

SAP Sybase IQ 16 Very Large Database (VLDB) Option Technical Overview

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April 2, 2013



Agenda

What's Happening in the Marketplace

Product Success

SAP Sybase IQ 16

What is Information Lifecycle Management?

SAP Sybase IQ VLDB Option

VLDB in Use in a Large Bank

SAP Sybase PowerDesigner ILM Model for SAP SYBASE IQ

Summary

Marketplace Today

What's Happening in the Marketplace...

BUSINESS INTELLIGENCE

PROFITABILITY

PREDICTIVE

LOB ANALYTIC APPLICATIONS

ADVANCED ANALYTICS

INFORMATION MANAGEMENT

COMPLIANCE MONITORING

LOB & INDUSTRY

BUSINESS ANALYTICS

PERFORMANCE MANAGEMENT

RISK MANAGEMENT

DATA WAREHOUSE

STRATEGY

**Exploding Data
Volumes**

**The Need for
Speed**

**Rising IT Cost and
Complexity**

Challenges customer face today?



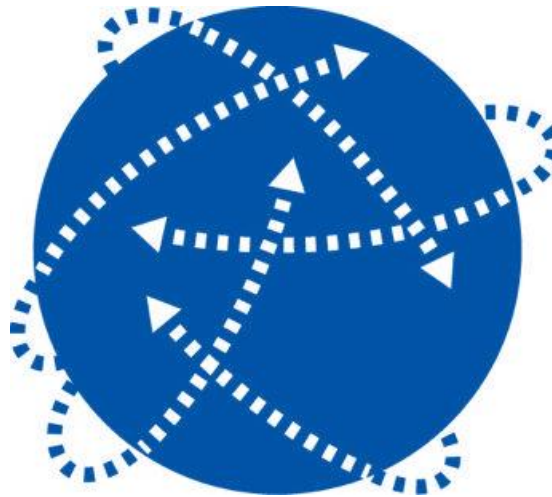
Lost revenues due to
lack of insight



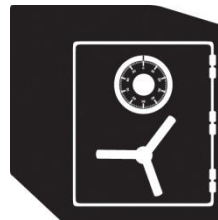
High Costs &
Complexities



Slow Performance



Data Management
Challenges

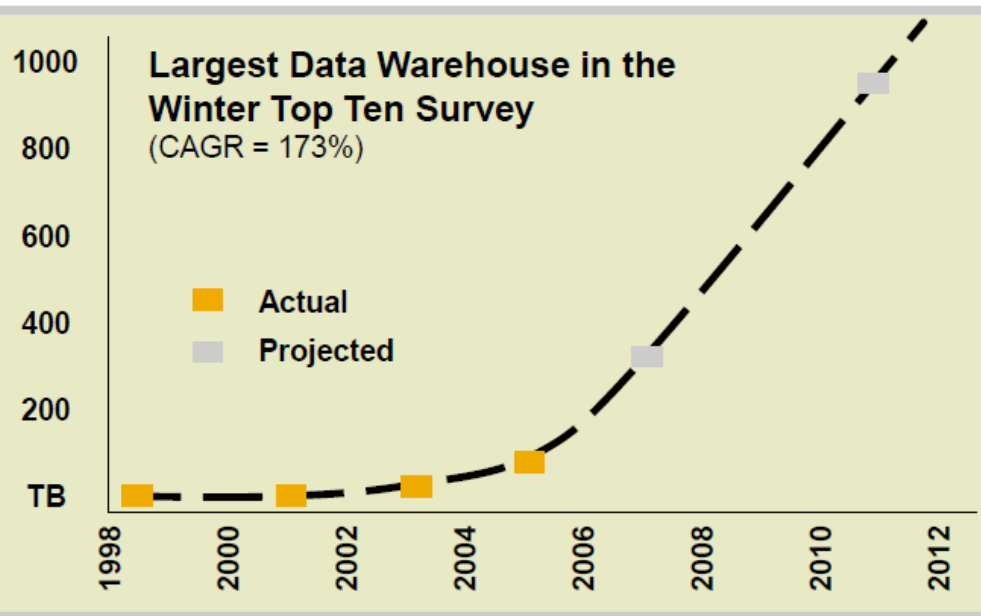


Security

SAP Sybase IQ 16 Motivators

“Petabyte is the new Terabyte” - Forbes

The data explosion continues: Data volumes in analytics environments are growing exponentially...



Source: WinterCorp

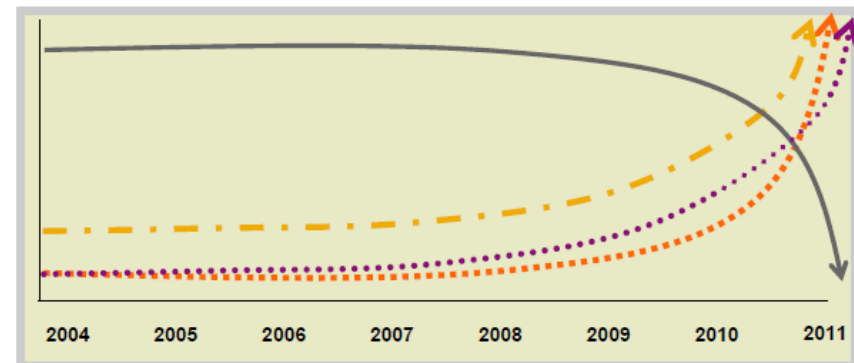
Meanwhile, what trends are you seeing...

Number of business decisions supported by data?

Number of users accessing analytics environments?

Required response time?

Resources required to maintain performance?



Product Success

SAP Sybase IQ: Market Leader for Extreme-Scale EDW and Analytics

High performance analytics server

- Columnar RDBMS (stores data in columns- versus rows)
- Optimized for managing and accessing massive amounts of data for analytics (versus transactions)

Accelerates analytics and reporting

- Up to 1000-times faster than traditional transactional databases
- Handles structured and unstructured data
- High compression and low TCO
- Highly scalable grid architecture

SAP Sybase IQ Facts

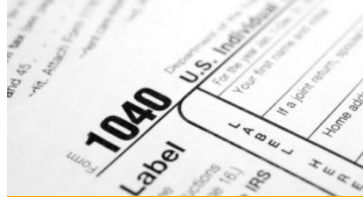
- 2200+ customers with over 4500+ installations worldwide
- Used by twice as many companies as the next leading provider
- Patented data compression dramatically reduces data storage requirement; cuts TCO
- Only column-based solution to support full text search, in-database analytics, and federated analytics
- 96%+ customer satisfaction rates
- Leader, 2013 Gartner Magic Quadrant for Data Warehouse DBMS

SAP Sybase IQ big data analytics

Pervasive across data intensive industries worldwide



Manage and analyze statistical measures for the entire nation of Canada



Analyze ALL Federal tax returns in the US



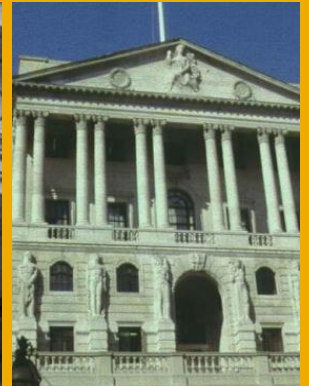
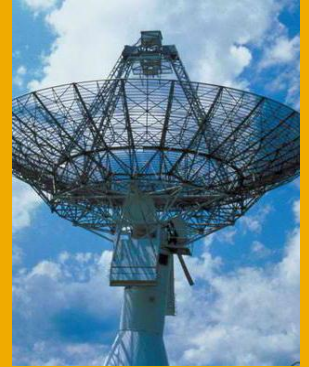
Analyze complex models in more than 200 financial institutions worldwide



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 among the largest banks, insurance agencies, and telecom operators worldwide



SAP Sybase IQ 16

Solution Overview – SAP Sybase IQ 16



SAP Sybase IQ transforms the way companies compete and win through actionable intelligence delivered at the speed of business to more people and processes.

Value of SAP Sybase IQ 16

- 1 Exploits the value of Big Data**
- 2 Transforms businesses through deeper insights**
- 3 Extends the power of analytics across the entire enterprise**

What is Information Lifecycle Management?

Information Lifecycle Management (ILM)

“ILM is a management approach aimed at tackling the storage ‘information overload’ problem which has so far failed to live up to its potential. The key to its success is being able to automate identification of the most valuable information contained in company data at any given time so that relatively unimportant data can be automatically demoted to lower-cost, less accessible storage media and ultimately discarded.

Bloor Research

ILM in the real world

NOAA: National Oceanic and Atmospheric Administration

A global network of sensors provide a steady stream of data on the Earth's oceans and weather

With streams and a vast archive of historical data, NOAA manages some of the largest databases in federal government

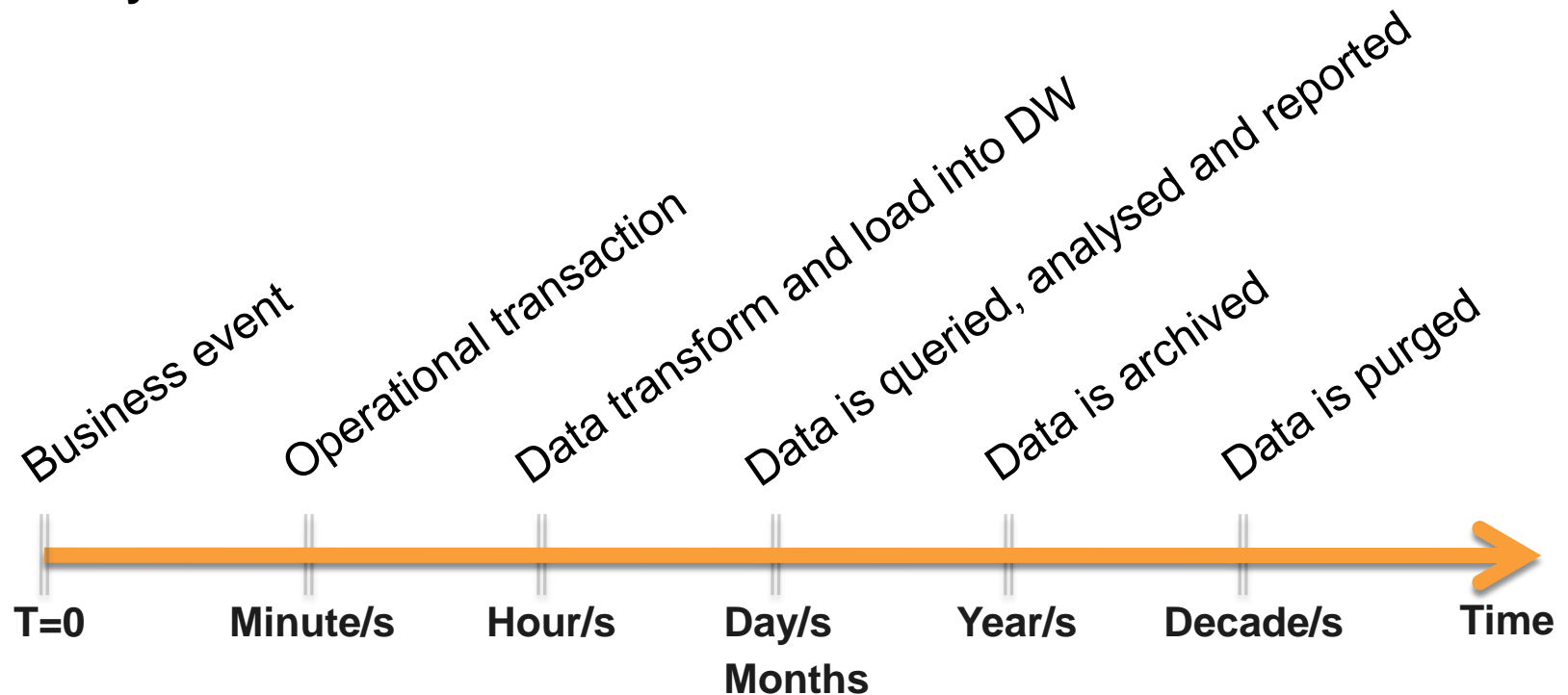
The Princeton, NJ data center alone stores more than 20 petabytes of data

NOAA CIO: Joe Klimavicz:

- *"I focus much of my time on DATA LIFECYCLE MANAGEMENT"*
- *"The keys to ensuring that data is useable and easy to find include using accurate metadata, publishing data in standard formats, and having a WELL-CONCEIVED DATA STORAGE STRATEGY"*

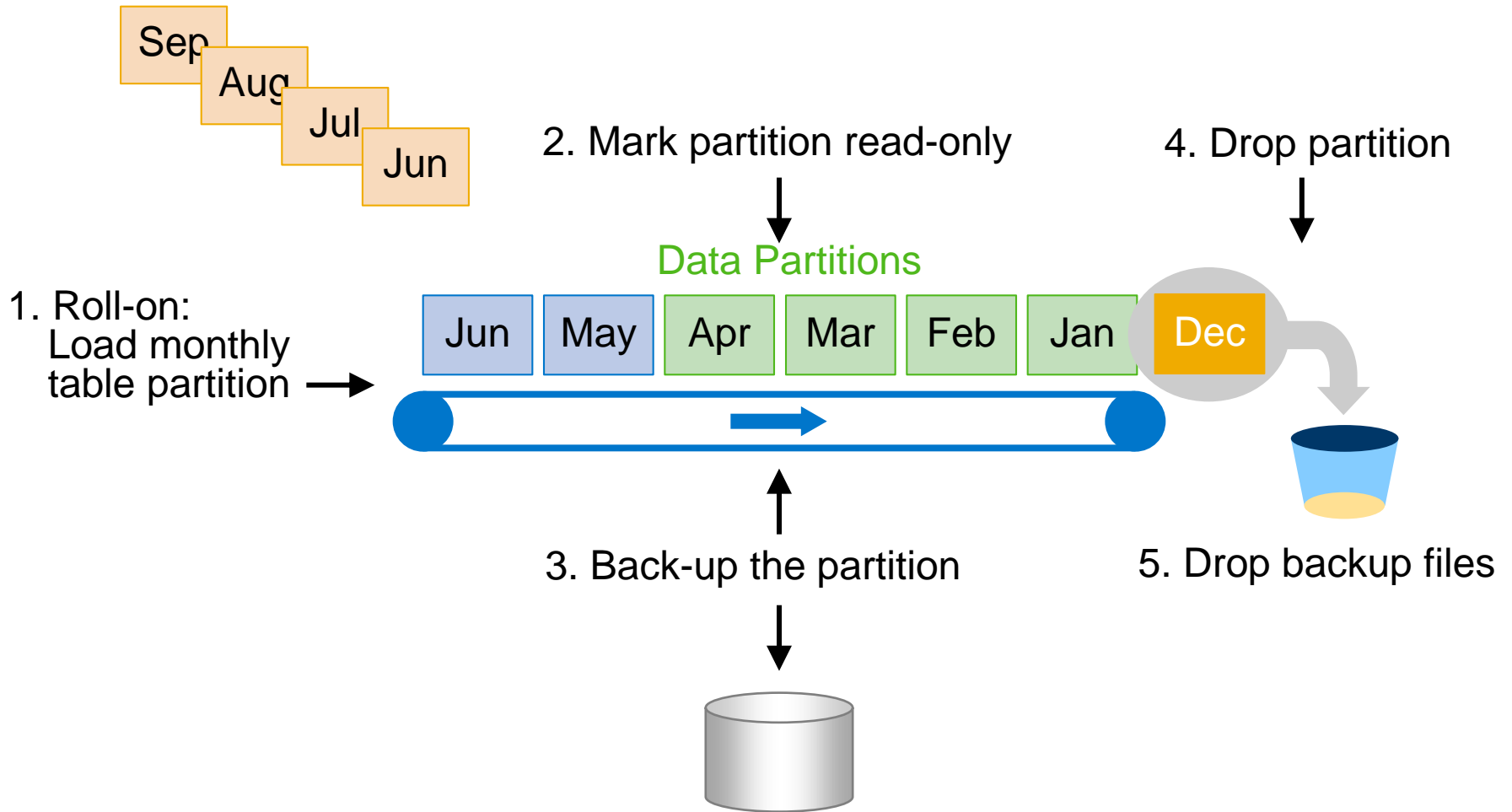
Data decreases in value over time

Data lifecycle



Information lifecycle management

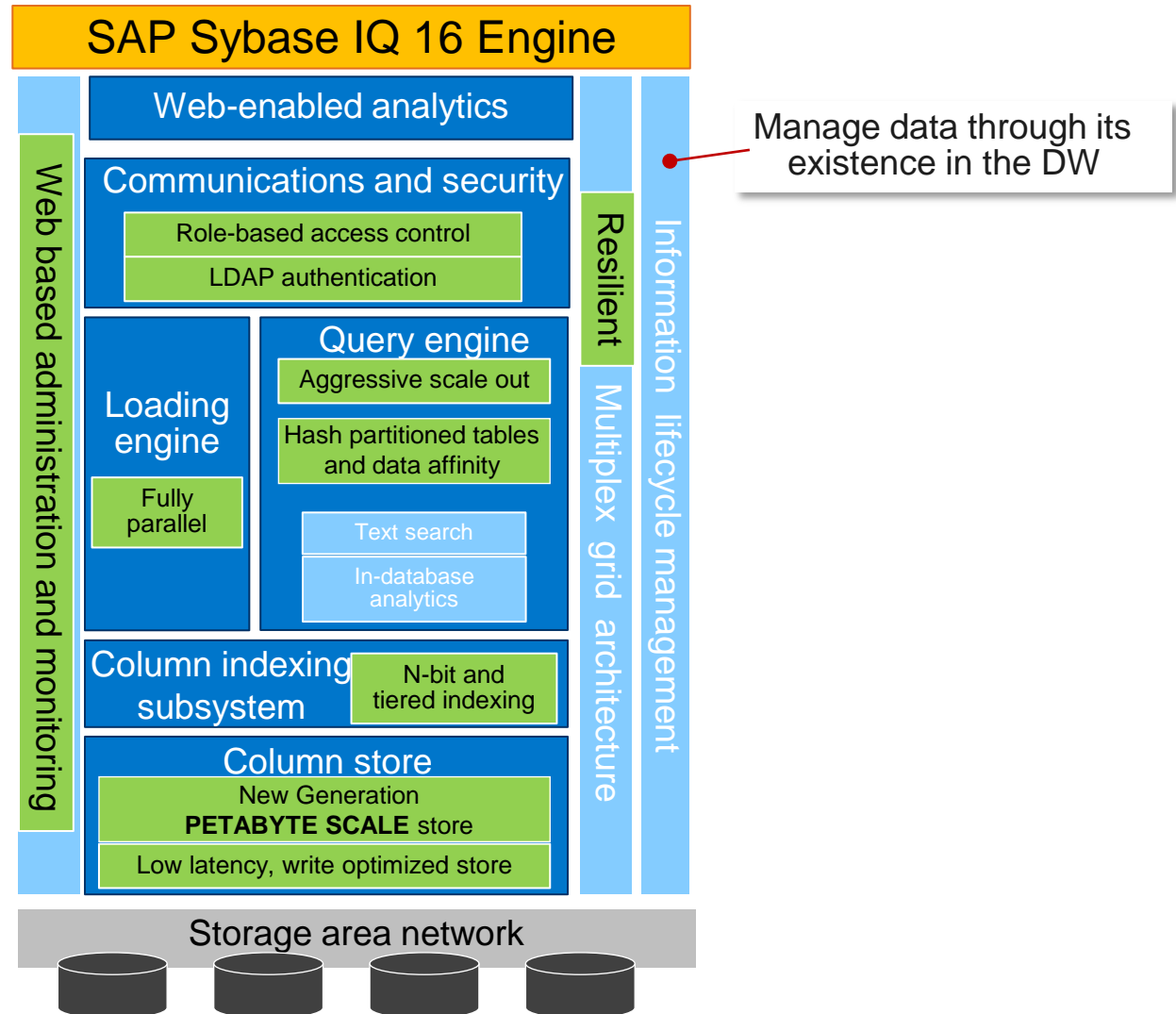
Data partitioning and placement according to data value



SAP Sybase IQ VLDB Option

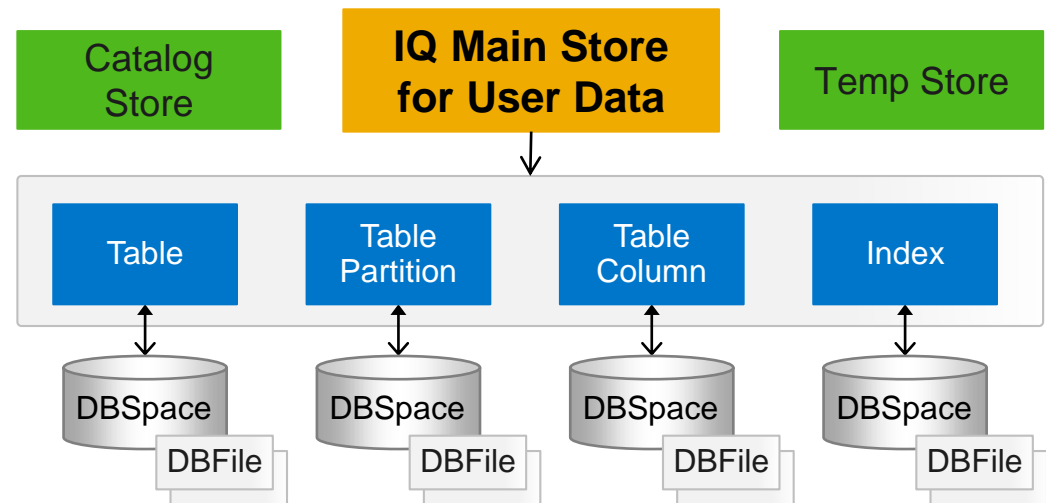
SAP Sybase IQ

Information lifecycle management



SAP Sybase IQ VLDB option

- Value-range-based data partitioning
- Multiple user DBSpaces
- Separate unstructured data from transactional data
- Place frequently accessed data on fast storage
- Granular database administration with read-only, read-write, on-line and off-line DBSpaces



VLDB option

Benefits

Option	Partitioned Tables	Number of User DBSpaces	Database Object Placement	DBSpace Attributes	DBSpace Management
VLDB Option	<ul style="list-style-type: none">• Partition by range; single column partition key	<ul style="list-style-type: none">• Multiple DBSpaces, each with multiple DBFiles• Unlimited data volume	<ul style="list-style-type: none">• Place database objects (tables, table partitions, columns, indexes) in specific DBSpaces	<ul style="list-style-type: none">• DBSpaces can be marked read-only, read-write, on-line or off-line	<ul style="list-style-type: none">• Validate read-write portions of database separately from read-only• Backup read-write DBSpaces separately from read-only
SAP Sybase IQ Base Product	<ul style="list-style-type: none">• Single table partition	<ul style="list-style-type: none">• Single user DBSpace with multiple DBFiles• Unlimited data volume	<ul style="list-style-type: none">• All database objects are placed in one user DBSpace	<ul style="list-style-type: none">• Single user DBSpace is read-write and on-line	<ul style="list-style-type: none">• Validate and backup single user DBSpace as a unit

ILM in SAP Sybase IQ

Partitioning and placement

IQ provides partitioning and placement features to manage the storage and movement of data:

- Partitioning divides data into non-overlapping subsets across a dimension, such as “date”. For example, you may partition customer order data by date
- Placement maps a data partition to a particular area of storage: the partition “June Customer Orders 2009” resides in file “/opt/data/orders/june2009.dat”

Separate big, unstructured data from transactional data:

- Different levels of protection
- Different administration needs
- Use of tiered storage to control cost

Controls for database administration

Database administrative operations can be performed with finer control

- The database can be divided into read-only and read-write sections that are managed differently
 - Backup and restore time can be reduced by backing up read-only data once
 - Data validation can be invoked on just the read-write portions of the database
- Frequently accessed data can be assigned to faster data storage, and less frequently accessed data can be segregated to cheaper, slower storage

Partition and position a table in IQ

Partition by range: single column partition key

1) Partition table Orders

```
CREATE TABLE Orders (  
  OrderID    INT,  
  OrderDate  DATE,  
  Description CHAR(10) ,  
  PARTITION BY RANGE (OrderDate  
    ( p2010 VALUES <= '2010-12-31' IN FIBER,  
      p2011 VALUES <= '2011-12-31' IN FIBER,  
      pNextYear VALUES <= (MAX) IN FIBER);
```

Over time, as data is being loaded, start migrating older data to slower, cheaper storage

2) Move p2010 to SATA storage

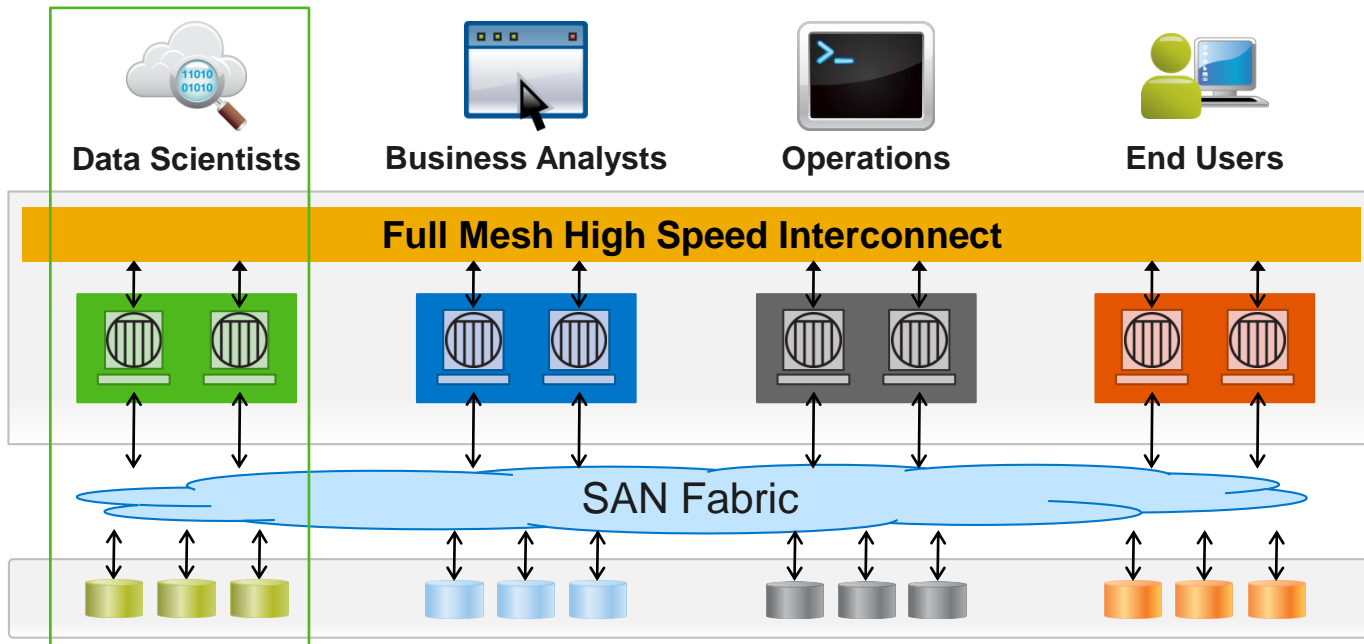
```
ALTER TABLE Orders MOVE PARTITION p2010 to SATA;
```

3) Later, drop very old partitions

```
ALTER TABLE Orders DROP PARTITION p2010;
```


Virtual data marts

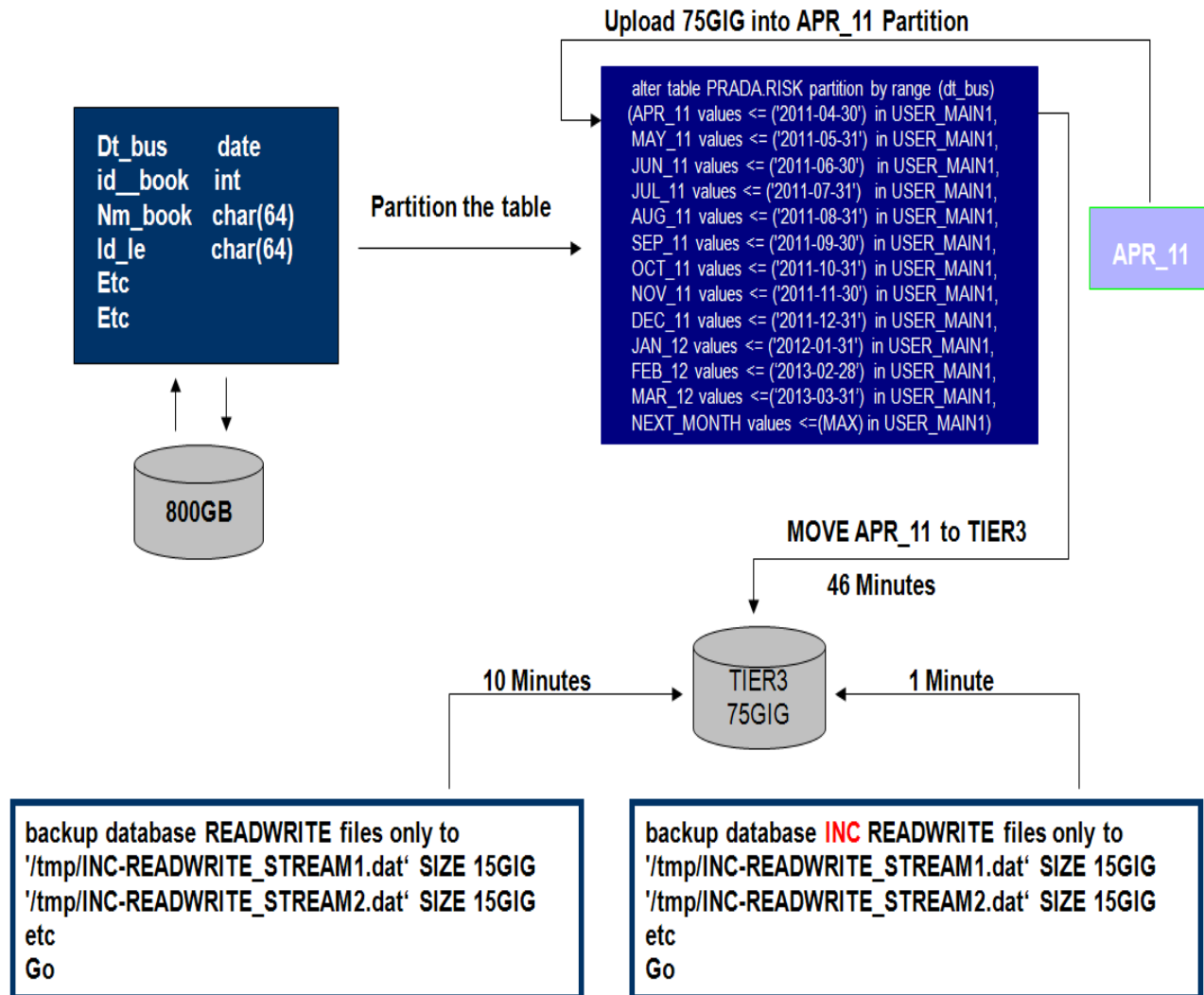
Unique, user community focused platform for big data analytics



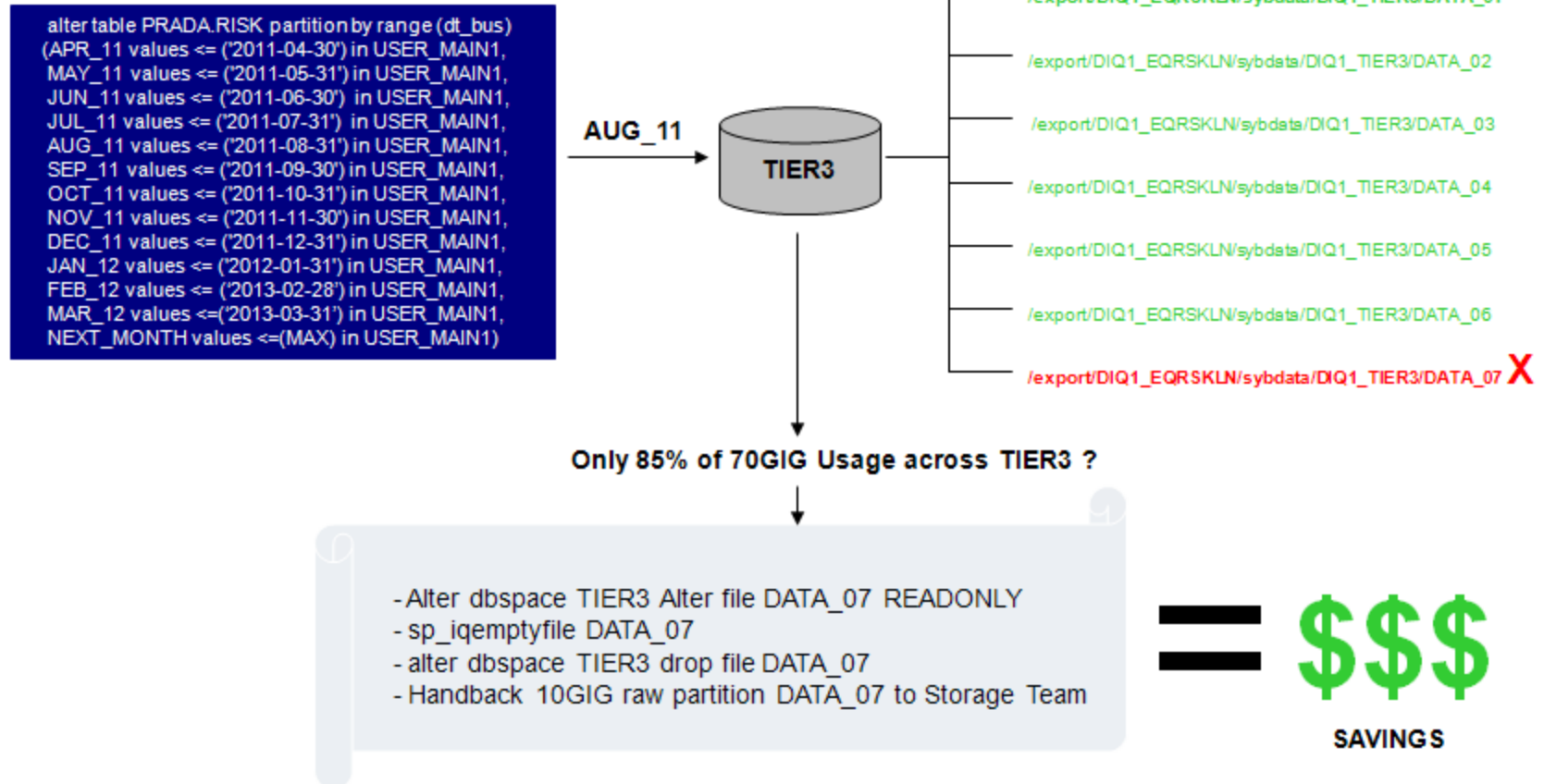
- **Virtual data mart of servers and partitioned storage**
 - Workload management
 - Privacy through isolation of resources
 - Separate big unstructured data from transactional data
 - Back up and restore independently

VLDB in use at a large bank

Shorten data backup times



Re-claim valuable storage space



INCREASE YOUR STORAGE EFFICIENCY ACROSS ALL YOUR DBSPACES

SAP Sybase PowerDesigner ILM Model for SAP Sybase IQ



ILM in SAP Sybase PowerDesigner

Model the database

Create DBSpaces

- Assign cost

Create a new lifecycle

- Assign start date and phase retention periods

Associate tables with lifecycle

- Select date column partition key

Estimate cost savings

Generate scripts to move partitions through DBSpaces as they age

Create lifecycle

Lifecycle Properties - ROLLONOFF (ROLLONOFF)

Dependencies Extended Dependencies Version Info

General Phases Tables Notes Rules

Name: ROLLONOFF

Code: ROLLONOFF

Comment:

Stereotype:

Policy type: Age-based

Start date (M/d/yyyy): 1/1/2008

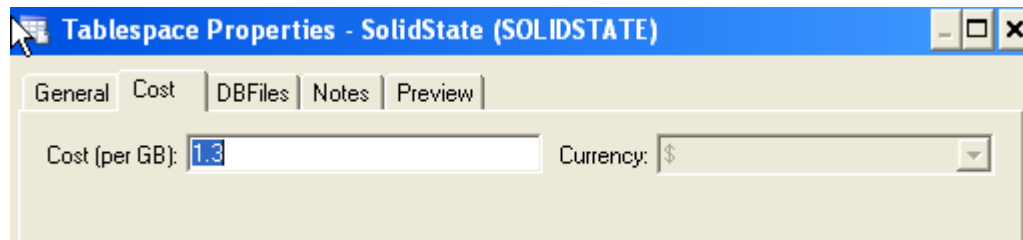
Total retention: 2 Time unit: Year

Partition range: 1 Time unit: Month

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Lifecycle properties

Assign a cost to the storage:

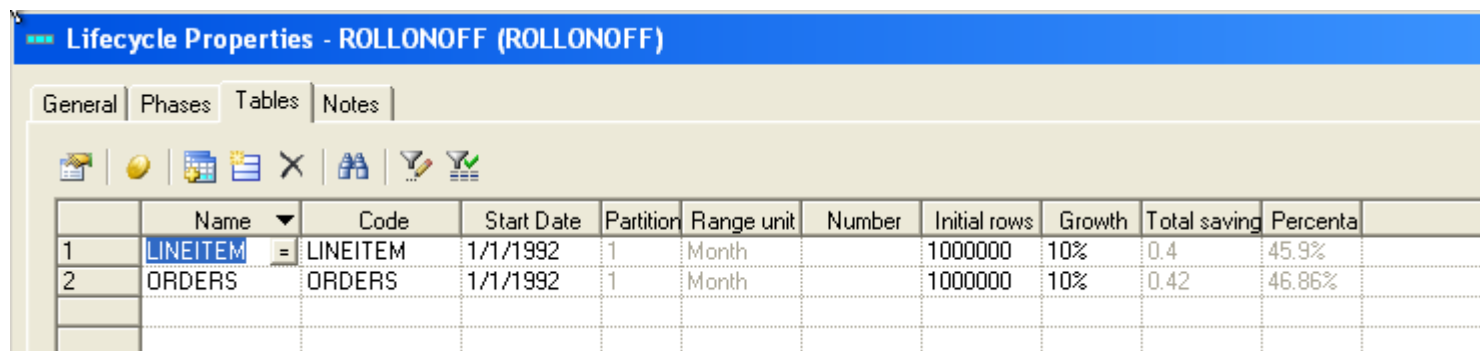


Tablespace Properties - SolidState (SOLIDSTATE)

General Cost DBFiles Notes Preview

Cost (per GB): 1.3 Currency: \$

Indicate which tables are part of the lifecycle:

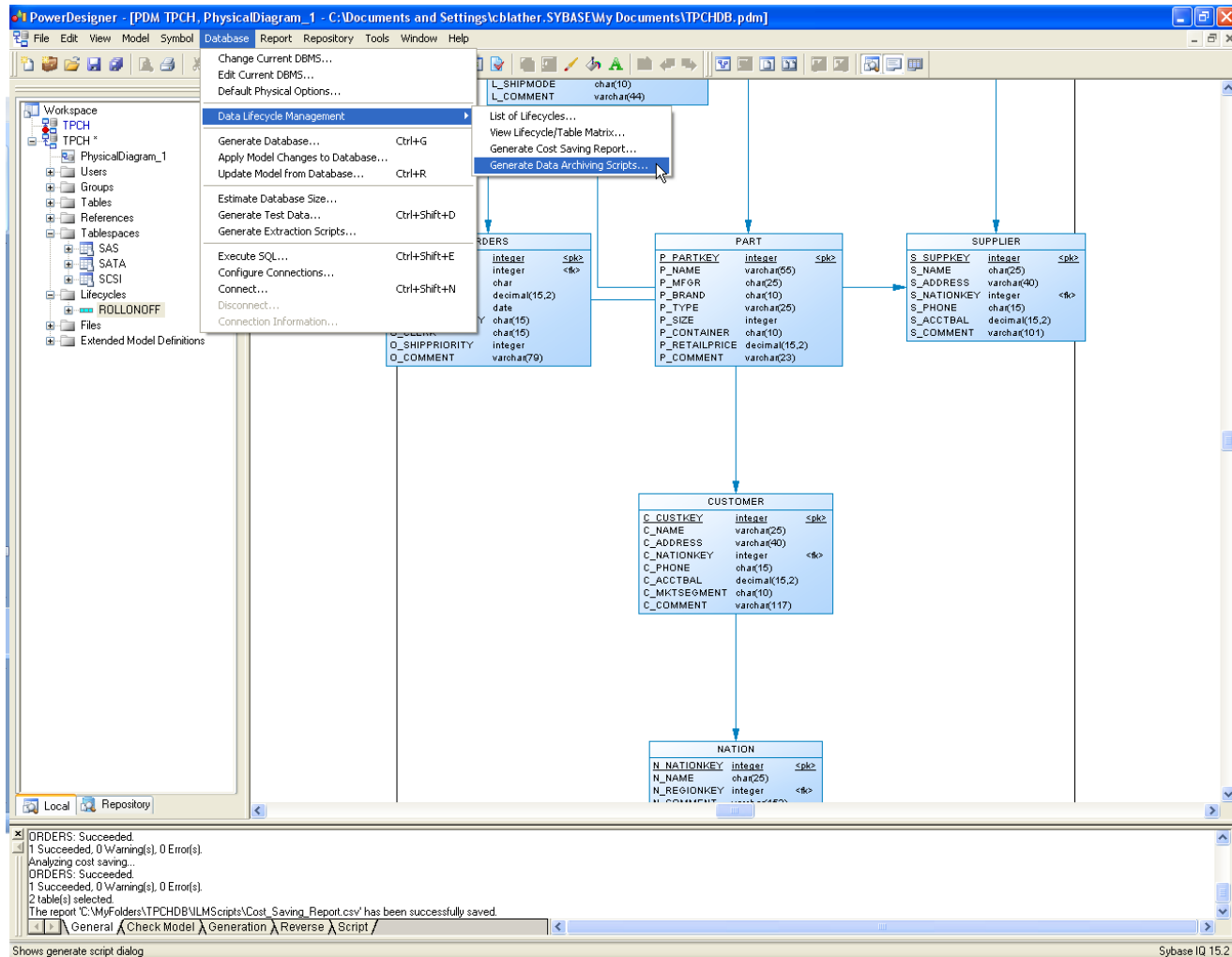


Lifecycle Properties - ROLLONOFF (ROLLONOFF)

General Phases Tables Notes

	Name	Code	Start Date	Partition	Range unit	Number	Initial rows	Growth	Total saving	Percenta
1	LINEITEM	LINEITEM	1/1/1992	1	Month		1000000	10%	0.4	45.9%
2	ORDERS	ORDERS	1/1/1992	1	Month		1000000	10%	0.42	46.86%

Generate data movement scripts



Generate cost savings report

Generate cost savings information

Lifecycle Properties - ROLLONOFF (ROLLONOFF)

General Phases **Tables** Notes Rules Dependencies Extended Dependencies Version Info

Analyze Cost Saving

	Name	Code	Start Date	Partition	Range unit	Initial rows	Grow	Total saving	Percentage	Partition key
1	ORDERS	ORDERS	1/1/2008	1	Month	1500000	10%	0.54	48.93%	ORDERS.O_ORDERDATE
2	LINEITEM	LINEITEM	1/1/2008	1	Month	6001215	10%	2.34	49.12%	LINEITEM.L_COMMITDATE

<< Less

Report:

	A	B	C	D	E	F	G
1		2008		2009		Total saving	
2	LINEITEM	\$0.76	33.50%	\$1.58	63.31%	\$2.34	49.12%
3	ORDERS	\$0.18	34.25%	\$0.37	64.00%	\$0.54	48.93%
4	All tables	\$0.94		\$1.95		\$2.88	
5							

Help

Summary

SAP Sybase IQ VLDB option

Summary

Storage strategies for managing big data — to service data requests responsively, while controlling costs

Learn more:

- Visit: <http://www.sap.com/iq>
- Call: 1-877-727-1127 FREE ext. 11001



Thank you

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