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What is an Enterprise Data Warehouse?

Functions of the Enterprise Data Warehouse (EDW)

**Characteristics**
- Consolidates data across the enterprise
- Standardized data model
- Supports decision making

**Main Tasks**
- Define common semantics
- Harmonize data values
- Establish a ‘single version of truth’
- Provide a single, comprehensive source of current and historical information
- Keep copy of source data to ensure independency of source and support the unknown

**Data Sources**
SAP, non-SAP, On premise, Cloud

**Navigation**
- Big Data Hadoop
- Analytics
  - Business Intelligence, Predictive, Planning
- Data Warehouse
  - “Single Point of Truth”
- Data Sources
  - SAP, non-SAP, On premise, Cloud
- Feeding external systems
- Planning & Forecast
- Streaming
- Virtual Access
- ETL
- ELT
Modern Challenges for Enterprise Data Warehouses

**Data**

- **Different Locations** – cloud, data lakes
- **Additional Types** – behavioral data, IoT (Structured and Unstructured)
- **Higher Volumes** – > 40% growth YoY

**People**

- **Better Performance** – real-time results
- **Greater Scope** – predictive, agile analytics
- **Added Value** – new & unused data (> 85%)
SAP Business Warehouse - Today

16000+

SAP BW Customers

Vast majority use SAP BW as central EDW, harmonizing many source systems

8000+

SAP BW 7.3 / 7.4 Customers

Embedded into mission critical business processes

4000+

SAP BW on SAP HANA Customers

Continuously growing SAP HANA adoption

Strategy to run simple with SAP BW
SAP BW/4HANA – The Next Generation Data Warehouse

- **SAP BW 7.3** powered by SAP HANA
  - Performance optimization

- **SAP BW 7.4** powered by SAP HANA
  - Simplification and Virtualization

- **SAP BW 7.5** powered by SAP HANA
  - Simplification, HANA platform integration
  - Big Data scenarios

- **SAP BW/4HANA Starter Add-on**
  - For SAP BW/4HANA customers only
  - Use transfer tools to make system ready for SAP BW/4HANA
  - Requires SAP BW 7.5 SP 4 or higher

- **Introducing SAP BW/4HANA**
  - The Next Generation Data Warehouse
  - Built for Cloud and on premise
  - Logical Data Warehousing
  - Internet of Things
  - Integrates with Big Data

- **2012**
- **2013**
- **2015**
- **2016**
THE NEXT GENERATION DATA WAREHOUSE
ANNOUNCING SAP BW/4HANA

SAP BW/4HANA...
• is a new data warehouse solution
• is highly optimized for SAP HANA
• solves analytics problems in seconds that take other systems days
• accelerates solution development
• means you have one version of the truth
• is ready for the internet of things at petabyte scale

The transition from standard SAP BW to SAP BW/4HANA can be compared with the transition of the SAP Business Suite to SAP S/4HANA. As part of this transition, SAP BW/4HANA will drastically reduce the number of data objects to be stored and maintained, similar to the elimination of aggregates in SAP S/4HANA.
SAP BW/4HANA
Benefit from SAP Modern Data Warehouse Capabilities

Business Agility
The flexibility to compete in real time

Cloud Ready
Prototype new ideas on a Cloud that grows with your business

Modern Data Warehouse
High performance, future-proof platform for all new challenges
### SAP BW/4HANA Highlights

<table>
<thead>
<tr>
<th>Simplicity</th>
<th>Openness</th>
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<tbody>
<tr>
<td></td>
<td>• Native SQL access</td>
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<tr>
<td>Simplified Data Structures</td>
<td>• Simplified Data Integration</td>
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<td>Simplified Data Flows</td>
<td>• Consolidated Source Systems</td>
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<tr>
<td>Data Lifecycle Management</td>
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<table>
<thead>
<tr>
<th>Modern Interface</th>
<th>High Performance</th>
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<tbody>
<tr>
<td>• New Business User UX</td>
<td>• In-Memory Data Warehousing</td>
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<tr>
<td>New Modeler UX</td>
<td>• Algorithm Pushdown</td>
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<tr>
<td>• New Administrator UX</td>
<td>• Advanced Analytics</td>
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Simplicity

Simplified Data Structures
Simplified Data Flows
Data Lifecycle Management
SAP BW/4HANA – Simplified Data Structures

- Number of Modelling object types reduced from 10 to 4
- No complex data structures (extended star schema)
- Field or InfoObject based Modelling
- Greater control of data persistency and virtualization
- Support for external, structured and unstructured data
SAP BW/4HANA – Simplified Data Flows
From Layered Scalable Architecture (LSA) to LSA++

Classic SAP BW (LSA)
- Source
- Staging
- Raw DWH
- Integrated DWH
- Data Marts
- Virtualization

SAP BW/4HANA (LSA++)
- Source
- Staging
- Raw DWH
- Integrated DWH
- Data Marts
- Virtualization, Virtual Data Marts

- top down Modelling
- mandatory layers
- bottom up Modelling
- optional layers depending on required business and service level
• Report at any layer of the Data Warehouse with speed and flexibility
SAP BW/4HANA – Simplified Data Flows

- Report at any layer of the Data Warehouse with speed and flexibility
- Virtually combine data across layers
SAP BW/4HANA – Simplified Data Flows

- Report at any layer of the Data Warehouse with speed and flexibility
- Virtually combine data across layers
- Business and service level driven

SAP BW/4HANA (LSA++)

- Virtual Data Marts
- Integrated DWH
- Raw DWH
- Staging
- Source
SAP BW/4HANA – Simplified Data Flows

- Report at any layer of the Data Warehouse with speed and flexibility
- Virtually combine data across layers
- Business and service level driven
- Combining bottom-up and top-down modelling approaches – allows for agile and flexible development
• Non-hierarchical, loosely coupled Information Areas
• Clear service definitions
• Communication, Integration, Orchestration rules
SAP BW/4HANA – Data Lifecycle Management

Scale SAP BW/4HANA using in-built data temperature management

SAP HANA

Master Node
Slave 1
Slave 3
Slave 2
Standby
Extension Slave 1
Extension Slave 2
Extension Slave 3

SAP IQ / Hadoop

Hot ➔ SAP HANA in-memory
Warm ➔ SAP HANA Extension Node
Cold ➔ Near-line Storage

Default
By aDSO or partition
By data time slice
Openness
Native SQL access
Simplified Data Integration
Simplified Source Systems
SAP BW/4HANA logic and data can be exposed to SAP HANA

Automatic generation of SAP HANA views allows:

- SQL logic on top of generated views
- Combined data from native SAP HANA
- SQL access for front-end tools

Generated SAP HANA views are part of SAP BW/4HANA lifecycle and SAP BW/4HANA security
Leverages SAP HANA EIM to provide new data provisioning opportunities

- Replicate data in real-time (HANA SDI based replication or via ODP - especially with ODP-SLT)
- Access data virtually
- Load data using optimized processing

Or automatically switch between the different methods
SAP BW/4HANA – Simplified Source Systems

Number of Source System Types reduced from 10 to 4

- HANA Source System for all database and file connectivity
- ODP Source System for SAP backend systems and SLT
- File Source System
- Big Data Source System

* Planned
** Connectivity to Spark (SQL) Destination already possible with the HANA Source System in BW 7.50 on HANA
Modern Interface

New Business User UX
New Modeler UX
New Administrator UX
SAP BW/4HANA – New Modelling User Interface

SAP GUl

SAP BW/4HANA Modelling Tools integrated with SAP HANA Studio
SAP BW/4HANA – New Business User Interface

BW Business Explorer (BEx)

SAP BusinessObjects Analysis Office

SAP BusinessObjects Design Studio

SAP BusinessObjects Cloud
SAP BW/4HANA – New Interface for Administrators

ABAP Process Chain Monitor

UI5-based Process Chain Monitor
High Performance

In-Memory Data Warehousing

Algorithm Pushdown

Advanced Analytics
SAP BW/4HANA – In-memory Data Warehousing

Query all data at the speed of SAP HANA

- No Aggregates or Roll-up Processes
- No Performance Specific Objects
- Fewer Indexes
- Faster Loading and Processing
Significant performance gain through push-down of operations/calculations

- OLAP Engine, complex query calculations (e.g. exception aggregation)
- Planning functions (e.g. disaggregation)
- Data management (e.g. transformation logic)
Enhance data with Advanced Analytics using HANA specific libraries (AFL), R-Script or a custom HANA procedure

- Predictive
- Text Analysis
- Data Mining
- Machine Learning
SAP BW/4HANA – Architecture

Key Features

- Lean application server
- SAP BW/4HANA Modelling environment built to run on SAP HANA
- No Java stack required
- SAP BW/4HANA - On-Premise or in the Cloud

* Lean ABAP Application Server
Paths to SAP BW/4HANA

New Installation
System Conversion
Landscape Transformation
Paths to SAP BW/4HANA

- SAP BW on any DB
- SAP BW on SAP HANA
- SAP BW 7.5 on SAP HANA + SAP BW/4HANA Starter Add-On
- System Consolidation & Carve Out *
- New System
- New Install

* Planned for piloting in Q1 2017
Path to **Convert Your System**

- **Step 1:** Classic DB migration and upgrade to latest SAP BW release using DMO
- **Step 2:** Implement add-on, use transfer tools to make system BW/4HANA-ready
- **Step 3:** System conversion (like an upgrade)

- All BW customers can start NOW
- Customers on SAP BW powered by SAP HANA have a head-start
- Customers can convert at their own pace – benefiting gradually from HANA-optimizations
Add-On “SAP BW/4HANA Starter” (f.k.a. “SAP BW, Edition for SAP HANA”) is prerequisite for In-Place Conversions

- Unsupported object types cannot be created
- Existing scenarios can continue running as before
- Unsupported objects can be changed when adding them to a white list

- No imports of unsupported object types
- White list is not relevant any more

- System is ready for component upgrade
Next Steps
SAP BW/4HANA Transfer Toolbox *

In-Place Conversion

- Full system conversion of an existing SAP BW installation (keep same SID)
- Step-by-step in-place transfer of classic objects into their HANA-optimized counterparts
- Followed by a component upgrade to SAP BW/4HANA
- Start release: SAP BW 7.50 SP 6 powered by SAP HANA

Remote Conversion

- Start with SAP BW/4HANA as green field installation (new SID)
- Support of carve-out and consolidation scenarios
- Transport data models and remote data transfer
- Risk mitigation due to parallel system
- Start release: SAP BW 7.0 or higher on AnyDB

* Availability Planned for Q2/2017
Migration to SAP BW/4HANA
Outlook – Conversion Support – In-Place Conversion

• Select scope
• Convert classic objects – including data – and adjust DTPs/Transformations
• System is ready for conversion? → Upgrade to SAP BW/4HANA

• Import transport – moving data to new objects
• System is ready for conversion? → Upgrade to SAP BW/4HANA
Transport selected objects
conversion during import in SAP BW/4HANA
Transfer data of selected objects
Transport of converted objects

Transfer data of selected objects
SAP BW/4HANA

Further Information
More Information about SAP BW4/HANA

SAP BW/4HANA Landing Page
http://sap.com/bw4hana

SAP BW/4HANA Community – Product Page
http://sap.com/bw4hana10

SAP BW/4HANA Documentation
http://help.sap.com/bw4hana10

Why #BW/4HANA?
http://scn.sap.com/community/bw-hana/blog/2016/09/05/why-bw4hana

SAP BW/4HANA FAQ
http://go.sap.com/documents/2016/08/c4458a08-877c-0010-82c7-eda71af511fa.html

SAP First Guidance – SAP BW/4HANA complete functional scope (CFS)
http://www.sap.com/documents/2016/09/b001a9de-8a7c-0010-82c7-eda71af511fa.html

Replay of the SAP BW/4HANA Launch Event
Thank you
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABAP</td>
<td>Advanced Business Application Programming</td>
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<td>ADSO</td>
<td>Advanced DataStore Object</td>
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<td>AFL</td>
<td>Application Function Library</td>
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<td>AGS</td>
<td>SAP Active Global Support</td>
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<tr>
<td>ASE</td>
<td>SAP Adaptive Server Enterprise Database</td>
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<tr>
<td>AWS</td>
<td>Amazon Web Services</td>
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<tr>
<td>BAPI</td>
<td>Business Application Programming Interface</td>
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<td>BEx</td>
<td>Business Explorer</td>
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<tr>
<td>BI</td>
<td>Business Intelligence</td>
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<td>BW</td>
<td>Business Warehouse</td>
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<tr>
<td>C4C</td>
<td>Cloud for Customers</td>
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<tr>
<td>CRM</td>
<td>Customer Relationship Management</td>
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<tr>
<td>DB</td>
<td>Database (Connect)</td>
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<td>DLM</td>
<td>Data Lifecycle Management</td>
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<tr>
<td>DMO</td>
<td>Database Migration Option</td>
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<tr>
<td>DSO</td>
<td>DataStore Object</td>
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<td>DW</td>
<td>Data Warehouse</td>
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<td>DWH</td>
<td>Data Warehouse</td>
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<td>DWaaS</td>
<td>Data Warehouse as a Service</td>
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<tr>
<td>ECC</td>
<td>Enterprise Core Component</td>
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<td>EDW</td>
<td>Enterprise Data Warehouse</td>
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<tr>
<td>EIM</td>
<td>Enterprise Information Management</td>
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<tr>
<td>ELT</td>
<td>Extract, Load, Transform</td>
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<tr>
<td>ERP</td>
<td>Enterprise Resource Planning</td>
</tr>
<tr>
<td>ETL</td>
<td>Extract, Load, Transform</td>
</tr>
<tr>
<td>FI,CO,SD,MM,HR</td>
<td>Financials, Controlling, Sales &amp; Distribution, Material Management, Human Resources</td>
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<tr>
<td>HAP</td>
<td>SAP HANA Analytic Process</td>
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<td>HEC</td>
<td>SAP HANA Enterprise Cloud</td>
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<tr>
<td>HTML</td>
<td>Hypertext Markup Language</td>
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<tr>
<td>IQ</td>
<td>SAP IQ Database</td>
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<tr>
<td>IoT</td>
<td>Internet of Things</td>
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<tr>
<td>LSA</td>
<td>Layered Scalable Architecture</td>
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<tr>
<td>LSA++</td>
<td>Layered Scalable Architecture for SAP HANA</td>
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<tr>
<td>ML</td>
<td>Machine Learning</td>
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<tr>
<td>NLS</td>
<td>Near-line Storage</td>
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<td>ODP</td>
<td>Operational Data Provisioning</td>
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<td>ODQ</td>
<td>Operational Delta Queue</td>
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<tr>
<td>ODS</td>
<td>Operational DataStore</td>
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<tr>
<td>OLAP</td>
<td>Online Analytic Processing</td>
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<td>PSA</td>
<td>Persistent Staging Area</td>
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<td>RDBMS</td>
<td>Relational Database Management System</td>
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<td>SDI</td>
<td>SAP HANA smart data integration</td>
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<td>SLO</td>
<td>System Landscape Optimization</td>
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<td>SLT</td>
<td>SAP Landscape Transformation</td>
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<tr>
<td>SOAP</td>
<td>Simple Object Access Protocol</td>
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<td>SP</td>
<td>Support Package</td>
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<td>SPS</td>
<td>Support Package Stack</td>
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<tr>
<td>SQL</td>
<td>Structured Query Language</td>
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<td>SUM</td>
<td>Software Update Manager</td>
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<td>SWPM</td>
<td>Software Provisioning Manager</td>
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<tr>
<td>UD</td>
<td>Universal Data (Connect)</td>
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<tr>
<td>UI</td>
<td>User Interface</td>
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<tr>
<td>UI5</td>
<td>SAP UI Development Toolkit for HTML5</td>
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<tr>
<td>UX</td>
<td>User Experience</td>
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