Verizon: Experiences of a Complex HANA Implementation with SAP BI Tools

Sreenath Akinepalli
Siva Kopparati
• Roll out of HANA Accelerators provided huge user benefits without business disruption.

• Combining data from SAP and Non-SAP data sources in HANA and Reporting through BusinessObjects Tools.

• Advantages of Enhancing the Business Intelligence footprint with Business Warehouse (BW) on HANA combining Standard and Replicated content.
Solution Description and Features

• **DRIVING FORCE:** Convergence of multiple ERP instances into a single SAP instance.

• “Create a SAP ERP Reporting & Business Intelligence solution serving the Operational and Analytical Reporting requirements for Finance, Supply Chain and Real Estate business users”.

• Features:
  - Real time reporting
  - High data volumes
  - Accelerate native ECC Reports
  - Robust reporting tools and platform for Self Service
Verizon - SAP HANA Implementation

BI Solution Evolution

Phase I
- SAP HANA POCs
- Reporting platform
- SAP HANA landscape with COPA Accelerator
- Architecture
- Learning points

Phase II
- Finance Close Reports
- GL Summary Feed
- Architecture
- Learning points

Phase III
- Operational Reporting with BW
- FICO Accelerator
- Architecture
- Learning Points

Future
• **Use Cases:**
  1. COPA Revenue Reports Acceleration
  2. Finance Close Reports combining data from SAP and Non-SAP data sources in near Real time
  3. Feed General Ledger Summary Data to an external system.
  4. Operational Reports for Finance, sub-ledgers and Supply Chain users

• **Components of the Solution:**
  - SAP BusinessObjects 4.0 SP4 Patch 1
  - SAP HANA SPS4 (Rev 40)
  - SAP BusinessObjects Data services 4.0
  - SAP BW on HANA 7.31 SP5
  - SAP LT 7.02 SP9
HANA Implementation Roadmap

Phase 1
- Proof of Concept and Laying the Foundation
- Roll out of HANA landscape
- COPA Accelerator

Phase 2
- Finance Close Reports in near real time
- Ledger Summary Feed to an external system

Phase 3
- Operational Reports using BW on HANA
- FICO Accelerator

Follow @ASUG365 and #ASUG2013 on Twitter
Worked with SAP team and conducted HANA POCs

Objectives:

- Data Exploration with Explorer
- COPA Accelerator - ECC Report Acceleration
- Near Real time data replication

• Metrics Gathered
  - 9x Data Compression
  - 300 million records loaded through files at 8 million/minute
  - Explorer View with 15 dimensions Drill down – 5 to 6 sec
  - COPA KE30 ECC Reports Drill response of 10 sec
Phased 1

- Started with the roll out of BusinessObjects 4.0 SP2.
- Enabled Webi and Analysis for OLAP reporting tools using SAP BW as the data source.
- Established SAP Authentication and integration with Netweaver Portal for SSO.
- Deferred enablement of Explorer until the roll out of HANA.
- Implemented Reports for Professional Services Business Team.
Laying the Foundation - Technical Architecture

Phase 1

SAP ECC → SAP BW on Oracle → Web Intelligence/Analysis for OLAP → Presentation

Follow @ASUG365 and #ASUG2013 on Twitter
Use of BW data source, if BEx query changed, all the Webi reports linked to the BEx query must be opened and resaved.

- Plan BusinessObjects 4.0 Product upgrades into the project life cycle – 2 patch upgrades and 1 SP4 upgrade in 9 months.
- Define clear guidelines for the selection of Reporting Tools of Webi, Analysis for OLAP based on business requirements.
- Establish effective Governance process for promotion of BI reports and Self service.
Performed landscape sizing exercise with analysis on use cases, anticipated data volumes and growth for 24 months.

- Installed COPA Accelerator on ECC and data replicated into HANA using LT (300 million records).
- Adjusted 20+ KE30 Revenue reports for Hana Data Source.
- No User Training needed as users continue to use the same ECC transactions.
- Created HANA View and enabled BusinessObjects Explorer for flexible reporting and data exploration.
COPA Accelerator - Technical Architecture

Phase 1

ECC Report Acceleration

Real-time Replication

SAP ECC

SLT Replication Server

SAP ECC schemas

Application Tables/Views

SAP HANA

SAP BusinessObjects

Explorer

Presentation

Follow @ASUG365 and #ASUG2013 on Twitter
Compatibility of Operating System on LT and ECC

- Mirror Sizing and Architecture of Test and Production Environments for Performance trouble-shooting
- Creation of Multiple HANA Databases on the same appliance in Non-Production environments
- Refresh of HANA schema for a single client requires drop and re-creation of schema
**Before**

Reports refreshed overnight with a Batch process.

- Summarization levels created and data aggregated.

**After**

- Reports refreshed in **seconds**
- Improved speed and quality of decision making and execution

...I would just like to add, why did we not get this years ago? ‘WOW’ the reports are instant now not even our slow network is impacting the return. Any faster and the report will be back with the results before I even ask for it!
Phase 2

Create 12 Finance Close Reports including Balance Sheet, Income Statement and Trial balance

- Replicate SAP General Ledger and COPA Line item tables into a HANA schema
- Create SAP LT Transformations for derived columns with complex procedural logic
- Replicate Non-SAP ledger data with Master data Hierarchies into a separate HANA schema
- Create HANA models combining Master data and Transaction data from two data sources
- Create Formatted BusinessObject reports using Webi exposing the HANA views through IDT
Data type mismatch between Relational Database and HANA. NUMBER data type converted as String

- Create HANA Calculation views using Graphical verses script based for exposure through multiple BI Reporting Tools like Webi, Analysis for Office
- Use Auto Generated columns to push calculations to the HANA DB level verses creating Calculation Attributes
- Flatten HANA Hierarchies to support data security based on Hierarchy nodes
- Use Relational connection in BI IDT with DB Credential mapping to pass user id to HANA DB
Phase 2

Send GL Summary Data from the ECC Special ledger and COPA tables

- Interface runs every 15 minutes for incremental updates
- End of Day reconciliation process to check systems in balance
- 2 ERP tables each have 300+ million records and the summary data interface requires a join of these tables
- Created a HANA stored procedure which chunks the tables by period and joins them in smaller subset
- Processed 25 months history aggregation in 75 minutes into 8 million records
GL Summary Feed - Technical Architecture

Phase 2

SAP ECC

Real-time Replication

SLT Replication Server

BODS

(GL Summary Data)

SAP HANA

SAPECC schemas

Application Tables/Views

(NON-SAP)
## GL Summary Feed - Learning Points

### Phase 2

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Strategy used to overcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of scheduling support at the HANA DB level to execute stored Procedure</td>
<td>Trigger Job through Data services</td>
</tr>
<tr>
<td>Joining two tables with 300+ million records</td>
<td>Chunk the tables by period and apply the join on a smaller subset in a Stored procedure</td>
</tr>
<tr>
<td>Handle foreign currencies with varied decimal precision</td>
<td>Enable Decimal Shift feature in HANA models</td>
</tr>
<tr>
<td>Handling latencies in data replication</td>
<td>Introduced lag in the Incremental feed determination</td>
</tr>
</tbody>
</table>

Follow @ASUG365 and #ASUG2013 on Twitter
200+ Finance and Supply Chain Operational Reports

- Modules include FICO, All sub-legers including AP, AR, Assets, Project systems, SCM, Leasing and REFx.
- Implement FICO (Scenario1 and Scenario2) Accelerator
- FICO real time replicated exposed as Virtual Providers in BW through Virtual Providers
- Use of In-memory Optimized DSOs exposed through Multi-providers and BEx queries
- Use of in-memory Optimized cubes when aggregating of data with different granularity
Operational Reports/FICO Accelerator - Technical Architecture

Phase 3

SAP ECC

SLT Replication Server

Real-time Replication

ECC Report Acceleration

SAP HANA

SAP schema

Application Tables/Views

SAP BW

Operational Reports/FICO Accelerator - Technical Architecture

SAP BusinessObjects

Web Intelligence/Analysis for OLAP

Explorer

Analysis for Office

Presentation

Follow @ASUG365 and #ASUG2013 on Twitter
Creating HANA views on replicated tables for FICO/COPA Accelerators and exposing them as Virtual Providers in HANA enables real time Operational reporting through BW

- Use Standard Business content where BW Extractors provide semantically rich content than re-creating the logic through HANA models like Asset management

- Use of Composite Provider over Info Sets
ERP Reporting Solution - End State Architecture

- GL Summary Data from SAP instances
- SAP HANA
- SAP BW
- SAP BusinessObjects
- Web Intelligence/Analysis for OLAP
- Printer
- Presentation
- SAP BW on Oracle
- SAP BW on Oracle
- SAP BW
- ECC Report Acceleration
- SLT Replication Server
- SAP ECC Convergence
- SAP ECC (Legacy)
- SAP BusinessObjects
- Non-SAP Application Tables/Views
- SAP/Non-SAP schemas
- SAP BW
- SAP BW on Oracle
- SAP ECC (Legacy)
- SAP BW
- SAP ECC Convergence
- SAP BW on Oracle
- SAP ECC (Legacy)
- SAP BW
- SAP ECC Convergence
- SAP BW on Oracle
- SAP ECC (Legacy)
- SAP BW
- SAP ECC Convergence
- SAP BW on Oracle
- SAP ECC (Legacy)
Follow @ASUG365 and ASUG CEO Bridgette Chambers @BChambersASUG on Twitter to keep up to date with everything at ASUG.

Follow the ASUGNews team of Tom Wailgum: @twailgum and Courtney Bjorlin: @cbjorlin for all things SAP.
THANK YOU FOR PARTICIPATING

Please provide feedback on this session by completing a short survey via the event mobile application.

SESSION CODE: 0508

For ongoing education on this area of focus, visit www.ASUG.com