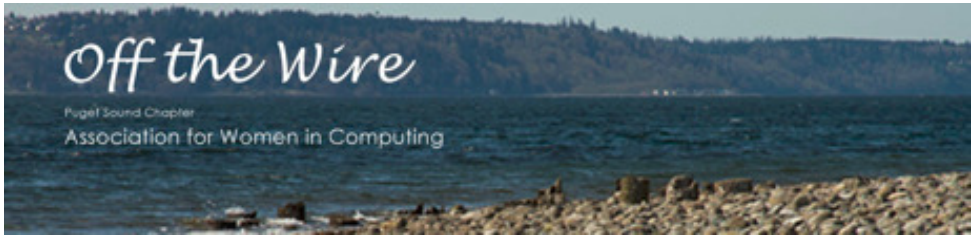
Challenges in a World of Large Databases and Business Intelligence



Daniel A. Morgan | **damorgan12c@gmail.com** | **www.morganslibrary.org**

Syllabus

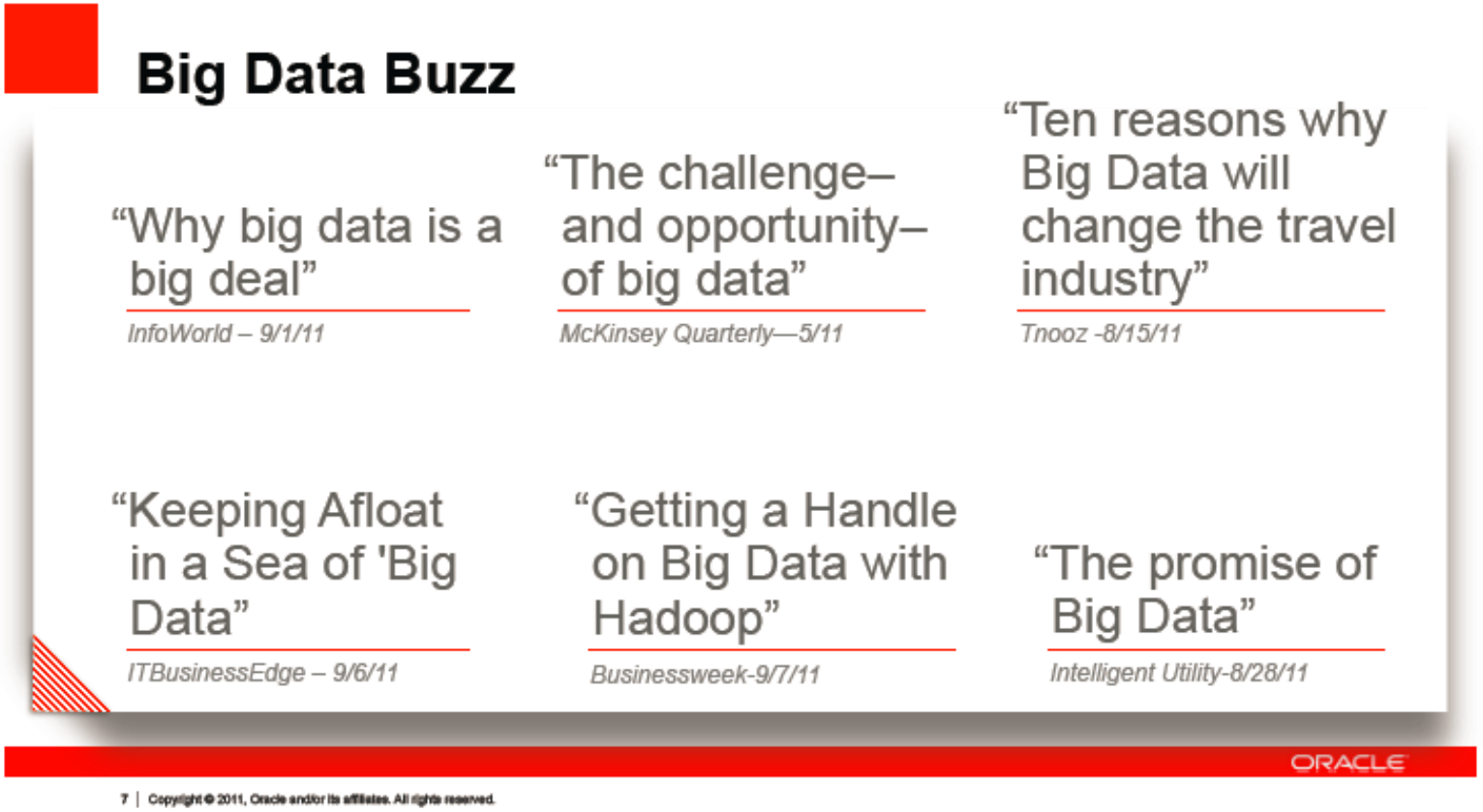
- Introduction
- Let's Define Our Terms
- Historic Road Trip
- What I See (far too often)
- Staffing
- Conclusion

Daniel A. Morgan

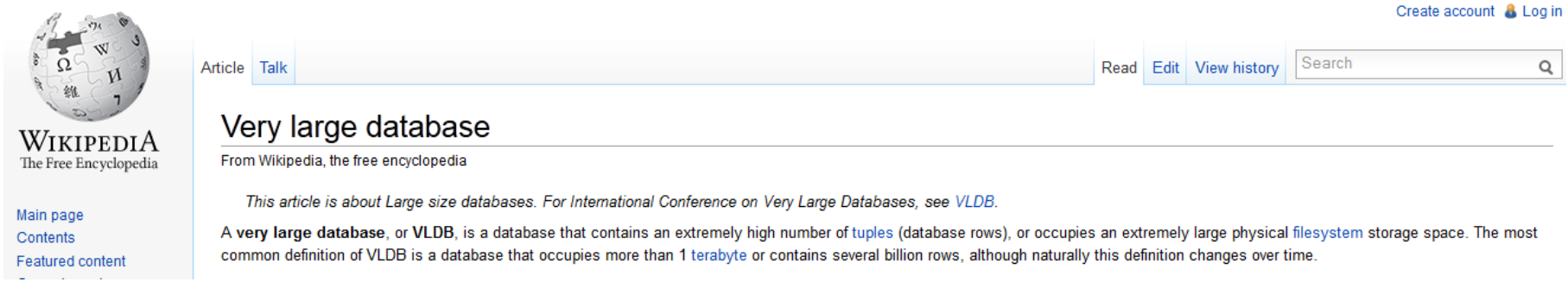
- Oracle ACE Director
- Consultant to Harvard University
- University of Washington Oracle Instructor, ret.
- The Morgan of Morgan's Library on the web
- Board Member: Western Washington OUG
- Editor: Microsoft SQL Server 2008 DBA Training
- > 500 RAC clusters built
  - Largest RAC 24 nodes
  - Largest DB storage footprint 1.2PB

Let's Define Our Terms

The Next "Cool" Thing



Jargon


Create account
Log in
Article
Talk
Read
Edit
View history
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The Free Encyclopedia
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Contents
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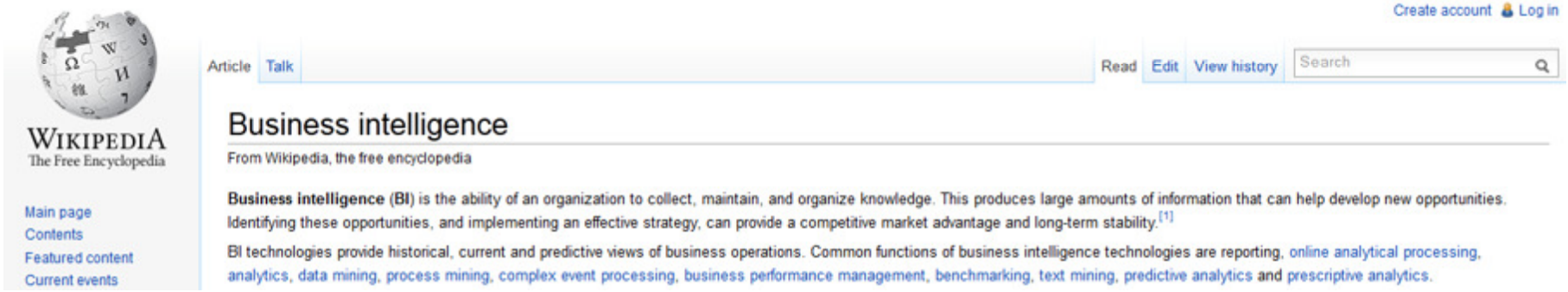
Very large database
From Wikipedia, the free encyclopedia
This article is about Large size databases. For International Conference on Very Large Databases, see VLDB.
A very large database, or VLDB, is a database that contains an extremely high number of tuples (database rows), or occupies an extremely large physical filesystem storage space. The most common definition of VLDB is a database that occupies more than 1 terabyte or contains several billion rows, although naturally this definition changes over time.


Create account
Log in
Article
Talk
Read
Edit
View history
Search
WIKIPEDIA
The Free Encyclopedia
Main page
Contents
Featured content
Current events
Business intelligence
From Wikipedia, the free encyclopedia
Business intelligence (BI) is the ability of an organization to collect, maintain, and organize knowledge. This produces large amounts of information that can help develop new opportunities. Identifying these opportunities, and implementing an effective strategy, can provide a competitive market advantage and long-term stability.[1]
BI technologies provide historical, current and predictive views of business operations. Common functions of business intelligence technologies are reporting, online analytical processing, analytics, data mining, process mining, complex event processing, business performance management, benchmarking, text mining, predictive analytics and prescriptive analytics.

More Jargon

- Big Data
  - "a collection of data sets so large and complex that it becomes difficult to process using on-hand database management tools." (wikipedia)
- Map Reduce
  - "... a programming model for processing large data sets ... typically used to do distributing computing on clusters of computers." (wikipedia)
- Hadoop
  - "... an open-source software framework that supports data-intensive distributed applications, licensed under the Apache v2 license." (wikipedia)
- Large Database
  - Any database whose size is larger than that which a team has comfortably worked with in the past. (morgan)

Define Large

- The number of tuples?
- The size of the storage footprint?
- The size of the queries?
- The size of the DML statements?
- The number of transactions per second?
- The number of simultaneously connected [active] users?

WORKLOAD REPOSITORY report for

DB Name	DB Id	Instance	Inst num	Startup Time	Release	RAC
OPM01P	782247420	opm01p6	6	18-Aug-10 21:08	11.1.0.7.0	YES

Host Name	Platform	CPUs	Cores	Sockets	Memory (GB)
usp9004b	Solaris[tm] OE (64-bit)	128	64	16	503.16

	Snap Id	Snap Time	Sessions	Cursors/Session
Begin Snap:	7037	15-Sep-10 13:00:18	406	7.5
End Snap:	7038	15-Sep-10 14:01:28	318	8.5
Elapsed:		61.17 (mins)		
DB Time:		6,076.88 (mins)		

Big Queries

This Is Page One Of A Single Query

Complete List of SQL Text

SQL Id	SQL Text
0cjpvvqy854kh	SELECT 'ERICSSON_CSCORE.EOS' AS TABLENAME, sumday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) end percent_of_cutoff_not_summed, percent(summarised_ontime_count, ontime_count+late_count, 2)percentage_of_total_by5am, percent(summarised_ontime_count+summarised_late_count, ontime_count+late_count, 2) current_percentage, ontime_count+late_count current_raw_elements, summarised_ontime_count+summarised_late_count current_summary_elements, summarised_ontime_count-summarised_late_count SUM_ELEMENTS_AT5AM, late_count late_raw_elements, ontime_count-late_count available_at_cutoff, percent(num_of_sumrows, num_of_rows, 2) accuracy from (select count(distinct case when trunc(datetime_ins,'mi') > trunc(sysdate)+3/24 then MSC end) late_count, count(distinct case when trunc(datetime_ins,'mi') < trunc(sysdate)+3/24 then MSC end) ontime_count, count (*) num_of_rows from ERICSSON_CSCORE.EOS where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60)rawt, (select max(datetime)sumday, count(distinct case when trunc(datetime_ins,'mi') > trunc(sysdate)+7/24 then MSC end) summarised_late_count, count(distinct case when trunc(datetime_ins,'mi') < trunc(s ysdate)+7/24 then MSC end) summarised_ontime_count, sum(entries) num_of_sumrows from ERICSSON_CSCORE.EOS_DY where datetime = trunc(sysdate)-1)sumt union all SELECT 'ERICSSON_CSCORE.MSCSTATS' AS TABLENAME, sumday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else 100-percent(summarised_ontime_count, 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then MSC end) summarised_late_count, count(distinct case when trunc(datetime_ins,'mi') < trunc(sysdate)+7/24 then MSC end) summarised_ontime_count, sum(entries) num_of_sumrows from ERICSSON_CSCORE.MSCSTATS_DY where datetime = trunc(sysdate)-1)sumt union all SELECT 'ERICSSON_CSCORE.MTRAFTYPE' AS TABLENAME, sumday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) end percent_of_cutoff_not_summed, percent(summarised_ontime_count, ontime_count+late_count, 2)percentage_of_total_by5am, percent(summarised_ontime_count+summarised_late_count, ontime_count+late_count, 2) current_percentage, ontime_count+late_count current_raw_elements, summarised_ontime_count+summarised_late_count current_summary_elements, 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(ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) end percent_of_cutoff_not_summed, percent(summarised_ontime_count, ontime_count+late_count, 2)percentage_of_total_by5am, percent(summarised_ontime_count+summarised_late_count, ontime_count+late_count, 2) current_percentage, ontime_count+late_count current_raw_elements, summarised_ontime_count+summarised_late_count current_summary_elements, summarised_ontime_count-summarised_late_count SUM_ELEMENTS_AT5AM, late_count late_raw_elements, ontime_count-late_count available_at_cutoff, percent(num_of_sumrows, num_of_rows, 2) accuracy from (select count(distinct case when trunc(d atetime_ins,'mi') > trunc(sysdate)+3/24 then BSC end) late_count, count(distinct case when trunc(datetime_ins,'mi') < 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trunc(sysdate)+7/24 then BSC end) summarised_ontime_count, sum(entries) num_of_sumrows from ERICSSON_GERAN.CELLSTATS_DY where datetime = trunc(sysdate)-1)sumt union all SELECT 'ERICSSON_PSCORE.MM' AS TABLENAME, sumday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count,

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(ontime_count-late_count), 2) < 0 then 0 else 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) end percent_of_cutoff_not_summed, percent(summarised_ontime_count, ontime_count+late_count,
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percent(num_of_sumrows, num_of_rows, 2) accuracy from ( select count(distinct case when trunc(datetime_ins, 'mi') > trunc(sysdate)+3/24 then SGSNID end) late_count, count(distinct case when trunc(datetime_ins, 'mi') <
trunc(sysdate)+3/24 then SGSNID end) ontime_count, count (*) num_of_rows from ERICSSON_PSCORE.MM where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday, count(distinct case
when trunc(datetime_ins, 'mi') > trunc(sysdate)+7/24 then SGSNID end) summarised_late_count, count(distinct case when trunc(datetime_ins, 'mi') < trunc(sysdate)+7/24 then SGSNID end) summarised_ontime_count, sum(entries)
num_of_sumrows from ERICSSON_PSCORE.MM_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'ERICSSON_PSCORE.SGSNSTAT' AS TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count,
(ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0
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count (*) num_of_rows from ERICSSON_PSCORE.SGSNSTAT where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday, count(distinct case when trunc(datetime_ins, 'mi') >
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ERICSSON_PSCORE.SGSNSTAT_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'ERICSSON_UTRAN.RBS_CARRIER' AS TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count),
2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count- late_count), 2) < 0 then 0 else
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count (*) num_of_rows from ERICSSON_UTRAN.RBS_CARRIER where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday, count(distinct case when trunc(datetime_ins, 'mi') >
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ERICSSON_UTRAN.RBS_CARRIER_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'ERICSSON_UTRAN.RBS_EDCHRES' AS TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count, (ontime_count-l
ate_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else
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count (*) num_of_rows from ERICSSON_UTRAN.RBS_EDCHRES where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday, count(distinct case when trunc(datetime_ins, 'mi') >
trunc(sysdate)+7/24 then NODEB end) summarised_late_count, count(distinct case when trunc(datetime_ins, 'mi') < trunc(sysdate)+7/24 then NODEB end) summarised_ontime_count, sum(entries) num_of_sumrows from ERICSSON_UT
RAN.RBS_EDCHRES_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'ERICSSON_UTRAN.RBS_HSDSCHRES' AS TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100
THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else
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ERICSSON_UTRAN.RBS_HSDSCHRES_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'ERICSSON_UTRAN.RNC_IURLINK' AS TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count, (ontime_count-
late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else
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late_count, count(distinct case when trunc(datetime_ins, 'mi') < trunc(sysdate)+3/24 then MSC end) ontime_count, count (*) num_of_rows from NORTEL_CSCORE.CCS7 where datetime between trunc(sysdate)-1 and
trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday, count(distinct case when trunc(datetime_ins, 'mi') > trunc(sysdate)+7/24 then MSC end) summarised_late_count, count(distinct case when trunc(datetime_ins, 'mi') <
trunc(sysdate)+7/24 then MSC end) summarised_ontime_count, sum(entries) num_of_sumrows from NORTEL_CSCORE.CCS7_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'NORTEL_CSCORE.LOCATIONAREACODE' AS
TABLENAME, sunday, CASE WHEN percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cut off, case when
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trunc(sysdate)+3/24 then MSC end) ontime_count, count (*) num_of_rows from NORTEL_CSCORE.LOCATIONAREACODE where datetime between trunc(sysdate)-1 and trunc(sysdate)-1/24/60 )rawt, ( select max(datetime)sunday,
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summarised_ontime_count+summarised_late_count current_summary_elements, summarised_ontime_count-summarised_late_count SUM_ELEMENTS_AT5AM, late_count late_raw_elements, ontime_count-late_count available_at_cutoff,
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Page 5

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num_of_sumrows from NORTEL_CSCORE.VLR6_DY where datetime = trunc(sysdate)-1 )sumt union all SELECT 'NORTEL_PSCORE.GSCGMM' AS TABLENAME, sumday, CASE WHEN percent(summarised_ontime_count, (ontime_count-
late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count, (ontime_count-late_count), 2) < 0 then 0 else
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percent(summarised_ontime_count, (ontime_count-late_count), 2) > 100 THEN 100 ELSE percent(summarised_ontime_count, (ontime_count-late_count), 2) END percent_of_cutoff, case when 100-percent(summarised_ontime_count,
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Historic Road Trip

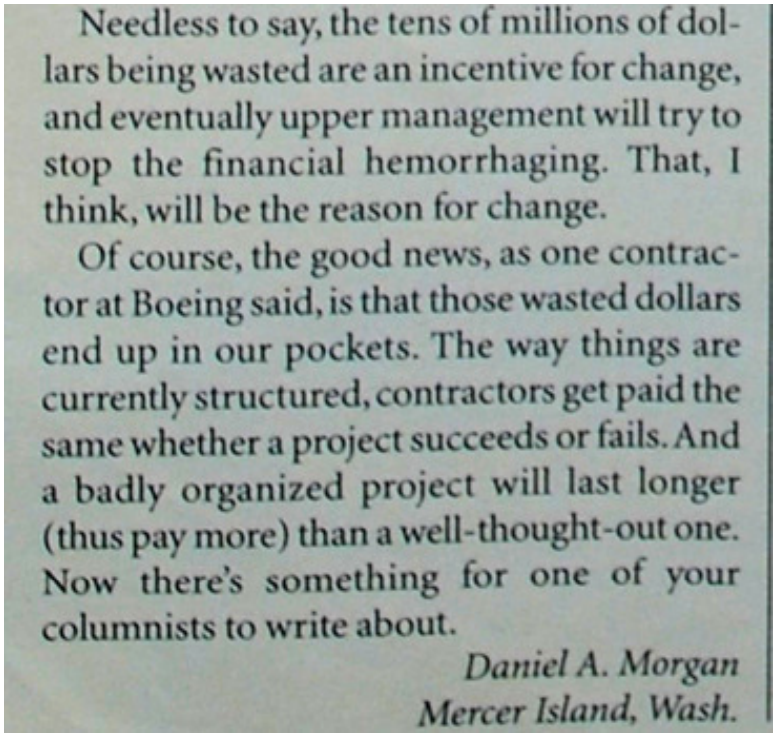
InfoWorld: November 30, 1998

TO THE EDITOR

Right conclusion, wrong reason

I AGREE WITH SANDY REED'S conclusion [that IT is undergoing a fundamental shift] but not for the reasons the Gartner Group cites. [See From the Editor in Chief, Nov. 16, page 81.]

My experience is that most IS/IT managers are incompetent. Not as managers of people and process, but rather as managers of technology. Many of the projects I have seen at major organizations, such as Boeing and King County (county seat of Seattle) and so on, are doomed due to the lack of technology background of key managers. They run at warp speed down dead ends. They choose the wrong technology. They don't understand the value of standards. They don't understand how to develop testing protocols. They focus wholly on the development side of a project and pay no attention to deployment and long-term maintainability issues.

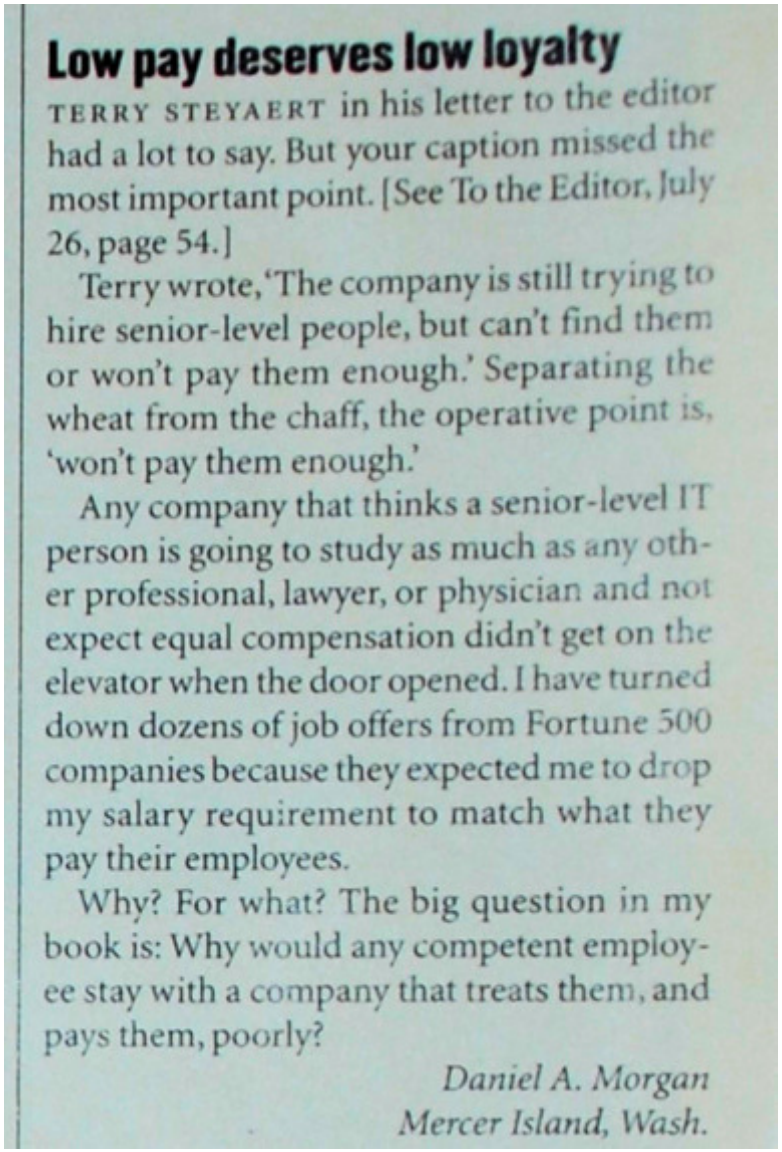


Needless to say, the tens of millions of dollars being wasted are an incentive for change, and eventually upper management will try to stop the financial hemorrhaging. That, I think, will be the reason for change.

Of course, the good news, as one contractor at Boeing said, is that those wasted dollars end up in our pockets. The way things are currently structured, contractors get paid the same whether a project succeeds or fails. And a badly organized project will last longer (thus pay more) than a well-thought-out one. Now there's something for one of your columnists to write about.

Daniel A. Morgan
Mercer Island, Wash.

InfoWorld: August 16, 1999



Low pay deserves low loyalty

TERRY STEYAERT in his letter to the editor had a lot to say. But your caption missed the most important point. [See To the Editor, July 26, page 54.]

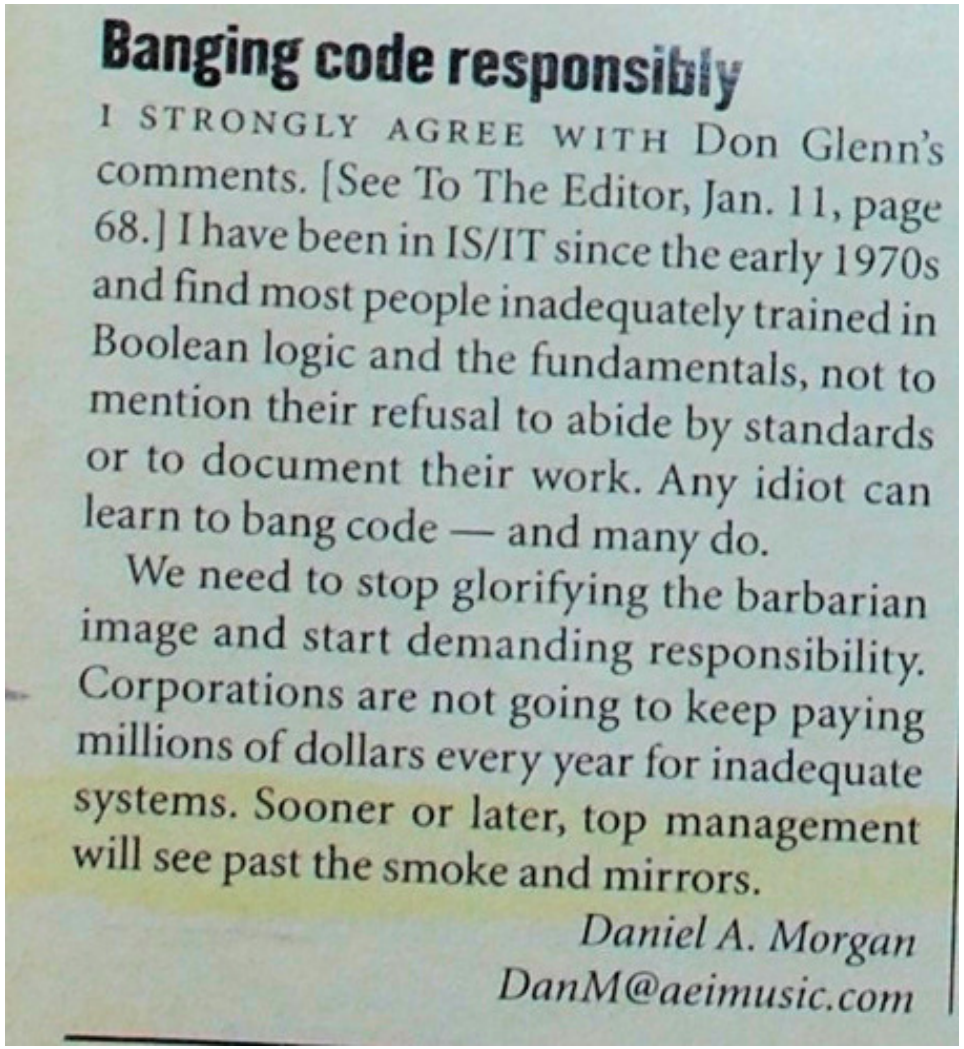
Terry wrote, 'The company is still trying to hire senior-level people, but can't find them or won't pay them enough.' Separating the wheat from the chaff, the operative point is, 'won't pay them enough.'

Any company that thinks a senior-level IT person is going to study as much as any other professional, lawyer, or physician and not expect equal compensation didn't get on the elevator when the door opened. I have turned down dozens of job offers from Fortune 500 companies because they expected me to drop my salary requirement to match what they pay their employees.

Why? For what? The big question in my book is: Why would any competent employee stay with a company that treats them, and pays them, poorly?

Daniel A. Morgan
Mercer Island, Wash.

InfoWorld: January 25, 1999



Banging code responsibly

I STRONGLY AGREE WITH Don Glenn's comments. [See To The Editor, Jan. 11, page 68.] I have been in IS/IT since the early 1970s and find most people inadequately trained in Boolean logic and the fundamentals, not to mention their refusal to abide by standards or to document their work. Any idiot can learn to bang code — and many do.

We need to stop glorifying the barbarian image and start demanding responsibility. Corporations are not going to keep paying millions of dollars every year for inadequate systems. Sooner or later, top management will see past the smoke and mirrors.

Daniel A. Morgan
DanM@aeimusic.com

InfoWorld: February 22, 1999

I STRONGLY DISAGREE with the premise and conclusions in "Origins of a shortfall." There is no shortage of applicants. There is a shortage of companies willing to pay market value.

Take, for example, the company where I am under contract as a senior Oracle DBA [database administrator] until July or August of this year. They have been looking for six months for a permanent employee to replace me. Many have applied, but none have accepted. Why? Because the company refuses to recognize that senior Oracle DBAs have the same amount of investment in their profession as physicians or attorneys. Anyone who is good expects commensurate compensation. If this company would pay market rates, there would be no shortage.

I turn away lots of job offers — some for lack of willingness to step up to the plate with my hourly rate, some because they are so poorly managed that I know the project is going to be a disaster. Bringing in [international] workers won't solve the problem. ... Unless "solving the problem" is reducing the income level of IS professionals.

Daniel A. Morgan
dmorgan@exesolutions.com

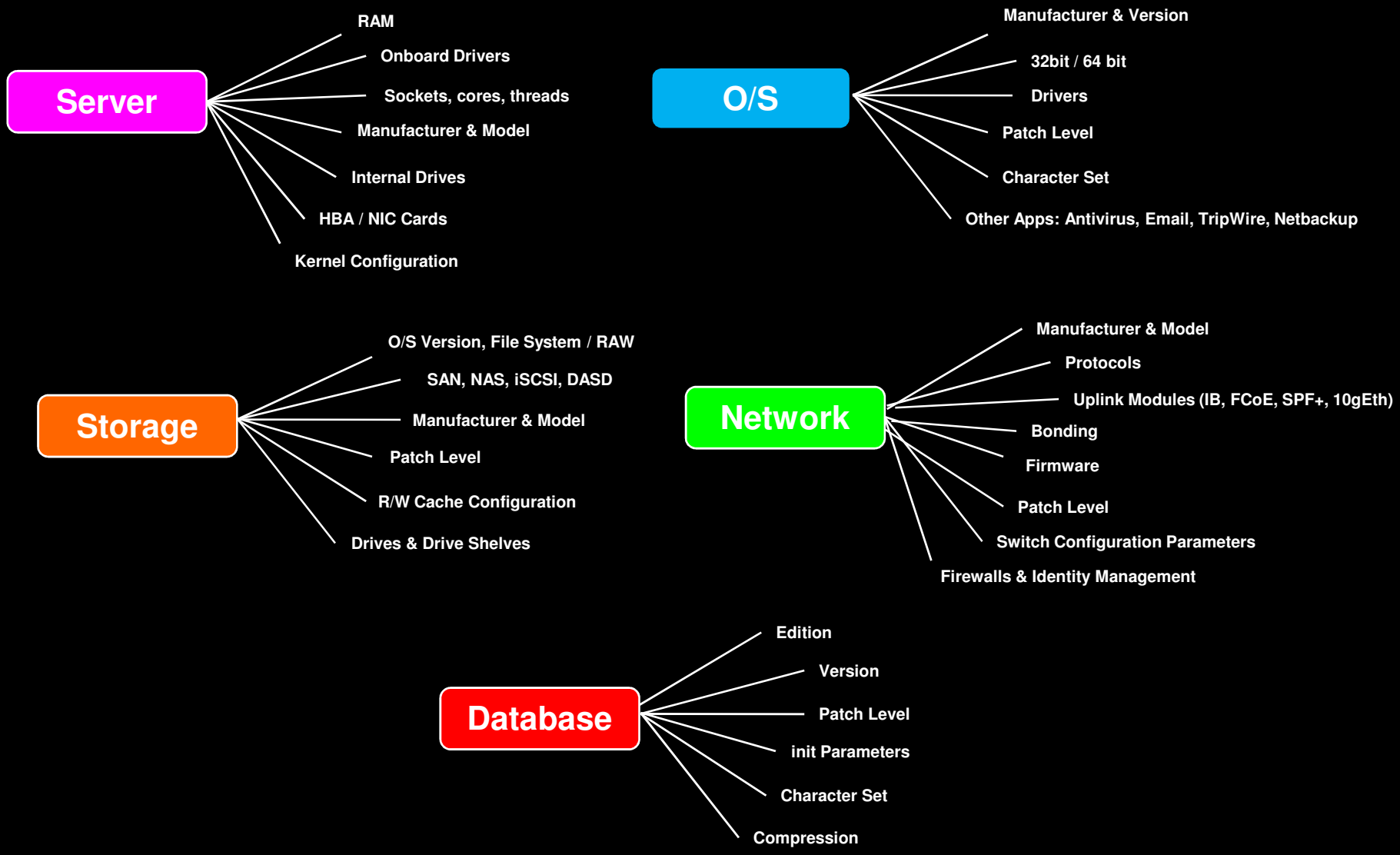
Self Image

- Most administrators and developers are dinosaurs
- Their managers don't know what they do
- Worse their managers don't know what they should do

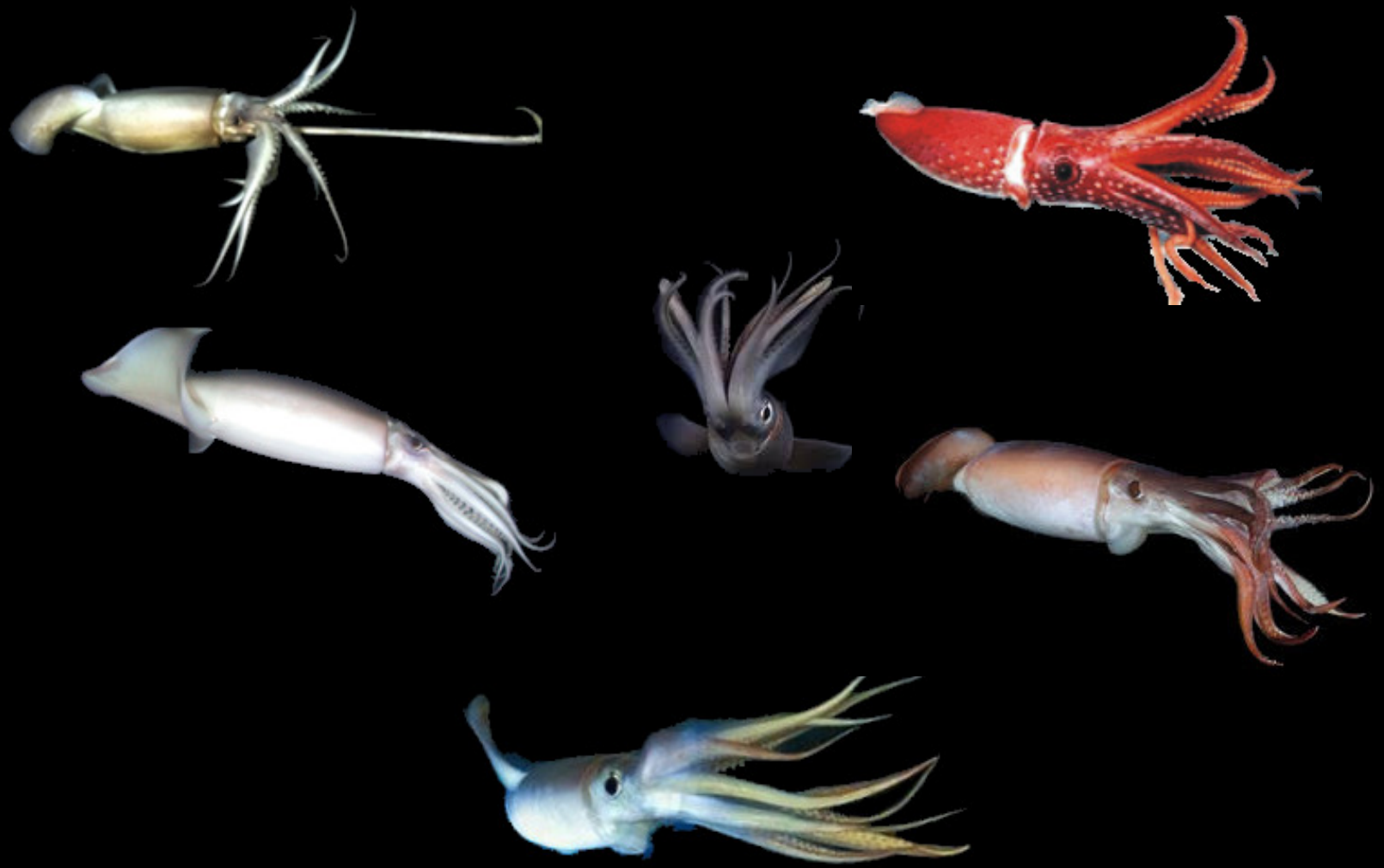
What I See

(far too often)

Static Puzzle Pieces



Animated Puzzle Pieces



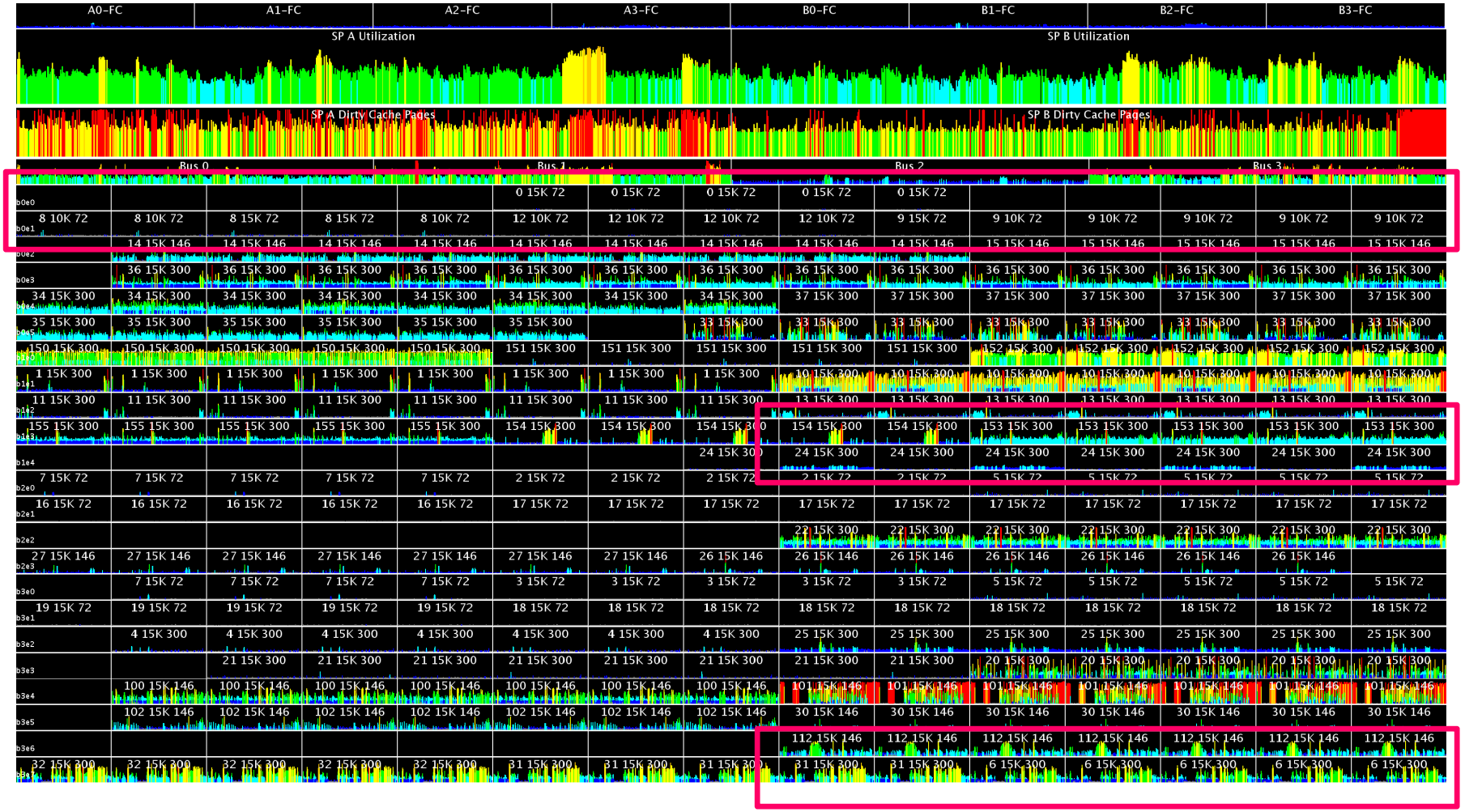
As easy to embrace as a barrel of squid

The Wrong Hardware

3 Sun M9000s

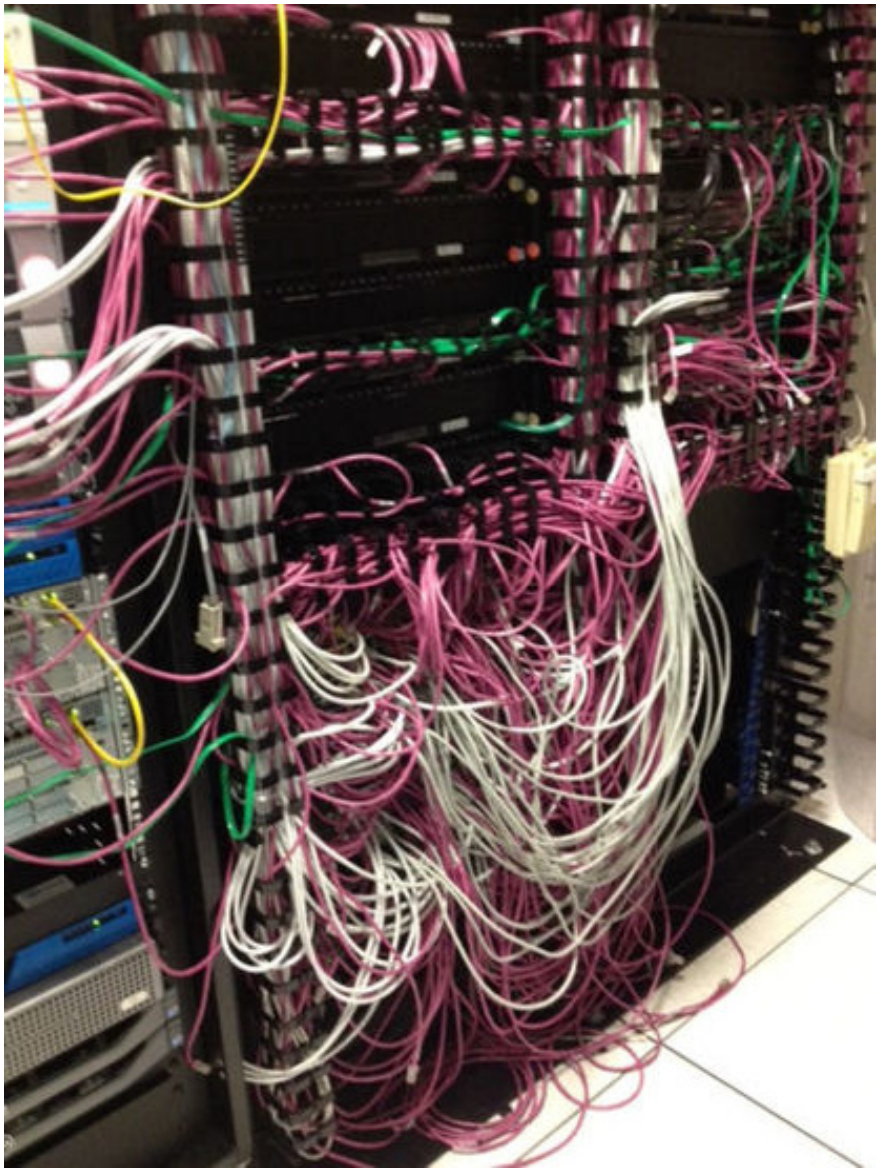
3 EMC VMax SANS

Storage Management?



1. Usage over 50% guarantees any component failure will overwhelm remaining resources producing an outage
2. Metrics coded in yellow are warnings
3. Metrics code in red indicate the database has been forced into a wait state while resources are recovered

Network Management?



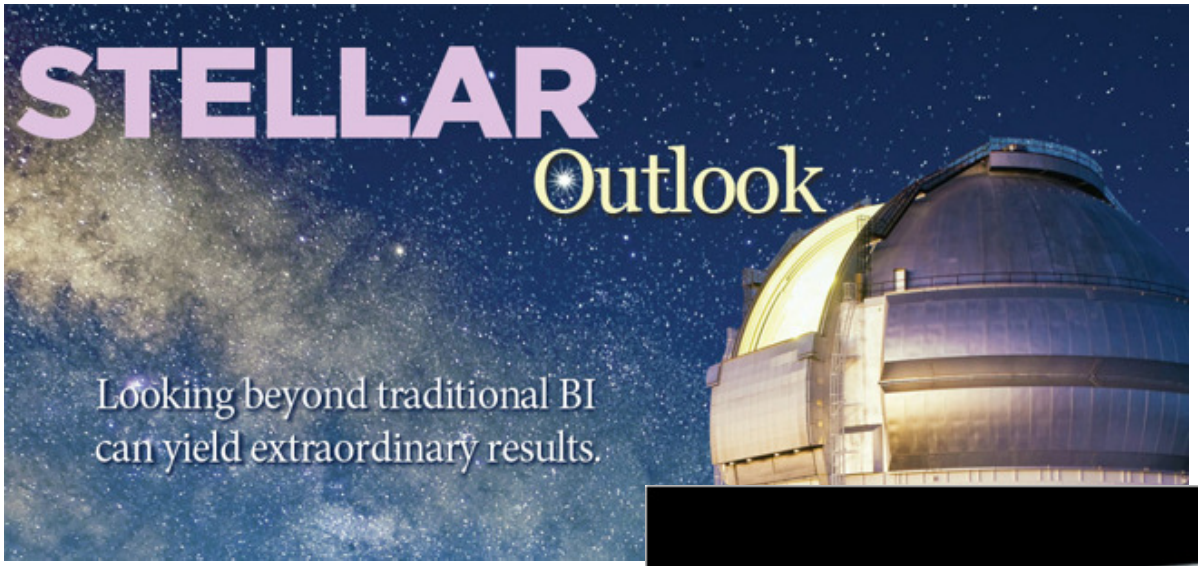
The Wrong Software

- Software vendor in Surrey, UK
- Vendor's developers in
  - India
  - South Africa
  - UK
  - [none initially in the] US
- The vendor has never come with an order of magnitude of scaling a system this size
- MongoDB and similar new products
  - No LDAP
  - No Active Directory
  - No audit trail
  - No tool vendors
  - No long-term financial track record

The Wrong Skill Set

- Client DBAs do not have development experience
- Client DBAs have little tuning experience ... in fact they really don't know what tuning is
- Vendor DBAs are 8 time zones away and support multiple customers
- Software upgrades that utilize none of the new features
- Audit trails no one looks at
- Far too much projector-ware floating around

Another Dead End



TERADATA
THE BEST DECISION POSSIBLE™

What Would Have Worked

Exadata and ZFS

Why?

- Simplified management
- Lowered cost
- Addressed loading issues
- Could run all existing code
- 40GB Infiniband a substantial improvement over 10MB Ethernet
- One neck to choke ... eliminated two major finger-pointing vendors

Warning: Appliances are not childproof

Can handle 85% of most database loads

Why?

- Simplified deployment
- Simplified management
- Lowered cost
- Removes multi-vendor engineering requirement
- One neck to choke ... eliminates mutli-vendor finger-pointing

Other Issues I See Regulary

- Lack of documented procedures
- Lack of documented processes
- Lack of tech writers

Staffing

Considerations

- Be careful what you wish for ... you might just get it
- Do you have anyone that can interview people that have the skills you need ... rather than the skills you already have?

Who Wants These Skills?

Job Title	Company	Location	Date Posted
Java Developer - Hadoop/Map Reduce experience needed	**Intersource**	**Seattle, WA**	**Oct-17-2012**
Software Development Engineer (Java, Big Data)	TRIAD Group	Bellevue, WA	Nov-09-2012
Software Developer - Ruby on Rails Engineer - Web Publisher	CyberCoders	Seattle, WA	Nov-14-2012
Software Engineer: Big Data and Data Warehouse	Amazon	Seattle, WA	Nov-14-2012
Sr. Software Developer - Big Data	Amazon	Seattle, WA	Nov-14-2012
Software Development Engineer-Distributed systems(Amazon EMR and DynamoDB)	Amazon	Seattle, WA	Nov-14-2012
Software Engineer: Big Data and Data Warehouse	Amazon	Seattle, WA	Nov-14-2012

Who Wants These Skills?

Job Title	Company	Location	Date Posted
Full Time Position For Hadoop Developer Job in Seattle, WA	**Resource Logistics**	**Seattle, WA**	**Nov-14-2012**
Hadoop / HBase / ElasticSearch and Scala	Kshunya Inc	seattle, WA	Nov-14-2012
Hadoop Developer	HCL America Inc.	Seattle, WA	Nov-14-2012
Java Developer - Hadoop/Map Reduce experience needed	**Intersource**	**Seattle, WA**	**Oct-17-2012**
Hadoop/No SQL, Java, ETL) Engineer	People Tech Group	SEATTLE, WA	Nov-13-2012
Sr. Software Engineer - Big Data, Hadoop, Amazon Elastic MapReduce	Amazon	Seattle, WA	Nov-14-2012
Software Engineer - Big Data, Hadoop, Amazon Elastic MapReduce	Amazon	Seattle, WA	Nov-14-2012

What You Don't Really Want

Job Summary

Location:
Bellingham, WA 98227

Job Category:
IT/Software Development

Occupations:
Database Development/Administration

Industry:
Insurance

Job Status/Type:
Full Time Employee

Career Level:
Experienced (Non-Manager)

Contact Information

Reference Code:
1289

Database Administrator

Position Description:

As one of the nation's most, progressive and dynamic insurance organizations, Windsor Health Group is a Health Specialty Management Company comprised of Windsor Health Plan, Sterling Insurance, and Olympian Health Partners. Collectively we offer a full range of products and services aimed to improve health, peace of mind and financial security for our members and policy holders when navigating health care coverage options. We aim to make working at Windsor an energizing and fulfilling experience. We believe that if we expect people's continued energy and commitment at work, we must provide the right environment for that to happen. Our organization is looking for individuals with a strong commitment to quality service, a clear sense of purpose and pride in their individual contribution to the company's success.Summary: The Database Administrator works with senior database administration staff to design, implement, administer, troubleshoot and develop database resources to meet company and departmental goals and standards for availability, capacity and security.
Duties and Responsibilities:

- Install, configure, troubleshoot, and performance tune Oracle and MS SQL databases on Sun UNIX, Linux, and Windows based operating systems.
- Evaluate and install new software releases, perform system upgrades, evaluate and install patches and resolve database related problems.
- Work jointly with networking engineers to install, configure, troubleshoot and performance tune database connectivity.
- Ensure uninterrupted database availability by managing physical and logical space. Measure growth and project for continued optimal performance and server upgrades.
- Maintain database security and where appropriate host security in accordance with company standards and industry best practices. This includes but is not limited to deployment of appropriate security patches, hot fixes, vulnerability scans and software and firmware upgrades.
- Work with other IT staff members to automate management tasks, streamline processes and perform standard administration functions as needed.
- Assist in IT disaster recovery planning.
- Participates in the development of policies, procedures, and resources that standardize the functioning of the systems and software and in accordance with company standards and industry best practices.
- Perform and adhere to established policies, and procedures.
- Assist more experienced staff in resolution of system and software issues related to the company's database systems.
- Coordinate with fellow IT staff to provide training and technical support to the user community on use of IT services.
- On-call responsibilities as required.
- Obtain and/or maintain technical certifications necessary for continued company growth and success.
- Perform additional duties as assigned by management.

What You Don't Really Want

Knowledge, Skills and Abilities:

- Ability to evaluate critical systems, prioritize work, and determine solutions
- Excellent verbal and written communication skills
- A working knowledge of these technologies:
- Oracle RDMBS; 9i, 10g, and 11g
- Oracle RAC and Grid
- Microsoft SQL Server 2005
- SQL, Oracle PL/SQL, and Microsoft Transact-SQL
- Sun Unix, Linux, and Microsoft Windows operating systems
- IIS or Apache web server architecture.
- Network storage technologies.
- Backup software installation, configuration, and operation
- TCP/IP
- UNIX shell scripting (Korn) and Perl
- Data center technologies including enterprise monitoring and event management.
- Strong project management skills
- Strong security knowledge and ability for securing and maintaining data for safety and to meet or exceed standards required by HIPAA, Sarbanes/Oxley and other regulations.
- Technical expertise of personal computing systems, peripheral equipment, and applications
- Strong troubleshooting skills
- Strong organizational skills
- Ability to work well under various urgent and time sensitive situations.
- Excellent verbal and written communication skills
- Strong attention to detail

Are my customer's happy?

Instance Efficiency Percentages (Target 100%)

Buffer Nowait %:	99.80	Redo NoWait %:	100.00
Buffer Hit %:	97.34	In-memory Sort %:	99.99
Library Hit %:	99.97	Soft Parse %:	98.79
Execute to Parse %:	99.29	Latch Hit %:	99.57
Parse CPU to Parse Elapsd %:	0.00	% Non-Parse CPU:	96.60

No!

Foreground Wait Events

- s - second, ms - millisecond - 1000th of a second
- Only events with Total Wait Time (s) >= .001 are shown
- ordered by wait time desc, waits desc (idle events last)
- %Timeouts: value of 0 indicates value was < .5%. Value of null is truly 0

Event	Waits	%Time -outs	Total Wait Time (s)	Avg wait (ms)	Waits /txn	% DB time
cursor: pin S wait on X	559,981	100	11,250	20	15.41	23.77
db file sequential read	1,824,756	0	4,231	2	50.23	8.94
unspecified wait event	462,648	0	1,996	4	12.73	4.22
gc buffer busy acquire	322,335	0	1,342	4	8.87	2.84
external table misc IO	57,038	0	1,131	20	1.57	2.39
db file scattered read	69,467	0	989	14	1.91	2.09
PX Deq: reap credit	68,532,223	100	630	0	1,886.33	1.33
IPC send completion sync	3,694,966	98	389	0	101.70	0.82
PX Deq: Slave Session Stats	132,529	12	350	3	3.65	0.74
external table read	96,704	0	339	4	2.66	0.72
PX Nsq: PQ load info query	1,668	97	328	197	0.05	0.69
read by other session	91,147	0	300	3	2.51	0.63
latch free	4,480	0	297	66	0.12	0.63
gc cr grant 2-way	417,285	0	272	1	11.49	0.57
DFS lock handle	13,528	11	261	19	0.37	0.55
gc cr multi block request	547,105	0	217	0	15.06	0.46
enq: PS - contention	186,170	56	201	1	5.12	0.42
kksfbc child completion	2,097	100	138	66	0.06	0.29

No!

Dictionary Cache Stats

- "Pct Misses" should be very low (< 2% in most cases)
- "Final Usage" is the number of cache entries being used

Cache	Get Requests	Pct Miss	Scan Reqs	Pct Miss	Mod Reqs	Final Usage
dc_awr_control	94	1.06	0		1	1
dc_constraints	75	81.33	0		75	268
dc_database_links	12,557	0.00	0		0	3
dc_files	18,320	0.00	0		0	482
dc_global_oids	414,904	0.00	0		0	355
dc_histogram_data	303,148	0.46	0		307	146,041
dc_histogram_defs	4,462,445	0.10	0		714	496,635
dc_object_grants	23,089	0.00	0		0	1,094
dc_objects	2,748,959	0.45	0		2,384	281,443
dc_partition_scns	3	0.00	0		0	5
dc_profiles	12,918	0.00	0		0	4
dc_rollback_segments	6,824,069	0.00	0		0	1,662
dc_segments	242,656	4.68	0		9,231	877,062
dc_sequences	396	3.28	0		396	33
dc_table_scns	43	37.21	0		0	8
dc_tablespace_quotas	8,495	21.27	0		2,365	66
dc_tablespaces	11,893,072	0.00	0		0	38
dc_users	10,119,305	0.00	0		15	6,827
global database name	8,789	0.00	0		0	2
outstanding_alerts	182	75.82	0		1	26

The SQL Challenge

find matching values present in two different tables

```
SELECT srvr_id
FROM servers
INTERSECT
SELECT srvr_id
FROM serv_inst;
```

```
SELECT srvr_id
FROM servers
WHERE srvr_id IN (
  SELECT srvr_id
  FROM serv_inst);
```

```
SELECT srvr_id
FROM servers s
WHERE EXISTS (
 SELECT srvr_id
 FROM serv_inst i
WHERE s.srvr_id = i.srvr_id);
```

```
SELECT DISTINCT s.srvr_id
FROM servers s, serv_inst i
WHERE s.srvr_id = i.srvr_id;
```

Optimizer Plans (the way it was)

```
SELECT DISTINCT E1_2.OBJECT_ID
   FROM PMCM.ELEMENT_DETAIL E1_1, PMCM.ELEMENT_DETAIL E1_2, PMCM.MARK_NETW_HIERARCHY H1,
        PMCM.ELEMENT_DETAIL E2_1, PMCM.ELEMENT_DETAIL E2_2, PMCM.MARK_NETW_HIERARCHY H2
   WHERE E1_1.OBJECT_ID = H1.PARENT_ID
     AND E1_2.OBJECT_ID = H1.OBJECT_ID
     AND E2_1.OBJECT_ID = H2.PARENT_ID
     AND E2_2.OBJECT_ID = H2.OBJECT_ID
     AND E1_1.CURRENT_IND = 'Y' AND E2_1.CURRENT_IND = 'Y'
     AND E2_1.CURRENT_IND = 'Y' AND E2_2.CURRENT_IND = 'Y'
     AND H1.CURRENT_IND = 'Y' AND H2.CURRENT_IND = 'Y'
     AND H1.HIERARCHY_TYPE = 'NETWORK' AND H2.HIERARCHY_TYPE = 'NETWORK'
     AND H1.PARENT_TYPE IN ('BSC','RNC')  AND H2.PARENT_TYPE IN ('BSC','RNC')
     AND E2_2.ELEMENT_TYPE = 'CELL' AND E1_2.ELEMENT_TYPE = 'CELL'
     AND H1.PARENT_TYPE IN ('BSC','RNC')
     AND E1_1.ELEMENT_NAME = E2_1.ELEMENT_NAME
     AND E1_1.ELEMENT_ID = E2_1.ELEMENT_ID
     AND E1_2.ELEMENT_NAME = E2_2.ELEMENT_NAME
     AND E1_2.ELEMENT_ID = E2_2.ELEMENT_ID
     AND E1_2.USEID LIKE '*%' AND E2_2.USEID NOT LIKE '*%';
```

Id	Operation	Name	Rows	Bytes	TempSpc	Cost (%CPU)	Time	Pstart	Pstop
0	SELECT STATEMENT		1	78		74M (40)	50:54:42		
1	TEMP TABLE TRANSFORMATION								
2	LOAD AS SELECT								
3	PARTITION RANGE ALL		22M	1111M		38153 (11)	00:01:34	1	29
* 4	TABLE ACCESS FULL	ELEMENT_DETAIL	22M	1111M		38153 (11)	00:01:34		
5	LOAD AS SELECT								
6	PARTITION HASH ALL		337K	9231K		3514 (15)	00:00:09	1	16
* 7	TABLE ACCESS FULL	MARK_NETW_HIERARCHY	337K	9231K		3514 (15)	00:00:09		
8	SORT AGGREGATE		1	78					
* 9	HASH JOIN		927G	65T	534M	74M (40)	50:53:00		
10	VIEW		22M	277M		16808 (12)	00:00:42		
11	TABLE ACCESS FULL	SYS_TEMP_0FDA7485F_6A66C42E	22M	1111M		16808 (12)	00		
* 12	HASH JOIN		21G	1272G	534M	1616K (43)	01:06:04		
13	VIEW		22M	277M		16808 (12)	00:00:42		
14	TABLE ACCESS FULL	SYS_TEMP_0FDA7485F_6A66C42E	22M	1111M		16808 (12)	0		
* 15	HASH JOIN		476M	23G	524M	97327 (22)	00:03:59		
* 16	HASH JOIN		10M	401M	8704K	34520 (10)	00:01:25		
* 17	HASH JOIN		234K	5948K	8256K	783 (10)	00:00:02		
18	VIEW		337K	4286K		142 (14)	00:00:01		
19	TABLE ACCESS FULL	SYS_TEMP_0FDA74860_6A66C42E	337K	3956K		142 (14)	00:00:01		
20	VIEW		337K	4286K		142 (14)	00:00:01		
21	TABLE ACCESS FULL	SYS_TEMP_0FDA74860_6A66C42E	337K	3956K		142 (14)	00:00:01		
22	VIEW		22M	277M		16808 (12)	00:00:42		
23	TABLE ACCESS FULL	SYS_TEMP_0FDA7485F_6A66C42E	22M	1111M		16808 (12)	00:00:42		
24	VIEW		22M	277M		16808 (12)	00:00:42		
25	TABLE ACCESS FULL	SYS_TEMP_0FDA7485F_6A66C42E	22M	1111M		16808 (12)	0		

Optimizer Plans (tuning gone terribly wrong)

Id	Operation	Name	Rows	Bytes	TempSpc	Cost (%CPU)	Time	Pstart	Pstop
0	SELECT STATEMENT		1	78		14T(100)	999:59:59		
1	TEMP TABLE TRANSFORMATION								
2	LOAD AS SELECT								
3	PARTITION RANGE ALL		22M	1111M		38153 (11)	00:01:34	1	29
* 4	TABLE ACCESS FULL	ELEMENT_DETAIL	22M	1111M		38153 (11)	00:01:34		
5	LOAD AS SELECT								
6	PARTITION HASH ALL		337K	9231K		3514 (15)	00:00:09	1	16
* 7	TABLE ACCESS FULL	MARK_NETW_HIERARCHY	337K	9231K		3514 (15)	00:00:09		
8	SORT AGGREGATE		1	78					
9	MERGE JOIN		471P	15E		14T(100)	999:59:59		
10	MERGE JOIN		10P	616P		694G (81)	999:59:59		
11	MERGE JOIN		231T	10P		377G (64)	999:59:59		
12	SORT JOIN		334T	11P	28P	377G (64)	999:59:59		
13	MERGE JOIN CARTESIAN		334T	11P		140G (14)	999:59:59		
* 14	HASH JOIN		989M	23G	534M	96010 (38)	00:03:56		
15	VIEW		22M	277M		16808 (12)	00:00:42		
16	TABLE ACCESS FULL	SYS_TEMP_0FDA7485B_6A66C42E	22M	1111M		16808 (12)	00:00:42		
17	VIEW		22M	277M		16808 (12)	00:00:42		
18	TABLE ACCESS FULL	SYS_TEMP_0FDA7485B_6A66C42E	22M	1111M		16808 (12)	00:00:42		
19	BUFFER SORT		337K	4286K		140G (14)	999:59:59		
20	VIEW		337K	4286K		142 (14)	00:00:01		
21	TABLE ACCESS FULL	SYS_TEMP_0FDA7485C_6A66C42E	337K	3956K		142 (14)	00:00:01		
* 22	SORT JOIN		337K	4286K	12M	844 (14)	00:00:03		
23	VIEW		337K	4286K		142 (14)	00:00:01		
24	TABLE ACCESS FULL	SYS_TEMP_0FDA7485C_6A66C42E	337K	3956K		142 (14)	00:00:01		
* 25	SORT JOIN		22M	277M	855M	65084 (16)	00:02:40		
26	VIEW		22M	277M		16808 (12)	00:00:42		
27	TABLE ACCESS FULL	SYS_TEMP_0FDA7485B_6A66C42E	22M	1111M		16808 (12)	0		
* 28	SORT JOIN		22M	277M	855M	65084 (16)	00:02:40		
29	VIEW		22M	277M		16808 (12)	00:00:42		
30	TABLE ACCESS FULL	SYS_TEMP_0FDA7485B_6A66C42E	22M	1111M		16808 (12)	0		

Optimizer Plans (making it better)

```
WITH ed AS (SELECT object_id, element_id, element_name, element_type, useid
            FROM pmcm.element_detail
            WHERE element_type = 'CELL'
            AND current_ind = 'Y'),
     mnh AS (SELECT parent_id, object_id
             FROM pmcm.mark_netw_hierarchy
             WHERE current_ind = 'Y'
             AND hierarchy_type = 'NETWORK'
             AND parent_type IN ('BSC', 'RNC'))
SELECT COUNT(*)
FROM ed e1_1, ed e1_2, ed e2_1, ed e2_2, mnh h1, mnh h2
WHERE e1_1.object_id = h1.parent_id AND   e1_2.object_id = h1.object_id
AND   e2_1.object_id = h2.parent_id AND   e2_2.object_id = h2.object_id
AND   e1_1.element_name = e2_1.element_name
AND   e1_1.element_id = e2_1.element_id
AND   e1_2.element_name = e2_2.element_name
AND   e1_2.element_id = e2_2.element_id
AND   e1_2.useid LIKE '*%'
AND   e2_2.useid NOT LIKE '*%';
```

Id	Operation	Name	Rows	Bytes	TempSpc	Cost (%CPU)	Time
0	SELECT STATEMENT		1	214		100K (6)	00:04:08
1	HASH UNIQUE		1	214		100K (6)	00:04:08
* 2	HASH JOIN		1	214	12M	100K (6)	00:04:08
3	PARTITION HASH ALL		337K	9231K		3514 (15)	00:00:09
* 4	TABLE ACCESS FULL	MARK_NETW_HIERARCHY	337K	9231K		3514 (15)	00:00:00
* 5	HASH JOIN		207K	36M	22M	95860 (6)	00:03:56
6	PARTITION RANGE ALL		586K	15M		16233 (2)	00:00:40
7	TABLE ACCESS BY LOCAL INDEX ROWID	ELEMENT_DETAIL	586K	15M		16233	??:??:??
* 8	INDEX SKIP SCAN	ED_ET_TECH_CI	586K			12791 (1)	00:00:3?
* 9	HASH JOIN		207K	31M	22M	77982 (7)	00:03:12
10	PARTITION RANGE ALL		586K	15M		16233 (2)	00:00:40
11	TABLE ACCESS BY LOCAL INDEX ROWID	ELEMENT_DETAIL	586K	15M		16233	??:??:??
* 12	INDEX SKIP SCAN	ED_ET_TECH_CI	586K			12791 (1)	00:00:??
* 13	HASH JOIN		179K	22M	12M	60372 (8)	00:02:29
14	PARTITION HASH ALL		337K	9231K		3514 (15)	00:00:09
* 15	TABLE ACCESS FULL	MARK_NETW_HIERARCHY	337K	9231K		3514 (15)	00:00:??
* 16	HASH JOIN		184K	17M	10M	55886 (8)	00:02:18
17	PARTITION RANGE ALL		184K	9008K		37137 (8)	00:01:32
* 18	TABLE ACCESS FULL	ELEMENT_DETAIL	184K	9008K		37137 (8)	00:01:32
19	PARTITION RANGE ALL		576K	28M		17383 (8)	00:00:43
* 20	TABLE ACCESS BY LOCAL INDEX ROWID	ELEMENT_DETAIL	576K	28M		17383 (8)	??:??:??
* 21	INDEX SKIP SCAN	ED_ET_TECH_CI	583K			13939 (9)	00:00:35

Result Cache

SQL ordered by Executions

- Total Executions: 29,717,627
- Captured SQL account for 77.4% of Total

Executions	Rows Processed	Rows per Exec	CPU per Exec (s)	Elap per Exec (s)	SQL Id	SQL Module	SQL Text
10,128,178	2,506,529	0.25	0.00	0.00	932srzg1krc33	ASN_07B_DIP(004110016)	SELECT NE_TIMEZONE FROM CMPM.E...
7,576,759	7,579,197	1.00	0.00	0.00	1h698sb62un99	asci_56_RANAPProtocolStats(016110008)	SELECT DISTINCT NE_TIMEZONE FR...
3,914,621	3,848,268	0.98	0.00	0.00	5tbzddgguu8cc	asci_56_RANAPProtocolStats(016110008)	SELECT SYS_VERSION FROM CMPM.T...
311,645	311,604	1.00	0.00	0.00	7gtztzv329wg0		select c.name, u.name from co...
301,428	301,325	1.00	0.00	0.00	36s446f9cnwhw		SELECT C.NAME FROM COL$ C WHER...
200,692	200,669	1.00	0.00	0.00	4vs91dcv7u1p6	OMS	insert into sys.aud$(sessioni...
65,044	65,035	1.00	0.00	0.00	fz9xwpt2cvt0k		SELECT par_type, param_clob, ...
64,949	3,945,482	60.75	0.00	0.00	f5ra7dru5fk5n	XML_P7R_RNC_RCS(003110008)	SELECT NAME, PATH, READ, WR...
64,801	64,807	1.00	0.00	0.00	fhzj09a7fnrnb	XML_V7I_IN_LP_DC(00811000V)	SELECT DBTIMEZONE, LENGTH(DBT...
64,632	64,542	1.00	0.00	0.00	15jnrrb6016nd	XML_V7I_IN_LP_DC(00811000V)	SELECT SESSIONTIMEZONE, LENGT...

```
CREATE OR REPLACE FUNCTION rcache(p_srvr_id IN servers.srvr_id%TYPE) RETURN BOOLEAN
RESULT_CACHE RELIES_ON(servers) IS
  srvrow servers%ROWTYPE;
 BEGIN
   SELECT *
   INTO srvrow
   FROM servers
   WHERE srvr_id = p_srvr_id;
   RETURN TRUE;
 EXCEPTION
   WHEN OTHERS THEN
     RETURN FALSE;
 END rcache;
 /
```

```
SELECT /*+ RESULT_CACHE */ srvr_id
FROM (
  SELECT srvr_id, SUM(cnt) SUMCNT
  FROM (
    SELECT DISTINCT srvr_id, 1 AS CNT
    FROM servers
    UNION ALL
    SELECT DISTINCT srvr_id, 1
    FROM serv_inst)
  GROUP BY srvr_id)
WHERE sumcnt = 2;
```

Conclusions

Is Anyone Ready For The Next Generation?

- No one is ready for the next generation
- No one has an appropriately sized training budget?
- There really is no such thing as "Big Data"

LONELINESS

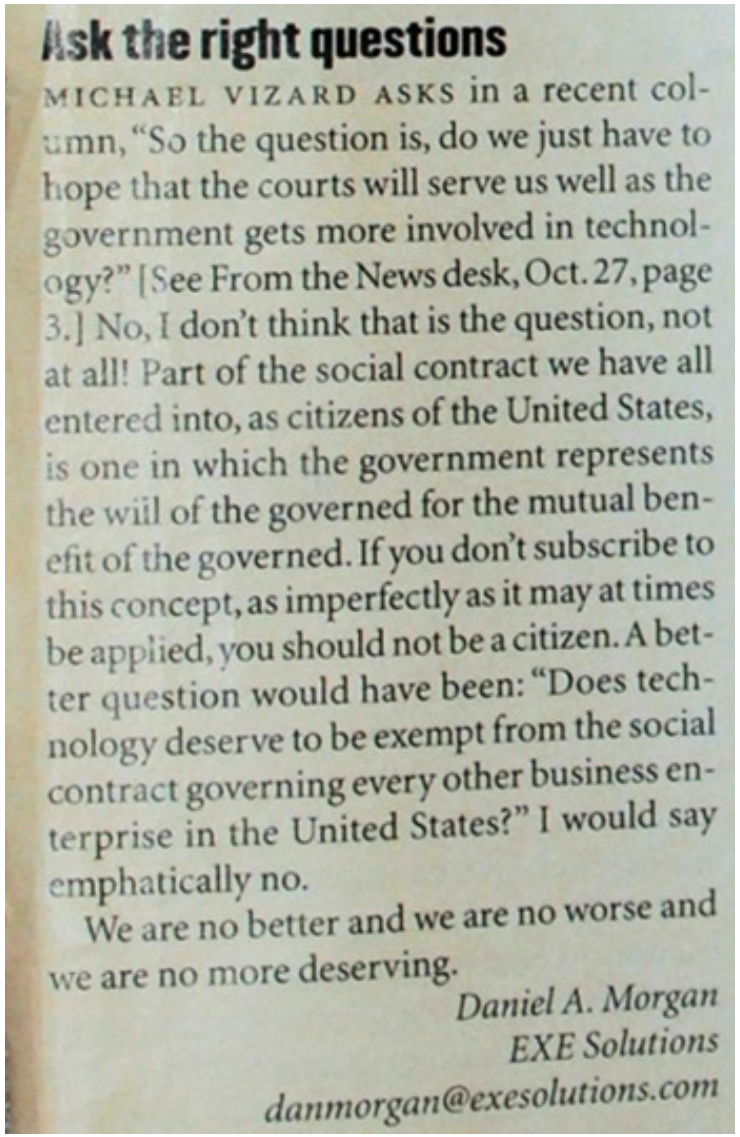
IF YOU FIND YOURSELF STRUGGLING WITH LONELINESS, YOU'RE NOT ALONE.
AND YET YOU ARE ALONE. SO VERY ALONE.

Questions

ERROR at line 1:
ORA-00028: your session has been killed

Thank you

InfoWorld: November 17, 1997



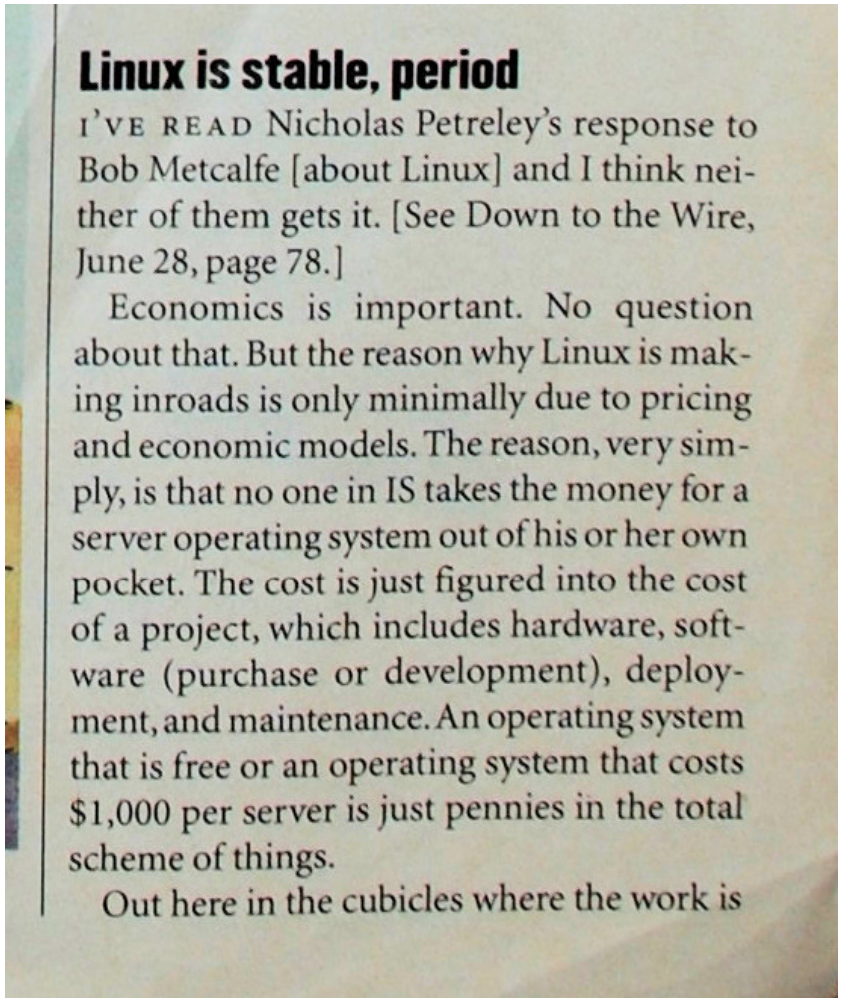
Ask the right questions

MICHAEL VIZARD ASKS in a recent column, "So the question is, do we just have to hope that the courts will serve us well as the government gets more involved in technology?" [See From the News desk, Oct. 27, page 3.] No, I don't think that is the question, not at all! Part of the social contract we have all entered into, as citizens of the United States, is one in which the government represents the will of the governed for the mutual benefit of the governed. If you don't subscribe to this concept, as imperfectly as it may at times be applied, you should not be a citizen. A better question would have been: "Does technology deserve to be exempt from the social contract governing every other business enterprise in the United States?" I would say emphatically no.

We are no better and we are no worse and we are no more deserving.

Daniel A. Morgan
EXE Solutions
danmorgan@exesolutions.com

InfoWorld: July 19, 1999



Linux is stable, period

I'VE READ Nicholas Petreley's response to Bob Metcalfe [about Linux] and I think neither of them gets it. [See Down to the Wire, June 28, page 78.]

Economics is important. No question about that. But the reason why Linux is making inroads is only minimally due to pricing and economic models. The reason, very simply, is that no one in IS takes the money for a server operating system out of his or her own pocket. The cost is just figured into the cost of a project, which includes hardware, software (purchase or development), deployment, and maintenance. An operating system that is free or an operating system that costs $1,000 per server is just pennies in the total scheme of things.

Out here in the cubicles where the work is done, we are moving toward Linux for one primary reason: stability.

If Windows NT was free, heck, if Microsoft paid us money to deploy NT Servers, the OS still isn't stable enough for mission-critical applications. Do I want to take support calls during the business day because the server crashed again? Do I want to drive to the office in the middle of the night to reboot the server because of memory leakage? Do I want to have a closer relationship with my cell phone and pager than I do with my girlfriend? I don't think so.

When Microsoft wants to be taken seriously, it will stop development of new versions of its OS and fix the one it already has. Given the choice between Windows 2000, Version 1.0, and a stable, secure version of NT 3.51, I'd go back to 3.51 in a second.

Daniel A. Morgan
Mercer Island, Wash.