Tips & Tricks for Implementing SAP HANA with SAP BusinessObjects

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About Me

- Jonathan Haun Consulting Manager with Decision First Technologies. http://www.decisionfirst.com
- Over 12 years implementing BI solutions utilizing Crystal Reports and BusinessObjects
- Experience with multiple ETL tools and RDMS
- Certified in multiple versions of BusinesObjects Enterprise, BusinessObjects Data Services and BusinessObjects Reporting tools
- Certified SAP Trainer
- Over one year of experience implementing BOBJ and BW solutions on SAP HANA
- Manager of the “All Things BOBJ BI blog”. http://bobj.sapbiblog.com
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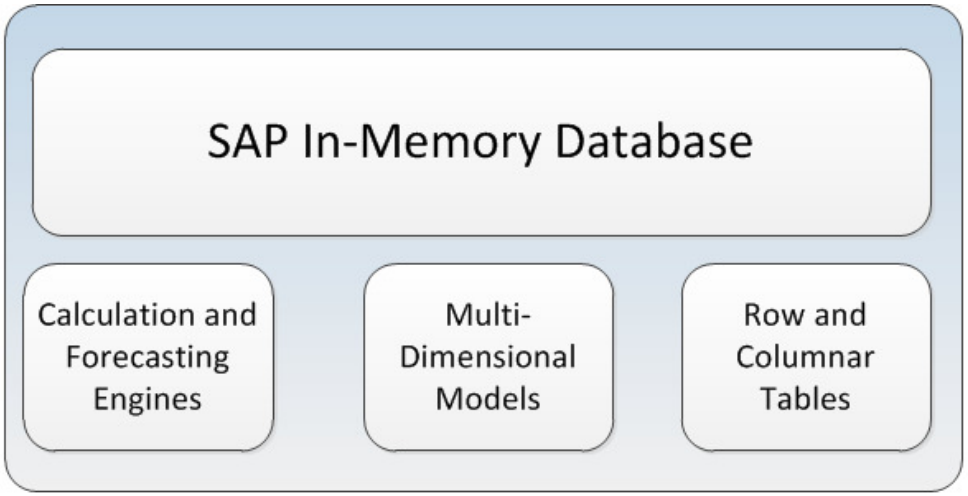
Learning Points

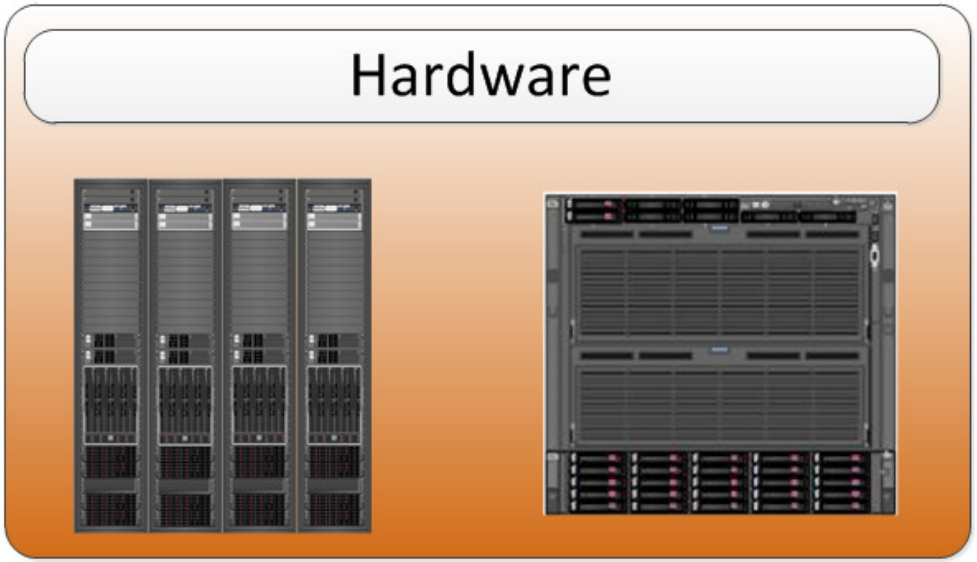
- What is SAP HANA ?
- Components of Modeling in SAP HANA
- Tips and Tricks implementing solutions on SAP HANA standalone

What is SAP HANA ?

Software engineered from the ground up to leverage the capability of todays hardware.



Hardware scalable from 128 GB RAM and 20 CPU cores to 8 TB RAM, Multiple Blades, and 100's of CPU cores.

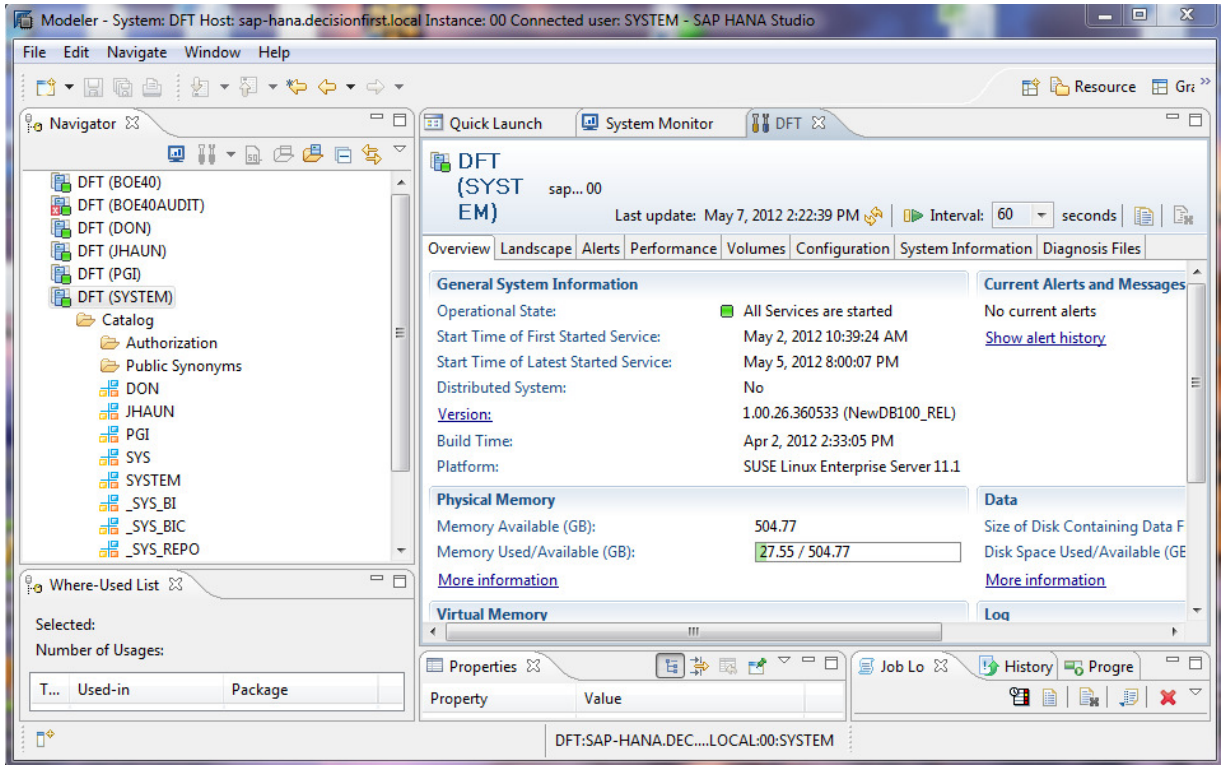


Solutions Currently Available based on SAP HANA

- SAP HANA Standalone
- SAP NetWeaver 7.3 BW powered by SAP HANA
- Applications Accelerated by SAP HANA

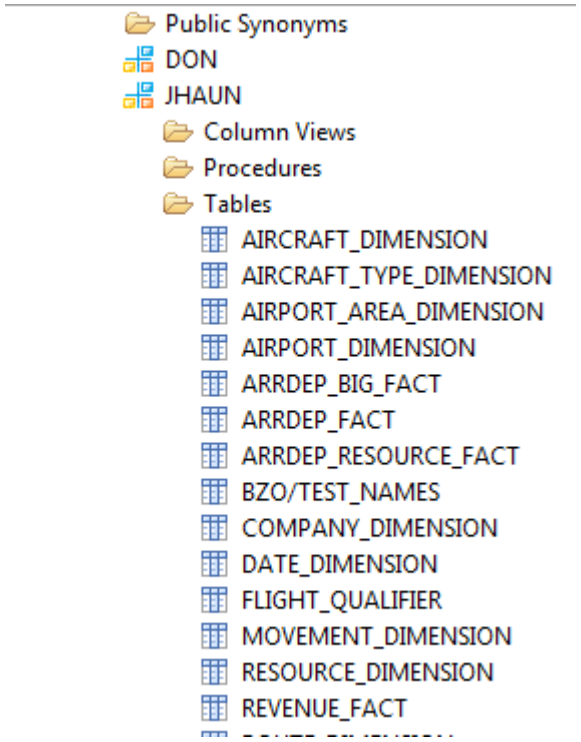
The Main Components of Modeling (HANA Studio)

- **SAP HANA Studio**
  - SAP HANA Studio is a Java-based client tool that allows developers and administrators to create models and manage the SAP HANA RDMS.



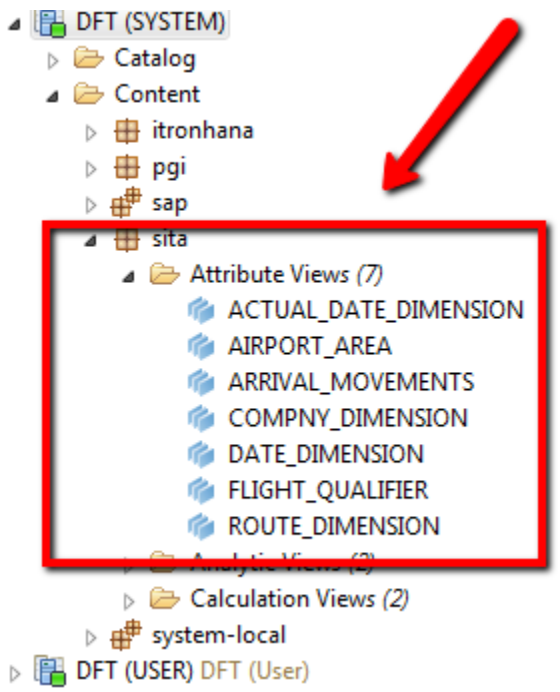
The Main Components of Modeling (Schemas)

- Schemas
  - Schemas are owned by defined users and used to store row and columnar tables.
  - Tables are used to store data.
  - Note: Schema owners must grant select access to other schema owners before they can access the tables.



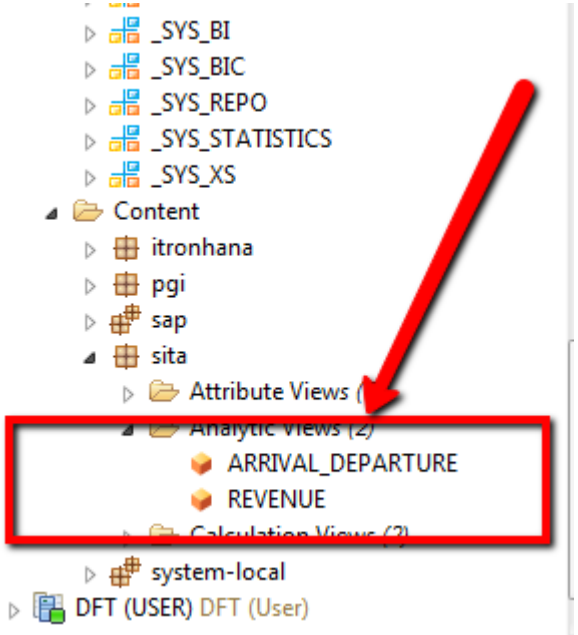
The Main Components of Modeling (Attribute Views)

- **Attribute Views**
  - Attribute Views are the dimensions of SAP HANA analytics
  - The SAP HANA Studio allows you to create them by Joining and Filtering tables found in an SAP HANA Schema.
  - You can create Calculated Attributes (Columns)
  - You can create Hierarchies
  - You can create Derived Attributes (Aliases of existing Attributes)
  - You can create Time/Date based Attributes (Date Dimensions managed by SAP HANA)



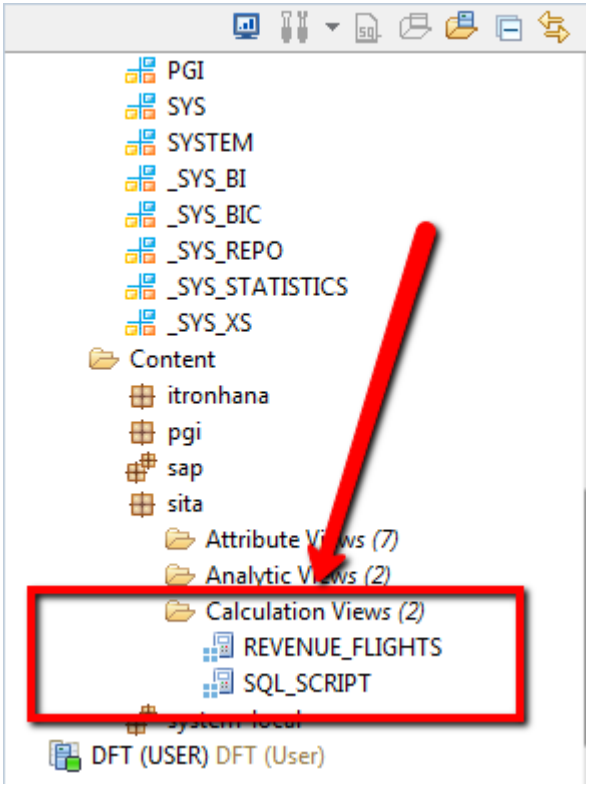
The Main Components of Modeling (Analytic Views)

- **Analytic Views**
  - Analytic Views are combined with Attribute Views to create rich multi-dimensional Analytics
  - You first create and setup the foundation (Select your Fact Tables and define keys and measures)
  - The Keys are called Private Attributes
  - Values that are summarized or aggregated are called measures
  - The Logic View Tab allows you to join Keys (Private Attributes) with existing Attribute Views
  - You can create Calculated Measures (Based on one or more measures)



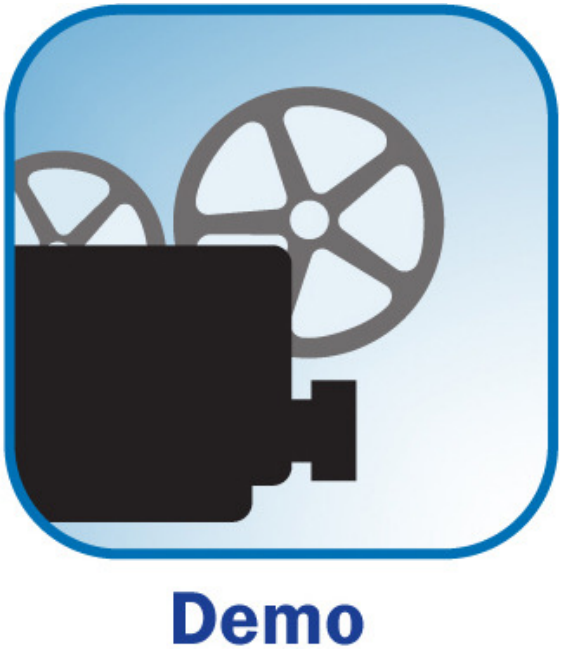
The Main Components of Modeling (Calculation Views)

- **Calculation Views**
  - Calculation Views are combined with Analytic Views to provide complex calculations and other "Calculated" Views for Analytical purposes
  - You can combine and aggregate multiple Analytic Views
  - You can use counters to generate distinct counts
  - You can use the GUI to build them or a script
  - They allow you to use CE_XXX functions (within the scripts) to optimize parallel and multi CPU core processing. "L" Language



Demo:

- See how to create Analytic Models in SAP HANA!

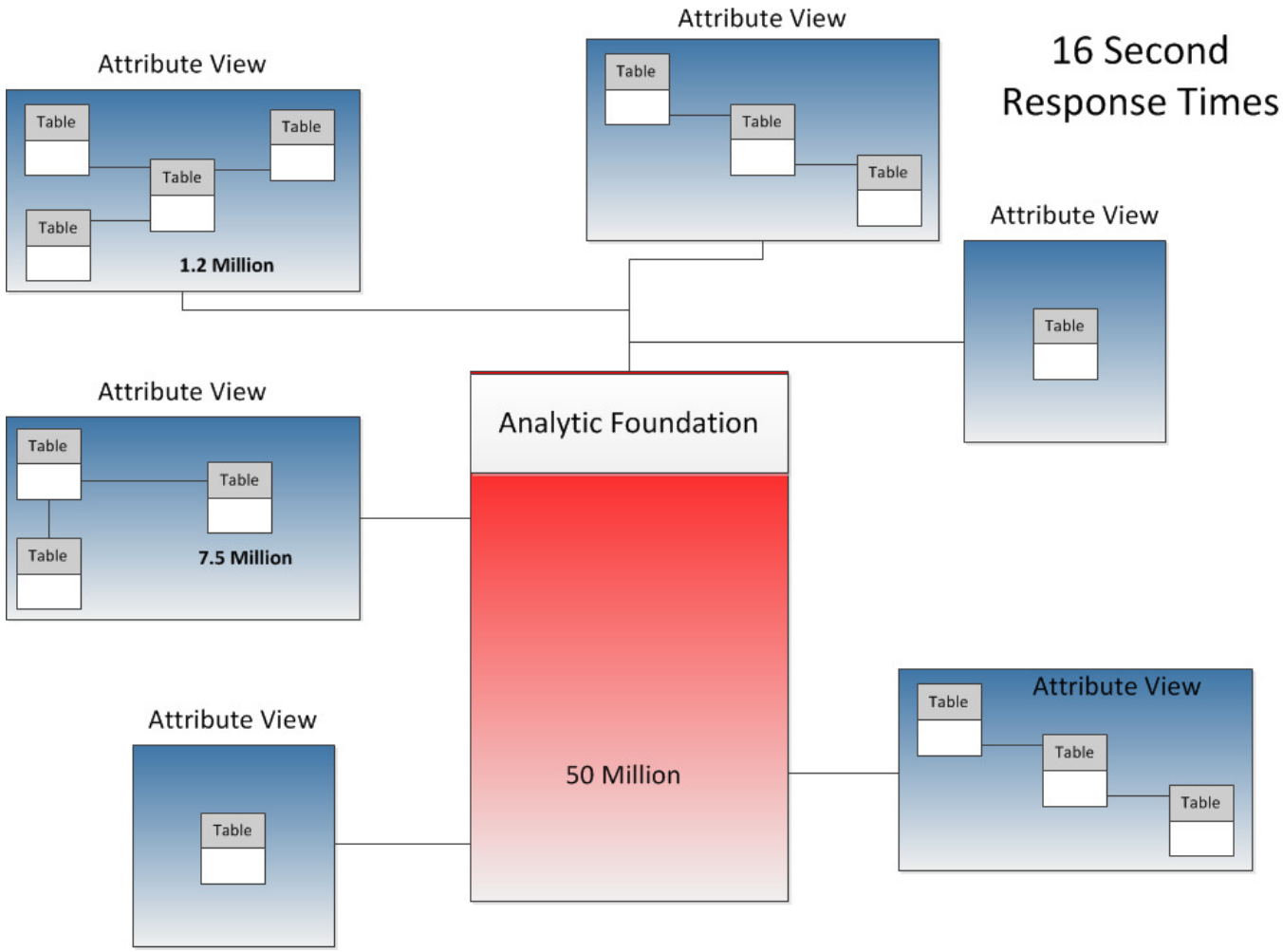


Tips and Tricks for SAP HANA standalone

- Data Modeling vs Analytic Modeling
  - Understand the difference before you begin developing solutions on SAP HANA standalone. Modeling in HANA centers around creating rich MDAS views, forecasting , and complex cross fact calculations.
  - When loading data in batch, model your data into a traditional Star Schema or Fully De-normalized Table before loading SAP HANA. Joining hundreds of physical **normalized** tables will reduce the performance of queries significantly. Also Attribute Views that contain millions of records should be modeled into the Analytic Foundation tables to increase performance.
    - Project Experience:
      - **100% Analytic Modeling:** Normalized Data loaded into HANA, containing multiple tables and joins and modeled completely in SAP HANA: 16 sec response times.
      - **90% Data Services Data Modeling:** With the same data, data modeled into a highly de-normalized table, with Attribute Views containing less then 10,000 records and fewer then 10 total joins produced results in < 1 sec.
  - Data Quality must be addressed via business processes and Data Services
  - Merging Dimensional Data from multiple sources should be addressed using Data Services
  - Reverse Pivots to de-normalize data should be addressed via Data Services
  - Hierarchy Parsing should be addressed via Data Services.

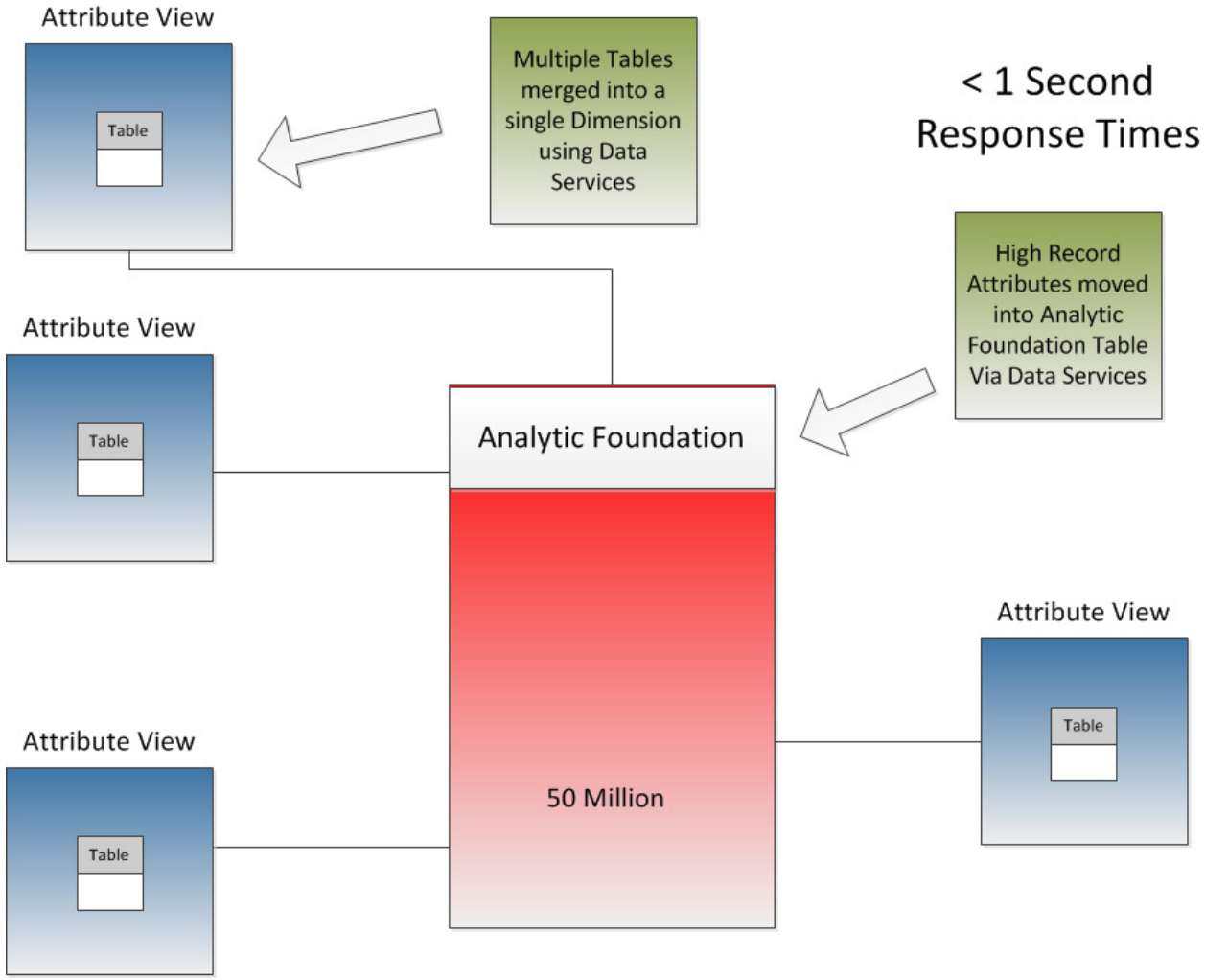
Tips and Tricks for SAP HANA standalone

- Using More SAP HANA "Analytic Modeling"



Tips and Tricks for SAP HANA standalone

- Using More Data Services "Data Modeling"



Tips and Tricks for SAP HANA standalone

- Analytic Modeling Tips
  - **Derived Attributes** allow you to make copies of an existing Attribute View. The copies can not be modified and will always represent the configuration of their master. They are great for Date and Time based Attributes that are needed to create joins between multiple date columns found in the Analytic Foundation. When you update the master Attribute all child attributes will inherit the master's columns. Similar to creating an alias of a table.
  - **Joins** between an Attribute View and Analytic Foundation **can not** be defined on Decimal(x,y) columns.
  - Joins on varchar or text columns do not perform as well as joins between Integer columns.
  - SAP HANA has a built in Date / Time Dimension (Attribute View). There is no need to use Data Services to create a calendar date dimension.
  - Joining multiple tables in the Analytic Foundation will greatly reduce performance. Better to use Data Services to combine the tables or Calculation Views to merge two independent Analytic Views.
  - Every Column in an Analytic View must have a unique name. It is best to implement a naming standard before you begin your end-to-end Analytic View design phase.
  - Be cautious making changes to existing Analytic Views (Post Development). Upstream content will stop working until it is re-activated. In some cases, removing columns, will require re-work on up-stream content.

Tips and Tricks for SAP HANA standalone

- Universe Design Tips
  - Using **Analytic Views** as the source for your Universe is great when that Universe is used primarily for Dashboards, Analytics and other reporting needs that contain Group By and Aggregate functions. All queries executed against an Analytic View must contain a measure. When you use an Analytic View within a Universe very little Universe design is required as most of the modeling and metadata were already defined in SAP HANA. It is also a good idea to leverage Analytic Views as current versions of SAP BusinessObjects Explorer and future versions of Web Intelligence will bind directly to SAP HANA Analytic Views.
  - Using SAP HANA **Columnar Tables** within a Universe (Traditional Universe Design) will provide more flexibility for a variety of reporting requirements. Best if used for Operational Reporting, Multi-Fact Data Synchronization and situations where measures are not required.
  - Multi-Fact Data Synchronization can be pushed down to SAP HANA by setting the **JOIN_BY_SQL** parameter to true within the Universe.
  - ODBC is easier to setup and maintain on Windows based BOE environments
  - JDBC is easier to setup and maintain on UNIX / LINUX environments.

Observations BW powered by SAP HANA

- BW powered by HANA
  - Frequent SAP HANA patching was required during the initial POC. However, the current patch level (Patch 33+) has proven to be more stable and we expect fewer and less frequent patching as the product matures. SAP has been very diligent in resolving issues but I would recommend adding time to any project estimate to account for unforeseen issues.
  - Hardware vendor selection is important. Watch for vendors recommending supplemental hardware components. (Network Switches Etc..) Make sure that all supplemental hardware is compliant with your current environment.
  - Frequent SAP HANA database settings were changed during the POC to find the right mix to support the customers in-house developed BW code. Loading and processing of complex BW flows may require increasing parallel treads and memory settings on SAP HANA.
  - Some BW modeling optimizations were required to fully support BW on HANA. In most cases the modeling code was poorly developed (not following best practices) in other cases SAP BW and or HANA required patches. Note: These issues had little or no impact on the project.

Clean Up and Reduce Data in BW

Reduced Data Footprint with BW on SAP HANA

Object Type	BW on DB2	Step 1. Cleaning up to move to HANA	Reduction in System Tables	Decommission Obselete Objects	Reduce Layers with HANA	Near line
PSA	5,842	100	100	100	100	100
Legacy DB Overhead	6,141	-	-	-	-	-
Change Log	4,174	-	-	-	-	-
DSO	1,487	1,487	1,487	1,312	1,201	1,201
System Tables	1,167	1,167	300	300	300	300
Cube	708	708	708	648	591	141
Master Data	408	408	408	408	408	408
Temp	7	7	7	7	7	7
Total (GB)	19,934	3,877	3,010	2,775	2,607	2,157
6 x Comp	3322	646	502	462	434	359

* Directly Observed during recent POC with customer. Your results might very based on the type and makeup of the data.

Key Learnings

- Key components of Modeling in SAP HANA
- SAP HANA Analytic Modeling vs traditional Data Modeling
- Tips for Modeling
- Observations from BW on SAP HANA project

Links and References

- Data Modeling vs Analytic Modeling in SAP HANA – "All Things BOBJ BI" http://wp.me/p2868w-4W
- Creating Analytic Models in SAP HANA Studio - Question and Answer Responses – "All Things BOBJ BI" http://wp.me/p2868w-54
- SAP BusinessObjects Explorer 4.0, powered by SAP HANA – "All Things BOBJ BI" http://wp.me/p2868w-2P
- SAP HANA FAQ – "All Things BOBJ BI" http://wp.me/p2868w-N
- https://www.experiencesaphana.com – SAP Hosted Site with great information on SAP HANA.
- SAP HANA product page - http://www.sap.com/solutions/technology/in-memory-computing-platform/index.epx

Thank you for participating.

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