One Happy Data Warehouse family
SAP Business Warehouse, SAP HANA and Sybase IQ
Nov 2011
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The Most Comprehensive Solution Portfolio
From the Leader in Business Analytics

Analytic Applications

By Industry
- Financial Services
- Public Sector and Healthcare
- Manufacturing
- Consumer Products
- Retail and Telco
- Utilities and more…

By LoB
- Service, Sales, and Marketing
- Procurement
- Supply Chain
- Finance
- Sustainability
- IT, HR, and more…

Enterprise Performance Management
- Strategy Management
- Planning, Budgeting, and Forecasting
- Profitability and Cost Management
- Financial Consolidation
- Disclosure Management

Business Intelligence
- Reporting and Analysis
- Dashboards and Visualization
- Data Exploration
- Mobile
- BI Platform

Governance, Risk, and Compliance
- Enterprise GRC
- Access Risk Management
- Global Trade Services
- Continuous Transaction Monitoring

Enterprise Information Management
- Data Services
- Master Data Management
- Event Processing
- Content Management
- Information Governance

Enterprise Data Warehousing
- Enterprise Data Warehouse
- RDBMS

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Data Warehousing Solutions from SAP
Comprehensive data foundation enabling price/performance optimization

Complex and diverse challenges
• Real-time analytics
  – Immediate availability of data for analysis
  – Fast and easy creation of ad-hoc views
• Big data
  – Massive data volumes
  – Structured and unstructured data
• Efficiency
  – Reduce complexity and minimize TCO

Sophisticated information landscapes
• High-performance operational analytics
  – In-memory and disk storage
• Enterprise data warehousing
  – SAP and non-SAP source systems
  – Complex transformations

Customer choice via complementary and inter-operable solutions
• SAP HANA
• Sybase IQ
  – Sybase PowerDesigner
• SAP NetWeaver Business Warehouse
  – SAP NetWeaver BW Accelerator
Data Warehousing Solutions from SAP
Most Complete Offering

1. SAP NetWeaver Business Warehouse
2. SAP HANA Appliance
3. Sybase IQ
4. Sybase Power Designer
5. Teradata Foundation for SAP NetWeaver BW
6. SAP BusinessObjects Rapid Marts
SAP NetWeaver Business Warehouse
Strong EDW capabilities

Integrated, scalable Enterprise Data Warehouse (EDW) platform
EDW = Database + X

- Fast, sustainable implementation through:
  - Modeling Patterns
  - Business Content

- Openness and data quality through:
  - Out-of-the-box integration for data originating in SAP systems
  - Integrated with SAP BusinessObjects Data Services (Data Integrator and Data Quality Management)

- Efficient data management through:
  - Management of data consistency
  - Sophisticated Security, Authorization and Identity Handling
  - High availability

- Enable sophisticated lifecycle management at different levels:
  - System
  - Meta Data
  - Data (Nearline storage, archiving)
SAP NetWeaver Business Warehouse
Stable Product, Large installed Base, Constant Growth

Productive SAP NetWeaver BW systems – constant growth

- Adoption of SAP NetWeaver BW constantly growing
- Unaffected by economic downturn in 2009
- More than 12000 customers referring to more than 15000 productive systems
What is SAP NetWeaver Business Warehouse

- EDW based on the **Layered Scalable Architecture (LSA)** that satisfies the need of decision makers across all areas of a company and acts as a single point of truth for any kind of information.

- Includes capabilities for **data flow modeling**, **ETL process modeling**, **real time data acquisition**, **scheduling**, **administration lifecycle management**, and **high performance OLAP processing**.
In-Memory Computing – a new Lifestyle

Technology that allows the processing of massive quantities of real time data in the main memory of the server to provide immediate results from analyses and transactions.
In-Memory Computing

Conventional Databases
Disk Read
5 milliseconds

1 Million Times Faster Than Disk

In-Memory Databases
Disk Read
5 nanoseconds

“By 2012, 70% of Global 1000 organizations will load detailed data into memory as the primary method to optimize BI application performance.”

- Gartner
A Shift of Frontiers in Computer Science
Freely Adapted from Jim Gray, Turing Award Winner 1998

- Tape is Dead
- Disk is Tape
- Main Memory is Disk
- CPU Cache is Main Memory
SAP In-Memory Evolution

SAP BWA
Accelerate BWA

Explorer
Open Acceleration
Self-Service BI

SAP HANA
In-Memory Platform

2007
2009
2010+
What is SAP HANA

- A flexible, data source agnostic in-memory appliance to quickly process and analyze large volumes of transactional data in real time

- Includes capabilities for calculation processing, data modeling, lifecycle management, security, operations, and so forth

- Combines SAP software components optimized on hardware (blades) provided, and delivered, by SAP’s leading hardware partners.
In-Memory Computing – The Time is NOW
Orchestrating Technology Innovations

The elements of in-memory computing are not new. However, dramatically improved hardware economics and technology innovations in software have now made it possible for SAP to deliver on its vision of the Real-Time Enterprise with in-memory business applications.

**HW Technology Innovations**
- Multi-Core Architecture (8 x 8 core CPU per blade)
- Massive parallel scaling with many blades
- One blade ~$50,000 = 1 Enterprise Class Server
- 64bit address space – 2TB in current servers
- 100GB/s data throughput
- Dramatic decline in price/performance

**SAP SW Technology Innovations**
- Row and Column Store
- Compression
- Partitioning
- No Aggregate Tables
Conventional databases store records in rows

Storing data in columns enables faster in-memory processing of operations such as aggregates

- Columnar layout supports sequential memory access
- A simple aggregate can be processed in one linear scan
SAP In-Memory Appliance (SAP HANA™)

SAP HANA™
- In-Memory software + hardware (HP, IBM, Fujitsu, Cisco, Dell)
- Data Modeling and Data Management
- Real-time Data Replication
- SAP BusinessObjects Data Services for ETL capabilities from SAP Business Suite, SAP NetWeaver Business Warehouse (SAP NetWeaver BW), and 3rd Party Systems

Capabilities Enabled
- **Analyze information in real-time** at unprecedented speeds on large volumes of non-aggregated data
- **Create flexible analytic models** based on real-time and historic business data
- **Foundation for new category of applications** (e.g., planning, simulation) to significantly outperform current applications in category
- **Minimize data duplication**
SAP HANA Proof Points

3600x Faster reporting speed

460B Data records analyzed in less than a second

21% Average increase in revenue
A platform for delivering a new class of real-time analytics and applications

SAP NetWeaver Business Client  SAP Business Objects solutions  Microsoft Excel  Other devices (mobile)

Real-time analytics  Real-time applications

SAP HANA

Planning and calculation engine  Application services  Business function library
Real-time replication services  In-memory database  Data services

SAP Business Suite  Third-party systems
SAP Applications Running on SAP HANA Roadmap

TODAY
- SAP BusinessObjects Strategic workforce planning
- SAP CO-PA Accelerator
- SAP ERP Operational Reporting
- SAP Smart Meter Analytics

TOMORROW
- Lines of Business
- Industries
- Cross
SAP HANA: Value Proposition
Addressing Key Business Drivers

1. Make Decisions in Real-time
   Fast and easy creation of ad-hoc views on business
   Access to real time analysis

2. Accelerate Business Performance
   Increase speed of transactional information flow in areas such as planning, forecasting, pricing, offers…

3. Unlock New Insights
   Remove constraints for analyzing large data volumes, trends, data mining, predictive analytics…
   Structured and unstructured data

4. Increase Business Productivity
   Business designed and owned analytical models reduce reliance on IT
   Use data from anywhere

5. Improve IT Efficiency
   Manage growing data volume and complexity
   Lower landscape costs
Sybase IQ Product Profile

Inside:
Architected ground up for High Performance Analytics

Grid Based Column Store
Fast Complex Queries
High Performance Data Loads
Storage, User Scalability
Non-relational Data Support

Outside:
Standards based open interfaces enables best-of-breed eco-System

Standard Language: ANSI SQL

Platform Agnostic: Linux, Unix, Windows

Schema Independent
3NF, Star, Flat

Standard Connectivity: ODBC, JDBC OLE-DB
What Analysts Say

Gartner

• “During the past few years, Sybase has shown increased ability to move from offering an analytic data mart to offering an enterprise data warehouse DBMS. “

• “The company has consistently won POCs with analytic applications, sometimes with performance 100 times greater than its competitors. “

• “We believe Sybase will achieve increased market share growth in 2011 and beyond. “

Gartner, Jan 2010 MQ for DW Database Mgt Systems

Forrester

• “Sybase’s mature columnar EDW platform, coupled with a fresh injection of development capital from new parent SAP, gives it a competitive advantage.”

• “Expect SAP Sybase to leverage these strengths, plus intensify its focus on in-memory and in-database analytics, to grow its share of the EDW market among large enterprises requiring robust real-time analytics solutions.”

Forrester, Feb 2010 EDW Platform Wave
Sybase IQ
Widespread Adoption

Manage and analyze statistical measures for the entire nation of Canada

Analyze ALL Federal tax returns in the US

Analyze complex models in more than 200 financial institutions worldwide

Store and Analyze massive amounts of industry segment data in 30 of the largest information providers in the world, including Transunion, Nielsen and Axiom

Stands out as the leading enterprise data warehouse amongst the largest banks, insurance agencies, and telecom operators worldwide
## Sybase IQ Designed for Analytics

### Data Is Stored Vertically
- Each column is stored separately
  - Bitmapped Index
  - Index on every column
  - Fast access and load

### Optimized Storage
- Input data is compressed
  - Usually = 40%-70%
- Database smaller than input data
  - Even with all the indexes

### Query Engine Retrieves Only Columns Used in the Query
- Reduces system I/O dramatically
  - Average 90% less than competition
- Permits better data manipulation
  - Easy to alter and manage

### Schema Design Not Restricted
- Design based on application use
  - Flat, Star, Relational, Snowflake
  - Any schema
Accelerating Reporting Systems

Offload scheduled production reports, on-demand reporting, KPIs, and dashboards from transactional systems or databases to a Sybase IQ column-based analytics server.

Designed and optimized for fast query processing
More efficient utilization of hardware resources
Accelerating Advanced Analytics

- Speed for complex queries on large data sets
- VLDB scaling deep analysis
- Speed for complex unplanned/ad-hoc queries
- Support for visualization/simulation/analysis tools
- Logical Servers for Virtual Data Marts
Data Compression
Dramatically Reduces Storage and Maintenance

Same INPUT data:
“Conventional DW”
is 3x-6x larger than
Sybase IQ DW

Conventional DBMS

Summaries
Aggregates
1 – 2 TB

Indexes
0.5 – 3 TB

Base table
“RAW data”
no indexes
0.9 – 1.1 TB

Sybase IQ

LOAD

INPUT DATA:
1 TB

LOAD

0.25 - 0.9 TB

Aggr/Summ:
0 - 0.1 TB

Indexes:
0.05 - 0.3 TB

Base table:
0.2 - 0.5 TB

Source: flat files, ETL, replication, ODS

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Sybase IQ
Integrated Text Analysis

• Text Index – SQL based on terms/phrases, prefix, proximity, scoring
• Interface to plug in 3rd party Document converters or Term Breakers
• 3rd party text mining libraries (not available in GA)

Text Search: Email-Archiving, E-discovery, E-library
Text Analytics: Fraud detection, Risk analytics, News feed analysis
Text Mining: Clustering, categorization, sentiment analysis
The Sybase IQ Advantage

Speed from a vertical, column-based architecture

- Up to 1000-times faster than traditional transactional database technology
- High-speed analytics performance handles volumes of ad-hoc queries in “real-time”

Scalability and flexibility from multiplexing

- Supports thousands of users and years of historical and real-time data
- Can support both simple and complex analytics for structured and unstructured data

Lowest TCO from data compression

- Compression algorithms reduce volume of stored data by up to 70%
- Low startup and long-term TCO — less storage and maintenance resources
- Easy to learn and use — minimal training and staff requirements
Data Warehousing Solutions from SAP

Summary

Solving complex and diverse challenges

- Real-time analytics
- Big data
- Efficiency

Powering sophisticated information landscapes

- High-performance operational analytics
- Enterprise data warehousing

Providing customer choice through complementary and inter-operable solutions

- SAP HANA Appliance
- Sybase IQ
- SAP NetWeaver Business Warehouse
- SAP BusinessObjects Rapid Marts
Data Warehousing Solutions from SAP

Summary

Instant access to massive volumes of data

Flexible data foundation to enable analysis of any business question

Optimize time-to-value by lowering costs and implementation times
Questions?

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THANK YOU