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Oracle on OpenVMS Products Update

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Director of Development, Oracle Corporation
September, 2009

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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remain at the sole discretion of Oracle.



Agenda

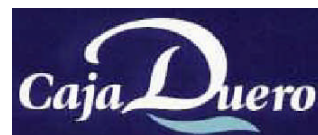
- Oracle/HP Partnership
- Oracle's Commitment to OpenVMS
- Organizational News
- Oracle Database on OpenVMS Update
- Oracle Rdb Update

HP/Oracle Partnership



- 25 years of collaborative partnership
- Executive Alignment
- 150,000+ combined customers...
 - 41% of Oracle customers run HP servers
 - 70% mid-range HP-UX servers & 90% of Superdomes run Oracle
 - 90+% HP OpenVMS database servers use Oracle
- Hundreds of dedicated resources; performance characterization, benchmarking, engineering, business alliance in the field
- Collaborative Engineering

Over 150,000 Joint Customers





Rdb & Oracle Database OpenVMS Single Management Team





Oracle OpenVMS Development Team

- Oracle Server OpenVMS Porting
 - Development/Base porting, QA, DDR
 - Based in Nashua, NH USA, IDC (India Development Center), HQ & UK
- Oracle Rdb Development
 - Development, QA, DDR
 - Based in Nashua, NH USA, IDC, Colorado, Australia, Japan
- Oracle OpenVMS Development Teams working closely with HP OpenVMS Engineering



Oracle OpenVMS Support Team

- Philippe DeLobel Organization supporting both Oracle Database and Oracle Rdb on OpenVMS
 - Dedicated global resources
 - US, EMEA, Asia Pacific, IDC, Japan
- Metalink enhancements ... Communities
 - <http://communities.oracle.com> communities known as "Oracle on OpenVMS" formally known as the "Midrange" forum on <http://metalink.oracle.com>
 - Two OpenVMS Communities:
 - Oracle on OpenVMS
 - Rdb Product Family on OpenVMS



Organizational Benefits

- Renewed Commitment to both Oracle Rdb & Oracle Database Server on VMS businesses
- Resource allocation for critical projects
- Leveraging of expertise between groups benefits both products
- Customer Focus
- Coordinated close partnership with HP

Oracle Database on OpenVMS





Oracle Database on OpenVMS

- Current Releases and Lifetime Support Dates
- Roadmap
- Group Priorities and Projects
- Project Status
- Customer Focus



Oracle Current Releases

- 9i (9.2.0.8) Alpha
 - CPU patches continuing upon request
- 10.1.0.5 Alpha
 - CPU patches continuing upon request
- 10.2.0.4 Alpha and Integrity
 - Alpha & Integrity shipped together
 - New features
 - AUDIT_FILE_DESTINATION support
 - Improved Stat Pack Information
 - Multiple Database Write Processes (DBWR)
 - Database Vault
- Grid Control Agent
 - 10.2.0.2 GC Agent for I64 and Alpha shipping
 - Patch kit 5 is the latest version



Oracle Database Lifetime Support Dates

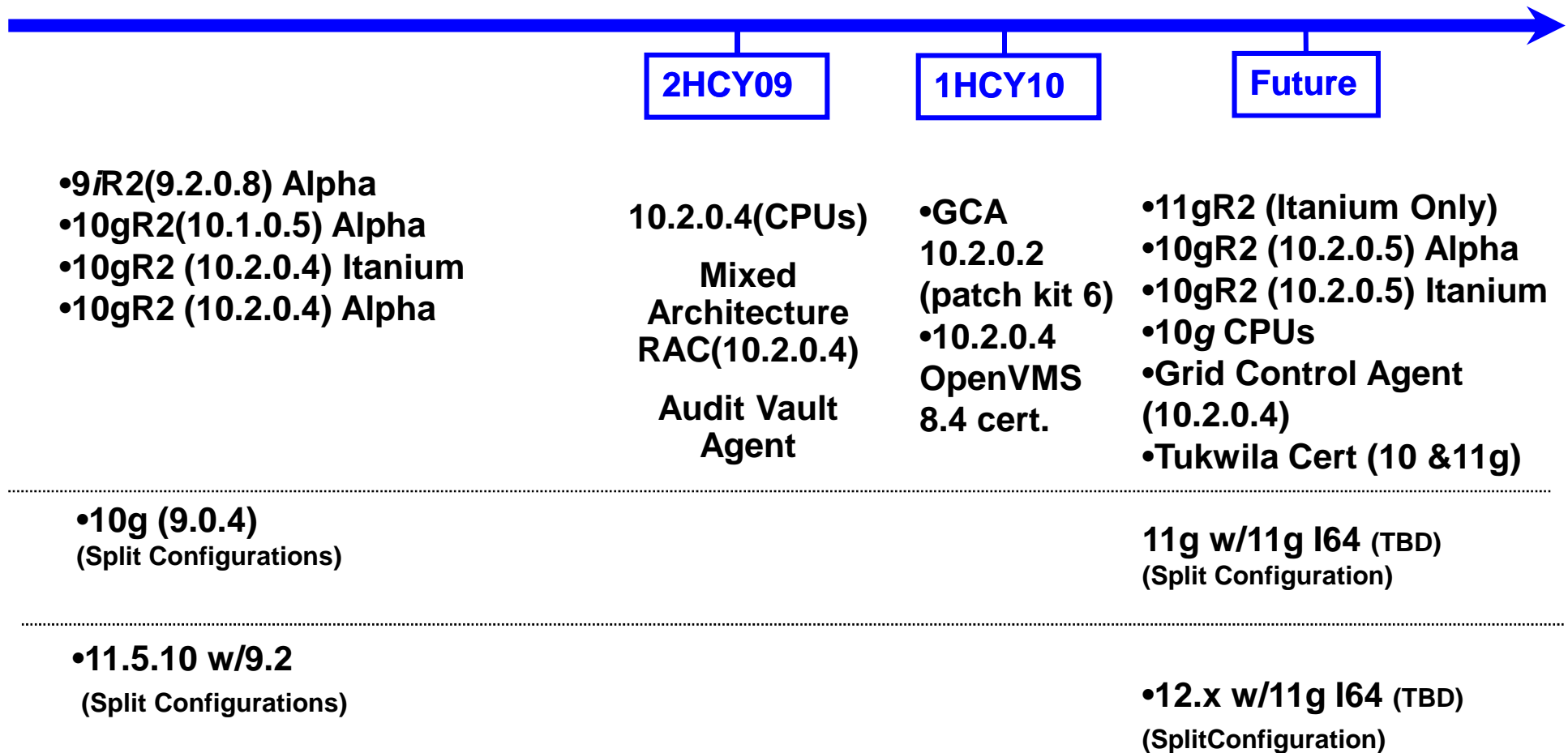
| | General Availability | Premier Support Ends | Extended Support Ends | Sustaining Support Ends |
|-------------|---------------------------------|-------------------------------------|--------------------------------------|--|
| 9.2 | Jul 2002 | Jul 2007 | Jul 2010 | Indefinite |
| 10.1 | Jan 2004 | Jan 2009 | Jan 2012 | Indefinite |
| 10.2 | Jul 2005 | Jul 2010 | Jul 2013 | Indefinite |
| 11.2 | Aug 2009 | Aug 2014 | Aug 2017 | Indefinite |



Certification

- 10.2.0.4 Database and Grid Control Agent
 - I64 V8.2-1, through V8.3-1H1
 - Alpha V8.2 through V8.3
 - Montvale
- 10.1.0.5
 - Alpha V7.3-2 through V8.3
- 9.2.0.8
 - Alpha V7.3 through V8.3

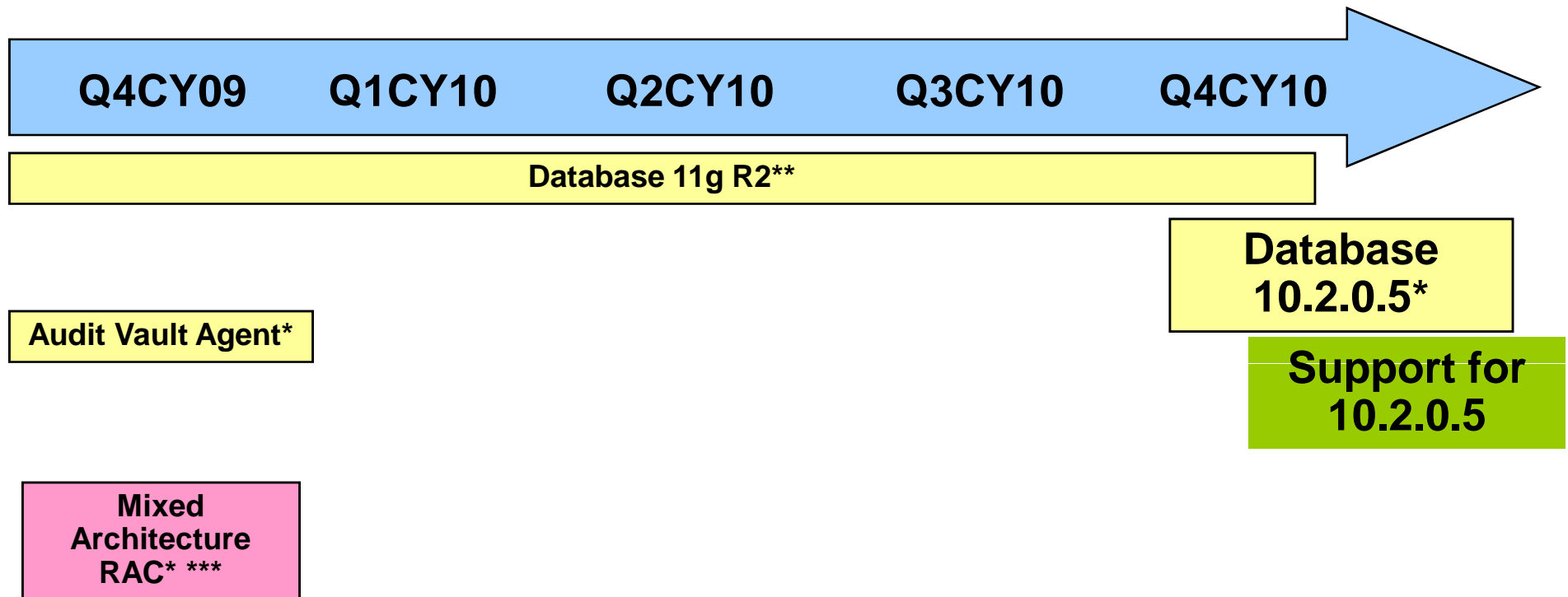
Oracle Roadmap - OpenVMS



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•Split Configurations allow backend database to reside on OpenVMS. Apps must be on supported middle-tier: HP-UX PA-RISC, Tru64 UNIX, Linux x86, Windows x86

Oracle on OpenVMS Development Pipe Line



The Next GC product

***Both Alpha and Itanium**

****Itanium Planned Only**

***** Planned**

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Group Priorities and Projects

- Mixed Alpha/Itanium RAC Support
- 11g
- Audit Vault Agent
- RAC Install
- Expedited Patch Sets
- Performance
- Customer Focus



Oracle 11g Release

- Customer base on OpenVMS is risk averse
 - Bet your business applications
 - High reliability and availability required
- Customers often cautious when upgrading between major versions
- Adoption rate for any given R1 release is low
 - Why then invest resources for R1 releases?
- 11g ported to OpenVMS starting with R2
- 11g target ship is 2HCY10



Oracle 11g Release

- Oracle Database on OpenVMS Plans
 - IA64 only
 - RAT (Real Applications Testing)
 - Active Data Guard
 - Development environment will be the first release making use of symbolic soft links on OpenVMS



Expedited Patch & CPU Releases

- Maintaining high level of quality for all Oracle releases on OpenVMS is top priority
- Not porting R1 version of major releases (e.g.11g) frees cycles to help increase the number of patch releases we deliver and reduce time to market
- Some significant internal process enhancements & new capabilities now available may allow us to shorten our development cycles



Customer Focus

- Maintaining contact with the customer base is key to understanding your needs and to our continued success
- Customer mailing list as we have done for Oracle Rdb - including online subscribe
 - To join go to <http://www.oracle.com/technology/products/oraonopenvms/index.html>
- 1-on-1 customer meetings
- Presence at Oracle and HP events such as OpenWorld, VMS Technical Days, Technical Forums, Online seminars through Oracle Support



Example Results of Oracle's Renewed Focus

- Customer reports “export is slow” and excessive CPU time
 - Analysis and investigation reveal inefficient method writing to output file
 - Optimization & tuning of the code results in four-fold performance increase
 - Improvements are available in 10.2.0.4



Example Results of Oracle's Renewed Focus

- Customer requests for Database Vault
 - Release for Both Alpha and Itanium in February 2009
- Customer requests for mixed-architecture RAC
 - Destructive testing underway
 - Anticipate initial deployment H2CY09



Beta Releases

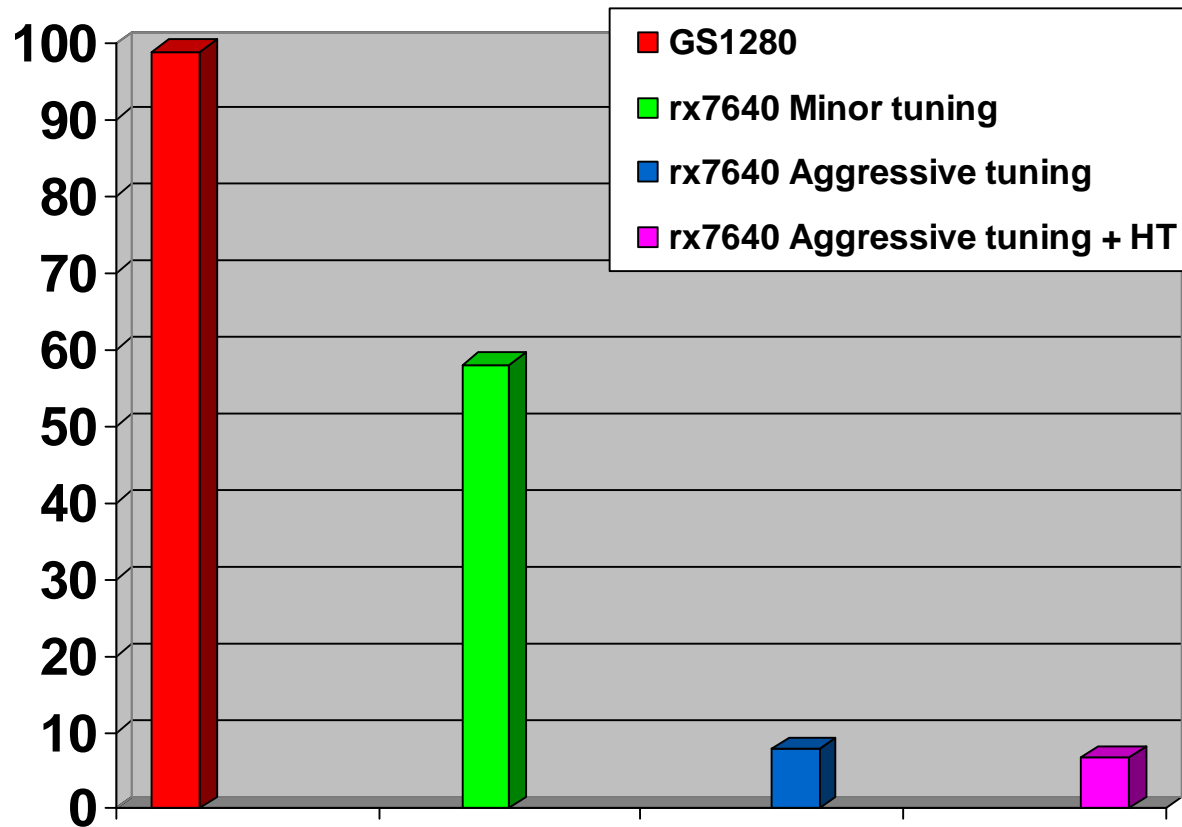
- Easy Registration
- Problems reported back to Engineering via Metalink using customer assigned Beta CSI number
- Kits available on our beta download site
- Dedicated Beta Program Administrator

Oracle Database on OpenVMS Alpha vs. 164 Performance





Alpha Vs. Itanium



- Actual Customer Environment
- End-of-Day Processing
- Oracle applications typically benefit from enabling HyperThreads



MAKLEE
software engineering
solutions

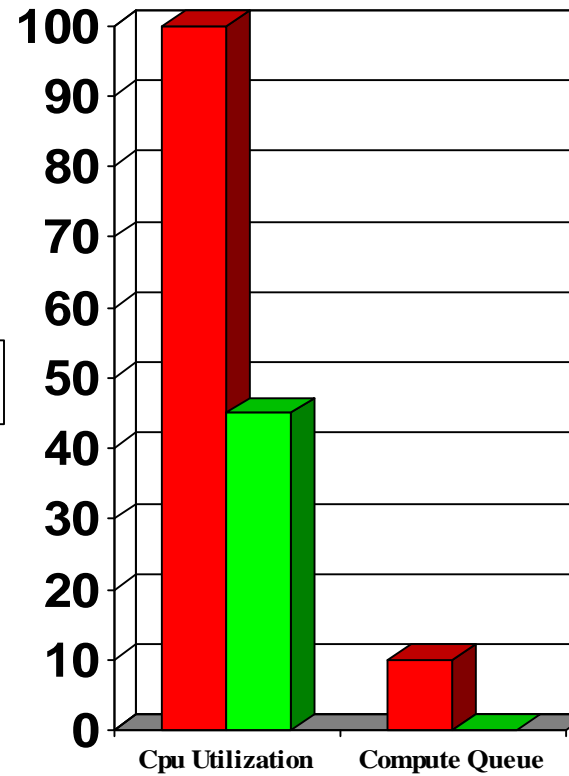
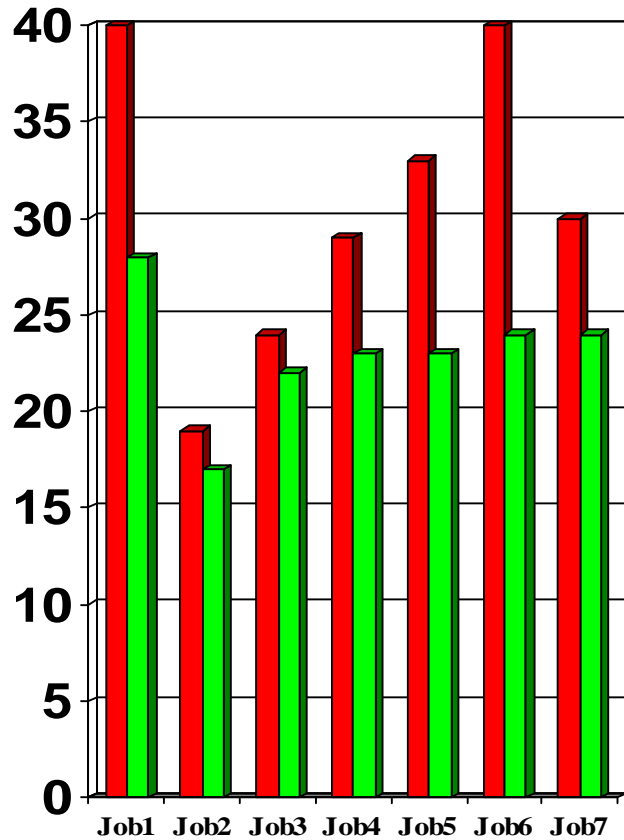
**Minutes to complete SQL job in batch
Less is better**

HyperThreads Improved Performance 15.7%

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Alpha Vs. Itanium



■ GS1280 1.15 Ghz
■ rx8640 1.6 Ghz



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software engineering
solutions

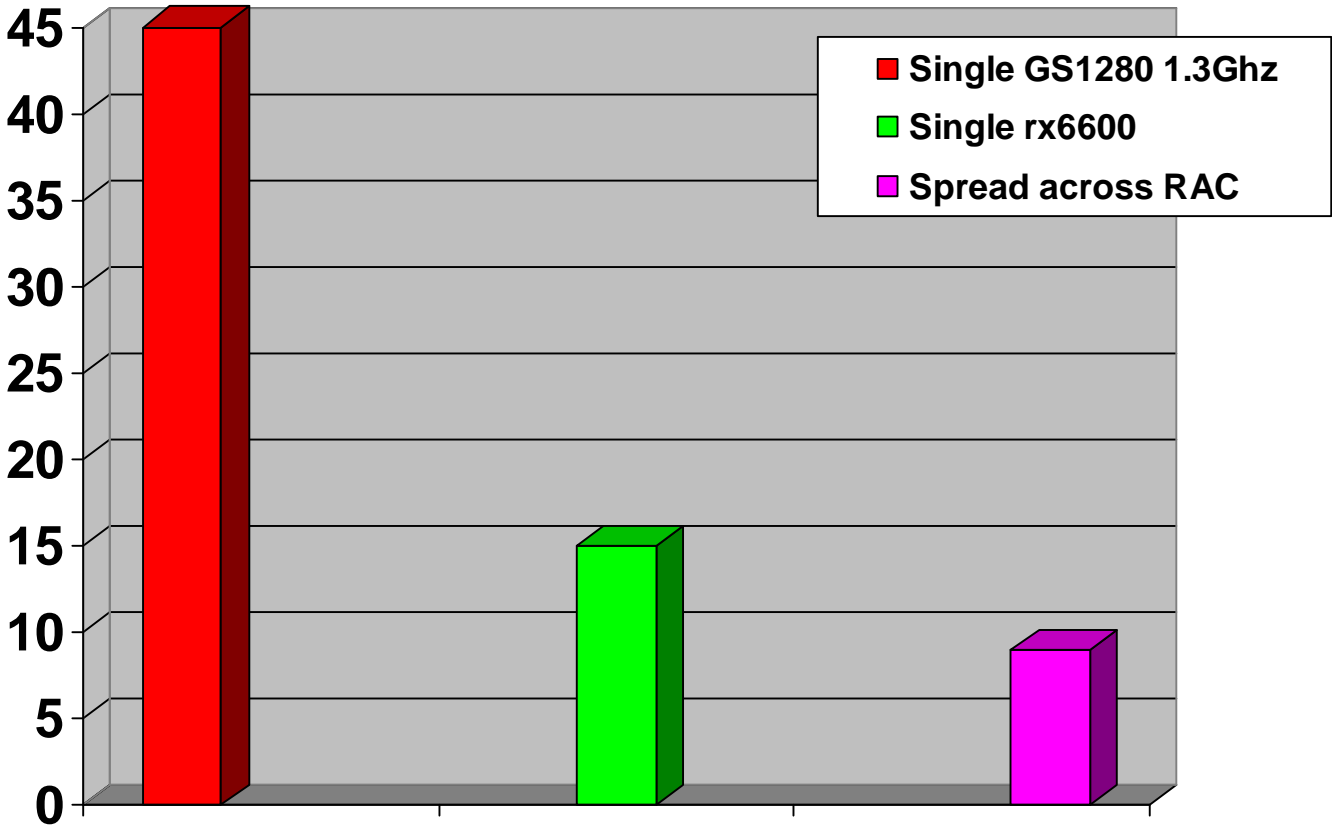
Elapsed time (minutes)
Less is better

CPU Use
Less is better

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Alpha Vs. Itanium



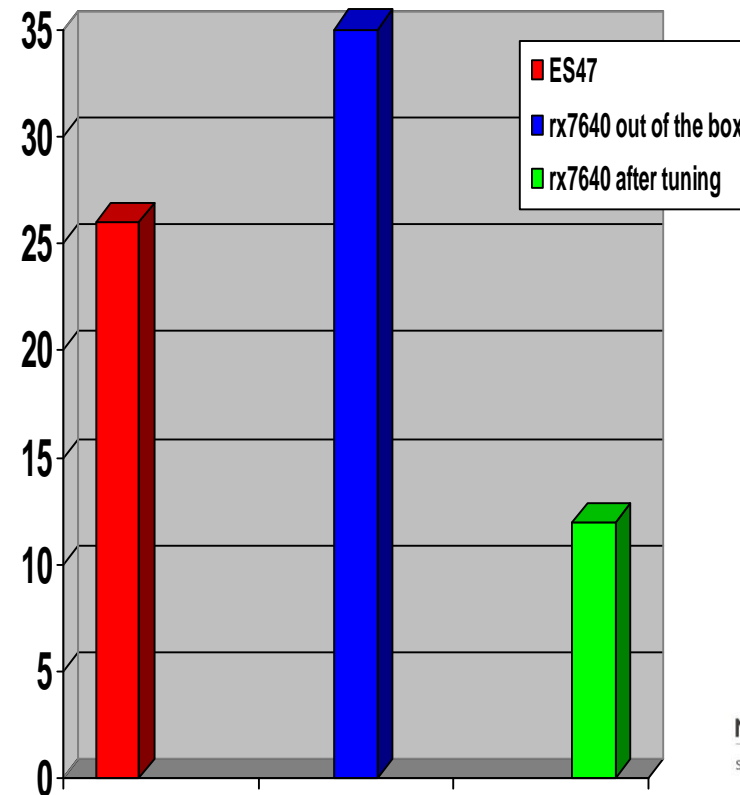
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**Minutes to complete 54 jobs in
batch processing cycle
Less is better**

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As Always, Tuning is critical for optimal performance

*66% difference between
"out of the box" &
after minimal tuning*



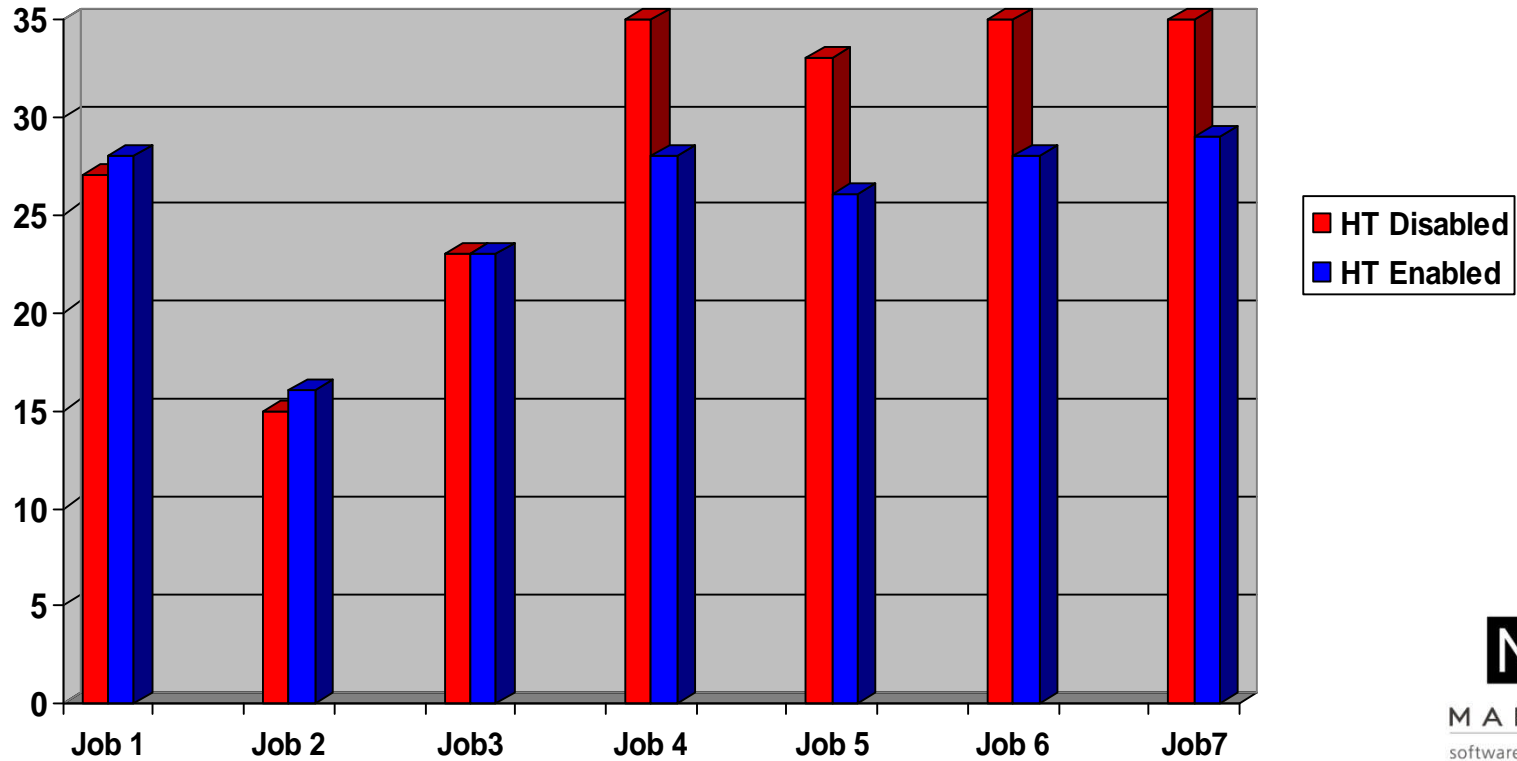
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Minutes to complete batch job
Less is better

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HyperThreads – Impact on Oracle Jobs



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**Elapsed time (minutes) to
execute 7 jobs
Less is better**

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Oracle Rdb on OpenVMS





Oracle Rdb

- Marketing
- Customer base and new wins
- Recent Release History
- Current Development Activity
- Roadmaps
- Futures



Rdb Marketing Focus

- Focus on meeting our customers' needs
- [Rdb Web page](#), Rdb Web Journal, MetaLink, OTN
- Rdb management personal customer visits
 - Well over 100 per year
 - Hundreds more via e-mail & telephone
- Events
 - Oracle OpenWorld
 - HP OpenVMS events
 - Oracle Users' Group
- Technical Forums 2009/10
 - Australia
 - Sydney, September 14-15
 - US
 - San Francisco, October 19-20
 - Nashua, October 22-23
 - Europe, Asia
 - Dates & Locations to be announced
- 7 held in 2008
 - San Francisco, Nashua, Tokyo, Osaka, Munich, Stockholm, Reading, Sydney
- 8 held in 2007
- 8 held in 2006

SANDVIK

Kittles
FURNITURE

NASDAQ OMX

KERRY

HKE HKE_x
香港交易所
0005 1071
1277 0004

DIRECTV

ASX
AUSTRALIAN SECURITIES EXCHANGE

verizon wireless

PARANOR

ERICSSON
TAKING YOU FORWARD

vodafone

FLINDERS MEDICAL CENTRE

DOLLAR



IKEA

SSAB CountryLife CityRail RailCorp

AVERY DENNISON

PostFinance
SWISS POST

Miller

hp

CABLE & WIRELESS

National Semiconductor
The Sight & Sound of Information

The Walt Disney Company

Bank of Ireland

VOLVO

VEICOLI COMMERCIALI DA SEMPRE

intel Leap ahead

Fermilab

Thrifty

SHARP

UnitedHealthcare
Healing health care. Together.

EZPass
New Jersey Customer Service Center

Cessna
A Textron Company

novo nordisk

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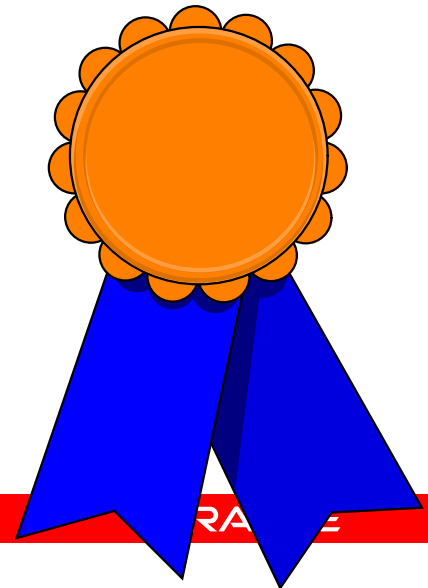


How Rdb Is Used

- Trading commodities, equities and futures: US, UK, Australia, Austria, Sweden, Spain, France, Greece, Italy, Switzerland, Hong Kong, Singapore, Korea & Germany
- Mobile phone systems: US, Japan, Hong Kong, UK, South Africa, Peru, Germany, Austria, Czech Republic, Denmark, France, Greece, Portugal & Switzerland
- Semiconductor manufacturing: Worldwide
- Lottery Systems: Europe, Canada, Australia, South America & US
- Automobile manufacturing: Volvo, Nissan, Toyota, Fiat, Ford
- Short Messaging Service: Worldwide
- Passport control: New Zealand
- Government: Ireland, Department of Social, Community and Family Affairs
- Education: Europe, United States, Australia -largest secondary education system in Southern Hemisphere
- Reservation systems: Thrifty & Dollar car rental
- Satellite Television: United States
- Automatic Toll Systems: United States

Recent Wins

- Deutsche Borse / Accenture
 - Shanghai Exchange
- OMX Technology
 - Osaka Stock Exchange
 - Tokyo Commodity Exchange
 - Thailand Exchange
 - Singapore Exchange
 - Hong Kong Exchange
- New projects with existing customers
 - SIAER
 - Sharp
 - Fidelity Investments
 - Plus more ...





Product Development Strategy

- High-end OLTP systems focus
 - High performance
 - Unique scalability on OpenVMS
 - Extensive tuning capabilities
 - High availability
 - Robust on-line management
- Integration with Oracle software environment
 - Oracle Developer Suite
 - Oracle Application Server
 - Extend Java, JDBC support
 - Oracle Enterprise Manager
 - Oracle Database



Rdb Product Family Releases Over The Last Year

- Rdb 7.2.3.5, April '09
- Rdb 7.2.3.4, February '09
- Rdb 7.2.3.2, November '08
- Rdb 7.2.3.1, September '08
- Rdb 7.2.3.0, July '08
- SQL Services 7.3, January '08



Beta Releases

- Easy Registration
- Problems reported back to Engineering via Metalink using customer assigned Beta CSI number
- Kits available on our beta download site
- Dedicated Beta Program Administrator



Rdb 7.2 Product Family on Alpha & Integrity

Oracle Rdb
Oracle CODASYL DBMS
Oracle CDD/Repository
Oracle SQL/Services
OCI Services for Oracle Rdb
Oracle Trace for Rdb
Replication Option for Rdb
Oracle Rdb ODBC Driver
Oracle Rdb JDBC Drivers
Oracle Rdb OEM Agent



Rdb V7.2 Product Family on Alpha & Integrity

- Supports full range of certified HP AlphaServer and HP Integrity server configurations
 - Desk-top to enterprise
 - Standalone or clustered environments

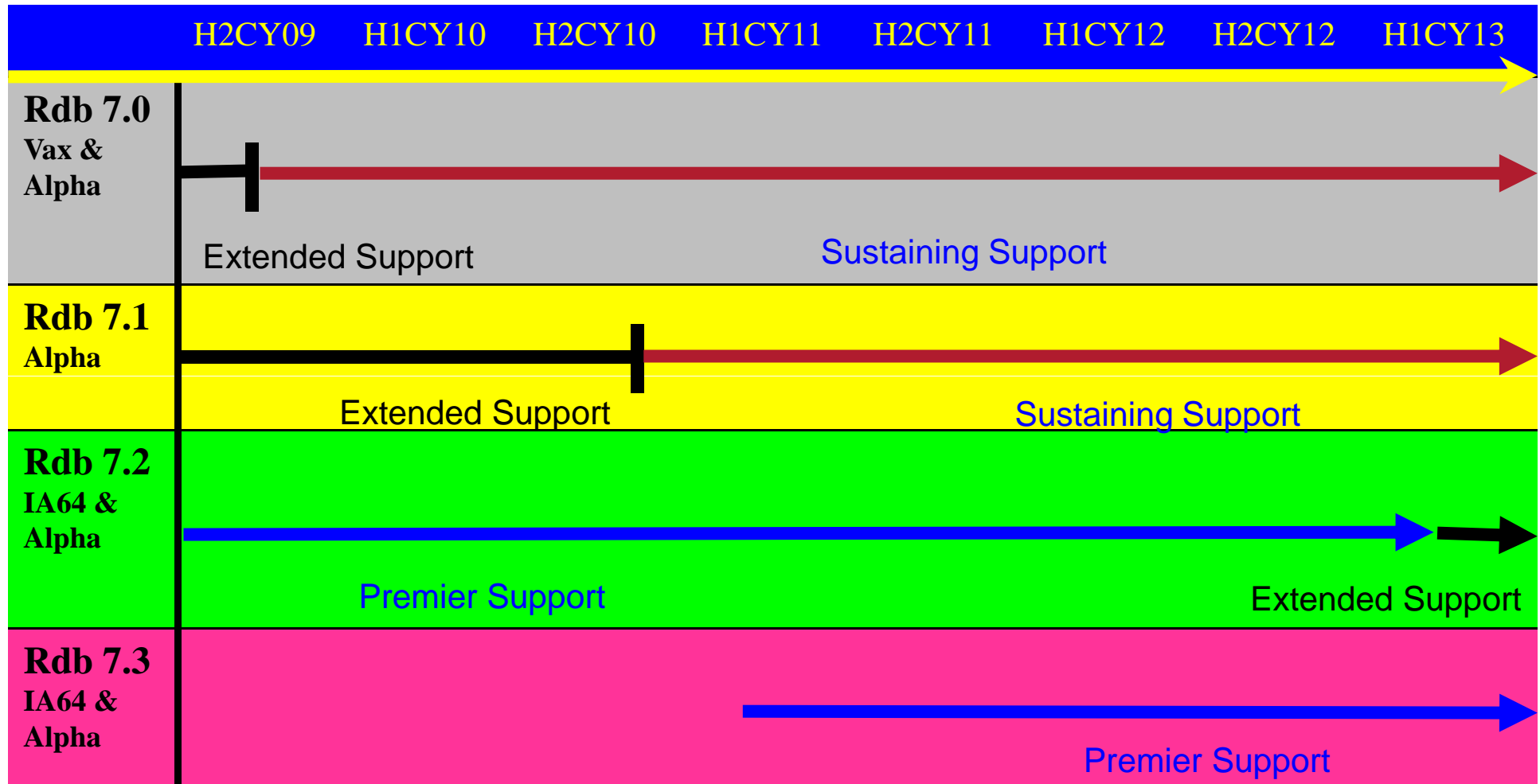


Rdb Product Family Lifetime Support Dates

| | General Availability | Premier Support Ends | Extended Support Ends | Sustaining Support Ends |
|----------------|-----------------------------|-----------------------------|------------------------------|--------------------------------|
| Rdb 7.0 | Oct 1996 | Aug 2007 | Aug 2009 | Indefinite |
| Rdb 7.1 | Jul 2001 | Dec 2007 | Dec 2010 | Indefinite |
| Rdb 7.2 | Jan 2006 | Jan 2013 | Jan 2016 | Indefinite |

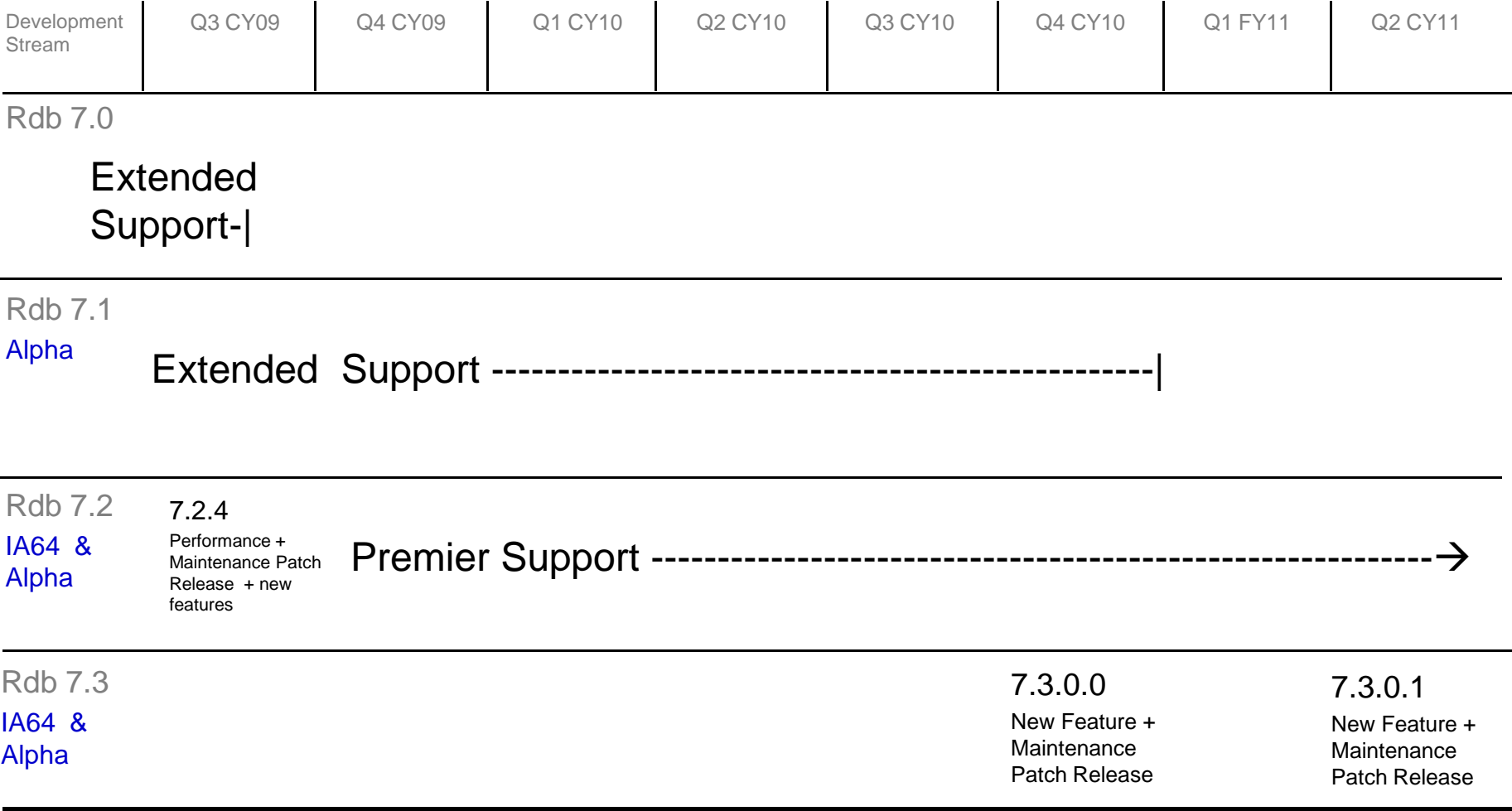
Oracle has extended the Premier and Extended support dates for Rdb 7.2

Rdb Product Family Extended Support End Dates





Rdb Roadmap through Q2 CY11



Rdb Product Family Roadmap through Q2 CY09

| | Q3CY09 | Q4CY09 | Q1CY10 | Q2CY10 | Q3CY10 | Q4CY08 | Q1CY11 | Q2CY11 |
|--------------------------------|------------------------|--------|---|--------|---|--------|--|--------|
| Rdb 7.0 Vax & Alpha | 7.0.9 Sustaining | | | | | | | |
| Rdb 7.1 Alpha | 7.1.5.2 Maintenance | | | | | | | |
| Rdb 7.2 IA64 & Alpha | 7.2.4.0 Maintenance | | 7.2.3 Performance + Maintenance + New Features | | 7.2.3.1 Performance + Maintenance + New Features | | Maintenance | |
| Rdb 7.3 IA64 & Alpha | | | | | | | 7.3.0.0 New Feature + Maintenance + Performance | |



Platforms & Versions

| Rdb | Platform | OpenVMS |
|-------------|-----------------|----------------------|
| V7.0 | VAX | V5.5-2 → V7.3 |
| | Alpha | V6.1 → V8.3 |
| V7.1 | Alpha | V7.2 → |
| V7.2 | Alpha | V8.2 → |
| | I64 | V8.2-1 → |



Rdb Futures

- Rdb 7.2.4
 - Stability
 - Performance
- Rdb 7.3
 - Encryption
 - Audit Vault
- SQL Services/OCI Services 11g upgrade
- JDBC Upgrades
- SQL Developer for Rdb
- Native Rdb Data Provider for .NET
 - Visual Studio Integration
 - 2PC
- ODBC 64 Bit
- New GUI for SQL/Services, JDBC and ODP.NET Management
- Rdb Extension Kit for Enterprise Manager 10g for Itanium



Rdb 7.3 Areas of Research and Development

- SQL enhancements
- Database encryption
- Auditing enhancements
- Database maintenance/management enhancements

Oracle Audit Vault

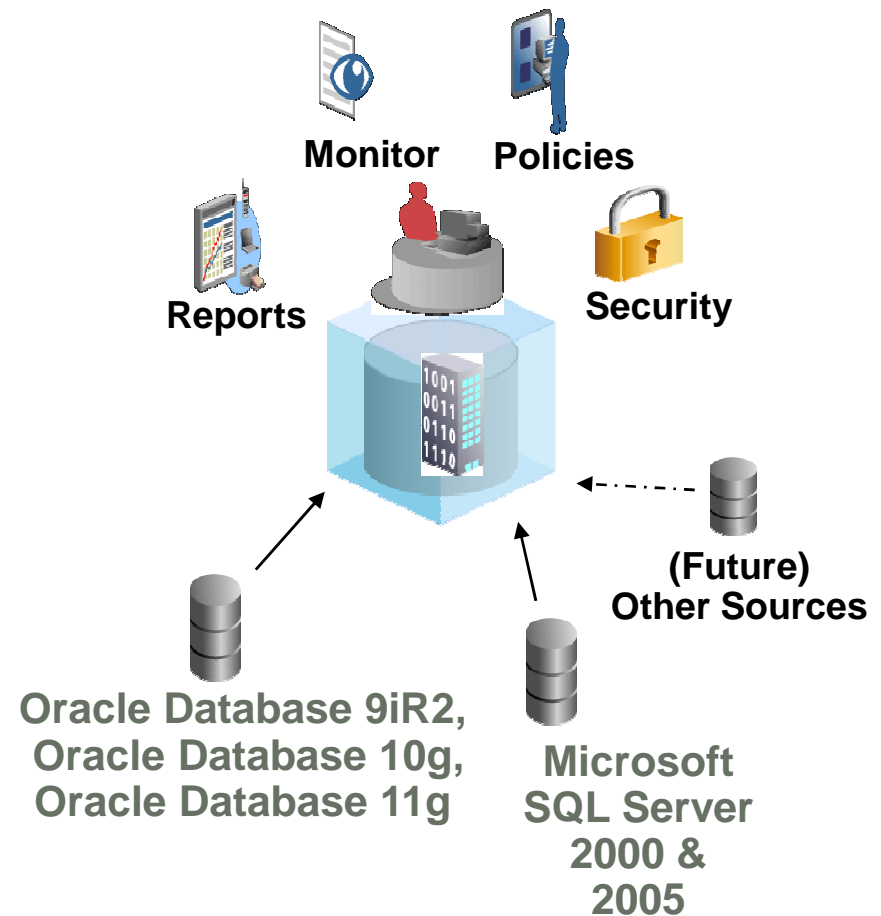
Overview

Consolidate and Secure
Audit Data

Simplify Compliance
Reporting

Alert on Security
Threats

Lower IT Costs With
Audit Policies



Oracle Audit Vault Reporting

ORACLE Enterprise Manager 10g
Audit Vault

[Help](#) [Logout](#)

[Home](#)

[Audit Reports](#)

[Audit Policy](#)

[Audit Status](#)

[Default Reports](#)

[Custom Reports](#)

Access Reports



- [Activity Overview](#)
- [Data Access](#)
- [Database Vault](#)
- [Distributed Database](#)
- [Procedure Executions](#)
- [User Sessions](#)

Compliance Reports



- [Account and Role Changes](#)
- [Account and Role Changes - Blocked](#)
- [Audit Setting Changes](#)
- [Data Changes](#)
- [Login Failures](#)
- [Login/Logoff](#)
- [Object Access](#)
- [Structure Changes](#)
- [System Events](#)

Alert Reports



- [All Alerts](#)
- [Critical Alerts](#)
- [Warning Alerts](#)

Management Activity Reports



- [Account Management](#)
- [Audit Commands](#)
- [Object Management](#)
- [Procedure Management](#)
- [Role and Privilege Management](#)
- [System Management](#)

System Exception Reports



- [Exception Activity](#)
- [Invalid Audit Record Activity](#)
- [Uncategorized Activity](#)

- Built-in customizable compliance reports
 - Privileged user activity, role grants
 - DDL activity
- User defined reports
 - What privileged users did on the financial database?
 - What user 'A' did across multiple databases?

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Consolidated Enterprise Reporting

Activity Overview

Rows

2

| Source | Category | Event | User | Target | Host | Event Time |
|-------------------|-------------------|---------------|-----------|-------------------|--------------------|--------------------|
| HR.ORACLE.VM | OBJECT MANAGEMENT | CREATE TABLE | PASSPORT | VISA | oel4upd4.oracle.vm | 11-JUN-08 10:02:53 |
| HR.ORACLE.VM | OBJECT MANAGEMENT | RENAME | JSCHAFFER | VW_TAB | oel4upd4.oracle.vm | 10-JUN-08 17:13:28 |
| HR.ORACLE.VM | OBJECT MANAGEMENT | CREATE VIEW | JSCHAFFER | VW_TAB | oel4upd4.oracle.vm | 10-JUN-08 17:13:19 |
| PAYROLL.ORACLE.VM | OBJECT MANAGEMENT | RENAME | JSCHAFFER | VW_TAB | oel4upd4.oracle.vm | 10-JUN-08 16:19:35 |
| PAYROLL.ORACLE.VM | OBJECT MANAGEMENT | CREATE VIEW | JSCHAFFER | VW_TAB | oel4upd4.oracle.vm | 10-JUN-08 16:19:25 |
| HR.ORACLE.VM | OBJECT MANAGEMENT | RENAME | JSCHAFFER | VW_TAB1 | oel4upd4.oracle.vm | 10-JUN-08 17:13:28 |
| HR.ORACLE.VM | OBJECT MANAGEMENT | CREATE VIEW | JSCHAFFER | VW_TAB1 | oel4upd4.oracle.vm | 10-JUN-08 17:13:19 |
| PAYROLL.ORACLE.VM | OBJECT MANAGEMENT | RENAME | JSCHAFFER | VW_TAB1 | oel4upd4.oracle.vm | 10-JUN-08 16:19:35 |
| PAYROLL.ORACLE.VM | OBJECT MANAGEMENT | CREATE VIEW | JSCHAFFER | VW_TAB1 | oel4upd4.oracle.vm | 10-JUN-08 16:19:26 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | configurations | oracle_ss | 11-JUN-08 13:22:02 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | configurations | oracle_ss | 11-JUN-08 13:22:02 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | fn_trace_getinfo | oracle_ss | 11-JUN-08 13:22:02 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | fn_trace_gettable | oracle_ss | 11-JUN-08 13:50:05 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | fn_trace_gettable | oracle_ss | 11-JUN-08 13:50:02 |
| mysqlserver1 | OBJECT MANAGEMENT | ACCESS OBJECT | avsrcusr | fn_trace_gettable | oracle_ss | 11-JUN-08 13:50:00 |

- Audit data normalized for consolidated reporting

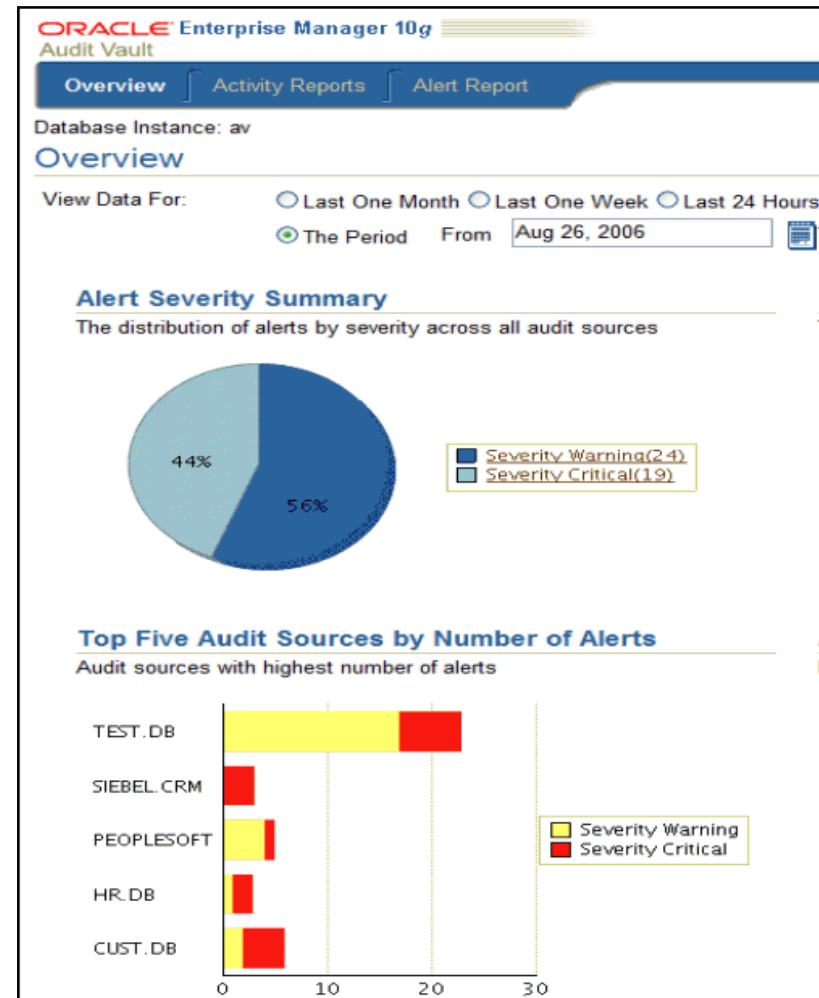
Oracle Audit Vault Report Customization

- Data filtering
- Record highlighting using condition values
- Charting with simple graphics
- Custom reports can be saved and shared

| Object | Event | User | Source | Host | Event Time | SQL Text |
|---------------------|--------|-------|-------------------|--------------------|-----------------------|--|
| OE.CUSTOMER_PAYMENT | SELECT | OE | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:24 | select payment_card_numbr customer_payment |
| OE.CUSTOMER_PAYMENT | SELECT | VSHAH | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:24 | select payment_code_id fro oe.customer_payment |
| OE.CUSTOMER_PAYMENT | SELECT | VSHAH | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:24 | select payment_card_numbr oe.customer_payment |
| OE.CUSTOMER_PAYMENT | SELECT | VSHAH | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:24 | select payment_expiration f oe.customer_payment |
| OE.ORDERS | UPDATE | VSHAH | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:10 | |
| OE.ORDERS | SELECT | VSHAH | PAYROLL.ORACLE.VM | oel4upd4.oracle.vm | 05-FEB-08 09:48:10 | select order_total from oe.o |

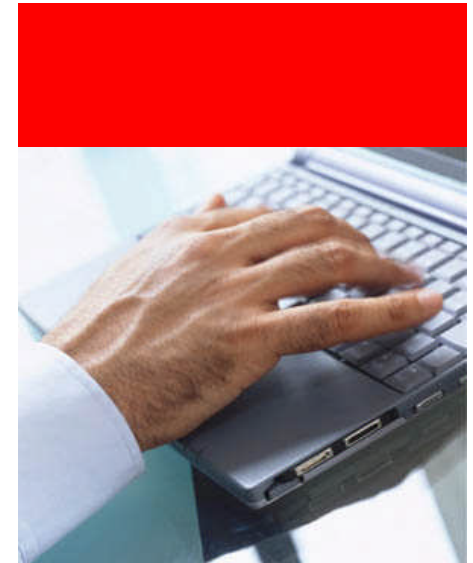
Oracle Audit Vault Alerts

- Efficient scanning
 - Inbound audit data scanning
- Alerts can be defined for
 - Direct views of sensitive columns
 - New users on sensitive systems
 - Role grants on sensitive systems
 - “DBA” grants on all systems
 - Failed logins
 - Enterprise-defined security policies



Program **Agenda**

- 7.2.5.2 Update - February 2008
 - Problems Fixed
 - New Features
- 7.2.5.3 Update – June 2008
 - Problems Fixed
- 7.2.5.4 Update – September 2009
 - Problems Fixed
- 7.3 Update – September 2009
 - New Features

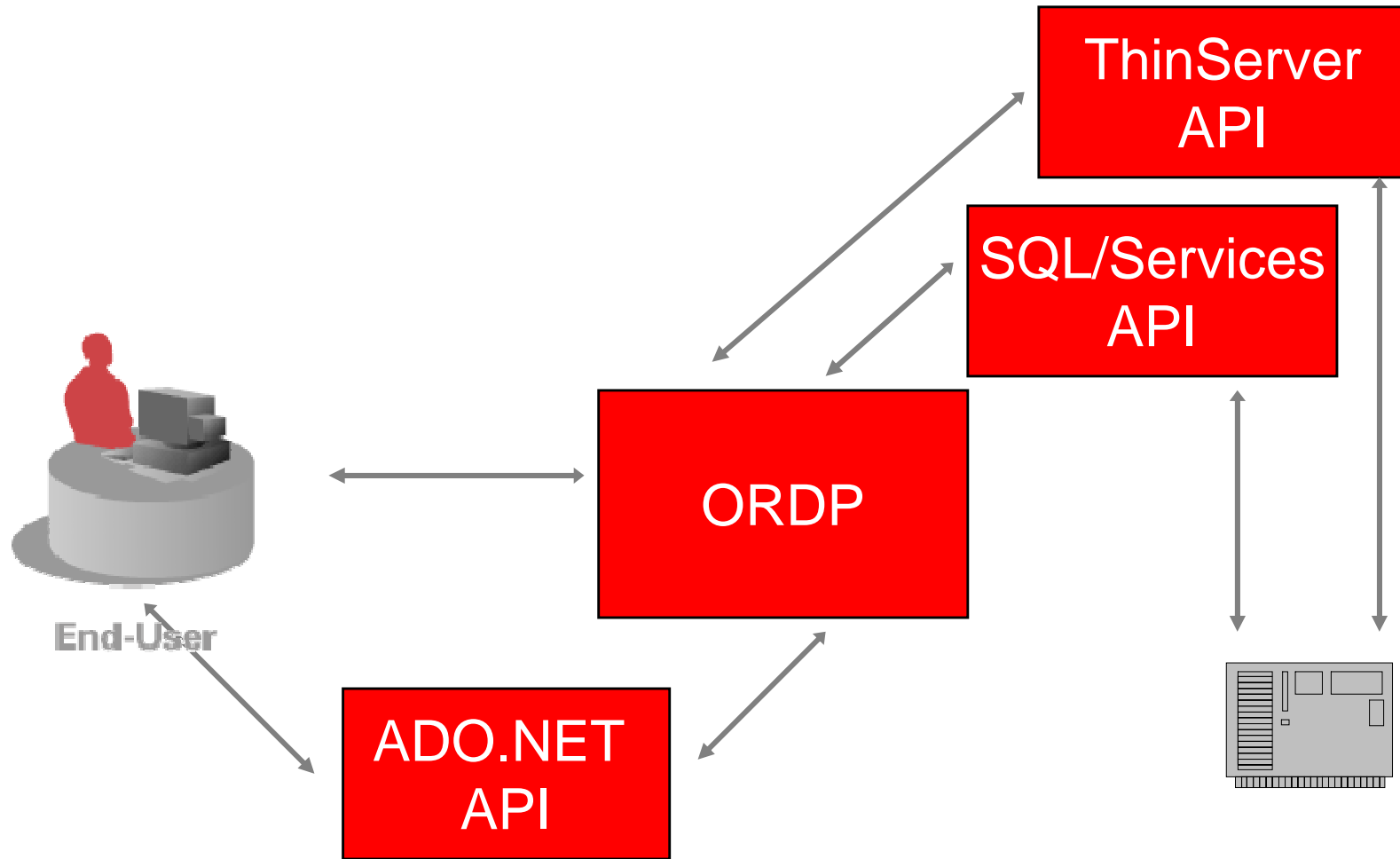




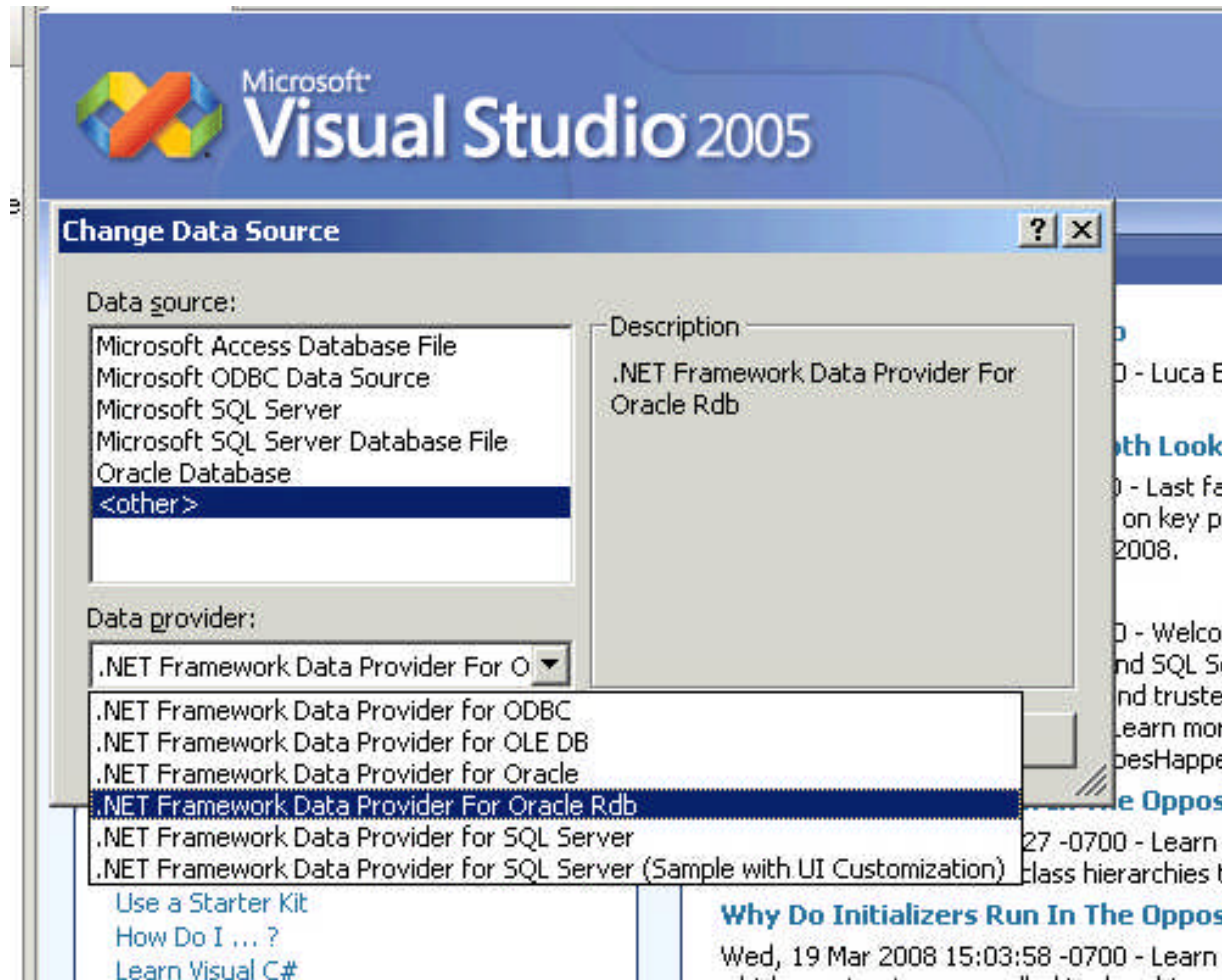
7.3 JDBC New Features

- Performance
- ShutDown hook
- Show DB output
- Driver.attach()
- Get Known Databases
- Obfuscate passwords
- Thin Controller additions

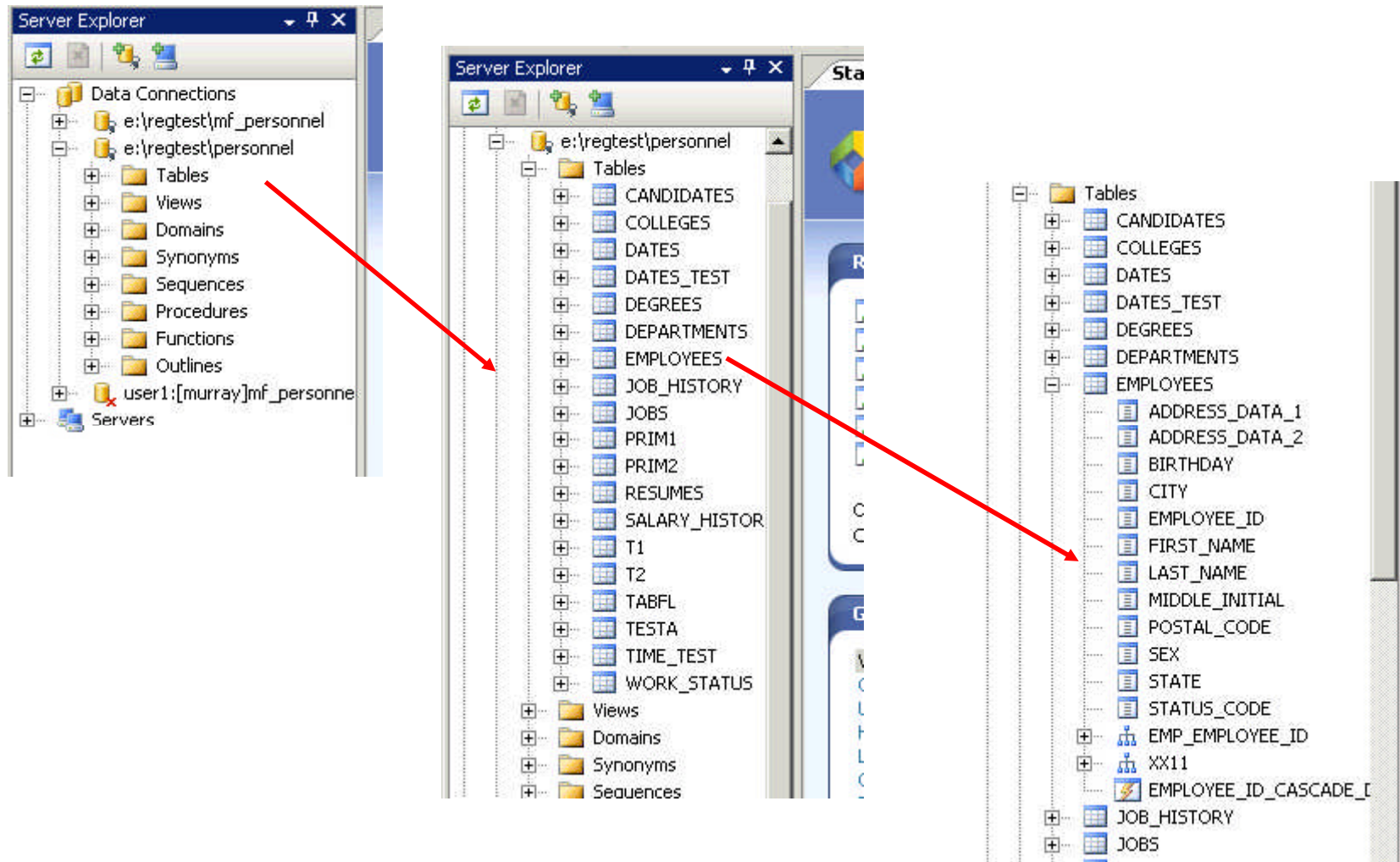
Oracle Rdb Data Provider for .NET



DDEX Provider for Visual Studio



DDEX Provider for Visual Studio





SQL Developer For Rdb


SQL Developer provides

- A free client database development tool
- Comprehensive core functionality
- Great user experience
- Enhanced productivity
- Simplified database development tasks



Product Overview

- Creating Connections
- Creating and Browsing Objects
- Querying Data
- Executing Queries
- Defining and Running Database Reports



SQL Developer

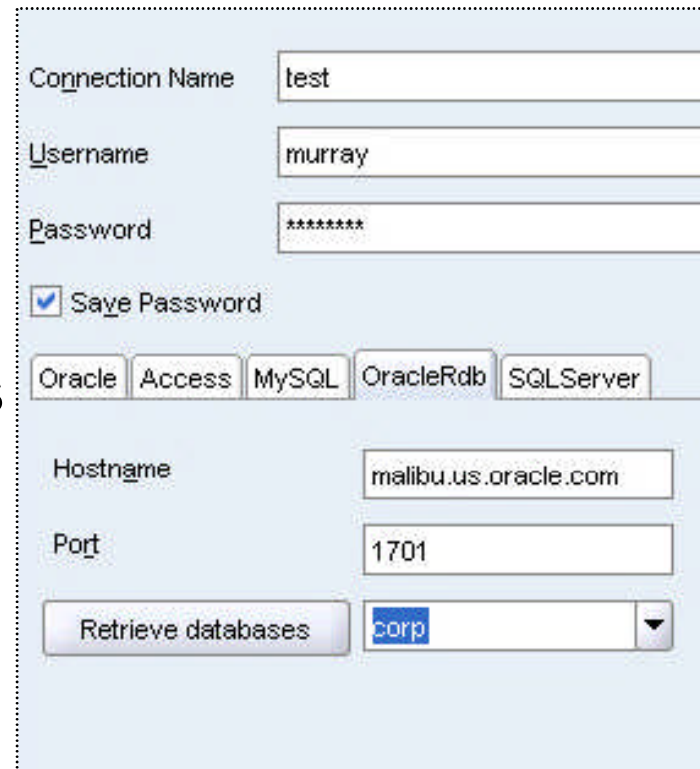
using the Oracle Rdb Addin



- Developed in the JDeveloper IDE
 - Leveraging a robust extensible IDE Framework
 - First independently branded product on JDeveloper IDE
- Bundled with JRE 1.5
- Easy install by unzipping the downloaded file
- Supports Windows, Linux and Mac OS X platforms
- Oracle Rdb Addin
 - Works with Oracle Rdb 7.2.0.1 and later
 - Uses Oracle JDBC for Rdb Thin driver

Database Connections

- Create and test connections
 - For multiple database systems
- Store often-used connections
- Import and export connections
- Reuse connections
 - Database browsing
 - SQL Development
 - Running reports
- Retrieve list of databases known to server

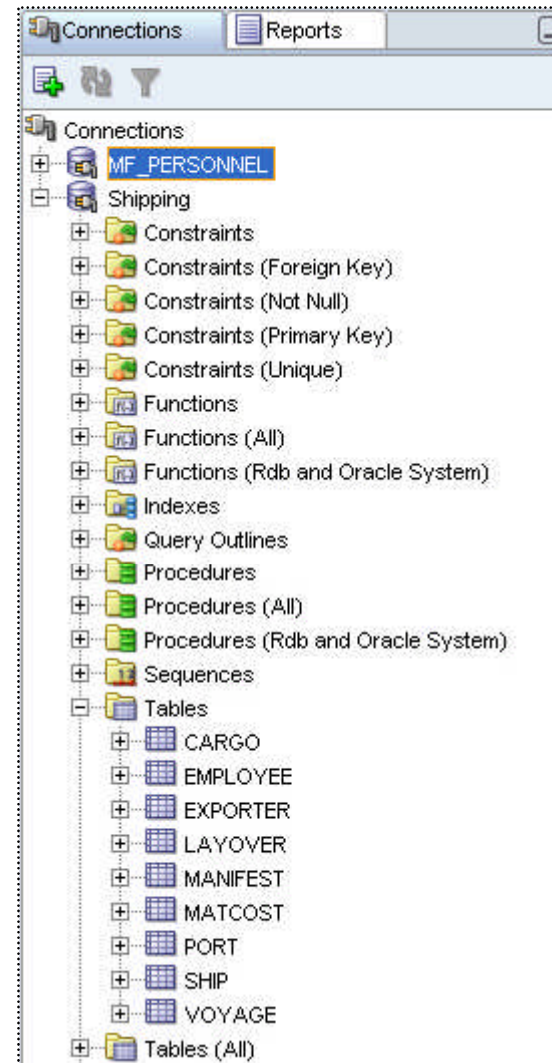


The screenshot shows a configuration dialog for a database connection. It includes the following fields and options:

- Connection Name:** test
- Username:** murray
- Password:** masked with asterisks (*****)
- Save Password
- Database type selection: Oracle, Access, MySQL, OracleRdb, SQLServer
- Hostname:** malibu.us.oracle.com
- Port:** 1701
- Retrieve databases:** corp (selected from a dropdown menu)

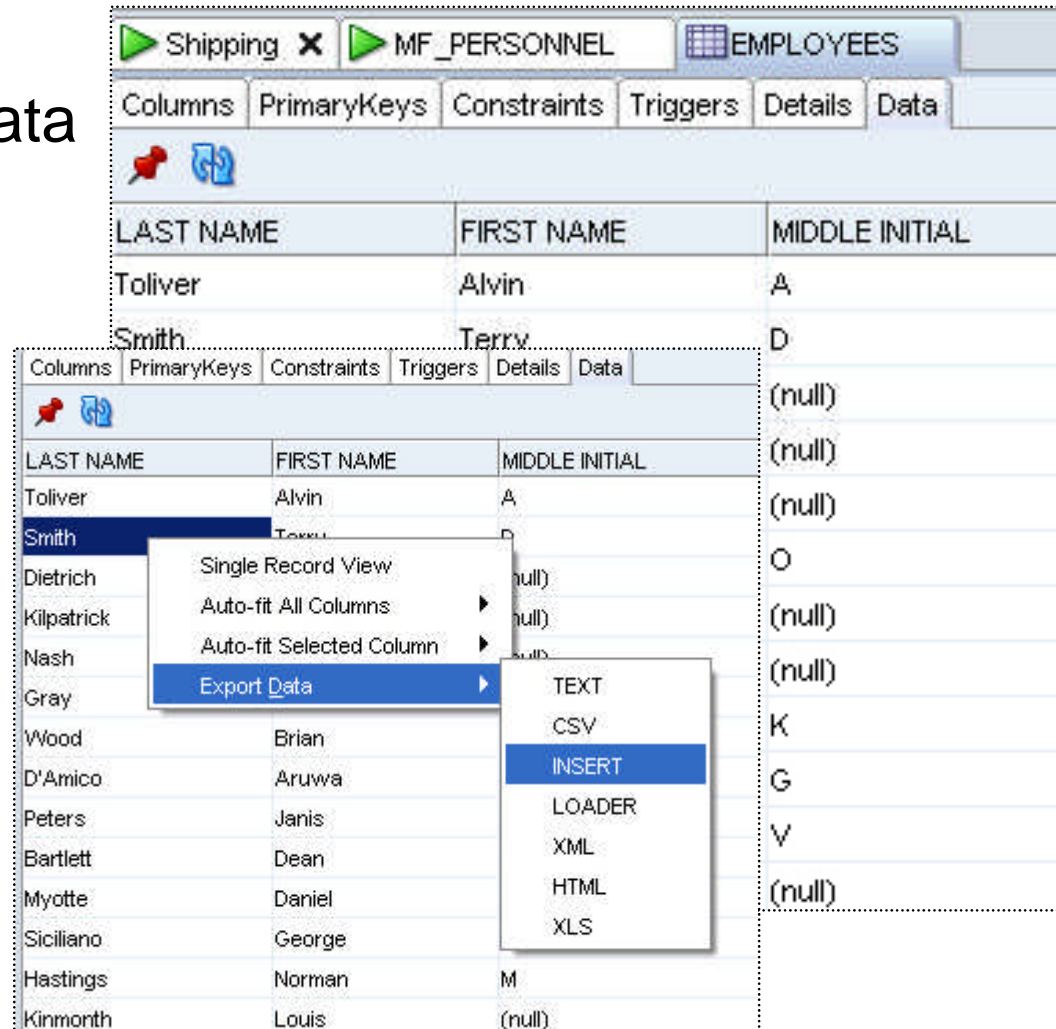
Object Browsing

- Tree Based Object Browser
- Browse Database Objects
- Support for common objects
 - Tables, Views, Indexes
 - Procedures, Functions
 - Triggers, Constraints
 - Query Outlines



Querying Data

- Browse table grid data
 - Filter
 - Order
- Filter and sort data for views
- Export data

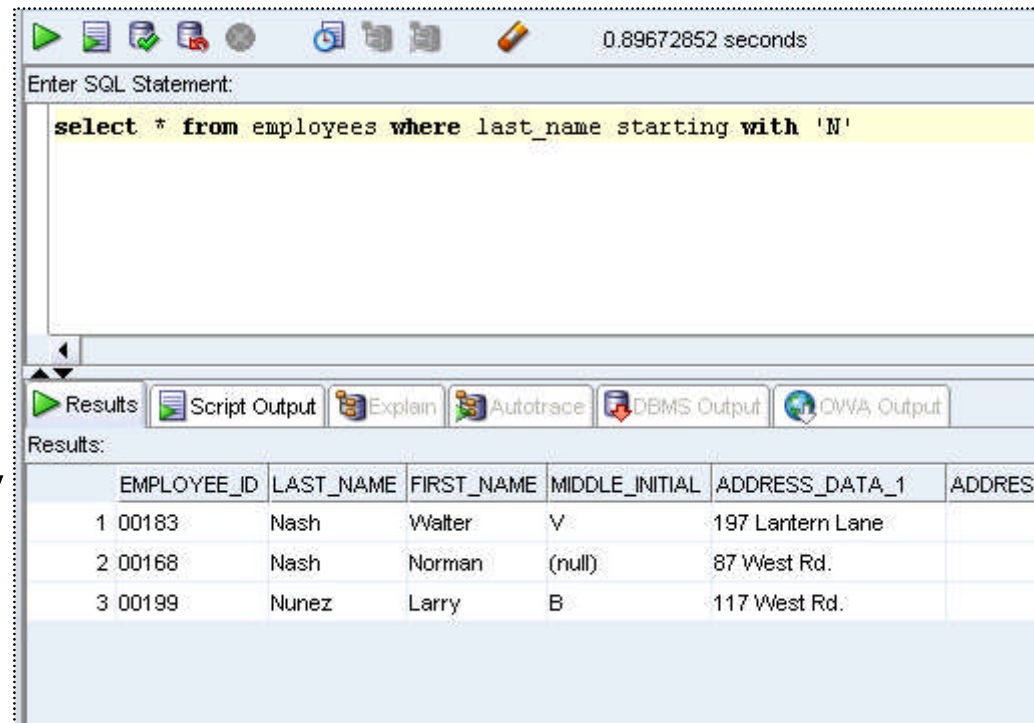


The screenshot displays the Oracle SQL Developer interface for the EMPLOYEES table. The table grid shows columns LAST NAME, FIRST NAME, and MIDDLE INITIAL. A context menu is open over the row for 'Smith', with the 'Export Data' option selected. The 'Export Data' submenu is also visible, showing options like TEXT, CSV, INSERT, LOADER, XML, HTML, and XLS.

| LAST NAME | FIRST NAME | MIDDLE INITIAL |
|------------|------------|----------------|
| Toliver | Alvin | A |
| Smith | Terry | D |
| (null) | | (null) |
| (null) | | (null) |
| Toliver | Alvin | A |
| Smith | Terry | D |
| Dietrich | | (null) |
| Kilpatrick | | (null) |
| Nash | | (null) |
| Gray | | (null) |
| Wood | Brian | |
| D'Amico | Aruwa | |
| Peters | Janis | |
| Bartlett | Dean | |
| Myotte | Daniel | |
| Siciliano | George | |
| Hastings | Norman | M |
| Kinmonth | Louis | (null) |

SQL Worksheet

- Syntax Highlighting
- Code Insight
- Single Statement Execution
- Script Execution
- Code Formatting
- Command History

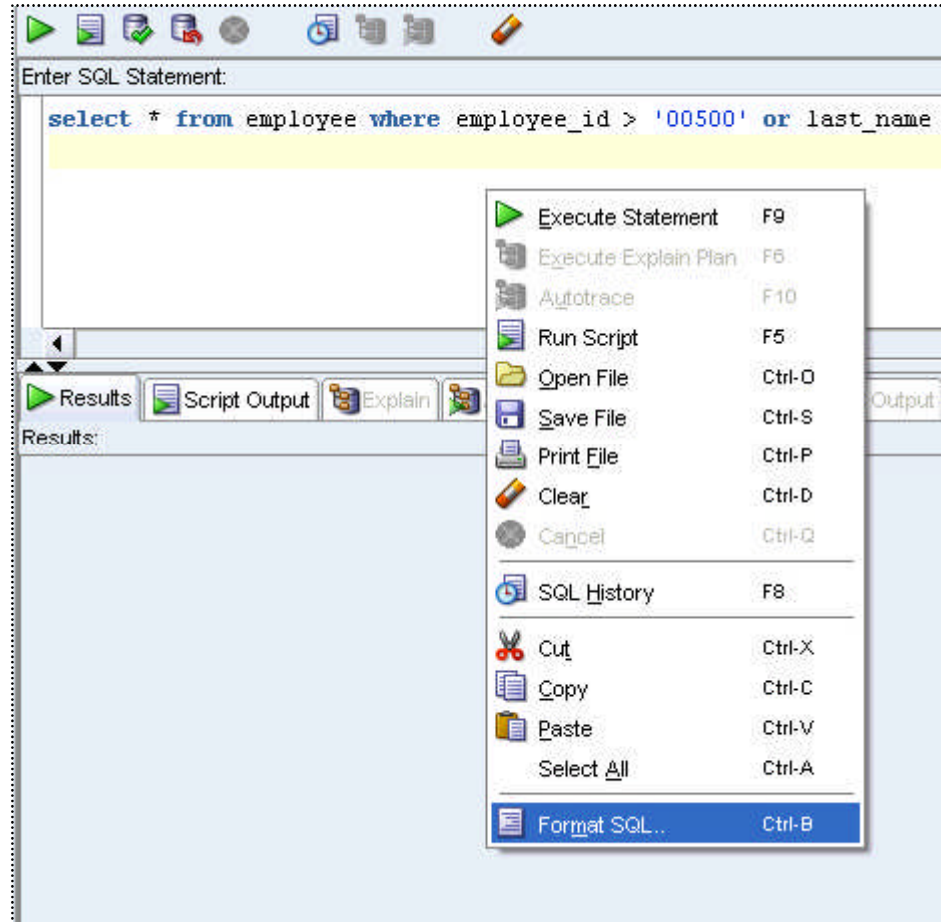


The screenshot displays an SQL worksheet interface. At the top, there is a toolbar with various icons and a timer showing 0.89672852 seconds. Below the toolbar is a text area labeled "Enter SQL Statement:" containing the query: `select * from employees where last_name starting with 'N'`. The query is syntax-highlighted. Below the text area is a toolbar with icons for "Results", "Script Output", "Explain", "Autotrace", "DBMS Output", and "OWA Output". Below this toolbar is a table with the following data:

| EMPLOYEE_ID | LAST_NAME | FIRST_NAME | MIDDLE_INITIAL | ADDRESS_DATA_1 | ADDRESS |
|-------------|-----------|------------|----------------|------------------|---------|
| 1 00183 | Nash | Walter | V | 197 Lantern Lane | |
| 2 00168 | Nash | Norman | (null) | 87 West Rd. | |
| 3 00199 | Nunez | Larry | B | 117 West Rd. | |

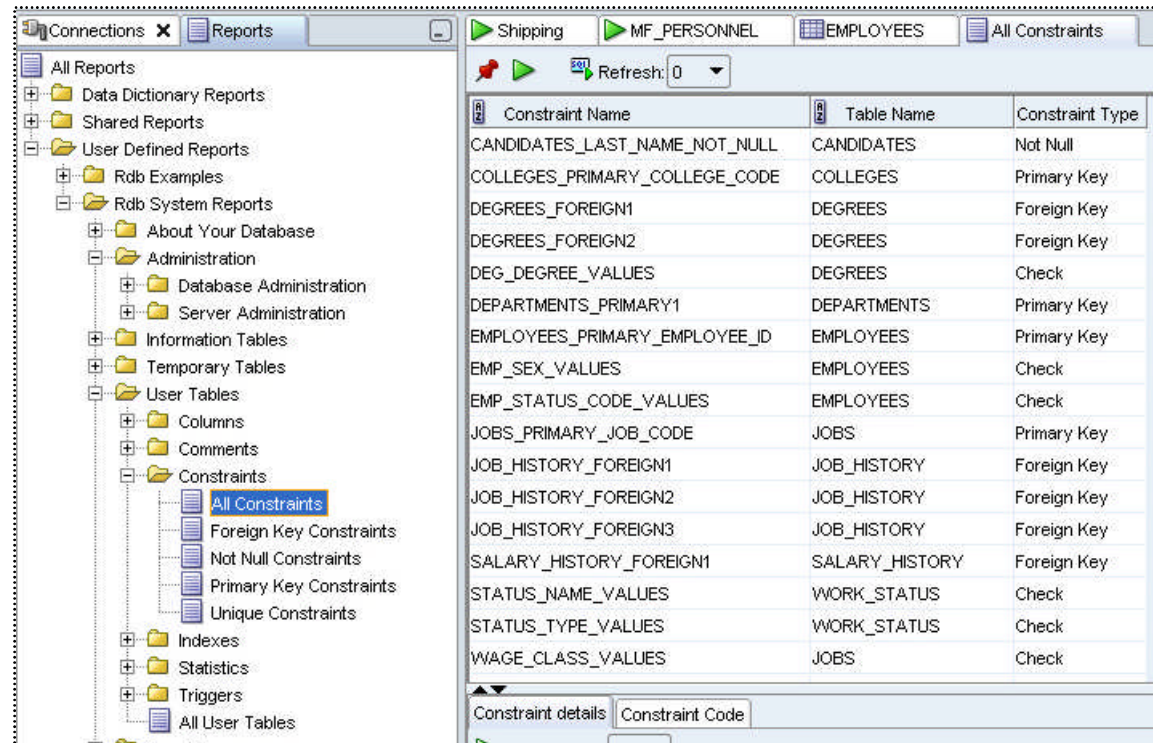
SQL Editing

- Full Function Editor
- Code Snippet Viewer
- Code Formatter
- Syntax Highlighting
- Code Insight (auto complete)
- Code Folding
- Inline Error Reporting
- Code Bookmarking
- Customizable Quick Keys
- Customizable Code Snippet Viewer



Reporting

- Suite of Reports
 - Data Dictionary
 - DBA
 - Monitoring
 - Table Object
- User Defined



The screenshot shows the Oracle Enterprise Manager Reports window. The left pane displays a tree view of reports, with 'All Constraints' selected under 'User Tables > Constraints'. The main pane shows a table of constraints with columns for Constraint Name, Table Name, and Constraint Type. The table lists various constraints such as 'CANDIDATES_LAST_NAME_NOT_NULL' (Not Null), 'COLLEGES_PRIMARY_COLLEGE_CODE' (Primary Key), and several Foreign Key and Check constraints.

| Constraint Name | Table Name | Constraint Type |
|-------------------------------|----------------|-----------------|
| CANDIDATES_LAST_NAME_NOT_NULL | CANDIDATES | Not Null |
| COLLEGES_PRIMARY_COLLEGE_CODE | COLLEGES | Primary Key |
| DEGREES_FOREIGN1 | DEGREES | Foreign Key |
| DEGREES_FOREIGN2 | DEGREES | Foreign Key |
| DEG_DEGREE_VALUES | DEGREES | Check |
| DEPARTMENTS_PRIMARY1 | DEPARTMENTS | Primary Key |
| EMPLOYEES_PRIMARY_EMPLOYEE_ID | EMPLOYEES | Primary Key |
| EMP_SEX_VALUES | EMPLOYEES | Check |
| EMP_STATUS_CODE_VALUES | EMPLOYEES | Check |
| JOBS_PRIMARY_JOB_CODE | JOBS | Primary Key |
| JOB_HISTORY_FOREIGN1 | JOB_HISTORY | Foreign Key |
| JOB_HISTORY_FOREIGN2 | JOB_HISTORY | Foreign Key |
| JOB_HISTORY_FOREIGN3 | JOB_HISTORY | Foreign Key |
| SALARY_HISTORY_FOREIGN1 | SALARY_HISTORY | Foreign Key |
| STATUS_NAME_VALUES | WORK_STATUS | Check |
| STATUS_TYPE_VALUES | WORK_STATUS | Check |
| WAGE_CLASS_VALUES | JOBS | Check |



Summary

- Oracle on OpenVMS continues because Oracle Database & Oracle Rdb business is healthy & valuable
- Cooperation between Oracle & HP development teams means better performance and manageability for you
- Development strategy maximizes value of your Oracle Database & Oracle Rdb investment.
 - Oracle development tools & middleware
 - Oracle management tools & API's
 - Oracle Database for reporting & data warehouses

“We are delighted that Oracle has strengthened its commitment to OpenVMS on HP Integrity servers. We are extremely pleased about our continued long-term relationship, delivering some of the industry's most robust, available and secure solutions to support the dynamic and critical needs of customers.”

Ann McQuaid, HP OpenVMS



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- Laren, The Netherlands

- <http://www.vxcompany.com/rdbtrainingcourses>



- **Americas**

- JCC Consulting, Inc.

- Granville, Ohio, United States

- <http://www.jcc.com/>



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- <http://www.sciinc.com/>



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Q & A

QUESTIONS
ANSWERS



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