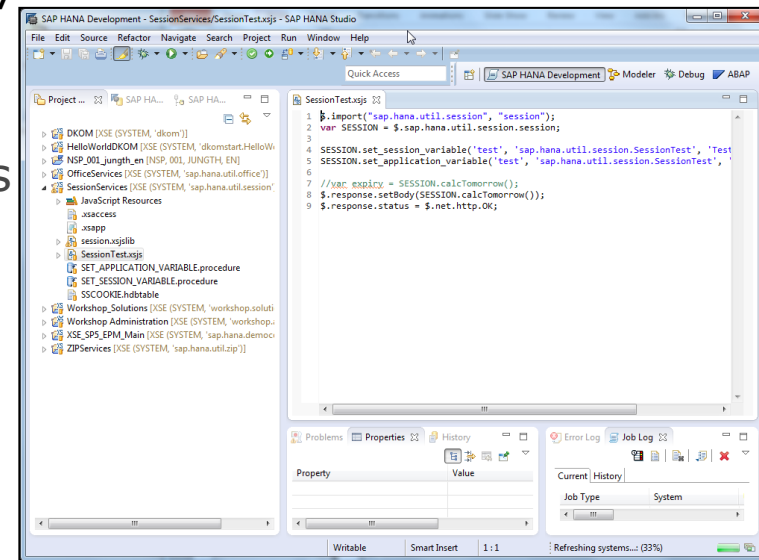
* - Attribute and Analytical Views are now depreciated in new version.

SAP HANA Studio –Development Perspective



The SAP HANA Development-perspective within the SAP HANA Studio

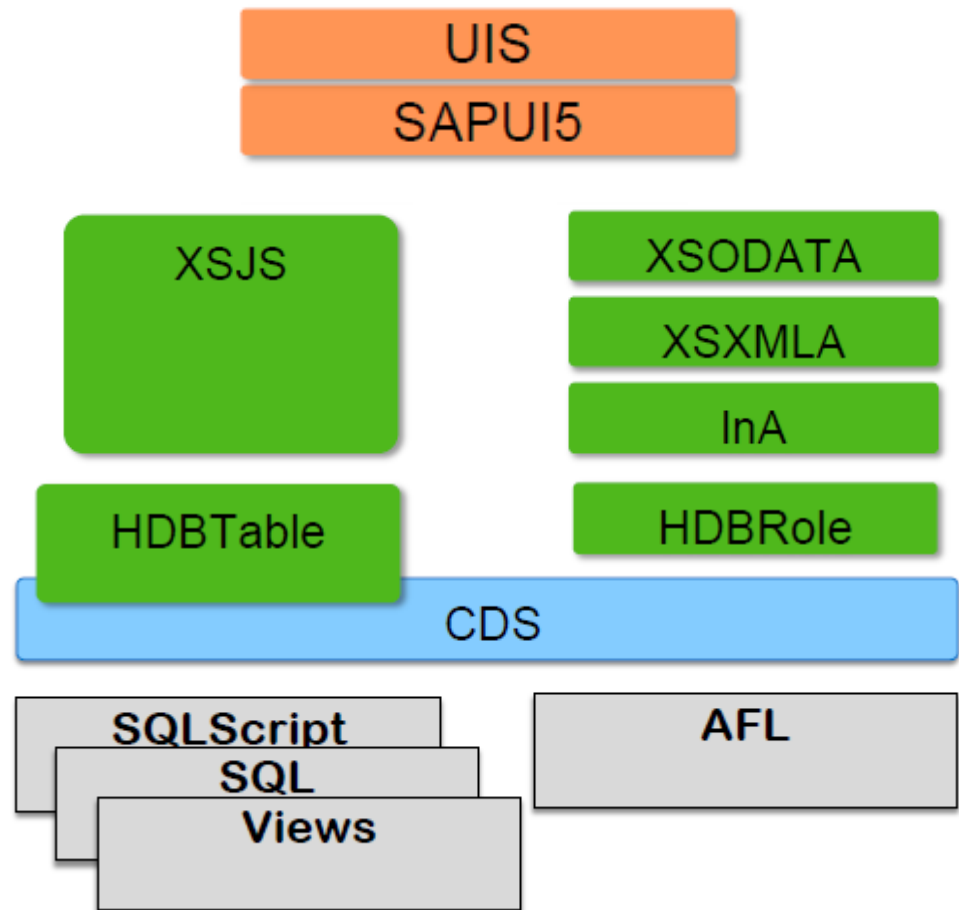
- Enables all HANA-related development scenarios and workflows
- Supporting all development artifacts necessary for building a HANA application, covering development, testing, debugging, supportability and lifecycle management.
- Integration into standard Eclipse IDE improves interoperability with external 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





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

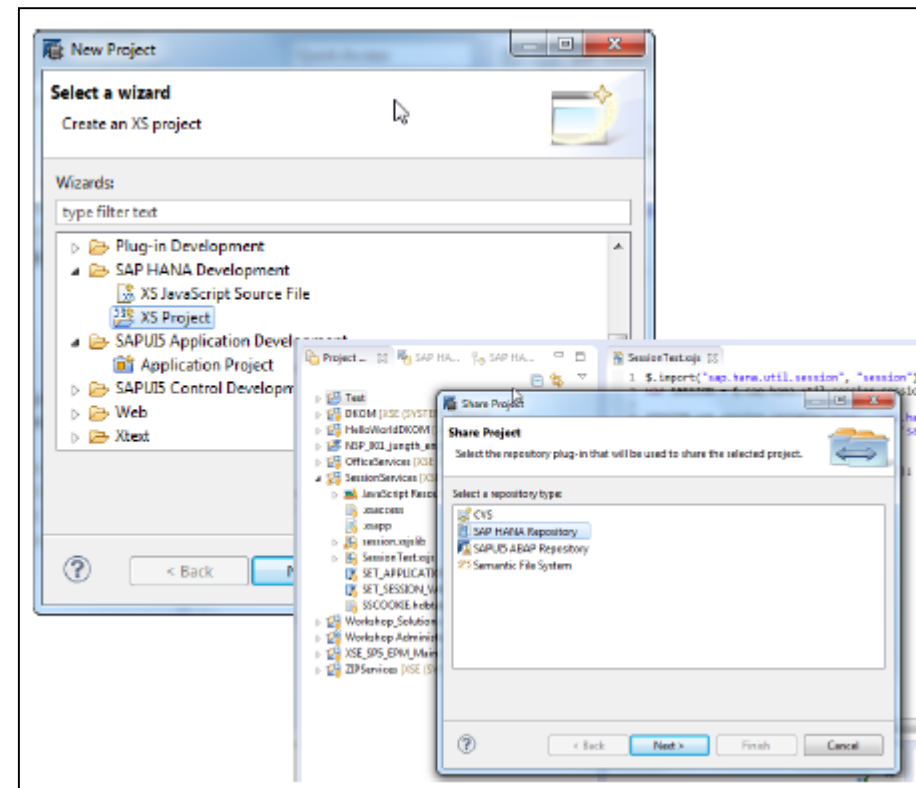


SAP HANA Studio – Application Development



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

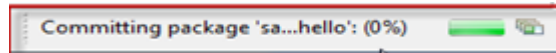


SAP HANA Studio – Application Development

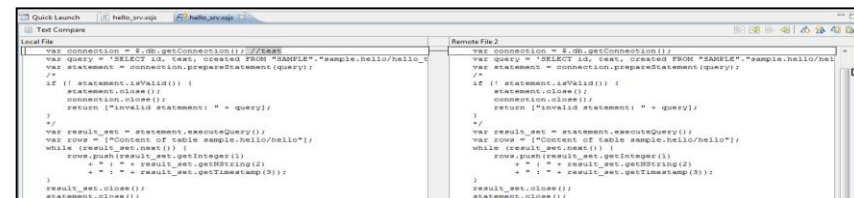
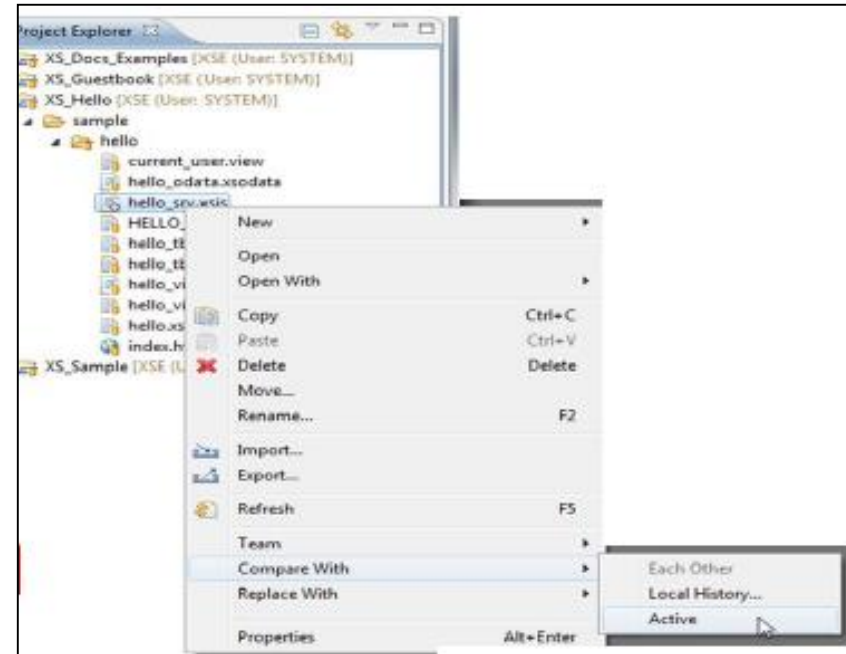


The SAP HANA Development-perspective within the SAP HANA Studio

- 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 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



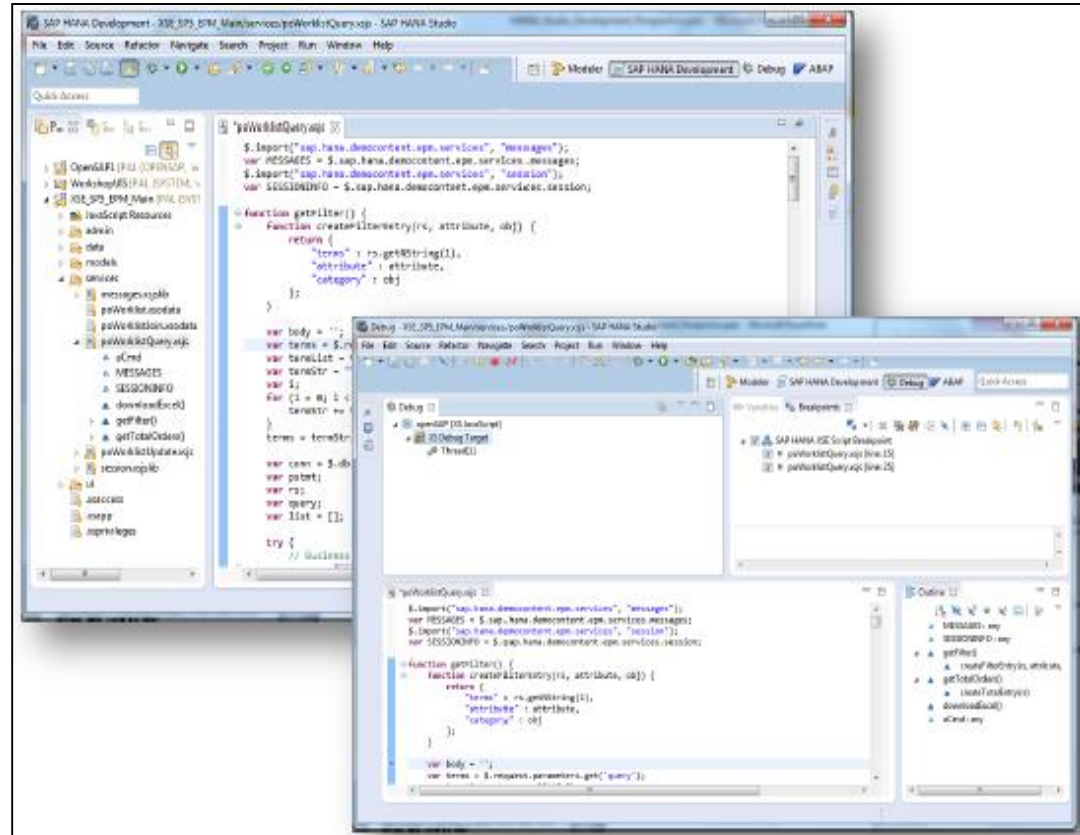
Editors utilized as part of the SAP HANA Development Perspective

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

A screenshot of the SQLScript editor in SAP HANA Studio. The code defines a procedure 'testproc' with three local variables: 'lv_schema_count', 'lv_table_count', and 'lv_view_count'. The 'lv_table_count' variable is highlighted in blue. A red arrow points to the first instance of 'lv_table_count' in the variable declaration, and another red arrow points to its usage in the 'select count(*) into lv_table_count from tables;' statement, demonstrating how double-clicking highlights all instances.

```
CREATE PROCEDURE testproc ( )
LANGUAGE SQLSCRIPT
SQL SECURITY INVOKER
READS SQL DATA AS

lv_schema_count integer := 0;
lv_table_count integer := 0;
lv_view_count integer := 0;

BEGIN
/*****
Write your procedure logic
*****/

select count(*) into lv_schema_count from schemas;
select count(*) into lv_table_count from tables;
select count(*) into lv_view_count from views;

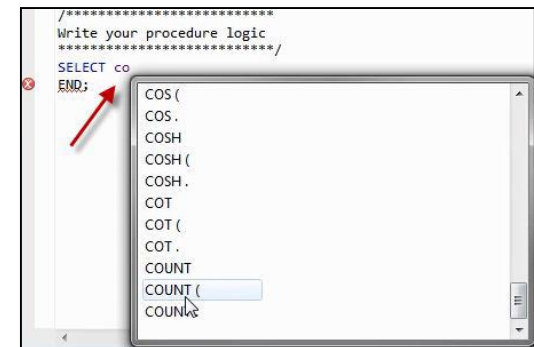
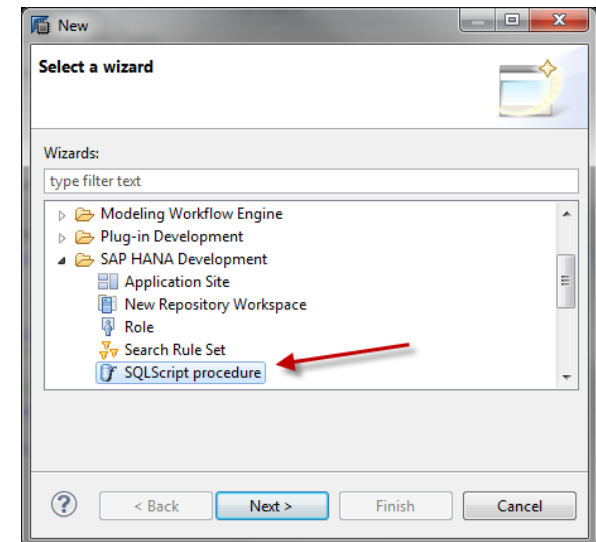
END;
```

Example: Syntactic code completion

A screenshot of the SQLScript editor showing syntactic code completion. The code is a template for a procedure with a comment 'Write your procedure logic'. The text 'select' is entered, and a red arrow points to the 'END' keyword in the completion list, which is highlighted in black.

```
/* *****
Write your procedure logic
***** */

select
END
```



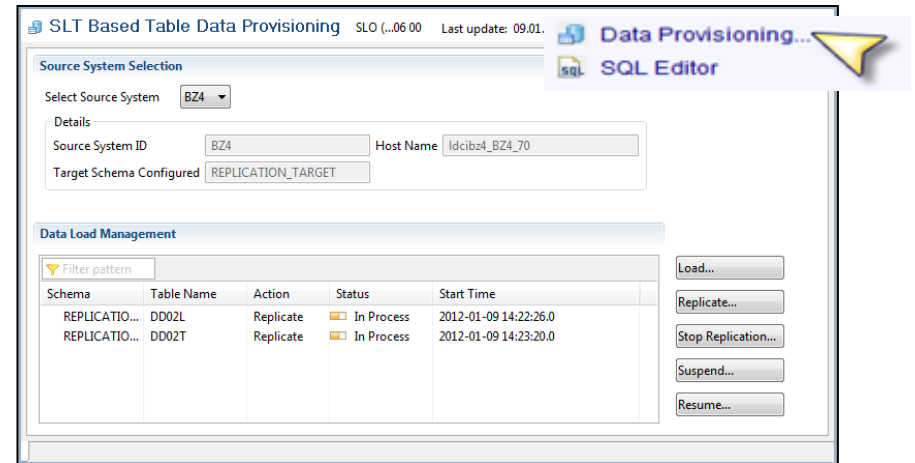
SAP HANA Studio – Data Provisioning Editor



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).



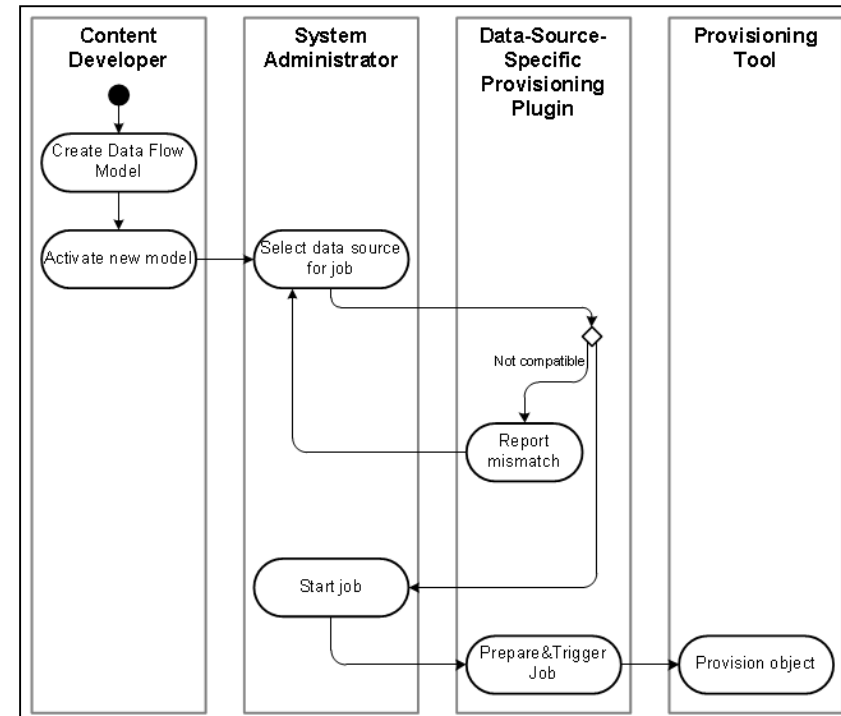
The SAP HANA Studio Data Provisioning Editor provides a unified model for different data source environments and tools

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.

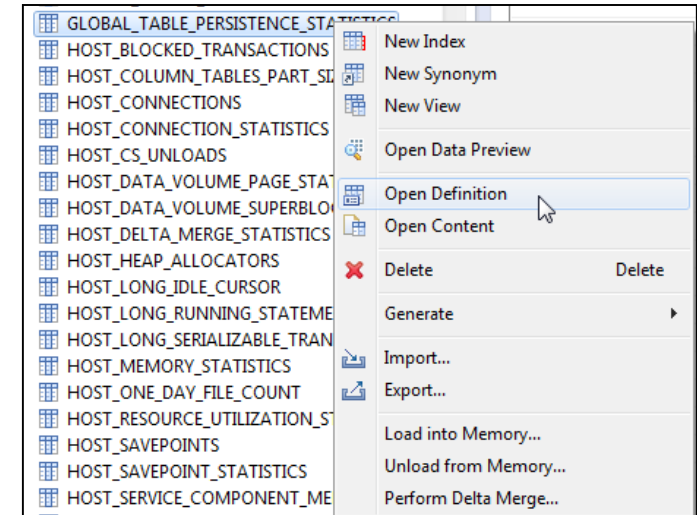


SAP HANA Studio – Table Administration



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.



ORG - _SYS_STATISTICS.GLOBAL_COLUMN_TABLES_SIZE

ORG (SYSTEM) wdf00272981a.dhcp.ber.sap.corp 00

Table Name:

Schema:

Type:

GLOBAL_COLUMN_TABLES_SIZE

_SYS_STATISTICS

Column Store

Columns

Indexes

Further Properties

Runtime Information

General

Total Memory Consumption (KB): 156

Number of Entries: 0

Size on Disk (KB): 200

Partition Specification: RANGE SNAPSHOT_ID 20000101-20130701,*

Memory Consumption in Main Storage (KB): 49

Memory Consumption in Delta Storage (KB): 107

Estimated Maximum Memory Consumption (KB): 158

Details for Table

Parts

Columns

Host:Port/Partition/Sub-Partition	Part ID	Range	Total Size (KB)	Main Size (KB)	Delta Size (KB)	Estimated Maximum Size (KB)	Number of Entries	Created
▲ wdf00272981a:30005								
1	1	20000101-20130701	78	25	54	79	0	04.06.2013 16:01:44
2	2		78	25	54	79	0	04.06.2013 16:01:44

SAP HANA Studio – Administration Perspective

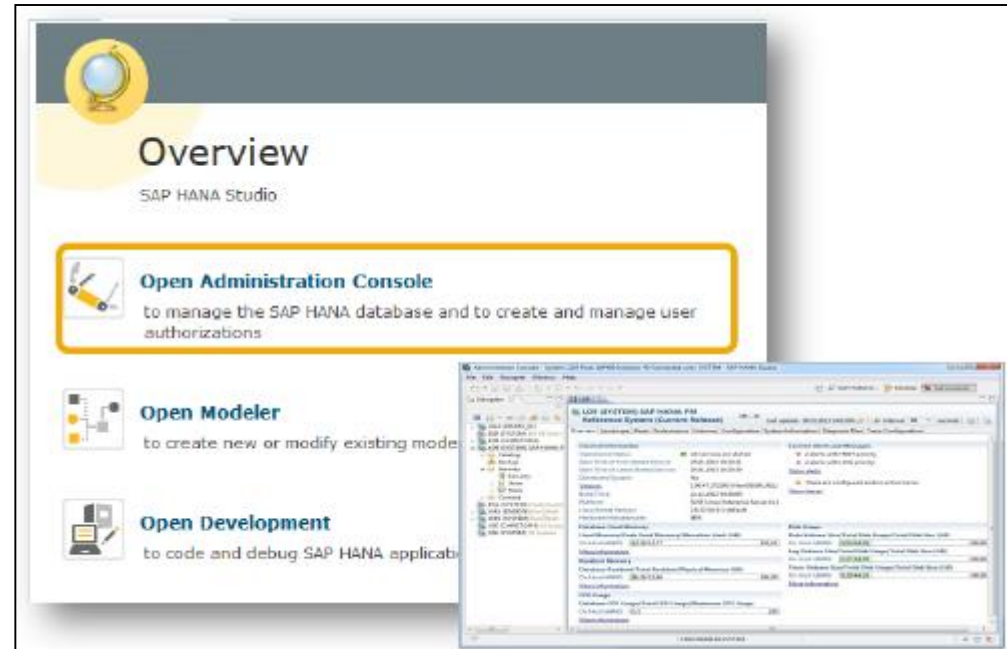


The SAP HANA Administration perspective within the SAP HANA Studio

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

Administration Console - System: LD9 Host: Id9400 Instance: 40 Connected user: SYSTEM - SAP HANA Studio

File Edit Navigate Window Help

SAP HANA D... Modeler Administrati...

LD9 (SYSTEM) SAP HANA PM
Reference System (Current Release) Id9... 40
Last update: 30.01.2013 14:03:00 Interval: 60 seconds

Overview Landscape Alerts Performance Volumes Configuration System Information Diagnosis Files Trace Configuration

General Information

Operational Status: All services are started
Start Time of First Started Service: 29.01.2013 18:30:51
Start Time of Latest Started Service: 29.01.2013 18:30:59
Distributed System: No
Version: 1.00.47.372360 (NewDB100_REL)
Build Time: 21.12.2012 04:39:09
Platform: SUSE Linux Enterprise Server 11.1
Linux Kernel Version: 2.6.32.54-0.3-default
Hardware Manufacturer: IBM

Database Used Memory

Used Memory/Peak Used Memory/Allocation Limit (GB)
On Host Id9400: 14,18/14,77 454,41
[More information](#)

Resident Memory

Database Resident/Total Resident/Physical Memory (GB)
On Host Id9400: 16,26/23,66 504,90
[More information](#)

CPU Usage

Database CPU Usage/Total CPU Usage/Maximum CPU Usage
On Host Id9400: 0/2 100
[More information](#)

Current Alerts and Messages

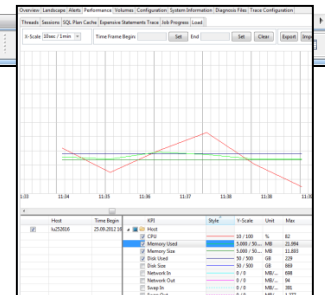
2 alerts with HIGH priority
2 alerts with LOW priority
[Show alerts](#)
There are configured and/or active traces
[Show traces](#)

Disk Usage

Data Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host Id9400: 3,03/44,29 196,86
[More information](#)

Log Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host Id9400: 2,27/44,29 196,86
[More information](#)

Trace Volume Size/Total Disk Usage/Total Disk Size (GB)
On Host Id9400: 0,30/44,29 196,86
[More information](#)



SAP HANA Studio – Administration Perspective



The SAP HANA Administration perspective within the SAP HANA Studio

Administration Tasks in the SAP HANA Systems View

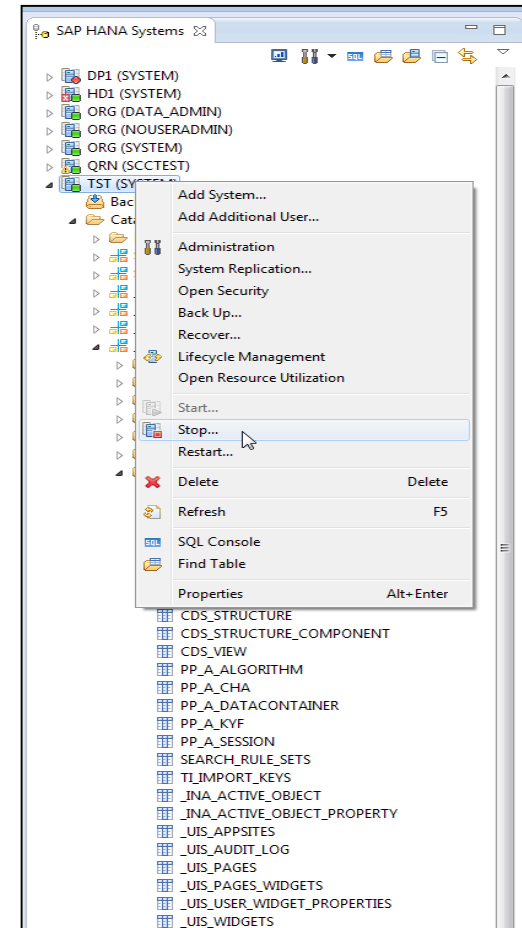
Hierarchical view of all the SAP HANA systems managed and their contents (database catalog, users, roles).

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

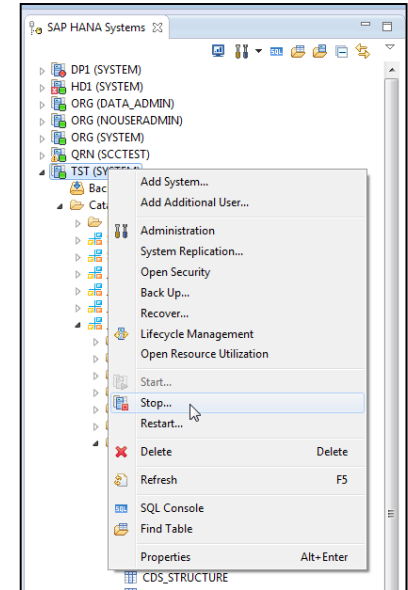


SAP HANA Studio – Administration Perspective



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:



ORG (SYSTEM) wdfd00272981a.dhcp.ber.sap.corp.00 Last Update: 03.06.2013 16:12:27 Interval: 60 Seconds

Overview | Landscape | Alerts | Performance | Volumes | Configuration | System Information | Diagnosis Files | Trace Configuration

General Information

Operational Status: ■ All services started
Start Time of First Started Service: 29.05.2013 15:48:12
Start Time of Latest Started Service: 29.05.2013 15:48:37
Distributed System: No
Version: 1.50.00.377543 (orange_COR)
Build Time: 21.05.2013 10:24:05
Platform: Windows 7
Hardware Manufacturer: Hewlett-Packard

Database Used Memory

Used Memory/Peak Used Memory/Allocation Limit (GB)
On Host wdfd00272981a: 6,80/11,15 21,59
[More Information](#)

Resident Memory

Database Resident/Total Resident/Physical Memory (GB)
On Host wdfd00272981a: 9,68/23,61 23,98
[More Information](#)

CPU Usage

Database CPU Usage/Total CPU Usage/Maximum CPU Usage
On Host wdfd00272981a: 1/5 100
[More Information](#)

Current Alerts and Messages

↑ 1 alert with HIGH priority
↓ 1 alert with LOW priority
[Show Alerts](#)
⚠ There are configured and/or active traces
[Show traces](#)

Disk Usage

Volume	Size (GB)	Total Disk Size (GB)
Data Volume Size/Total Disk Usage/Total Disk Size (GB)	4,29/39,66	465,76
Log Volume Size/Total Disk Usage/Total Disk Size (GB)	2,29/39,66	465,76
Trace Volume Size/Total Disk Usage/Total Disk Size (GB)	0,28/39,66	465,76

[More Information](#)

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 catalog, with history information on backups

The screenshot shows the 'Backup FIX (SYSTEM) PR1 - Local on Z600' window in SAP HANA Studio. The 'Overview' tab is selected, displaying the 'Status of Currently Running Data Backup'. A progress bar indicates 41.21% completion of a 265MB backup out of 643MB. Below this, a table shows the status of various services: Name Server (100.0% finished), Index Server (100.0% in progress), Statistics Server (0.0% in progress), and XSEngine (100.0% finished). To the right, the 'Last Successful Data Backup' summary is shown, including start time (05.06.2013 12:34:03), duration (00h 00m 12s), size (643,34 MB), and throughput (53,61 MB/s). Below the overview, the 'Backup Settings' tab is visible, showing 'File-Based Data Backup Settings' and 'Log Backup Settings'. The file-based settings include a destination path and a limit on maximum file size (500 GB). The log backup settings show a destination path and a 15-minute interval, with 'Enable Automatic Log Backup' checked.

Backup FIX (SYSTEM) PR1 - Local on Z600

Last update: 12:34:24

Overview Configuration Backup Catalog

▼ Status of Currently Running Data Backup

Progress of the currently running backup.

41,21% 265MB of 643MB

Backup is running - 2 of 4 services finished successfully

▼ Details

lu285957

Name Server	Execute Data Backup Finished	100.0%
Index Server	Execute Data Backup In Progress	100.0%
Statistics Server	Execute Data Backup In Progress	0.0%
XSEngine	Execute Data Backup Finished	100.0%

Last Successful Data Backup

Started: 05.06.2013 12:34:03 (Europe/Berlin)

Finished: 05.06.2013 12:34:16 (Europe/Berlin)

Duration: 00h 00m 12s

Size: 643,34 MB

Throughput: 53,61 MB/s

[More Information](#)

Overview Configuration Backup Catalog

► Backint Settings

File-Based Data Backup Settings

The default destination is used unless you specify a different destination. If you specify a new destination, ensure that the directory already exists before you start a data backup. For improved data safety, it is recommended to specify an external backup destination.

Destination: /usr/sap/FIX/HDB00/backup/data

You can specify the maximum size of service-specific data backup files. If a data backup exceeds the specified size, it is split across multiple files, which are written to sequentially. By default, data backups are not split across multiple files.

☒ Limit Maximum File Size

Maximum File Size: 500 GB

Log Backup Settings

Destination Type: ☒ File ☐ Backint

Destination: /usr/sap/FIX/HDB00/backup/log

Backup Interval: 15 Minutes

☒ Enable Automatic Log Backup

If you disable automatic log backup, the log area will continue to fill. A full log area will cause the database to hang.

The screenshot shows the 'Backup Catalog' tab in SAP HANA Studio. It displays a table of backup history with columns for Status, Started, Duration, Size, and Backup Type. There are three entries listed, all with a status of 'Success'.

Status	Started	Duration	Size	Backup Type
Success	03.06.2013 15:00:04	00h 00m 11s	661,73 MB	Data Backup
Success	03.06.2013 12:24:00	00h 00m 12s	641,08 MB	Data Backup
Success	07.05.2013 10:33:12	00h 00m 14s	770,03 MB	Data Backup

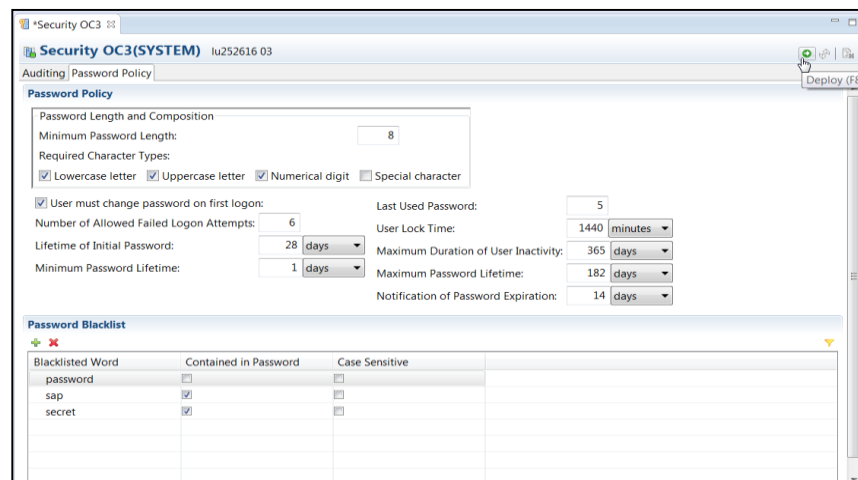
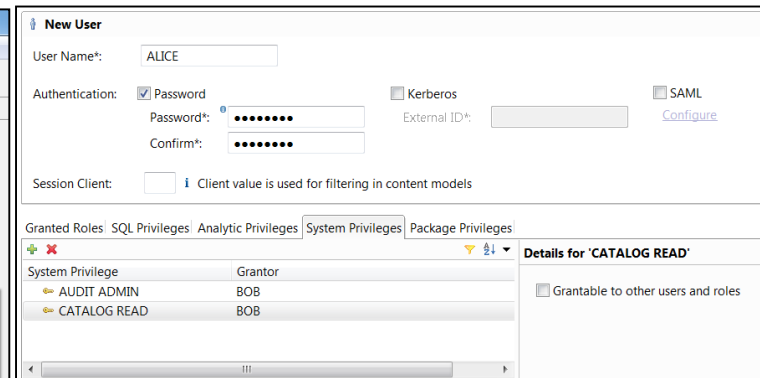
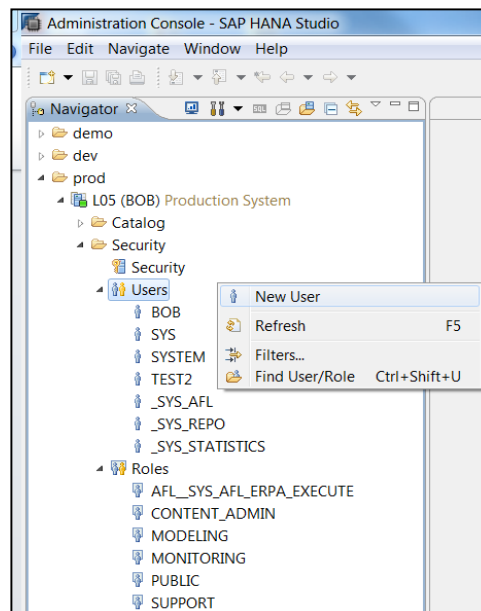
SAP HANA Studio – Security Administration



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

User and role management

- Definition of analytic privileges
- 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.

The screenshot shows the 'Auditing L05(SYSTEM)' configuration window. It includes a status bar indicating 'Audit configuration changed'. The 'System Settings for Auditing' section shows 'Auditing Status' set to 'Enabled' and 'Audit Trail Target' set to 'Syslog (default)'. The 'Audit Policies' section contains a table with the following data:

Policy	Policy Status	Audited Actions	Audited Actions St...	Audit Level	User	Target Object
users	Enabled	CREATE USER, DROP USER, ALTER USER	SUCCESSFUL	INFO		
connects	Enabled	CONNECT	SUCCESSFUL	INFO		
access	Enabled	INSERT, UPDATE, DELETE	SUCCESSFUL	INFO	ALICE	GLOBAL_MEMORY...

Buttons for 'Create Policy' and 'Delete Policy' are visible on the right side of the table.

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](#)



<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



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



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 _____.



Thank you