Informix Ultimate Warehouse Edition
Informix Warehouse Accelerator

Juhász Csaba
csaba_juhasz@hu.ibm.com

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AGENDA

1	Data Warehousing Trends
2	Introducing Informix Ultimate Warehouse Edition
3	The Sweet Spot
4	Conclusion

Trends: Third Generation Database Technology

IDC *Analyze the Future*   Carl Olofson– Feb. 2010

1st Generation

Vendor proprietary databases (IMS, IDMS, Datacom)

2nd Generation

RDBMS for Open Systems, dependent on disk layout, limitations in scalability & disk I/O

3rd Generation

Most data warehouses will be stored in a columnar fashion
Most OLTP databases will either be augmented by an in-memory database (IMDB) or reside entirely in memory
Most large-scale database servers will achieve horizontal scalability through clustering

Trends: Key Drivers of Technology Changes for Warehouses

tdwi

The Data Warehouse
Institute - 2010

What problems will eventually drive you to replace your current primary data warehouse platform?
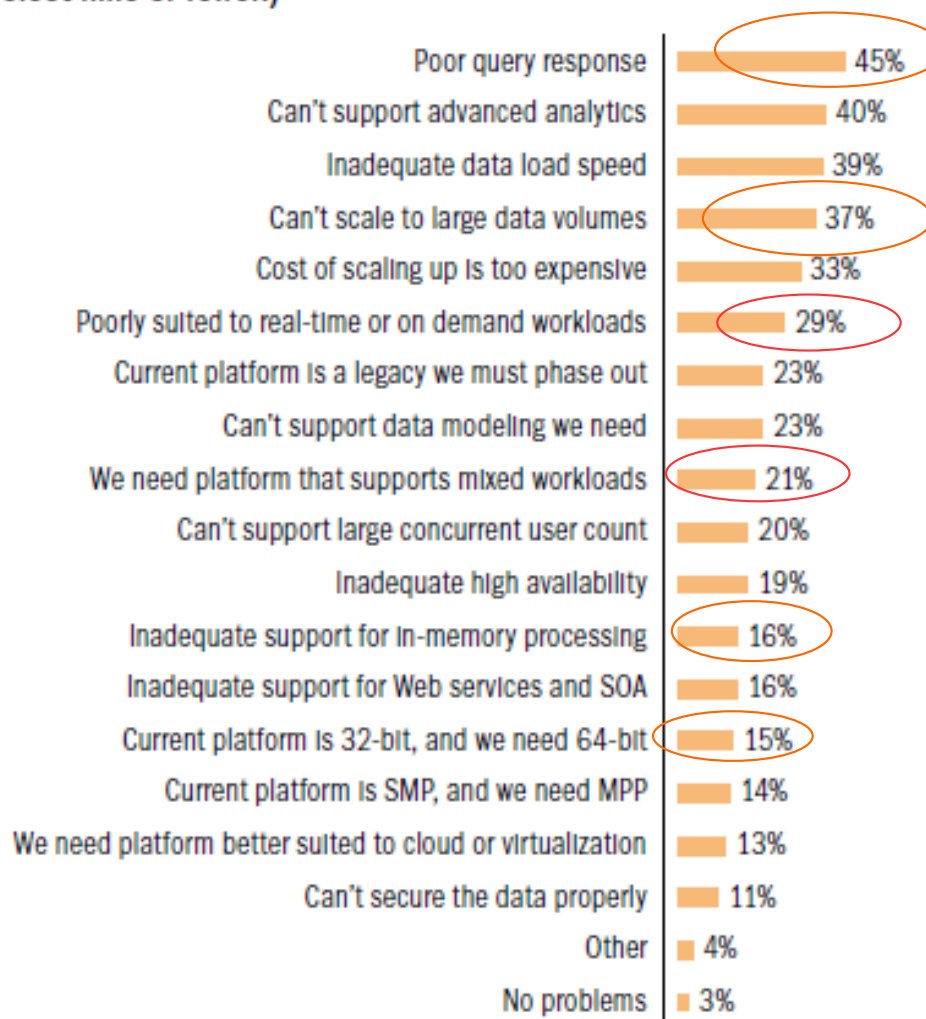(Select nine or fewer.)

Problem	Percentage
Poor query response	45%
Can't support advanced analytics	40%
Inadequate data load speed	39%
Can't scale to large data volumes	37%
Cost of scaling up is too expensive	33%
Poorly suited to real-time or on demand workloads	29%
Current platform is a legacy we must phase out	23%
Can't support data modeling we need	23%
We need platform that supports mixed workloads	21%
Can't support large concurrent user count	20%
Inadequate high availability	19%
Inadequate support for in-memory processing	16%
Inadequate support for Web services and SOA	16%
Current platform is 32-bit, and we need 64-bit	15%
Current platform is SMP, and we need MPP	14%
We need platform better suited to cloud or virtualization	13%
Can't secure the data properly	11%
Other	4%
No problems	3%

Figure 3. Based on 1,752 responses from 417 respondents; 4.2 responses per respondent on average.

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New order of Performance!

10s to 100s of times faster

Predictable response times

Take "No" for an answer!

No maintenance!!

Near zero administration!!

Storage allocation/data partitioning

Index maintenance

Statistics maintenance

Application changes

Cube maintenance or summary tables

NO

IBM
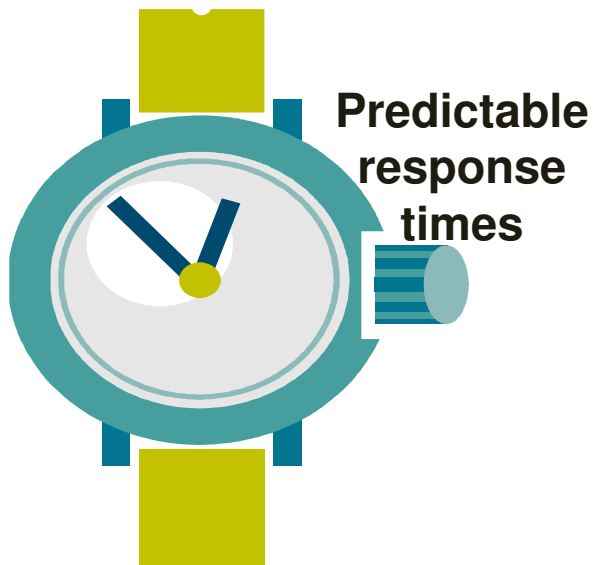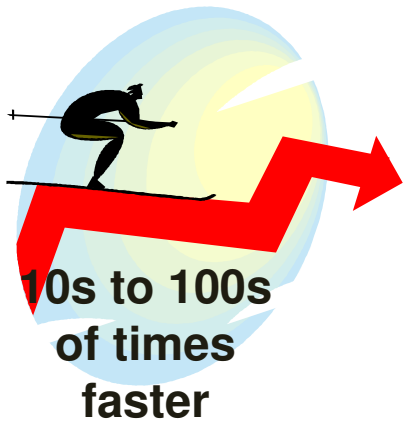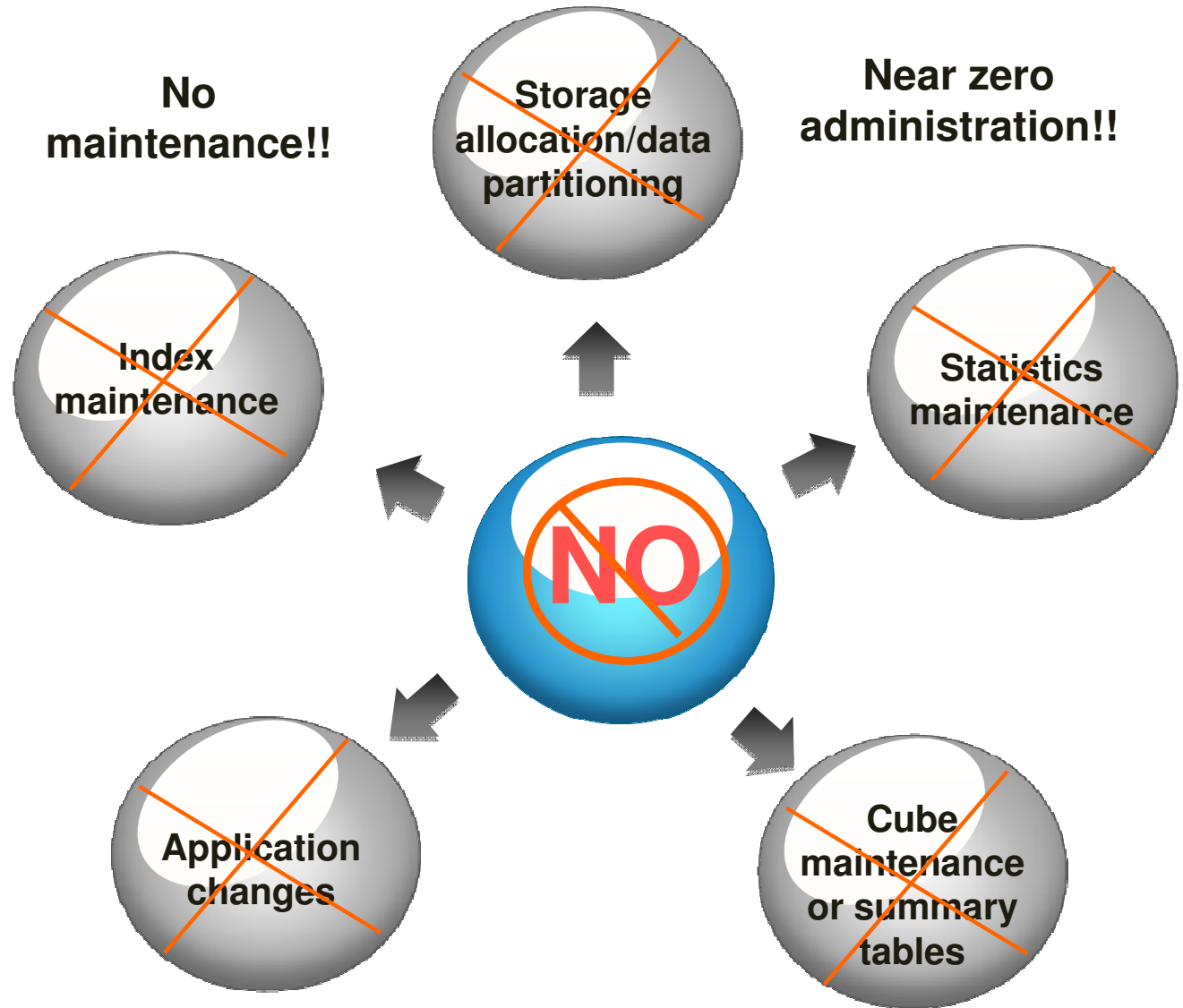
Informix Ultimate Warehouse Edition

What it is

- New Informix edition for warehouse
- Packaged as:
  - Informix Ultimate Edition
  - **Informix Warehouse Accelerator (IWA)***
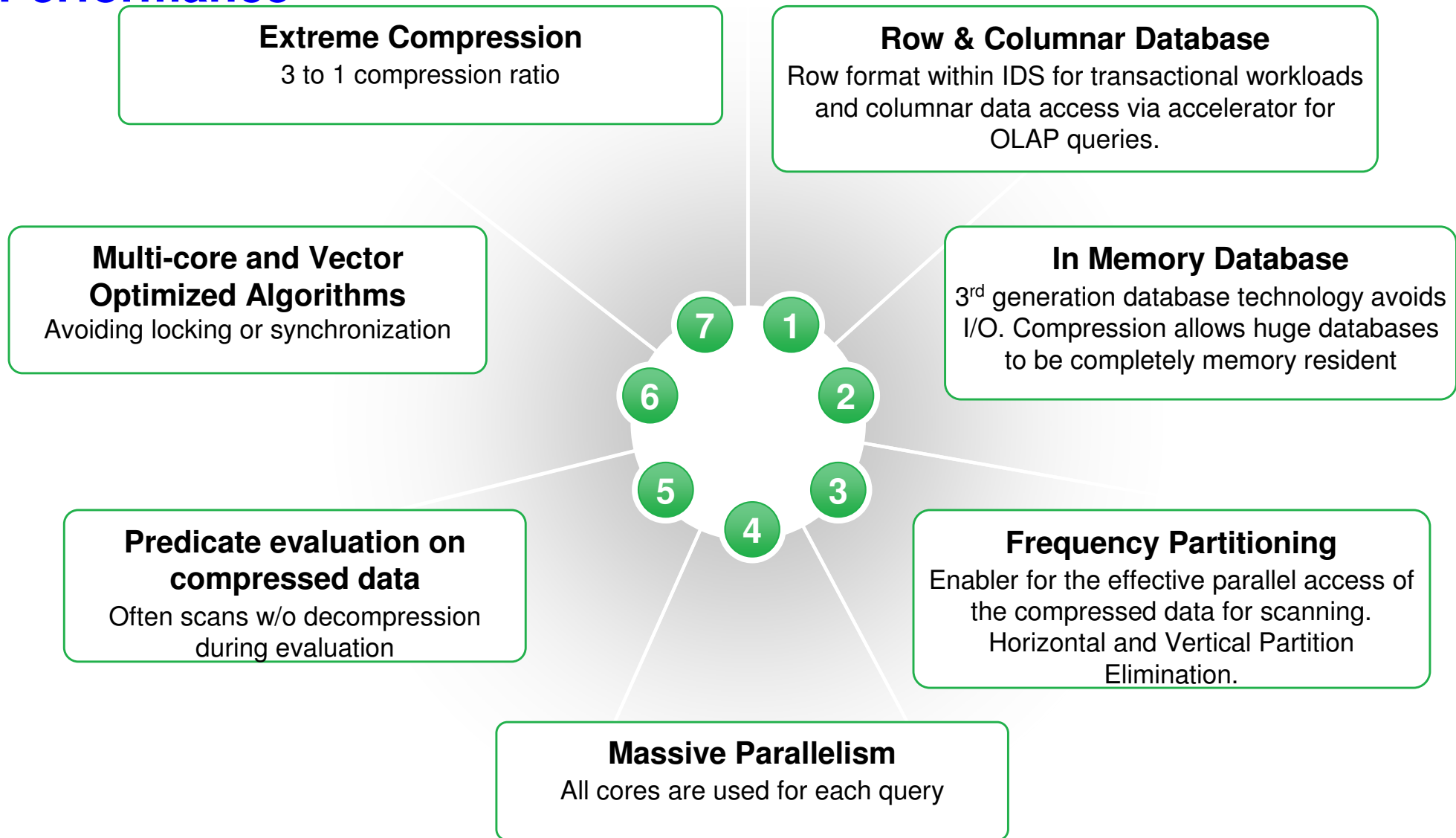 - Compression (Informix)

What it does

- Compresses and processes data mart entirely in memory
- Uses a deep columnar approach for optimizing performance
- Runs as an add-on to Informix

Benefits

- Order of magnitude or more performance gains
- Transparent to BI apps – queries continue to run against Informix
- No maintenance
- Manage warehouse on Informix

*Informix Warehouse Accelerator requires a Linux Intel system as it is relies on optimizations in that environment
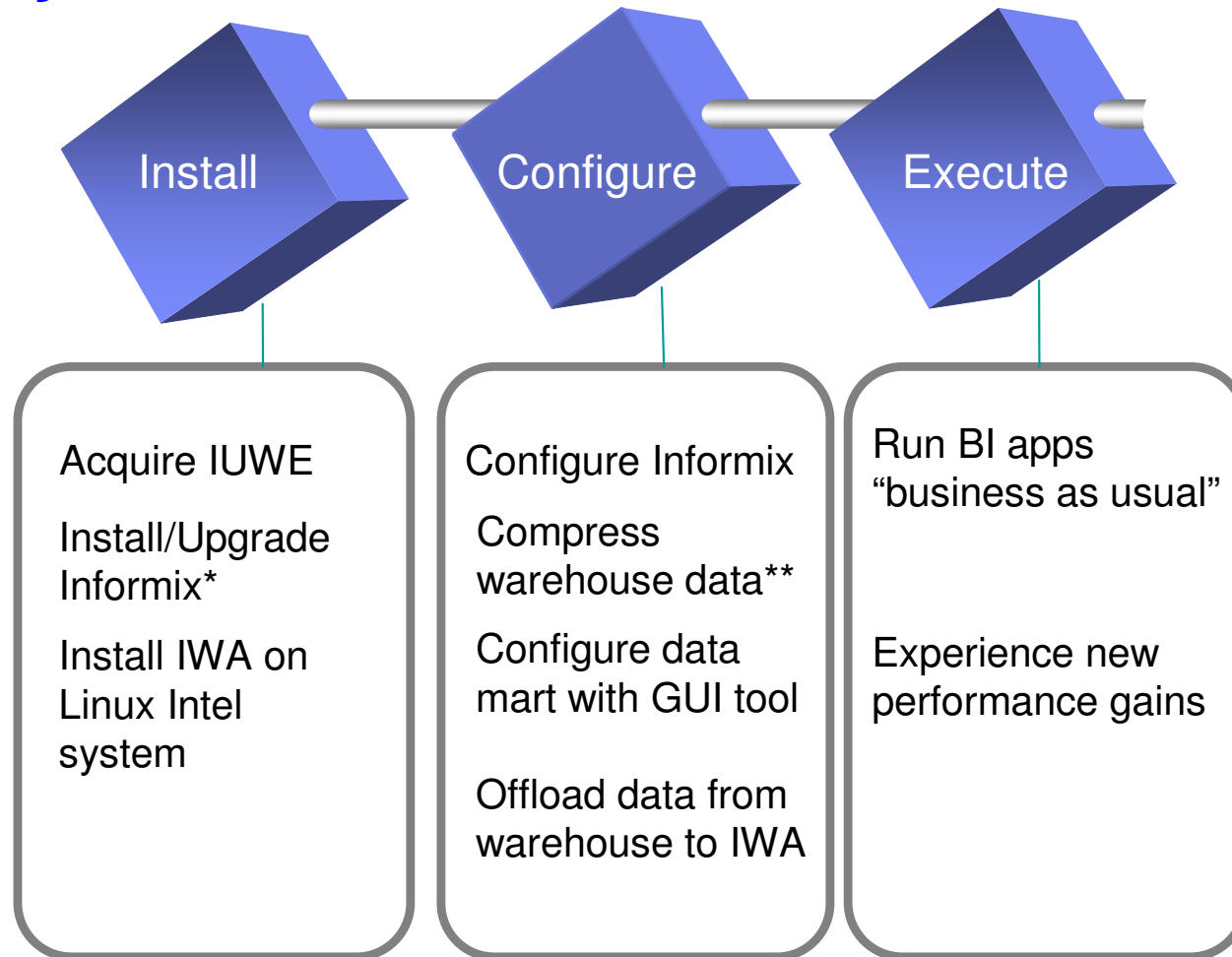
Informix Warehouse Accelerator – Breakthrough Technology for Performance

Extreme Compression
3 to 1 compression ratio

Row & Columnar Database
Row format within IDS for transactional workloads and columnar data access via accelerator for OLAP queries.

Multi-core and Vector Optimized Algorithms
Avoiding locking or synchronization

In Memory Database
3rd generation database technology avoids I/O. Compression allows huge databases to be completely memory resident

Predicate evaluation on compressed data
Often scans w/o decompression during evaluation

Frequency Partitioning
Enabler for the effective parallel access of the compressed data for scanning. Horizontal and Vertical Partition Elimination.

Massive Parallelism
All cores are used for each query

7 1 6 2 5 3 4

Comes with Smart Analytics Studio, a GUI tool, for configuring data mart and monitoring IWA

Informix Ultimate Warehouse – Performance, Simplicity, Transparency

Install → Configure → Execute

Install

Acquire IUWE

Install/Upgrade Informix*

Install IWA on Linux Intel system

Configure

Configure Informix

Compress warehouse data**

Configure data mart with GUI tool

Offload data from warehouse to IWA

Execute

Run BI apps "business as usual"

Experience new performance gains

*Informix Ultimate included with IUWE can be installed on any of 4 supported 64-bit platforms

**Compression feature included with IUWE can be used to compress warehouse data optimizing storage

Informix Ultimate Warehouse – Performance, Simplicity, Transparency

BI App

Configure, offload data mart

HPUX-64, AIX-64, SOL-64, Linux-64

Linux-64, Intel

Redirect queries

Informix env

Informix Warehouse Accelerator

Query Results

Warehouse   DataMart

IBM Smart Analytics Studio

Easy to use graphical tool for data mart configuration

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Customer Test Scenarios

Federal Agency - Germany

- 537 Queries executed over a 30 GB data mart
- 432 Queries accelerated via IWA
- Performance with IDS+IWA was 90 times faster than XPS

Federal Agency - USA

- Sample data set from 2 TB warehouse
- 8 representative queries ran 127 times faster

Large Shoe Retailer

- BI Queries on 150 GB data set
- Fact table – 1 billion rows
- Queries against Informix – 22 minutes
- Queries against Informix + IWA : 4 secs, 330 times faster

Large Global Retailer

- 10 GB data mart sample
- Fact table – 25 million rows
- Queries against Informix – over 20 mins
- Queries against Informix + IWA: 4 secs, 300 times faster

Sample Customer Result – US Federal Agency

> **The numbers say it all!**

Query	Description	Informix	Informix w/ IWA	Notes	Improvement
1	**Find Top 100 Entities**	**1:28:22**	**0:01:28**	**Fact Table Scan**	6023.23%
2	**Find Top 100 Members**	**1:22:32**	**0:01:05**	**Fact Table Scan**	7640.45%
3	**Summarize all transactions by State and County**	**1:34:37**	**0:00:14**	**Fact Table Scan**	41708.49%
4	**Summarize all transactions by State, County, City, State, Zip, Program, Program Year, Commodity and Fiscal Year**	**1:48:58**	**0:00:41**	**Fact Table Scan**	15800.89%

Sample Customer Result – Large Shoe Retailer

The numbers say it all!

Query	Informix (secs)	Informix w/ IWA (secs)	Improvement
1	1320	4	330 times
2	63	2	31 times
3	220	2	110 times
4	1800	4	450 times
5	120	2	60 times
6	1800	2	900 times
7	2700	2	1350 times

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Summary

1 — Informix Ultimate Warehouse Edition is a new Informix warehouse offering based on 3rd generation database technology

2 — IUWE is for Informix, XPS and Red Brick customers and ideal for speeding up queries against star or snow-flake schemas

3 — Using deep columnar, compression and in-memory data mart processing, IUWE can provide an order of magnitude or more performance gains

4 — For more information visit:
```
http://www.ibm.com/software/data/informix/warehouse
ftp://public.dhe.ibm.com/software/data/sw-library/
informix/whitepapers/InformixWarehouseAcceleratorPaper.pdf
```

Thank You

Questions?
contact Csaba Juhász,
csaba_juhasz@hu.ibm.com