HANA Introduction

* Hasso’s new Architecture (Abbreviation for HANA)
* Launched in June 2013
* Secret to speed
  + Multi-Core parallelism
  + Data Locality in memory
  + Columnar Structures
  + Everything is written from scratch to sue parallelism
  + 3.5B scans/sec/core – a modern server has 80 cores and due to parallelism HANA can utilize all of them simultaneously
  + 12 – 15M aggregations /second/core – analyze anything in real time
  + Row stores allow quick transactions processing
  + Column stores allow quick analytic processing
    - HANA uses delta stores to quickly accept transaction information and later merges it to the main column store
    - Additionally now they have an L-1 store which is row store that can handle millions of inputs per second and then translates those over to the Delta store as time and processors allow
* Projections - allows you to grab just the columns of data you need instead of the entire row of a record
* Dynamic Aggregation – You can calculate aggregations on the fly without storing ahead of time. You are not limited to pre-defined aggregations, but can run them dynamically
* Integrated Compression – each record may not contain the data in a column or the column may be limited in choices and this allows HANA to dramatically compress the database.
* Insert Only – whether new record or update to existing record the HANA process adds the new data and later invalidates the old data but then you have an audit trail to changes over time
* Partitioning & Scale Out - Allows part of a column or different columns to be stored across servers
* Hot and Cold Storage – so Hot data is this year, plus maybe all of last year so you can do TY/LY reporting and that is super fast versus other historical data is “cold” and is super compressed for storage optimization.
* Full SQL standards compliant is supported.
* MDX – SQL started at Microsoft is supported
* Text functions
* MAP API to apply mass updates without SQL
* SQL Script
* L – low level language
* GIS, Text, BFL (Business Function Library), PAL – Predictive Analytics Library
* HANA is more than a DB it is a platform – started with XS engine, Javascript, user security, Data services, rules engine
* Five dimensions of performance – the more of these involved the more HANA is superior
  + Data Size
  + Query Complexity
  + Rate of change of data
  + Raw or prepared
  + Response Time
* Application Services – XS Engine
  + Native SAP Applications
  + Integrated – Java and ABAP
  + Open – Anything that can speak SQL – Node.JS, .net, ODBC, ODATA, JDBC
* Software Development for SAP has always been a batch process