Running Analytics on SAP HANA and BW with MicroStrategy

Presented by: Trishla Maru
Agenda

• Overview
  • Relationship and Certification with SAP

• Integration to SAP BW
  • Overview with SAP BW
  • Import process and basic reporting on SAP BW

• Integration to SAP HANA
  • What is SAP HANA?
  • How does MicroStrategy connects to SAP HANA?
  • Data blending from HANA and any other source

• Modeling and Best Practices
  • Information Views in SAP HANA
  • Input Parameters in SAP HANA
  • Security
  • Best Practices for Modeling on HANA

• Demo: SAP HANA Modeling and Reporting

• Q&A
MicroStrategy is Tightly Integrated with SAP BW and HANA

OLAP BAPI Certification
- SAP BW Certification – Certified native access to SAP BW

Powered By NetWeaver Certifications
- Portal Certification - Integration with SAP NetWeaver Portal including single-sign on
- Security Certification - Certified integration with SAP roles and privileges to ensure data security
- Application Server Certification - Certified integration with SAP Web Application Server

HANA Certification
- SAP HANA Certification - MicroStrategy is officially certified for HANA by SAP.
Unleash the potential of your SAP data

Mobilize, Visualize and Analyze your SAP data with MicroStrategy

- Certified and reliable BI solution for SAP BW, SAP HANA and other SAP technologies
- Official member of the SAP Partner Edge program
- Helps you get the most insight out of your HANA data.
Leveraging Existent and Familiar BI Tools to Access Data From Multiple Containers within a Single Platform

Key BI Characteristics:
- INDUSTRY: Manufacturing
- BUSINESS USERS: 30,000
- BI COMPONENTS: 75+ Applications in Production
- DATABASE: Main EDW: Teradata. Other DB’s: SAP BW, Oracle, SQL Server, Sybase
- CUSTOMER SINCE: 2000
- APPLICATIONS: Customer Fulfillment Analysis, Distributor Pricing Analysis/Product Analysis, Global Procurement Reporting, Financial Analysis

Business Use:
- The Customer Fulfillment Planning & Logistics team, which is responsible for all aspects of delivery of products to their customers, uses the application from MicroStrategy on a daily basis to view key metrics regarding order response and order fulfillment.
- Dashboards are used to monitor backlog, execute change orders, implement decision workflows, and track order status.
- The Distributor Pricing Analysis application is used to report on, analyze, and monitor the pricing details and quotes.

Business Benefits:
- Customer wants IT to get out of the middle, enabling more “self-service” of BI. In addition, they want users to focus on the “what” not the “how”.
- Business Users preferred MicroStrategy front end tools over SAP Business Intelligence Tools.
- User can define and save Production Ad Hoc Reports outside of the SAP environment.
- Centralized Connectivity and Security for all Data Sources
- Users are leveraging MicroStrategy Office to deliver Reports to Microsoft Word, Excel, and PowerPoint
Manufacturing of Stainless Steel Products

Gaining Valuable Insight into Product Sales and Penetration

Key BI Characteristics:

INDUSTRY: Manufacturing, Retail
BI COMPONENTS: 1 Application; 100 Reports, 2 Dashboards, 18 Metrics, & 20 Attributes
DATABASE: SAP BW; 100 GB
CUSTOMER SINCE: 2012
APPLICATIONS: Sales Analysis, Product Analysis, Inventory Analysis

Business Use:

• Sales and Marketing department analyzes product sales by branch, product line, and time
• Monitor product line and individual product penetration to make intelligent pricing decisions
• Sales representatives access reports to learn about their customers’ purchase histories

Business Benefits:

• Insight into product penetration and how to adjust prices to maximize revenue
• Can calculate profit and inventory at the SKU level, providing great insight into sales
• Able to make better importing and manufacturing-related decisions
Key BI Characteristics:

- **INDUSTRY:** Software
- **BI COMPONENTS:** 1 Application; More than 15 VI Dashboards
- **USERS:** ~2000
- **DATABASE:** SAP HANA
- **CUSTOMER SINCE:** 2012
- **APPLICATIONS:** Sales Analysis

Business Use:

- Sales Operations Application that provides the field force management with forecast and sales reporting
- Corporate Dashboard solution including Mobile applications serving Finance, Field Sales and Solution Engineers.
- Financial Analysts using FPA style reporting and analysis.

Business Benefits:

- Better field force management, helping to reduce costs
- Able to make better Sales decisions
Agenda

• Overview
  • Relationship and Certification with SAP

• Integration to SAP BW
  • Overview with SAP BW
  • Import process and basic reporting on SAP BW

• Integration to SAP HANA
  • What is SAP HANA?
  • How does MicroStrategy connects to SAP HANA?
  • Data blending from HANA and any other source

• Modeling and Best Practices
  • Information Views in SAP HANA
  • Input Parameters in SAP HANA
  • Security
  • Best Practices for Modeling on HANA

• Demo: SAP HANA Modeling and Reporting

• Q&A
MicroStrategy Connects to SAP BW via OLAP BAPI’s

- Queries SAP BW via Multidimensional Expressions (MDX)
- Automatic metadata replication
- Import Users and Groups
- Security & Authentication
Three Steps to Creating MicroStrategy Reports on SAP BW

Define
• Define MicroStrategy Database Instance
• Define the cube connection type: SAP BW
• Provide login credentials

Import
• Import SAP BW Cube into MicroStrategy Metadata
• Optionally rename/remap objects

Create
• Create Grids/Graphs reports
• Use reports as datasets to create Report Services Documents
• Use documents to create Mobile Apps
Import Process: SAP BW

SAP Objects are translated into native MicroStrategy metadata objects

- SAP Characteristics → MicroStrategy Attributes
- SAP Key Figures → MicroStrategy Metrics
- SAP Variables → MicroStrategy Prompts
- SAP Hierarchies → MicroStrategy Hierarchies
- SAP Structures → MicroStrategy Attributes
Import Process Flow

Reports / Documents

Attributes / Metrics

Logical Tables

Physical Table

SAP BW Cube

Information for a report or dashboard can come from multiple cubes.

One Logical Table points to a single cube and the MDX source levels and measures are columns.
Agenda

- **Overview**
  - Relationship and Certification with SAP

- **Integration to SAP BW**
  - Overview with SAP BW
  - Import process and basic reporting on SAP BW

- **Integration to SAP HANA**
  - What is SAP HANA?
  - How does MicroStrategy connects to SAP HANA?
  - Data blending from HANA and any other source

- **Modeling and Best Practices**
  - Information Views in SAP HANA
  - Input Parameters in SAP HANA
  - Security
  - Best Practices for Modeling on HANA

- **Demo: SAP HANA Modeling and Reporting**

- **Q&A**
What is SAP HANA?

**SAP HANA** stands for High Performance Analytical Appliance. It’s an in-memory row and columnar based database management system.

**Key features:**
- An appliance which includes software licensing + SAP Partner hardware
- Based on Massively Parallel Processing architecture
- Both Columnar and Row based storage: optimized for both read/write
- In-memory database: OLAP and calculation operations done in-memory
- Data compression: up to 8x compression (in memory)

**Versions of HANA:**
- Standalone
- SAP HANA for SAP Netweaver BW
Connectivity to SAP HANA and SAP BW

Unified MicroStrategy Web Interface
- Report Services
- OLAP Services
- Analytics
- Narrowcast Server

MicroStrategy Intelligence Server
- MDX Engine
- ROLAP Engine

BAPI
- SAP BW

ODBC
- SAP HANA
Connectivity to SAP HANA
Three Different Ways to Connect to SAP HANA

1. Standalone SAP HANA Database
   - Data is stored directly in HANA or an ETL process moves data into HANA
   - MicroStrategy uses SAP HANA as any other relational source using ODBC/SQL
   - Model the HANA database schema using Architect

2. SAP HANA for SAP Netweaver BW via MDX
   - SAP BW is the data provider, with HANA as the data storage database
   - MicroStrategy connects to SAP BW through BAPI and issues MDX
   - The BW catalog is imported directly into MicroStrategy
Connectivity to SAP HANA
Three Different Ways to Connect to SAP HANA

3 SAP HANA for SAP Netweaver BW via SQL
- SAP BW is the data provider, with HANA as the data storage database. Expose BW Infoprovers (Infocubes, DSOs, Query Snapshots) as HANA information views
- MicroStrategy uses SAP HANA as any other relational source using ODBC/SQL
- Model the HANA database schema using Architect
- Requires MSTR 9.3.1 or newer, and also that HANA-optimized DSOs and InfoCubes already created by the customer.
## MicroStrategy Supports All Key Features of SAP HANA

<table>
<thead>
<tr>
<th>SAP HANA Database Features</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multicore CPU</td>
<td>Greater computation power</td>
</tr>
<tr>
<td>Row and column store</td>
<td>Faster aggregation</td>
</tr>
<tr>
<td>Partitioning</td>
<td>Analysis on large data sets</td>
</tr>
<tr>
<td>Non materialized views</td>
<td>No data duplication</td>
</tr>
<tr>
<td>Insert only on delta</td>
<td>Fast data loads</td>
</tr>
</tbody>
</table>

- Leverages HANA’s database features transparently
- Push down SQL takes advantage of HANA’s calculation engines
- Use the full analytical power of MicroStrategy
Data Blending
Combine Data from SAP BW, SAP HANA or Any Other Source

Business users and developers access and analyze data from SAP BW, SAP HANA or any other source as if it were a single database.

MapReduce Databases

Columnar Databases

DW Appliances: SAP HANA

Relational Databases

Multidimensional Databases: SAP BW

User / Departmental Data

Bring All Relevant Data to Decision Makers, No Matter Where It Resides
Agenda

• **Overview**
  • Relationship and Certification with SAP

• **Integration to SAP BW**
  • Overview with SAP BW
  • Import process and basic reporting on SAP BW

• **Integration to SAP HANA**
  • What is SAP HANA?
  • How does MicroStrategy connects to SAP HANA?
  • Data blending from HANA and any other source

• **Modeling and Best Practices**
  • Information Views in SAP HANA
  • Input Parameters in SAP HANA
  • Security
  • Best Practices for Modeling on HANA

• **Demo: SAP HANA Modeling and Reporting**

• **Q&A**
Information Views in SAP HANA

- SAP HANA introduces the technical concept of non-materialized views (or information views) to support data aggregation and OLAP analysis.
- Information views extend traditional database views to allow more complex joins of many tables or other information views.
Attribute Views
Act as Hierarchical Lookup Data in SAP HANA

- An Attribute View is a single view based on the relationships between attribute data contained in multiple tables. Separates Master Data modeling from Fact Data.
- These are analogous to Denormalized Lookup tables in MicroStrategy.
- MicroStrategy’s SQL Engine:
  - Recognizes this as a regular table
  - Does not automatically recognize the hierarchical structure of the Attribute view. The hierarchy can be defined manually in MicroStrategy.
  - Gives superior performance by using in-memory tables and a separate JOIN engine.
Analytical Views
Build the Data Foundation of a Star Schema in Memory
Calculation Views
Provide Advanced Slices of Data Using Analytic and Attribute Views
Four Steps to Creating MicroStrategy Reports on SAP HANA

1. Source Tables/Views

2. Import Table Metadata

3. Create Abstraction of Physical Layer

4. Build & Run reports/documents

Automatically generated HANA customized SQL...
Input Parameters in Information Views
Dynamic Filtering on HANA Data

- SAP HANA has the capability to parameterize modeling views. If the view has input parameters defined on it, these must be provided with an answer/value before a query can run.

- MicroStrategy supports input parameters in information views. These will be imported as prompts to the project tables in the Warehouse Catalog.
Input Parameters are Prompts in MicroStrategy

1. Import Table Metadata
2. Input Parameters imported as MSTR table prompts
3. Reports show prompts when parameterized views are queried; SQL includes input parameter clauses.
## SAP HANA Objects in MicroStrategy

<table>
<thead>
<tr>
<th>HANA Objects</th>
<th>MicroStrategy Objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attribute Views</td>
<td>Regular Table Objects</td>
</tr>
<tr>
<td>Analytical views</td>
<td>Regular Table Objects</td>
</tr>
<tr>
<td>Calculation Views</td>
<td>Regular Table Objects</td>
</tr>
<tr>
<td>Tables</td>
<td>Regular Table Objects</td>
</tr>
<tr>
<td>Attributes</td>
<td>Column</td>
</tr>
<tr>
<td>Measures</td>
<td>Column</td>
</tr>
<tr>
<td>Calculated Columns</td>
<td>Column</td>
</tr>
<tr>
<td>Hierarchies</td>
<td>Unused</td>
</tr>
<tr>
<td>Variables</td>
<td>Unused</td>
</tr>
<tr>
<td>Input Parameters</td>
<td>Table-level Prompts</td>
</tr>
</tbody>
</table>
Why Hierarchies and Variables from HANA are not used?

Why Hierarchies from HANA are not used?
Hierarchies in HANA only are supported for the ODBO/MDX standard and not supported using the ODBC driver. We are in parity with all other BI tools, that use SQL as query language.

Users can easily create hierarchies in MicroStrategy just like as with any other relational database.

Why Variables from HANA are not used?
Variables are basically filters and only affect the WHERE clause of the SQL statement. These are not processed by the HANA Engine and it’s the client’s responsibility to enforce it. MicroStrategy decided to not support it as of now.

Variables can easily be replaced with normal MicroStrategy prompts.
Security with SAP HANA


- Analytical Privilege restrictions in effect on a per-user basis (configured on SAP); we provide correct runtime user
  - Element browsing
  - Report execution
Best Practices
MicroStrategy Modeling for SAP HANA

• Always Import Table Names and Prefixes
  • Views in MicroStrategy appear with the name of their package
  • Always import the prefix, so that the MicroStrategy SQL engine can generate proper SQL against the views

• Calculation Views Best for Advanced Processing
  • Calculation views can perform poorly for element browsing
  • Avoid using them as lookup tables

• Analytical Views Best for Aggregate Fact Data
  • Should be used for “select *” statements

• Attribute Views Best for Element Browsing
  • Use as attribute lookup tables
How to tell the difference between HANA Views and Tables in MSTR
# MicroStrategy vs. Other Vendors

<table>
<thead>
<tr>
<th>Can the vendor connect to HANA?</th>
<th>MicroStrategy</th>
<th>SAP Business Objects</th>
<th>IBM Cognos</th>
<th>Oracle</th>
<th>Tableau</th>
<th>QlikTech</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the connection to HANA via ODBC, MDX, or other?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ODBC</td>
</tr>
<tr>
<td>ODBC/JDBC</td>
</tr>
<tr>
<td>JDBC</td>
</tr>
<tr>
<td>ODBC</td>
</tr>
<tr>
<td>ODBC/JDBC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the vendor certified by SAP for HANA?</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can the vendor connect to HANA via Enterprise Edition?</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can the vendor connect to HANA via Self-Service tool?</th>
</tr>
</thead>
<tbody>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
<tr>
<td>MicroStrategy</td>
</tr>
<tr>
<td>SAP Business Objects</td>
</tr>
<tr>
<td>IBM Cognos</td>
</tr>
<tr>
<td>Oracle</td>
</tr>
<tr>
<td>Tableau</td>
</tr>
<tr>
<td>QlikTech</td>
</tr>
</tbody>
</table>

---

#mstrworld
Agenda

• **Overview**
  • Relationship and Certification with SAP

• **Integration to SAP BW**
  • Overview with SAP BW
  • Import process and basic reporting on SAP BW

• **Integration to SAP HANA**
  • What is SAP HANA?
  • How does MicroStrategy connects to SAP HANA?
  • Data blending from HANA and any other source

• **Modeling and Best Practices**
  • Information Views in SAP HANA
  • Input Parameters in SAP HANA
  • Security
  • Best Practices for Modeling on HANA

• **Demo: SAP HANA Modeling and Reporting**

• **Q&A**
Demo: Connect and Report on SAP HANA

- Model Information Views in SAP HANA Studio
- Create a Database Connection in MicroStrategy to SAP HANA
- Import views/tables from SAP HANA in MicroStrategy
- Create a report to execute against SAP HANA
Agenda

• Overview
  • Relationship and Certification with SAP

• Integration to SAP BW
  • Overview with SAP BW
  • Import process and basic reporting on SAP BW

• Integration to SAP HANA
  • What is SAP HANA?
  • How does MicroStrategy connects to SAP HANA?
  • Data blending from HANA and any other source

• Modeling and Best Practices
  • Information Views in SAP HANA
  • Input Parameters in SAP HANA
  • Security
  • Best Practices for Modeling on HANA

• Demo: SAP HANA Modeling and Reporting

• Q&A
Questions?