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Back to the Future

Mainframes, Open Systems,
and the New Role of Exadata

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Back to the Future

Mainframes, Open Systems, and the New Role of Exadata

I wish I still had some clothes like that in the back of my closet.

Oh wait, I think I do!

by Kerry Osborne

- an oldish Oracle guy

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whoami – (and why am I here?)

Started working with Oracle in 1983
Version 2 of Oracle on Vax

Never worked directly for Oracle
Not certified in anything (except Scuba Diving)
But I have attended the Hotsos Symposium 6 years in a row!

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whoami – (my prejudices)

Clearly I am an Oracle Bigot

Agenda

- History
- Roll Your Own vs. Integrated Systems
- Where Exadata Fits
- What the Future Holds?
- Questions

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When I was a boy …

Seat Belts Didn't Exist (for the most part)
The 3 Point Shot Didn't Exist
Video Games Didn't Exist
Computers Didn't Exist

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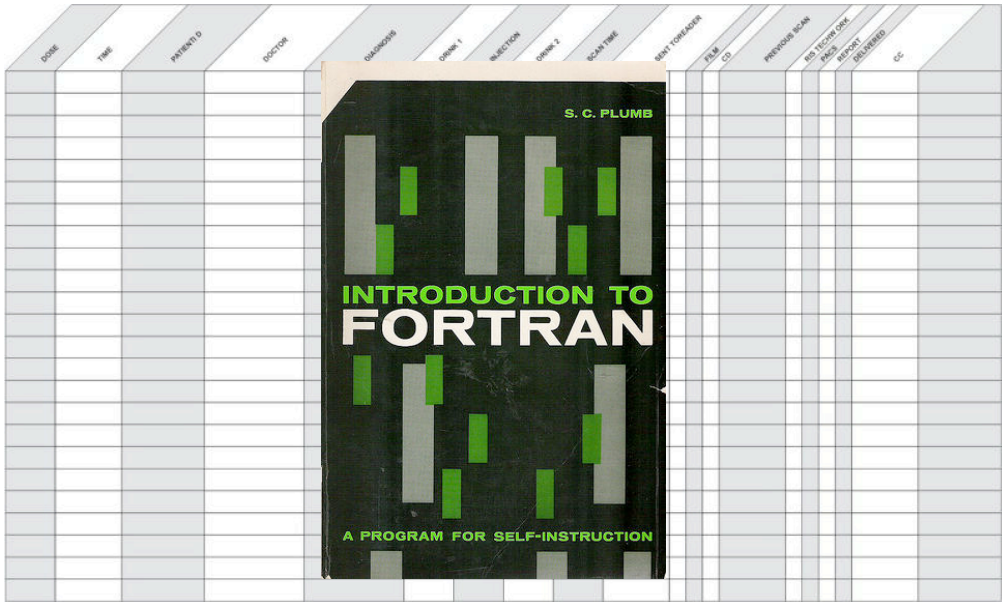
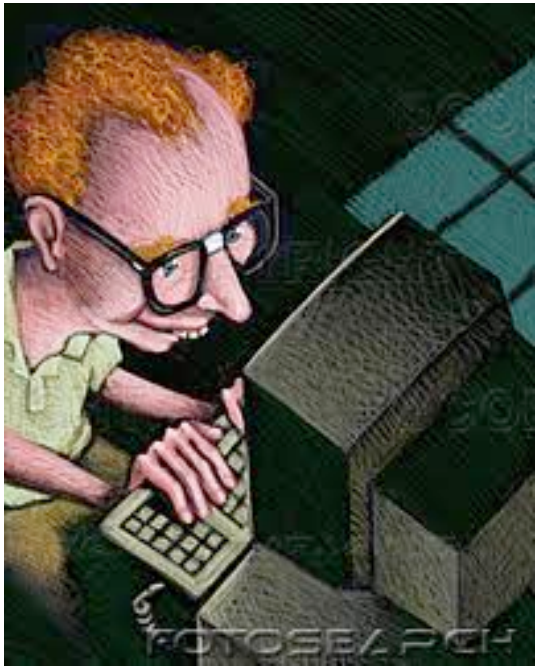
How I Became a Computer Geek …

By Accident





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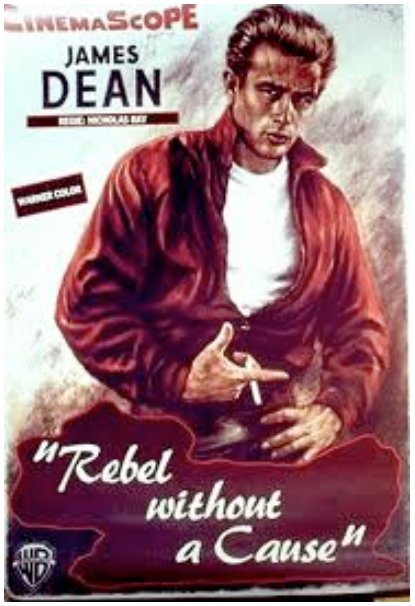
50's

IBM, UNIVAC, Honeywell
Only available to government (IRS, Census, Military)
Vacuum Tubes -> Transistors
1st Magnetic Hard Disk (50 – 2' Disks = 5Megs)
There was no software (or programmers)
FORTRAN not released until 1957 (first compiler)
COBOL not invented until 1959
SAGE (Semi-Automatic Ground Environment)
RAND did most of the programming



•SAGE (Storage Application for the Grid Infrastructure)

Exadata!

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A Brief History of "Oracle" Time

V1 – No Such Thing
V2 – 1979 – Assembly – Vax – 2 task
V3 – 1983 – rewritten in C – Vax
V4 – 1984 – Read Consistency – multi-platform
V5 – 1985 – Client/Server
V6 – 1988 – OPS, B-Tree, RBS, RLL, PL/SQL
V7 – 1992 – CBO, proc's, R.I., PX, Histograms, Trace
8i – 1997 – Partitioning, Bind Variable Peeking
9i – 2001 – RAC, Flashback, Data Guard
10g – 2003 – ASM, AWR, SQL_ID, RBO deprecated
11g – 2008 – Editions, SPM, PX Que, HCC – Exadata!
12c – 2011 – ?, Column Oriented, self managing, infinitely scalable, flashing li

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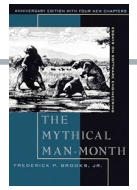
60's



IBM still the main player (System 360)
Only available to large business or government
IBM bundled Software (gave it away)
A few contract programming firms
A few programming firms started to reuse software

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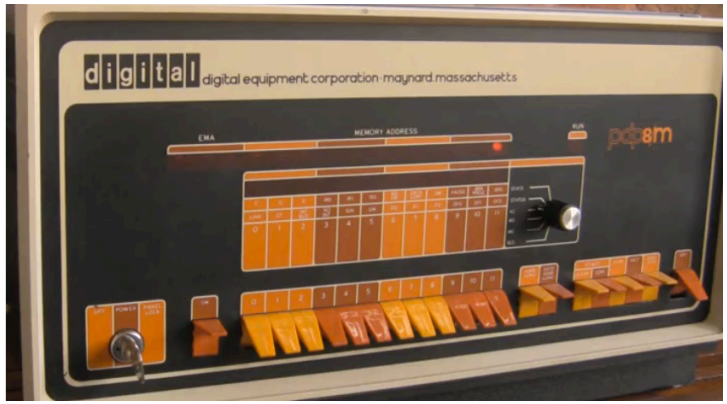
70's

IBM still the main player (S/370)
Mid Range Computers (IBM S/32-38, DEC PDP)
Only available to mid sized businesses & up
IBM started to charge for software (1st time)
"Unbundling" sets stage for Software Industry
Codd and Date invent RDBMS!



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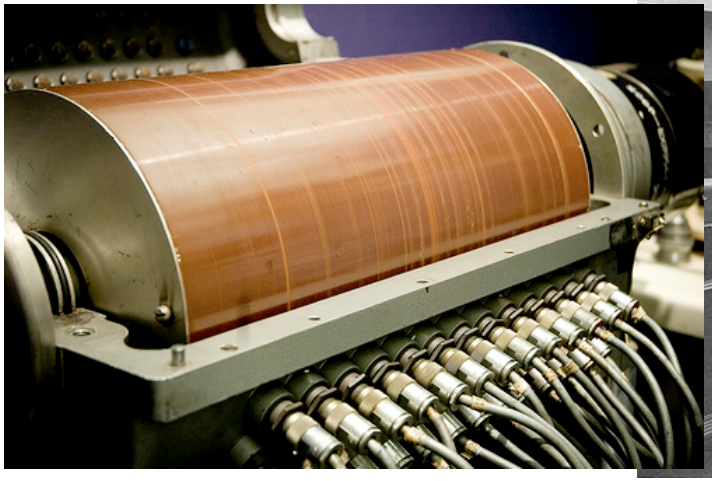
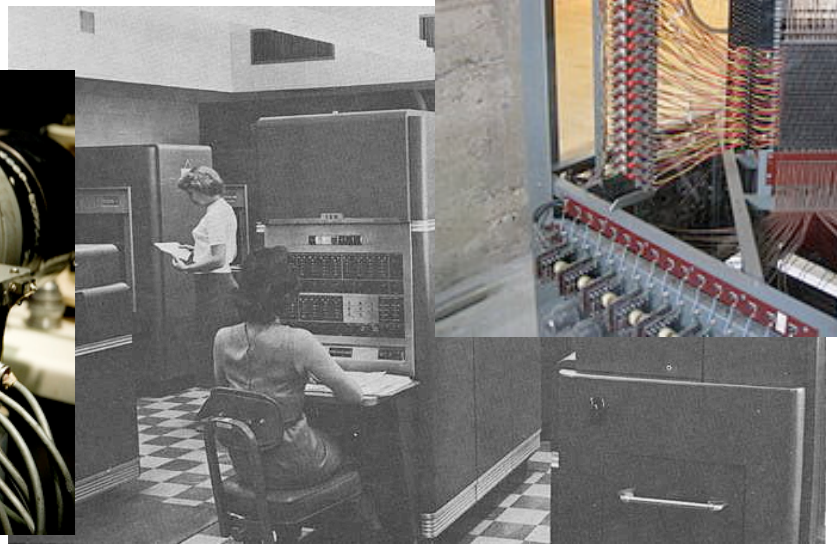
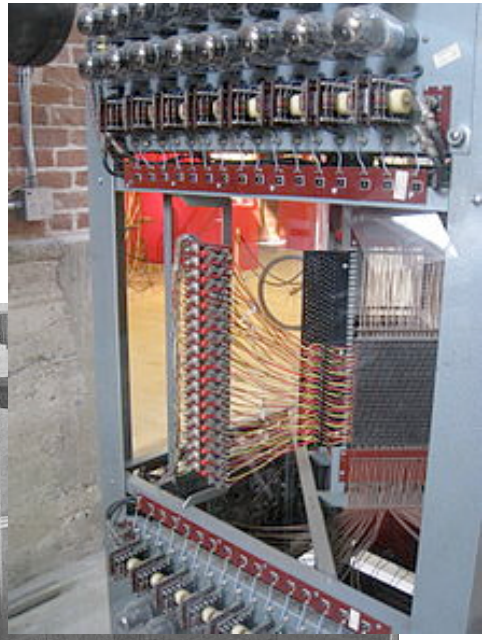
Mainframes

IBM is synonymous with the term
Term originally coined because of size of cabinets
Characteristics
- Designed for large scale applications
- Capable of running multiple O/S's
- HA architecture
- Shared Disk / DASD







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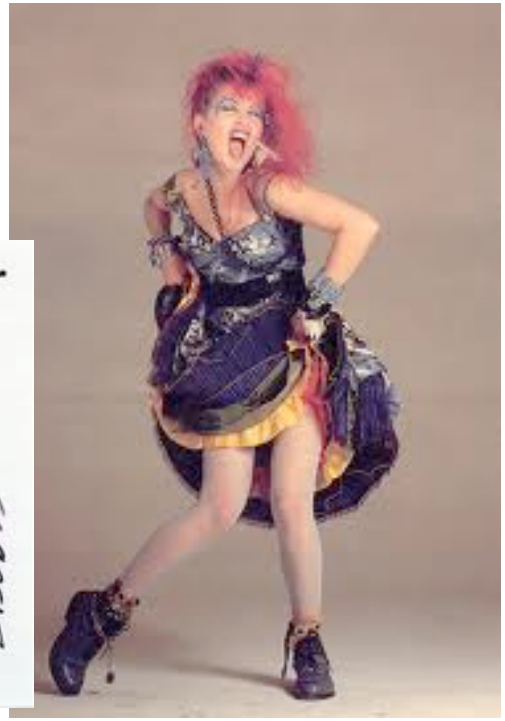
80's

PC revolution
The rise of "Best of Breed"
Mini's take over – Vax, AS400, etc…
Sun Microsystems Founded
Client Server Aps



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Micro Computers (PC's)

1977 – Apple II

1981 – IBM 5150 (PC)

apple II

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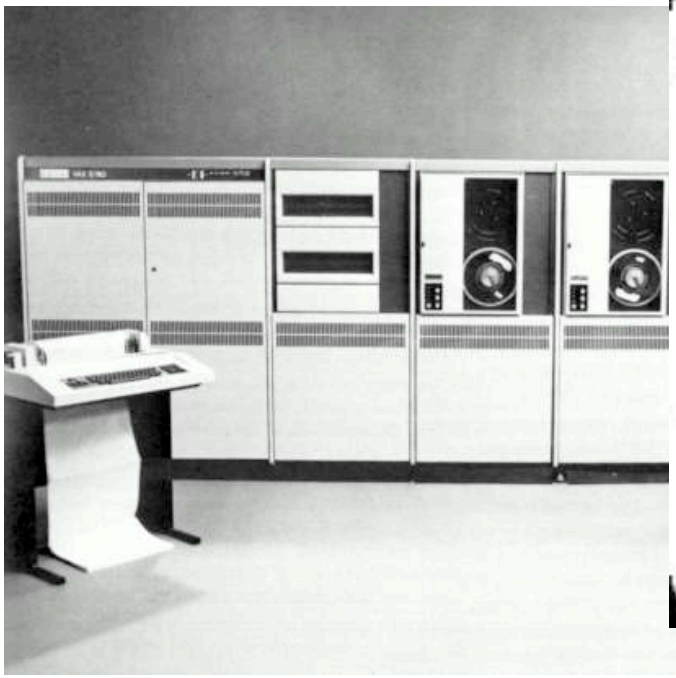
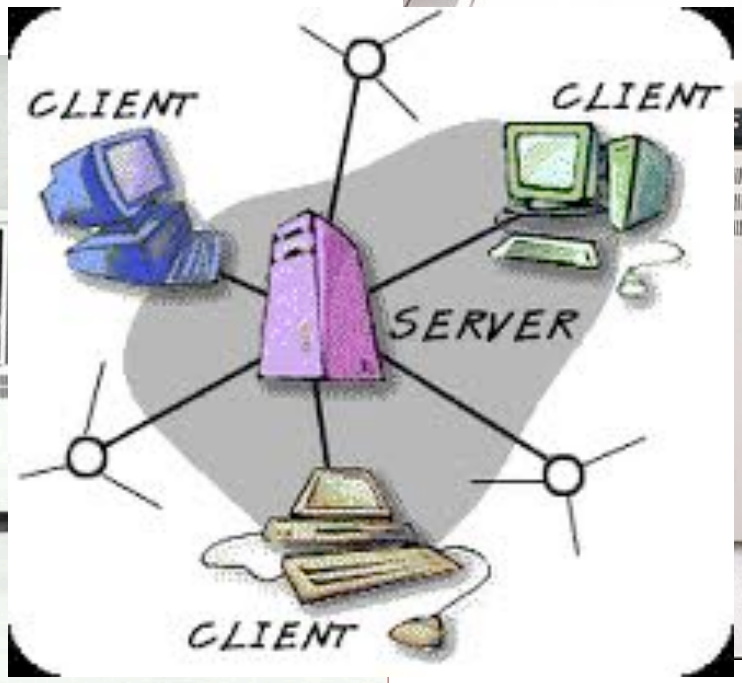
Mini Computers

Digital Equipment Vax 11/780





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90's

Internet invented (by Al Gore?)
Mosaic First Browser (1993)
Web Based Aps
The domination of "Best of Breed"
Cost of Integration Kills
Rise of Unix
IBM Spins Off Divisions
Dot-Com Boom
Google, Amazon and Ebay founded
Broadcast.com sold for ~5 Billion

Java Invented
1st Web Log (Blogging)

Demise of Mainframes?

In a 1991 article, Stewart Alsop, former editor-in-chief of InfoWorld, said, "I predict that the last mainframe will be unplugged on March 15, 1996."

Didn't Happen!

- While sales still declining, it's at a much slower pace
- Linux / virtualization is a big reason
- Increase in size of DB's is another reason
  - -Longer Retention (7 years is common now)
  - -Replication – trend of splitting DW and OLTP
  - -The more space you have the more space you use

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00's

Dot-Com Bubble Bursts
Nobody Does Anything for Several Years
Unix Rules (Linux)
Java Becomes Ubiquitous
Multi-Tiered Aps
Data Volumes Explode *
Slow Shift to Integrated Systems

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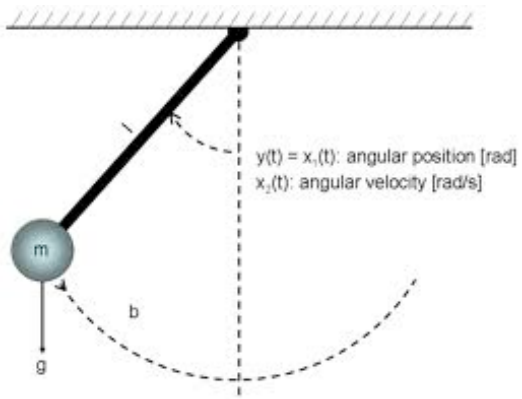
Newton's Third Law

~ *To every action there is an equal and opposite reaction …*

The pendulum swings both ways



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Build Your Own

Pros
- Unique
- You Get to Design it

Cons
- Unique
- You Have to Design it
- May Take 30 Years
- It May Never Work
- You Have to Fix it

* But it Travels Through Time (if you survive the trip it will be awesome)

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Preconfigured

Pros

- You can Drive it Off the Lot
- It Has A Design Legacy
- It Has Been Tested
- It Has A Warranty

Cons

- You Might See Another One
- Might Find A Better O-Ring

* But all the parts should work together nicely, and you can get fuel at 7-11

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Build Your Own

Advantage
- You can get it with no pickles

Disadvantage
- You have to wait

WHATABURGER
Just like you like it.

* and if you don't like it, it's at least partly your own fault

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DIY – Why People Do Do It

Business people like to think they (and their companies) are unique and that their "uniqueness" gives them an advantage in the market place.

IT people like tinkering with things. They often think they are smarter than the average bear and that they can put together parts and pieces into a more functional system at a lower cost.

Business people (and IT people) are afraid they will loose negotiating strength if they stick with a single vendor.

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DIY – Why People Don't Do It

It's rare that a business has such unique requirements that an integrated approach cannot handle it.

Fear makes the wolf bigger than he is. **~German Proverb**

People are more expensive than anything else and integrating a bunch of separate pieces can be extraordinarily expensive both in people costs and in time.

When trouble arises, "roll your own" architectures tend to foster finger pointing rather than constructive activities.

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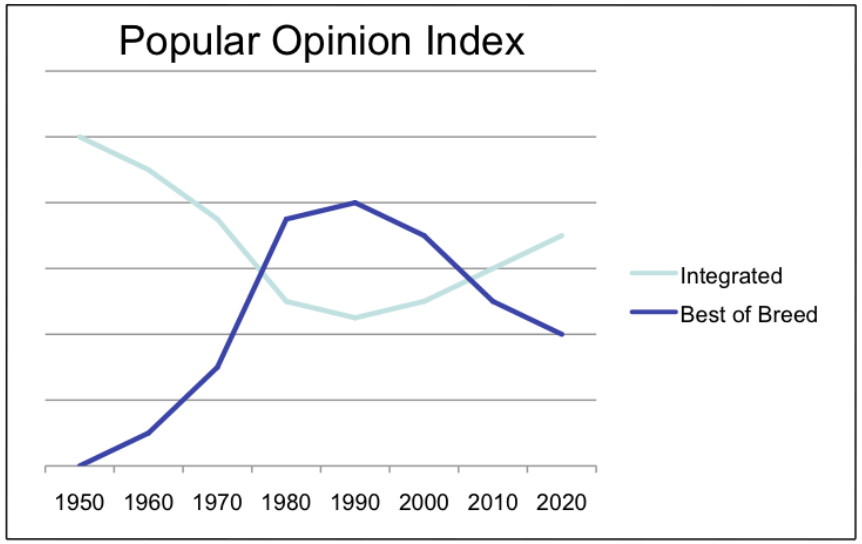
Why Exadata and Why Now?

Popular Opinion is Swinging to Integrated Systems
Exadata is an Integrated System
Exadata is Optimized for Oracle RDBMS
Data Volume Growth ***
Support Issues
Sun Acquisition



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What's He Got, That I Ain't Got?

DB Aware Storage (Exadata) is a Giant Leap Forward for Oracle

The Big Ah Ha! - bottleneck is often between disk and server

How to fix it?

- **Make the pipe bigger / faster (Infiniband and RDS)**
- **Reduce the volume of data (offloading optimizations)**

Ability to Run OLTP and DW Together

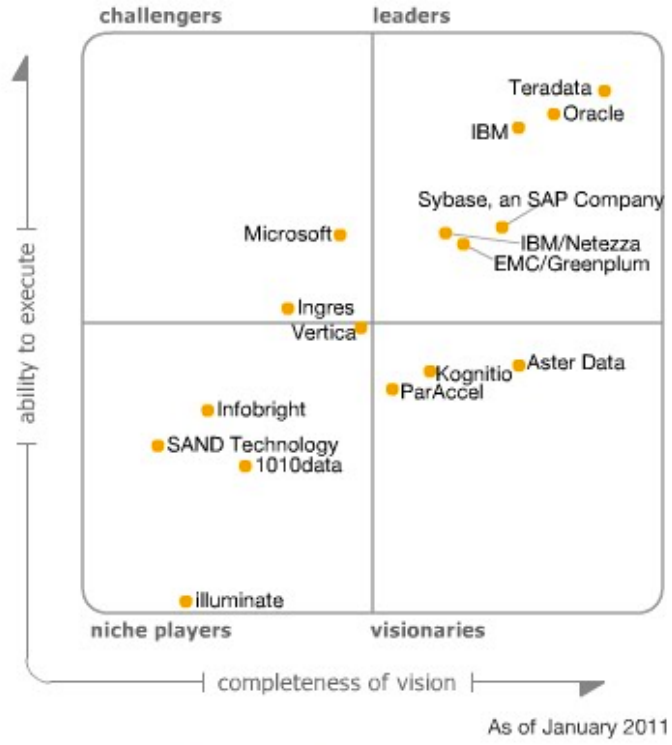
- **Vastly Reduces Data Volume and Processing**

It's Oracle

- **No Rewrite of Applications**

Gartner Magic Quadrant

Datawarehouse
Database
Management
Systems



Source: Gartner (January 2011)

Mano a Mano

For Years Oracle Beat the “Best of Breed” Drum.

Now It’s Beating the ”Integrated Systems” Drum.

IBM Still Could Be a Big Competitor, particularly after the acquisition of Netezza.

However, to date there has been been no move to follow Oracle’s lead into the Offloading to a storage grid approach.

IBM appears to believe that DW and OLTP systems should be separated.

Oracle seems to think they should be combined.

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10's (my predictions)

Oracle and IBM Duke it Out in Large DB Space
Integrated Stacks Become Cool Again
Wave of Consolidation Continues
Apple Takes Lead in PC Production (wishful thinking)
Disk Companies Struggle or are Acquired
Oracle Takes Lead in Disk Sales
Exadata Dominates Oracle Landscape

Questions / Contact Information

Questions?

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