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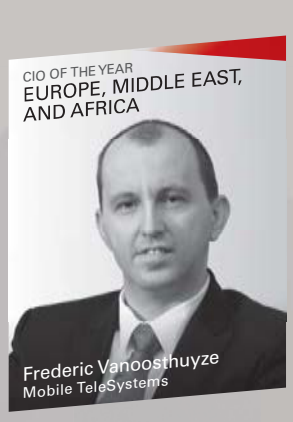
ORACLE

ORACLE.COM/ORACLEMAGAZINE

ORACLE MAGAZINE

ORACLE EXCELLENCE AWARDS 2011

Oracle recognizes technology leaders who engineer innovation



C is for Cloud

Oracle Enterprise Manager 12*c* launches business-driven IT management into the cloud

Open to the Public

Oracle Public Cloud provides a self-service, subscription-based model for building, deploying, and running applications in the cloud

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ORACLE MAGAZINE

Cover: Sloan Schwartz

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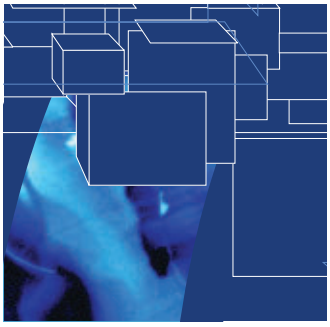
Innovation. Excellence. Leadership. Oracle customers, partners, and technologists continue to excel and bring new meaning to these words. In 2011, Oracle recognized outstanding achievement through the Oracle Excellence Awards—with categories including CIO of the Year, Technologist of the Year, Data Warehouse Leader of the Year, Eco-Enterprise Innovation, Java Innovation, Oracle Fusion Middleware Innovation, and Proactive Support: Champion of the Year. *—By David A. Kelly, with additional reporting by Patty Waddington*

C is for Cloud / 52



Designed to manage data center and cloud environments, Oracle Enterprise Manager has consistently focused on business-driven IT management. The latest release, Oracle Enterprise Manager 12*c*, continues this focus and expands its cloud management capabilities to deliver a complete solution for setting up, managing, provisioning, and charging back for Oracle-based enterprise clouds. *—By David Baum*

Open to the Public / 27

Oracle Public Cloud provides a self-service, subscription-based model for building, deploying, and running applications in the cloud. Amit Zavery, vice president for Oracle Public Cloud, provides details on this new offering. *—By Caroline Kvitka*

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ORACLE PRODUCT INDEX

Really Big

Oracle OpenWorld is a launchpad for high-impact news.

Some things defy description. And sometimes trying to describe such things helps to make that point. In *The Hitchhiker's Guide to the Galaxy*, Douglas Adams has such a description: "Space is big. You just won't believe how vastly, hugely, mind-bogglingly big it is."

When people who have never been to Oracle OpenWorld ask me to describe it, I often borrow from Adams and begin my description with "Oracle OpenWorld is big." I usually then go on to number the different venues, the street closures, the hotels, the tents, the attendees, and so on. After Oracle OpenWorld 2011, however, I'm going to start mentioning the number of industry-disrupting news announcements that come out of this event.

TYPICALLY BIG

A typical Oracle OpenWorld San Francisco experience is a collection of news, education, networking, socializing, sightseeing, and more. In the area of news, Oracle OpenWorld is a launchpad for Oracle and its partners to make really big announcements, a place for everyone to take in that information, and an opportunity for all manner of media to comment on it. Oracle OpenWorld 2011 certainly did not disappoint anyone looking for big news.

For all of you who attended Oracle OpenWorld 2011 in San Francisco, California, watched online on the YouTube channel, experienced other coverage of the event, or somehow managed to miss the event completely (is that possible?), there are more than 34 pages (print or digital) of Oracle OpenWorld–related content in this issue of *Oracle Magazine*.

Oracle OpenWorld–related news in this issue includes Oracle Public Cloud, Oracle Enterprise Manager 12*c*, Oracle Social Network, Oracle Fusion Applications, Oracle NoSQL Database, Oracle Big Data Appliance, Oracle Exalytics In-Memory Machine, Oracle SPARC SuperCluster, and Oracle Excellence Awards.

Cloud computing was a big part of the Oracle OpenWorld conversation, including the Oracle Public Cloud, Oracle Enterprise Manager 12*c*, Oracle Social Network, and Oracle Fusion Applications announcements, and the final day of the conference was dedicated to the cloud. Engineered systems were also in the news as Oracle introduced Oracle Big Data Appliance and Oracle Exalytics In-Memory Machine and previewed Oracle SPARC SuperCluster.

Even hands-on technology content is part of the *Oracle Magazine* Oracle OpenWorld experience: Tom Kyte includes information from one of his Oracle OpenWorld presentations in this issue's Ask Tom column.

NOT BIG ENOUGH

Because Oracle OpenWorld is so big, the 34 pages of Oracle OpenWorld coverage in this issue only scratch the surface of what happened there. I encourage you to explore the links in Next Steps for more information about Oracle OpenWorld and the biggest news from the conference. I also recommend that you explore the links in the rest of this issue's Oracle OpenWorld coverage to continue your exploration of that news—and see how big it really is.

Tom Haunert, Editor in Chief
tom.haunert@oracle.com

NEXT STEPS

LEARN more about

Oracle OpenWorld
oracle.com/openworld
oracle.com/openworld/live/on-demand

Oracle Public Cloud
cloud.oracle.com

Oracle Enterprise Manager 12*c*
oracle.com/us/products/enterprise-manager

Oracle Social Network
bit.ly/omagosn1

Oracle Fusion Applications
oracle.com/us/products/applications/fusion

Oracle NoSQL Database
oracle.com/us/products/database/nosql

Oracle Big Data Appliance
bit.ly/omagbigdata

Oracle Exalytics In-Memory Machine
bit.ly/omagexalytics

Oracle SPARC SuperCluster
bit.ly/omagspacsc

Oracle Excellence Awards
oracle.com/us/corporate/awards

JavaOne
oracle.com/technetwork/java/javamagazine

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ANIMAL APPS

Scotts Bird ID

Identify wild birds by both pictures and birdcalls, then share which birds you spot on an interactive Facebook map. Developed with the National Wildlife Federation. Free (Android, iPhone). scotts.com

Pet Dossier

Track your pet's health records, medications, diet and feeding schedules, vet and groomer appointments, and more; e-mail information to a pet sitter. Do good, too: 25 percent of the sale price goes to the ASPCA. *US$1.99*. yepyup.com

iKibble

If you can't resist feeding your dog from the table, this app tells you if what you're offering is healthy. Choose from hundreds of meats, dairy products, fruit, vegetables, and grains. *US$0.99*, or free if you're willing to look at ads. bit.ly/s2U7mx

PawTrotter

Carry this directory of more than 130,000 pet-friendly businesses, hotels, and parks. Find a pet sitter or vet, and view user ratings. This app also helps pets in need: a percentage of revenues goes to the American Humane Association. *US$2.99*. pawtrotter.com

IN THE POCKET

"Button-down" is rarely synonymous with "cool," but the SeV Button Down Shirt from Scottevest turns a conservative garment into a must-have tech accessory by adding a handful of secret pockets and extra features. The standard chest pocket is bolstered with pen- and passport-sized inner pockets and a hidden magnetic clasp to hold stuff in when you bend over. An extra pocket at the bottom of the placket is handy for stashing cash or credit cards—if you wear the shirt untucked. And two invisible underwing zippered pockets can hold sunglasses, a smartphone, or other items you'd rather not share with pickpockets. The shirt also sports a "personal area network" (loops and holes through which you can thread earbuds) and is sewn of wrinkle-free cotton in six colors and patterns. *US$80*. bit.ly/omagshirt

1 TB SSD DRIVE

OCZ's new Octane series is the first solid-state drive (SSD) to squeeze 1 full terabyte of storage into a 2.5-inch drive. The drive has read speeds of up to 560 MB/sec and write speeds of 400 MB/sec. Octane SSDs also come equipped with proprietary NDurance technology from Indilinx—a NAND flash controller maker acquired by OCZ—which increases the lifespan of the NAND flash memory, ensuring the most consistent and reliable performance and minimizing degradation even when the drive's storage capacity is highly utilized. Octane's 1 TB capacity could be just what it takes for SSDs to move from supplemental drive status to actually replacing traditional plate drives. *US$1.30/GB*. ocz.com

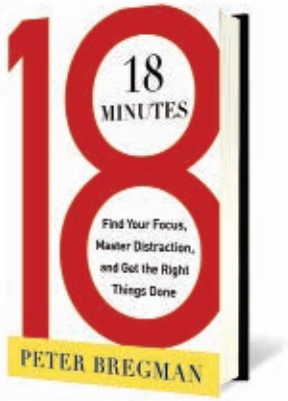
DATA BREACHES HURT FOR A YEAR

On average, it takes one year to restore an organization's reputation after a data breach.

Source: *The Ponemon Institute and Experian Data Breach Resolution, ponemon.org, experian.com*

"Just 18 minutes a day can save you hours of inefficiency. The trick is to choose your focus deliberately and wisely, and then consistently remind yourself of that focus throughout the day."

—**Peter Bregman**, author of *18 Minutes* (Business Plus, 2011)



DATA CENTER EXECUTIVES WERE ASKED
What's driving you to cloud and virtualization in your data center design?

74% SAID **BUSINESS NEEDS DRIVE IT DECISIONS**
Business needs will ultimately drive the adoption of cloud and virtualization.

13% SAID **OPERATIONAL VARIABLES**
Manageability and agility help contain staff, power, cooling, and other expenses.

13% SAID **CAPITAL EXPENSES**
It's about optimizing and managing return on investment and total cost of ownership.

Source: *CABLExpress Data Center Survey, cablexpress.com*

YOUR TURN

What's driving your cloud and virtualization decisions? **Take our Facebook poll** at bitly.com/orclmagfb.

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Engineered for Innovation

Oracle OpenWorld 2011 showcased the latest products and technologies from Oracle, its partners and customers, and technology enthusiasts.

With more than 45,000 attendees from 117 countries, Oracle OpenWorld 2011 was the biggest event of its kind, delivering new product announcements while showcasing innovative technology from Oracle, its partners and customers, and technology enthusiasts. From October 2 through 6, Oracle literally painted the town red, in the process helping to generate an estimated US$100 million–plus for the San Francisco Bay Area economy.

During the conference, attendees chose from more than 2,000 sessions, 475 partner exhibits, and nearly 400 Oracle product demonstrations, plus keynotes from Oracle executives and partners. And for the first time, more than 600,000 viewers worldwide watched live streaming video from Oracle OpenWorld on YouTube. "Oracle OpenWorld 2011 offered five days of wall-to-wall sessions and demos geared toward helping companies maximize their current Oracle investment and stay ahead of the competition," says Tania Weidick, vice president of marketing at Oracle.

Oracle executives showcased a range of hardware and software products engineered for innovation. Notable product announcements included Oracle Public Cloud, Oracle Social Network, Oracle Exalytics In-Memory Machine, Oracle Big Data Appliance, Oracle Enterprise Manager 12c, and general availability of Oracle Fusion Applications. Oracle also highlighted cloud computing with Oracle Powers the Cloud Day, an all-day special event with a keynote and cloud sessions and demos.

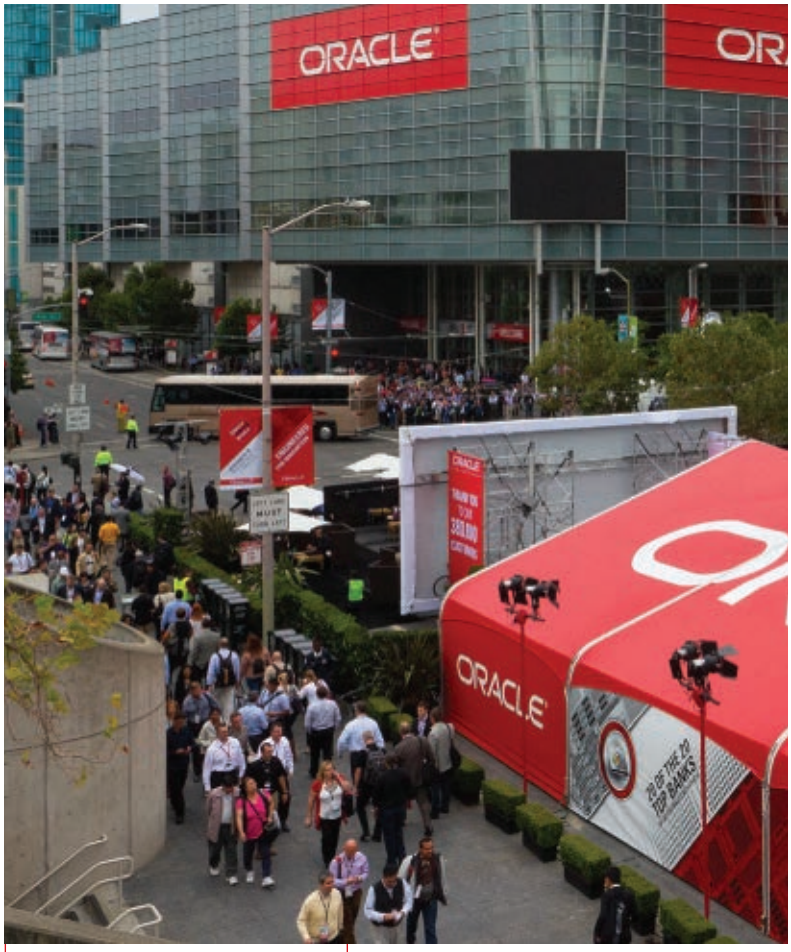
Between keynote presentations, educational sessions, and exhibits, attendees enjoyed numerous opportunities to network, relax, and be entertained. At the ORACLE Racing and America's Cup Extreme Experience, attendees got to meet the team; check out a 45-foot, 2,910-pound AC45 racing catamaran; see the America's Cup trophy (won by ORACLE Racing in 2010); and play a racing simulation game for prizes. The Welcome Reception got the week off to a great start, and despite having to move inside due to rain, OTN Night was a festive event that got attendees fired up for the rest of the week. The much-anticipated Appreciation Event—with Sting, Tom Petty and the Heartbreakers, and Dave Wakeling and the English Beat—once again rocked Treasure Island. Finally, the It's a Wrap! event gave attendees one last chance to celebrate. ◀

Oracle OpenWorld 2011 drew more than 45,000 technology enthusiasts from 117 countries for five days of keynotes, sessions, and networking.

Oracle President Safra Catz welcomed the audience to a keynote presentation by Cisco Chairman and CEO John Chambers.

Oracle CEO Larry Ellison proudly showed off a 2010 World Series ring presented to him by San Francisco Giants President Larry Baer (right).

Oracle President Mark Hurd explained how Oracle's strategy of hardware and software, engineered to work together, is delivering results.



Located between Moscone North and South, the Howard Street Tent hosted catered lunches, OTN Night, the OTN Lounge, and more.

Customers sailed on San Francisco Bay in the International America's Cup yacht *USA-76*, which was raced by ORACLE Racing in the 2007 America's Cup.

PHOTOGRAPHY BY HARTMANN STUDIOS, ENRIQUE AGUIRRE

JavaOne 2011

For a complete wrap-up of JavaOne 2011, see the November/December 2011 issue of *Java Magazine* at bitly.com/omagjavamag.

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Hardware Momentum

Winner: BIAS Corporation

Solutions Category:

Database and Clustering

Winner: Cintra Software

Oracle Stack

Winner: BIAS Corporation

What are the Titan Awards?
Oracle Titan Awards recognize partners for their ability to deliver Oracle solutions and services that drive business and customer value. This year's winners demonstrated excellence in categories including sales, marketing and solution development in fiscal 2010.

NEXT
Plan for your presence at Oracle OpenWorld 2012

Accelerating Your Success™

Technology Events

Conferences and sessions to help you stay on the cutting edge

GETTY IMAGES

HIMSS12 Annual Conference and Exhibition

February 20–24, Las Vegas, Nevada

Sponsored by the Healthcare Information and Management Systems Society, this weeklong gathering of healthcare technology professionals offers more than 300 educational sessions in 23 categories such as mobile health, business and clinical analytics, and meaningful use. Get all the details and register at **himssconference.org**.

Storage Visions 2012 Conference

January 8–9, Las Vegas, Nevada

▶ **storagevisions.com**

Executives, analysts, and digital technology professionals discuss how digital content will be created, protected, and stored. The conference also focuses on the choice between local and cloud storage, especially as the quantity of high-resolution content increases.

eHealth Initiative Annual Conference

January 11–12, Washington, DC

▶ **bit.ly/vicfc4**

Under the title "Cancer, Diabetes, and Heart Disease: Improving Care Through eHealth," this conference assembles more than 300 participants who drive improvement in the quality, safety, and efficiency of healthcare through information technology.

National Retail Federation 101st Annual Convention and EXPO

January 15–18, New York, New York

▶ **bit.ly/smMmkT**

President Bill Clinton keynotes at "Retail's BIG Show," an industry event that offers education, networking, and an expo hall. Session tracks include digital and mobile retailing, IT, and more.

Oracle Technology Network Sys Admin Day

January 18, Salt Lake City, Utah

▶ **bit.ly/snQXg7**

Created specifically for systems administrators who use (or want to use) Oracle Solaris and Oracle Linux, this bring-your-own-laptop event offers OS-specific hands-on training.

Construction CPM Conference

January 21–25, Orlando, Florida

▶ **constructioncpm.com**

This conference covers the theory and practice of the critical path method (CPM) of schedule analysis and includes training on CPM software products, including Oracle's Primavera P6 applications. Vendor-specific user forums and networking events are included.

Electric Light and Power Executive Conference

January 22–23, San Antonio, Texas

▶ **elpconference.com**

Utility industry leaders network and discuss the challenges and opportunities their companies face. The conference includes a focus on helping utilities and their customers move toward, and adapt to, a sustainable energy future.

Personalized Medicine World Conference

January 23–24, Mountain View, California

▶ **pmwc2012.com**

This gathering of more than 1,000 thought leaders from business, government, healthcare, research, and technology examines the advances and challenges of personalized medicine. Products and services from startups and public companies alike are on display.

ORACLE USER GROUPS

Oracle Storage Archive Manager User Group Meeting
January 10, Austin, Texas
bit.ly/w2mxM9

Silicon Valley JavaFX User Group Event
January 11, Redwood Shores, California
bit.ly/rKI84W

Software Quality Group of New England Meetings
January 11 and February 8, Burlington, Massachusetts
sqgne.org

Georgia Oracle Users Group Meetings
January 12 and February 9, Atlanta, Georgia
gouser.org

FatWire User Group Meeting
January 17, London, England
bit.ly/rQQhXy

Calgary Oracle Users Group Meeting
January 19, Calgary, Alberta, Canada
coug.ab.ca

BayLISA Meetings
January 19 and February 16, Mountain View, California
baylisa.org

Northeast Ohio Oracle Users Group Meeting
January 20, Independence, Ohio
neooug.org

Greater Cincinnati Oracle User Group Tom Kyte Day
January 23, Blue Ash, Ohio
gcoug.org

Oracle User Group Leaders' Summit
January 23–25, Redwood Shores, California
bit.ly/t3lYOK

Suncoast Oracle User Group Monthly Meetings
January 26 and February 23, Tampa, Florida
soug.org

LA Ruby Conference
February 2–4, Burbank, California
larubyconf.com

Memphis Area Oracle User Group Meeting
February 14, Memphis, Tennessee
bit.ly/uXM6L6

Rocky Mountain Oracle Users Group Training Days
February 14–16, Denver, Colorado
rmoug.org

Redefine mobile at Mobile World Congress, February 27–March 1 in Barcelona, Spain.

OOP 2012

January 23–27, Munich, Germany

▶ **lanyrd.com/2012/oop**

Under the banner of "Sustainability: Empowering the Next Generation," thousands of software architects, developers, and IT professionals discuss agile, SOA, mobility, embedded development, and modern software engineering topics.

DistribuTECH Conference and Exhibition

January 24–26, San Antonio, Texas

▶ **distributech.com**

This smart grid conference and exposition for the utility industry includes 13 educational tracks and 300 speakers. Topics include automation and control systems, energy efficiency, demand response, renewable energy integration, advanced metering, water utility technology, and more.

RootsTech Family History and Technology Conference

February 2–4, Salt Lake City, Utah

▶ **rootstech.org**

This conference brings technologists and genealogists together to learn from each other and address challenges in family history research. Attendees benefit from hands-on workshops and interactive presentations on topics including cloud computing, mobile apps, social networking, and geo-mapping.

NDSS Symposium 2012

February 5–8, San Diego, California

▶ **isoc.org/isoc/conferences/ndss/12**

At the 19th annual Network and Distributed System Security Symposium (NDSS), the global internet community discusses cutting-edge advances in the science and application of network and distributed systems security.

Gartner Business Intelligence Summit

February 6–7, London, England

▶ **bit.ly/vOa5hL**

This summit addresses important business intelligence (BI) topics such as BI innovations, the relationship between analytics and BI, methods for improving data quality, business involvement in BI initiatives, master data management, and cloud analytics.

Oracle Financial Services and Insurance Forum

February 7, New York, New York

▶ **bit.ly/sMPT87**

Oracle executives, partners, and decision-makers from the financial services industry collaborate and share best practices and ideas for meeting business challenges such as changing customer demands and regulations.

TDWI World Conference

February 12–17, Las Vegas, Nevada

▶ **bit.ly/uwzvRJ**

This conference features six days of in-depth data warehousing courses, plus a three-day executive summit on executing an enterprise data strategy. Expert speakers and case studies illuminate these topics.

Cloud Connect Santa Clara

February 13–16, Santa Clara, California

▶ **cloudconnectevent.com/santaclara**

Learn about cloud technologies and platforms at this conference. Topics on the agenda include big data processing, parallel computing, mobile cloud, private clouds, and infrastructure.

USENIX Conference on File and Storage Technologies (FAST '12)

February 14–17, San Jose, California

▶ **usenix.org/events/fast12**

FAST '12 is a venue for researchers and practitioners to explore the design, implementation, evaluation, and deployment of storage systems ranging from low-level storage devices to information management systems.

Chief Information Security Officer Middle East Summit and Roundtable

February 27–29, Abu Dhabi, United Arab Emirates

▶ **bit.ly/ruaQ8u**

At this summit, CISOs discuss information security trends including data leakage, privacy, insider threats, security governance, risk continuities, digital IP theft, mobility, encryption, cloud computing, and cyberterrorism.

Mobile World Congress

February 27–March 1, Barcelona, Spain

▶ **mobileworldcongress.com**

"Redefining mobile" is the theme of this year's mobile technology and business conference. More than 60,000 attendees are expected for this event, which includes a conference program, exhibition, and awards program. App Planet, a conference in its own right, is the world's largest gathering of apps developers—more than 10,000 are expected.

RSA Conference

February 27–March 2, San Francisco, California

▶ **rsaconference.com/events/2012/usa**

This event for information security leaders includes 17 technical tracks, more than 220 hands-on sessions (including several peer-to-peer events), and more than 350 technology vendor exhibits.

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Locate User Groups
oracle.com/technetwork/community

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What's New at Oracle

The latest videos, podcasts, blogs, and more

VIDEOS

Silent Data Corruption

▶bcove.me/31sup388

Learn how to mitigate silent data corruption in your database with a data integrity solution based on Oracle Linux and Emulex host bus adapters.

Video Series: *Move Off SharePoint*

▶oracle.com/moveoff/sharepoint

In this four-part video series, see how a fictional solar company makes the switch from SharePoint to Oracle WebCenter.

Video Series: *Oracle Sun Blade 6000 Modular System*

▶bit.ly/rLknFv

This three-part series demonstrates how to configure and network Oracle's Sun Blade 6000 modular systems.

Introducing the Oracle Public Cloud

▶bit.ly/tq8Wsy

Tyler Jewell, vice president of product management at Oracle, introduces Oracle Public Cloud at Oracle OpenWorld 2011.

Oracle OpenWorld Highlights

▶oracle.com/openworld/live/on-demand

Watch full-length keynotes and highlights, general sessions, and executive solution sessions from Oracle OpenWorld 2011.

Be Effective—Bring Your Own Client Device

▶bit.ly/sgC60M

Oracle Chief Corporate Architect Ed Screven discusses the confluence of interests between people in the enterprise who use IT and those who are delivering IT.

E-BOOK

The Next Page in Innovation—Extreme Performance

▶oracle.com/goto/ipad2

Now available on the iPad, this Oracle Exadata interactive e-book includes success stories, analyst reports, and demos.

WEBCASTS

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PODCASTS

"Oracle SPARC SuperClusters—The New SPARC-Based Engineered Systems"

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Find out about Oracle's SPARC SuperClusters, a new generation of optimized apps-to-disk engineered systems that offer the performance of Oracle Exadata.

"MySQL Cluster and Oracle NoSQL Database"

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Hear what's new in the second development milestone release of MySQL Cluster 7.2.

"Shafii and Konduri on Oracle Fusion Middleware"

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Authors Reza Shafii and Gangadhar Konduri discuss *Oracle Fusion Middleware 11g Architecture and Management* (Oracle Press, 2011).

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OVERHEARD

"[Oracle Public Cloud] is a big deal because it is the first cloud that offers a complete set of applications, fully integrated with a set of platform services—application, middleware, and database—all in one unified product offering with a simple pricing model and consumable in a self-service mechanism."

—Tyler Jewell, Vice President of Product Management at Oracle, in *Introducing the Oracle Public Cloud* (bit.ly/tq8Wsy)

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Oracle's Sun Blade Systems
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ARTICLES AND WHITE PAPERS

"Using Sun ZFS Storage Appliance iSCSI LUNs in an Oracle Linux Environment"
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Read about how to use Sun ZFS Storage Appliance iSCSI LUNs with Oracle Linux.

"Creating a Self-Service Dev/Test Cloud"
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See how Oracle created a private infrastructure-as-a-service development and test cloud.

"Oracle's SPARC T4-1, SPARC T4-2, SPARC T4-4, and SPARC T4-1B Server Architecture"
▶ bit.ly/vCqBO2
Discover the breakthrough performance of Oracle's SPARC T4 series servers.

"MySQL Enterprise Edition Product Guide"
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Get an introduction to MySQL Enterprise Edition's comprehensive features, tools, and services.

"Guide to Scaling Web Databases with MySQL Cluster"
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Find out why 9 of the top 10 most trafficked Web properties power their sites using MySQL.

"MySQL with Windows Server 2008 R2 Failover Clustering"
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Learn how Windows Server Failover Clustering with MySQL provides a solution to reduce downtime and guard against data loss.

"Oracle Solaris and Oracle SPARC T4 Servers—Engineered Together for Enterprise Cloud Deployments"
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Learn how the combination of Oracle Solaris and the SPARC T4 processor can maximize ROI and help organizations manage costs for their existing infrastructures and new enterprise cloud infrastructure design.

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Oracle WebLogic Server 11*g*: Administration Essentials
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This course provides an overview of Oracle WebLogic Server 11*g*.

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Oracle JDeveloper 11*g*
Oracle SQL Developer
Oracle Solaris

Oracle NoSQL Database Available for Download

Part of Oracle's portfolio of big data products, Oracle NoSQL Database is available for download from Oracle Technology Network. Oracle NoSQL Database enables organizations to easily manage dynamic schemas with massive amounts of data such as Web log data, sensor and smart meter data, data gathered for personalization, and data maintained by social networks. With a simple key-value data model, the highly available and scalable Oracle NoSQL Database facilitates efficient storage of data in a simple, flexible format and is suited for rapid development and deployment of applications.

Oracle NoSQL Database is commercial-grade software that is fast, scalable, reliable, easy to install and configure, and backed by Oracle Support. It scales almost linearly, providing users with reliable performance under a wide range of workloads and use cases. Oracle NoSQL Database also manages consistency and offers developers configurable consistency options to meet different application needs. Its simple programming and operational model provides extreme flexibility of programming for large data sets in horizontally scaled environments. And a Web-based console provides automatic management and monitoring of topology, load balancing, performance, events, and alerts.

"As customers look to manage the huge explosion in data from new and evolving sources, such as Web, sensors, social networks, and mobile applications, Oracle is helping them unlock the value of this data by providing a highly available, reliable, and scalable Oracle NoSQL Database environment," says Andy Mendelsohn, senior vice president of database server technologies at Oracle.

oracle.com/bigdata
bit.ly/vVNX1V

Oracle Acquires GoAhead Software

Oracle has agreed to buy GoAhead Software, a provider of packaged service availability software for the communications industry. GoAhead provides carrier-grade software that speeds the time to market and reduces the cost and risk of carrier-grade services that need to be always available.

"The addition of GoAhead technology will help us deliver a comprehensive, standards-based, carrier-grade platform that supports the delivery of new services in the call path of the network," says Nigel Ball, vice president, Oracle Communications.

oracle.com/goahead

Oracle Application Development Framework Mobile Client Previewed

Oracle OpenWorld attendees got a sneak peak at the next-generation Oracle Application Development Framework Mobile Client (Oracle ADF Mobile Client), an extension of Oracle ADF that simplifies mobile application development. This release will allow developers to write applications once and deploy them to multiple device platforms, including Apple iOS mobile devices. It also provides deep and complete access to a mobile device's native capabilities, such as calendars, cameras, and GPS. In addition, tight integration with Oracle Fusion Middleware and Oracle Applications enables organizations to extend enterprise processes and data to mobile users. Oracle ADF Mobile Client leverages Oracle ADF's rich visual and declarative environment so that developers don't have to learn new skills or development paradigms.

"As developers increasingly work on more-sophisticated mobile business applications, they need tools that will help them quickly and easily deploy native and Web functionality to mobile devices," says Ted Farrell, chief architect and senior vice president of tools and middleware at Oracle. "Oracle ADF Mobile Client continues to enhance developer productivity, bringing together capabilities that significantly simplify mobile application development, while also helping to ensure that enterprise applications can be easily extended to mobile channels."

bit.ly/gKrPpm

LINDY GROENING

Sun ZFS Storage Appliances Released

Oracle has unveiled its third-generation Sun ZFS Storage Appliances, which offer enterprise network-attached storage (NAS) functionality and best-in-class performance, efficiency, data integrity, and integration with Oracle software. The storage line includes significant enhancements to its hybrid storage pool technology, which accelerates I/O-operations-per-second performance and enables customers to maintain optimal performance under heavy utilization.

The latest Sun ZFS Storage Appliances include Oracle Hybrid Columnar Compression support, which increases storage efficiency with 10 to 50 times compression for most data sets and reduces capital and operating expenses. This technology, pioneered in Oracle Exadata, is also now supported in Oracle's Pillar Axiom storage systems.

The latest Sun ZFS Storage Appliances feature capacity-optimized disk drives as well as 15,000 RPM SAS-2 drives with 300 GB and 600 GB capacity, which accelerate noncached reads and high-volume synchronous writes and enable customers to run both databases and applications that stream large amounts of data faster and with fewer resources.

"Oracle is changing the dynamics of the NAS market in a single step, giving enterprise customers a quantum leap in achievable performance and efficiency," says John Fowler, executive vice president of systems at Oracle. "Third-generation software, third-generation disk drives, and unique Oracle integration like Hybrid Columnar Compression on the Sun ZFS Storage Appliance enable Oracle storage customers to achieve business results and reduce cost at levels other NAS solutions can't match."

bit.ly/hJGMKK

JavaFX 2.0 Unleashed

At JavaOne 2011, Oracle announced general availability of JavaFX 2.0, an advanced Java user interface platform for enterprise business applications and the next step in the evolution of Java as a premier rich client platform. Developers use JavaFX 2.0 to build rich client applications in Java. By using Java for both the server and client side of their applications, developers can decrease risk significantly by reducing the complexity of their business solutions.

Key features in JavaFX 2.0 include FXML, a scriptable, XML-based markup language for defining user interfaces, and full Swing integration. JavaFX 2.0 also provides a Web component based on WebKit, which allows developers to seamlessly mix and match native Java capabilities and the dynamic capabilities of Web technologies.

"With JavaFX 2.0, customers and partners can leverage their existing knowledge of and investments in Java technologies and easily create modern, expressive graphical user interfaces and data visualizations," says Nandini Ramani, vice president of development, Java client group, at Oracle.

javafx.com

Oracle Fusion Applications Available

In a keynote speech at Oracle OpenWorld, Oracle CEO Larry Ellison announced general availability of more than 100 Oracle Fusion Applications components. These span enterprise resource planning, human capital management (HCM), and customer relationship management (CRM) and were all rewritten on top of modern technology, Ellison said.

"These are not just point solutions but a rich set of apps," said Steve Miranda, senior vice president of applications development at Oracle, in another Oracle OpenWorld presentation. "They were designed from the ground up not just to be transactional applications; we really designed them to have embedded business intelligence."

In other applications news, Oracle Fusion Customer Relationship Management and Oracle Fusion Human Capital Management are now available as part of the new Oracle Public Cloud. Oracle Fusion CRM Cloud Service is an enterprise-grade CRM cloud application offering. It integrates sales territory management with quota management to help sales organizations optimize resource allocation. The service also combines customer and product master data information with all CRM processes and delivers a consolidated customer center for all CRM business processes that is supported by a common 360-degree view of customer information.

Oracle Fusion HCM Cloud Service is an enterprise-grade HCM cloud application offering. It delivers a complete HCM suite, including core HR, payroll, and benefits management capabilities that enable organizations to manage, track, and analyze employee information and objectives via employee dashboards that provide context-specific transactional business intelligence. Oracle Fusion HCM Cloud Service also provides worker directories, employee provisioning and deprovisioning, compensation management, incentive management, performance management, and goal management.

bit.ly/tIoCJi

cloud.oracle.com

Oracle Buys Endeca

Oracle has agreed to acquire Endeca Technologies, a provider of unstructured data management, Web commerce, and business intelligence solutions. Endeca InFront is a customer experience management platform that enables businesses to deliver highly targeted and relevant customer experiences online with advanced merchandising and content targeting tools for Web commerce. Endeca Latitude is a technology platform that allows businesses to rapidly develop analytic applications bringing information from many unstructured and structured information sources together.

"We will provide best-in-class technology to manage structured and unstructured data; business intelligence tools to analyze structured and unstructured data; and a broad suite of packaged applications that extends the value of unstructured data," says Thomas Kurian, executive vice president of product development at Oracle.

oracle.com/endeca

Oracle Communications Service Controller Released

Oracle has unveiled Oracle Communications Service Controller to help communications service providers (CSPs) reduce the time and risk associated with launching new services that blend legacy and IP networks, while consolidating service platforms across multiple network types. This standards-based, scalable, carrier-grade service interaction application provides CSPs with integration between intelligent network capabilities and new technologies. It also adds structure and order to complex networks through orchestration.

"Oracle Communications Service Controller offers prebuilt, out-of-the-box service interaction and mediation capabilities to bring order to complex networks and integrate disparate technologies," says Liam Maxwell, vice president of products, Oracle Communications.

bit.ly/w2JIqv

Oracle BPM Process Accelerators Speed Deployment

Oracle has released Oracle process accelerators to simplify business process management (BPM) initiatives. Built on Oracle Business Process Management Suite 11*g*, these prebuilt processes are customizable and extensible to fit specific organizational requirements. Oracle process accelerators address horizontal and industry-specific process requirements for common and repeatable business process patterns, such as employee onboarding and invoice processing. By delivering embedded best practices and built-in efficiencies, Oracle process accelerators allow organizations to speed deployment times and improve IT and business efficiency with reduced risk.

"Extending Oracle Business Process Management Suite 11*g* with prebuilt Oracle process accelerators enables customers to increase the value of business processes, speed time to value, and increase user productivity," says Michael Weingartner, vice president, product development, at Oracle.

bit.ly/rGgAc5

Oracle Buys RightNow

Oracle has agreed to acquire RightNow Technologies, a provider of cloud-based customer service.

"Oracle is moving aggressively to offer customers a full range of cloud solutions including sales force automation, human resources, talent management, social networking, databases, and Java as part of Oracle Public Cloud," says Thomas Kurian, executive vice president of product development at Oracle. "RightNow's leading customer service cloud is a very important addition to Oracle Public Cloud."

oracle.com/rightnow

Oracle Identity Analytics Eases Compliance

The latest release of Oracle Identity Analytics 11*g* delivers the advanced identity analytics that business managers need to meet increasingly complex, time-consuming compliance requirements. With this release, Oracle Identity Analytics simplifies access review certification with business-centric views, actionable dashboards, and rich identity analytics, helping to reduce errors in the certification process and increase user productivity by up to 80 percent. It provides aggregated risk metrics along with in-depth historical context, allowing approvers to focus their attention on critical applications and associated audit risks. Oracle Identity Analytics' improved performance enables users to scale compliance initiatives to support millions of user entitlements across thousands of applications.

"Oracle Identity Analytics offers both the appropriate scalability as well as the comprehensive and intuitive functions necessary to streamline how users, roles, and entitlements are managed within an enterprise," says Marc Boroditsky, vice president, Oracle Identity Management.

bit.ly/u3GeQr

Pillar Software Updated

Release 5 of Oracle's Pillar Axiom storage system software is now available for Pillar Axiom 600 storage systems. The new software is also compatible with Pillar Axiom 500 and 300 storage systems.

With this new release, Pillar Axiom storage systems can lower the cost of enterprise storage, increase data security and data protection service levels, and allow users to scale system performance and capacity thresholds without disrupting operations.

Release 5 of Pillar Axiom storage system software includes several enhancements. Pillar Axiom Storage Domains help to alleviate security, compliance, and regulatory risks by allowing disparate customer, application, and workload data to be securely, physically separated in drive groups in a single storage array, while maintaining full data accessibility. Pillar Axiom MaxMan enables management of multiple Pillar Axiom storage systems anywhere from a single Java-based interface. Pillar Axiom MaxRep products simplify data mobility and migration and provide advanced data protection capabilities, moving data between multiple Pillar Axiom storage systems in a synchronous or asynchronous fashion, locally, remotely, and in multihop scenarios.

"Oracle's Pillar Axiom storage system has always differentiated itself from other storage solutions in two ways: through enterprise storage innovation and an unwavering focus on simplifying the customer experience," says Mike Workman, senior vice president of storage solutions at Oracle. "This release enhances our patented Pillar Axiom Quality of Service technology and enables customers to optimize the performance of Oracle Applications, Oracle Database, and Oracle Fusion Middleware that are supported by Axiom storage."

bit.ly/tScKMK

LINDY GROENING

The First Cloud OS

Oracle Solaris 11 provides virtualization, availability, and security for next-generation cloud computing environments.

Oracle has officially unveiled Oracle Solaris 11, the world's first cloud operating system (OS). The result of more than seven years of intense research and development, this latest iteration of the most widely installed enterprise UNIX provides more than 400 new features that enable organizations to deploy private, public, and hybrid cloud environments that are highly scalable, available, and secure.

Oracle President Mark Hurd formally introduced Oracle Solaris 11 during a live event from New York City's Gotham Hall on November 9, 2011, and the OS was released that day for SPARC and x86-based systems. (Oracle Solaris 11 was previewed at Oracle OpenWorld 2011.)

"Oracle Solaris 11 represents Oracle's commitment to the best of breed at every level of the architecture," said Hurd. "To put this in context, this is also part of a greater Oracle strategy and a greater overall R&D commitment we've made to [the Sun] portfolio." Other recent demonstrations of that strategy and commitment include the SPARC T4 processors and the SPARC SuperCluster servers. (See "Engineered System for General-Purpose Computing," page 22.)

Executive Vice President of Systems at Oracle John Fowler (left) and Oracle President Mark Hurd officially launched Oracle Solaris 11, the world's first cloud operating system, at a live event in New York, New York.

NEXT-GENERATION CLOUDS

John Fowler, executive vice president of systems at Oracle—also on hand at the event—said that Oracle Solaris 11 is designed not just for current enterprise systems but also for the next generation of enterprise systems and cloud environments. "These systems will support large-scale, mission-critical ERP [enterprise resource planning] and high-throughput OLTP [online transaction processing] applications," he said. "These systems will have thousands of threads, hundreds of terabytes of memory, and double-digit gigabyte network performance."

A key requirement for these next-generation systems is virtualization. "As people go into cloud environments, they will go from hundreds and thousands of physical machines into environments where they will have tens and hundreds of thousands of virtual machines," Fowler said.

With Oracle Solaris 11, virtualization is not a separate product that has to be layered into a system's architecture—it is integrated right into the OS. In addition to being the first cloud OS, Oracle Solaris 11 is also the first fully virtualized OS, with server, storage, and network virtualization all built in.

Oracle Solaris 11's virtualization technology also provides the high availability (HA) that clouds require—99.999 percent availability, according to Fowler. "Users don't have to install HA features at each level of their stack because with Oracle Solaris 11 they're already built in," he said.

DATA AT CLOUD SCALE

Oracle Solaris 11 also offers advanced data management especially designed for the cloud environment. To accomplish this, Fowler said, Oracle Solaris 11 moves common data services—flash-enabled pools, encryption, replication, duplication, and deduplication—to the OS. Moving these services, commonly performed in storage systems, to the OS improves performance and increases storage efficiencies, he said.

Fowler said that users should expect continuous improvements in Oracle Solaris 11 and other Sun product lines. "Our roadmap is on track, and we remain committed to Oracle Solaris and to delivering two times the performance every two years," he said. ◀

Philip Gill is a San Diego, California–based freelance writer and editor.

NEXT STEPS

LEARN more about Oracle Solaris 11
oracle.com/solaris

DOWNLOAD Oracle Solaris 11
bit.ly/tbS8SU

WATCH an Oracle Solaris 11 demo
bit.ly/vowV22

Engineered System for General-Purpose Computing

SPARC SuperCluster T4–4 delivers extreme performance and value.

The engineered system model that made Oracle Exadata Database Machine and Oracle Exalogic Elastic Cloud the fastest dedicated-purpose systems has come to general-purpose computing with the release of Oracle's SPARC SuperCluster T4-4.

Introduced by Oracle CEO Larry Ellison and Oracle Executive Vice President John Fowler on September 26, 2011, at a live launch event, SPARC SuperCluster T4-4 is based on the new SPARC T4 processor that has already achieved nine world-record benchmarks across a wide range of workloads. SPARC SuperCluster T4-4 runs on both Oracle Solaris 11 and Oracle Solaris 10 and offers complete forward and backward application compatibility for the thousands of customers running applications on Oracle Solaris today. "We wanted to give [customers] a very smooth upgrade path, and that's what the SPARC SuperCluster T4-4 is," Ellison said at the event.

T4 AT THE CORE

The brain of the new SPARC SuperCluster T4-4 is the new SPARC T4 processor, which is up to five times faster for single-threaded workloads than the SPARC T3 processor that it replaces, Ellison said. Fowler concurred, noting that the SPARC T4 family is "the biggest single-generation performance boost in SPARC history."

The SPARC T4 processor integrates out-of-order execution and dynamic threading to provide optimal performance regardless of an application's execution profile. The SPARC T4's integrated cryptographic stream processing unit supports 16 industry-standard security ciphers without introducing processing overhead. The SPARC T4 processor also exploits the virtualization capabilities of Oracle Solaris Zones and Oracle VM Server for SPARC, enabling customers to improve system utilization while reducing space and power requirements.

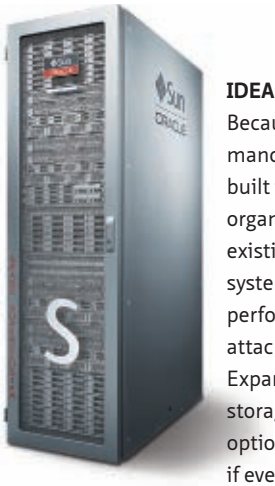
ENGINEERED FOR PERFORMANCE

SPARC SuperCluster T4-4 can come equipped with either two or four SPARC T4-4 servers to provide up to 16 eight-core processors and 4 terabytes of memory in a single rack. It includes redundant InfiniBand-attached ZFS storage clusters for high-performance network-attached storage, and Oracle Exadata Storage Servers for unmatched Oracle Database 11*g* performance.

Because SPARC SuperCluster T4-4 integrates both hardware and software from Oracle, its strengths are magnified, Fowler said. "Many different companies could, potentially, put different racks of hardware together," he said. "But what binds this together is the software."

SPARC SuperCluster T4-4 has been optimized for running Oracle Solaris 11, Oracle VM Server for SPARC, Oracle Exalogic Elastic Cloud software, and Oracle Database 11*g*. The entire system is managed using Oracle Enterprise Manager and Oracle Enterprise Manager Ops Center, which is now bundled with Oracle Premier Support.

The net result of Oracle's applications-to-disk engineering is a system built and tuned for performance. "You cannot make a strong package out of a collection of weaker components," Fowler said. "Here at Oracle we've been investing in SPARC and investing in Oracle Solaris to create these leadership technologies."



IDEAL CONSOLIDATION PLATFORM

Because of the extreme performance and powerful virtualization built into SPARC SuperCluster T4-4, organizations can consolidate many existing applications onto one system while enjoying improved performance. Organizations can attach additional Exadata Storage Expansion Racks or their existing storage area network using an optional Fibre Channel adapter. And if even greater computing power is needed, up to eight SPARC SuperCluster T4-4 systems or Exadata Storage Expansion Racks can be interconnected.

"Oracle is changing the dynamics of the data center by combining the industry's best technology—the SPARC T4 processor, Oracle Solaris 11, Oracle Exadata storage, and Oracle Exalogic Elastic Cloud—into a versatile, secure, general-purpose engineered system," Fowler said. "Oracle's SPARC SuperCluster T4-4 is an ideal platform for application and server consolidation that demonstrates how engineered systems can deliver huge performance at a fraction of the cost of competing solutions." ◀

Fred Sandsmark is a regular contributor to *Oracle Magazine*.

NEXT STEPS

LEARN more about SPARC SuperCluster T4-4
bit.ly/omagspacsc

the SPARC T4 processor
bit.ly/omagsparct4

WATCH a 3-D demo
bit.ly/omagscdemo

SEE SPARC T-Series server benchmarks
bit.ly/omagt4bench

Social for Business

Oracle Social Network delivers secure collaboration tools for business users.

During his Oracle OpenWorld 2011 keynote, Oracle CEO Larry Ellison announced Oracle Social Network, an enterprise collaboration and social networking tool for business that enables business users to find and collaborate with the right people within and across enterprises using information from human resources systems, business applications, and private social networks. Oracle Social Network is one of the application services available through Oracle Public Cloud (see "Open to the Public," page 27).

"Organizations want to connect their people, applications, processes, and customers," said Ellison. "Oracle Social Network provides that; all the tools are integrated, and employees can work from anywhere with the devices best suited to their job."

Oracle CEO Larry Ellison at Oracle OpenWorld, where he announced Oracle Social Network .

DRIVING THE CONVERSATION

Oracle Social Network enables business users to collaborate with each other using a broad range of collaboration styles, including personal profiles, groups, activity feeds, status updates, discussion forums, document sharing, cobrowsing and editing, instant messaging, e-mail, and Web conferencing. "Business today is all about being connected with others," says Andy Kershaw, senior director, Oracle WebCenter product management. "Many organizations today have the goal of providing a perfect information workplace. We believe that Oracle Social Network, along with the capabilities of Oracle WebCenter, can deliver that workplace." To address enterprise requirements, Oracle Social Network centers on what Kershaw calls *the conversation*. "The conversation is key and at the heart of what we do. It's a new paradigm for how business users will collaborate," he says. "The conversation models how people really work together—where the manner, form, and participation all evolve as the decisions or problems become more complex. Communicating in real time, sharing files, annotating content, making decisions, measuring progress—this really rich set of interactions all happen inside the conversation. Each conversation is presented in context within Oracle Social Network–integrated applications."

Integrated with Oracle Fusion Applications and business processes, Oracle Social Network allows users to receive real-time information feeds from these systems and to collaborate and resolve business issues quickly and effectively, including updating applications and business processes. "We surface all of the activity, business updates, and conversations within activity streams that understand what you have read or seen before, making those streams more powerful by surfacing what's most important to you and doing so securely," explains Kershaw. "Oracle Social Network addresses corporate demands for security, privacy, and information protection. It provides each organization and its users with a virtualized and private instance for collaboration with configurable retention and audit policies for traceability."

GOING MOBILE

Oracle Social Network is designed to extend collaboration to mobile users. "Oracle Social Network provides native applications on a variety of devices, including iPhones, iPads, and Android devices, as well as a modern, easy-to-use browser interface," Kershaw says.

This mobile connectivity helps salespeople to identify potential prospects, build effective teams, prepare convincing sales presentations, and more. And other types of users stand to benefit as well, he says.

"With Oracle Social Network, almost any business user can be more effective. Marketing teams can design more-creative campaigns; human resources managers can collaborate on workforce planning and drive talent management best practices; project managers can collaborate on project plans and tasks, resolve issues and change requests, and track and update project milestones," Kershaw says. "Business users can benefit from Oracle Social Network because it enables smarter teams, smarter collaboration, and ultimately smarter decisions." ◀

Rich Schwerin is a senior manager with Oracle Publishing who focuses on social media.

NEXT STEPS

LEARN more about Oracle Social Network
bit.ly/omagosn1

WATCH an interview with Andy Kershaw
bit.ly/omagosn4

HARTMANN STUDIOS

Go Big and Go Fast

New Oracle engineered systems deliver big data and high-speed visual analytics.

According to Gartner, big data, next-generation analytics, and in-memory computing are three of the top strategic technologies for 2012. To help enterprises stay ahead of the curve, Oracle introduced two new systems at Oracle OpenWorld 2011 that focus strategic technologies on some of today's most daunting information processing challenges. The first product, Oracle Big Data Appliance, is built to acquire, organize, and load large volumes of unstructured data; the second, Oracle Exalytics In-Memory Machine, uses in-memory database software and an optimized business intelligence platform to provide extremely fast visual data analytics.

ORACLE BIG DATA APPLIANCE

Andy Mendelsohn, senior vice president of database server technologies at Oracle, introduced Oracle Big Data Appliance during his Oracle OpenWorld general session on big data. Mendelsohn began his presentation by describing three characteristics of big data: massive volumes, high velocity or frequency, and datasources that are varied and often unstructured (such as e-mail, sensor data, and smart meter readings).

Oracle Big Data Appliance is engineered to address those characteristics: it acquires unstructured data, organizes and filters it to discover the most-valuable nuggets of information, and loads the result into a data warehouse for analysis and decision-making. Its hardware is a robust rack of 18 Sun Fire X4270 M2 servers totaling 216 processor cores, 864 GB of memory, and 432 TB of storage. InfiniBand interconnects are used to integrate these components and connect Oracle Big Data Appliance with Oracle Exadata Database Machine and Oracle Exalytics In-Memory Machine.

The software included with—and tuned for—Oracle Big Data Appliance includes an open source distribution of Apache Hadoop, for handling data-intensive applications; Oracle NoSQL Database, Enterprise Edition, a scalable key-value database; Oracle's data integrator application adapter for Hadoop, which simplifies data integration from Hadoop; and Oracle Loader for Hadoop, which provides an easy way to load data from a Hadoop cluster into Oracle Database or Oracle Exadata Database Machine.

With these hardware and software components, engineered to work together, Oracle Big Data Appliance provides a complete solution for handling big data's volume, velocity, and variety, and helps companies derive value from that data, Mendelsohn said. "Oracle is the first vendor to offer customers a complete and integrated set of products to address critical big data requirements, unlock efficiencies, simplify management, and create data insights that maximize business value," he explained.

ORACLE EXALYTICS IN-MEMORY MACHINE

In his opening keynote at Oracle OpenWorld, CEO Larry Ellison introduced Oracle Exalytics In-Memory Machine, the industry's first engineered system for analytics. Oracle Exalytics combines Oracle's Sun hardware; an optimized version of Oracle Business Intelligence foundation with enhanced data visualization and performance capabilities; and a version of Oracle TimesTen In-Memory Database optimized to run business analytics. Oracle Exalytics can access data from any Oracle or non-Oracle relational, online analytical processing, or unstructured datasource and provide visual analytics at the speed of thought. "There's nothing faster than this thing," Ellison said.

Oracle Exalytics is built on an Oracle's Sun Fire server with Intel Xeon E7-4800–series processors totaling 40 cores, coupled with a full terabyte of RAM. The software stack is tuned for the hardware and optimized for business intelligence. A user interface provides interactive data visualization, enabling even casual users to explore large data sets and spot patterns, trends, and outliers.

Oracle Exalytics uses adaptive in-memory technology to ensure that the most-important data sets are always in memory and automatically tunes cached data by constantly monitoring user queries and moving most-used data from storage into memory.

Based on Oracle's internal testing scenarios, Oracle Exalytics provides more than 20 times faster response times in comparison to conventional BI software running on generic hardware configurations—a difference that Ellison believes will change the practice of analytics. "When you have a 20-times improvement, you operate differently," he said. "You ask more questions. You get better answers." ◀

Fred Sandsmark is a regular contributor to *Oracle Magazine*.

NEXT STEPS

LEARN more about
Oracle Big Data Appliance
bit.ly/omagbigdata

Oracle Exalytics In-Memory Machine
bit.ly/omagexalytics

SEE Gartner's list of strategic technologies for 2012
bit.ly/omaggartner

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ORACLE

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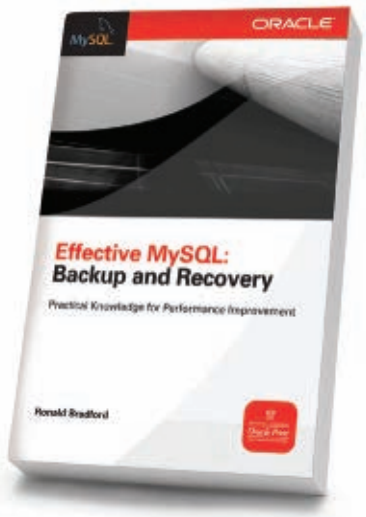

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Ronald Bradford
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Open to the Public

Oracle Public Cloud provides a self-service, subscription-based model for building, deploying, and running applications in the cloud.

Caroline Kvitka, Oracle Magazine *senior managing editor, sat down with Amit Zavery, vice president for Oracle Public Cloud, to talk about Oracle's new public cloud offering. The following is an excerpt from that interview. Download the full podcast at oracle.com/magcasts.*

Oracle Magazine: What was the biggest cloud news at Oracle OpenWorld 2011?

Zavery: [Oracle CEO] Larry Ellison announced Oracle Public Cloud, a broad set of best-in-class, integrated services that provide customers with subscription-based, self-service access to Oracle products in a public cloud environment.

Oracle Magazine: What are the components?

Zavery: We're providing applications and platform services, including Oracle Fusion Customer Relationship Management Cloud Service, Oracle Fusion Human Capital Management Cloud Service, Oracle Social Network [see "Social for Business," page 23], Oracle Database Cloud Service, and Oracle Java Cloud Service.

Oracle Magazine: How do the platform services work?

Zavery: Customers can either build new applications or take their existing standard Java and Oracle Database applications and deploy them to Oracle Public Cloud without rewriting them.

Oracle Magazine: How does Oracle Public Cloud differ from Oracle On Demand?

Zavery: Oracle On Demand provides hosted services for Oracle applications and technologies that a customer has purchased. Oracle Public Cloud is a self-service mechanism where you can purchase and provision a particular service for as long as you want.

Oracle Magazine: How does this subscription model work?

Zavery: You sign up for an account and select the service that you want. You get notified of the provisioned instance and can start using those services.

Amit Zavery, Vice President, Oracle Public Cloud

Oracle Magazine: What's unique about Oracle's public cloud offering?

Zavery: First, we provide a complete set of integrated services across applications and platform. Second, our cloud services are 100 percent industry standards–based, so customers can use SQL, Java, and so on to build their applications. Third, we provide customers flexibility to deploy the same applications both in the cloud and on premises without rewriting any code.

Oracle Magazine: Where does Oracle Public Cloud fit for customers running Oracle technology in their own data centers?

Zavery: If customers want to create a development and test environment without buying a server farm or software, they can sign up for Oracle Public Cloud and start building or move their existing application instantly. They can continue using their on-premises environment, but they gain the ability to do development and testing and add more capacity easily.

Oracle Magazine: Is Oracle Public Cloud appropriate for growing companies?

Zavery: I think it's the right target system for anybody who's looking for an easy way to build and use applications on the cloud, because there are multiple tiers of services offered with elastic capacity. Companies of all sizes can sign up for a service and grow into the capacity they use without having to pay for all of this up front.

Oracle Magazine: When is Oracle Public Cloud going to be available?

Zavery: Users can sign up now for early access to the service.

Oracle Magazine: What does Oracle Public Cloud mean for Oracle's cloud commitment?

Zavery: Oracle has been building and delivering cloud products for several years. Customers are currently using our cloud offerings on premises or in hybrid cloud environments. We also have many software-as-a-service providers using Oracle products to host their services in the cloud. Oracle Public Cloud is a continuation of Oracle's cloud strategy, providing customers with an additional deployment option. ◀

Caroline Kvitka is senior managing editor of *Oracle Magazine* and *Java Magazine*.

NEXT STEPS

LEARN more about Oracle Public Cloud
cloud.oracle.com

LISTEN to the podcast
oracle.com/magcasts

BOB ADLER

Oracle Core: Essential Internals for DBAs and Developers

By Jonathan Lewis

Apress
apress.com

In his new book, Oracle database expert Jonathan Lewis provides just the essential information about Oracle Database internals that every DBA needs for troubleshooting—no more, no less. Oracle Database's extensive feature set is built on a core infrastructure that manages transactions and the ability to commit and roll back changes, protects the integrity of the database, enables backup and recovery, and allows for scalability to thousands of users all accessing the same data. By gaining an understanding of the essential core, DBAs will be able to solve most performance, backup, and recovery problems they face on a daily basis.

Oracle WebLogic Server 11g Administration Handbook

By Sam Alapati

Oracle Press
oraclepressbooks.com

Oracle WebLogic Server 11g Administration Handbook leads readers through the migration to, and optimization of, Oracle WebLogic Server 11g—the industry's most comprehensive Java platform for developing, deploying, and integrating enterprise applications. Author Sam Alapati demonstrates everything needed to install, configure, manage, and secure the platform. He explains the entire process—beginning with the basics—of building, maintaining, and tuning the backbone product on which all Oracle Fusion Middleware and Oracle Fusion Applications are built. Find out how to use the Oracle WebLogic Server Administration Console feature, employ command-line and scripting tools, implement failover and migration capabilities, and generate reliable backups. Troubleshooting, tuning, and security procedures are also covered.

Expert Oracle and Java Security: Programming Secure Oracle Database Applications with Java

By David Coffin

Apress
apress.com

This book provides resources that all Java and Oracle Database application programmers need to ensure that they have guarded the security of the data and the identities entrusted to them. Readers will learn to consider potential vulnerabilities and to apply best practices in secure Java and PL/SQL coding. Author David Coffin also shows you how to encrypt data in transit and at rest; to accomplish single sign-on with Oracle proxy connections; to generate and distribute two-factor authentication tokens from the Oracle server using pagers, cell phones (SMS), and e-mail; and to securely store and distribute Oracle application passwords.

OCA Oracle Database 11g: SQL Fundamentals I: A Real World Certification Guide

By Steve Ries

Packt
packtpub.com

The Oracle Database 11*g*: SQL Fundamentals I exam is the first stepping-stone to obtaining the Oracle Certified Associate certification for Oracle Database 11*g*. SQL is used in every major relational database today, and understanding its real-world application is key to becoming a successful DBA. This book provides the tools to develop the essential skills to pass the Oracle Database 11*g*: SQL Fundamentals I exam and use those skills in daily life as a SQL developer or DBA. Beginners are introduced to concepts in a logical manner, while more-experienced practitioners can use the book as a reference to jump to relevant concepts directly.

Oracle BPM Suite 11g Handbook

By Manoj Das, Manas Deb, and Mark Wilkins

Oracle Press
oraclepressbooks.com

Written by experts with years of real-world experience in the science and art of business process management (BPM), *Oracle BPM Suite 11g Handbook* is a balanced combination of essential BPM concepts. It includes various methodology aspects related to successful BPM adoption in an organization, best practices, and a detailed treatment of all the features and functionalities of Oracle Business Process Management Suite 11*g* Release 1. The author team includes senior members of the product management group for Oracle Fusion Middleware and subject-matter experts from the Oracle enterprise architecture team. The book serves as a complete introduction and essential reference for developers, managers, business analysts, and enterprise and solution architects.

Look for other Oracle books at oracle.com/technetwork/community/bookstore.

Storix Updates SBAdmin to Support Oracle Solaris 11 Express

Oracle partner Storix, a provider of a UNIX-based system recovery solution for Oracle Solaris, Linux, and AIX systems, has updated its System Backup Administrator 7.2 (SBAdmin) solution to support Oracle Solaris 11 Express. With SBAdmin, Oracle Solaris 11 Express customers can recover systems to identical or different hardware and perform physical-to-virtual migrations. SBAdmin supports Oracle Solaris 11 Express on both Intel 64-bit and SPARC hardware.

SBAdmin features include flexible bare-metal recovery, local and network backups, encryption of backup data, and optional integration with Tivoli Storage Manager. SBAdmin's Adaptable System Recovery adapts a backup to the hardware detected during installation, so a recovered system is built to the same state as the prior system. Restoring from bare metal can be managed locally or remotely. A free 30-day trial of SBAdmin is available for download.

storix.com

Teleran Improves Visibility into BI Applications

Oracle Gold Partner Teleran Technologies, a provider of business intelligence (BI) and data warehouse management software, has released a new version of the Teleran data warehouse management software suite for Oracle Database 11*g* and Oracle Exadata Database Machine. The new version improves visibility into how applications and data are used and delivers real-time policy management to BI application users.

The Teleran solution complements the native management capabilities of Oracle Database 11*g* Release 2 and Oracle Enterprise Manager by continuously tracking users and their business context, BI applications activity, and data usage. This information lets IT organizations connect data warehouse system use to business-critical functions and roles, which in turn enables IT to better understand, prioritize, and support those business operations.

teleran.com

LINDY GROENING

TAKE Solutions Extends Safety and Pharmacovigilance Service Offerings

TAKE Solutions, a life sciences solutions developer and Oracle Gold Partner, has launched SafetyReady for Oracle, a new solution that helps life sciences organizations jump-start safety and pharmacovigilance efforts. Based on Oracle Argus Safety—a comprehensive drug safety and pharmacovigilance software platform for life sciences organizations—SafetyReady helps ensure regulatory compliance and product oversight from clinical development through postmarketing surveillance.

TAKE also offers SafetyReady Cloud, an on-demand option suitable for midsize businesses with limited resources.

TAKE's solution suite includes SafetyReady Upgrade, which makes upgrading to new Oracle Argus Safety releases easier, and SafetyReady Migrate, which helps customers migrate from other applications to Oracle Argus Safety solutions.

takesolutions.com

Fishbowl Solutions Earns Validation

Fishbowl Solutions, an Oracle Gold Partner that has achieved Specialized status in Oracle WebCenter, has also achieved Oracle Validated Integration of its SharePoint Connector for Oracle WebCenter Version 1.0. Fishbowl's product enables organizations to centrally store and manage business-critical content in Oracle WebCenter rather than in disparate, ungoverned SharePoint sites.

SharePoint Connector for Oracle WebCenter maintains the SharePoint user experience but ensures that any content that is added, edited, or saved to a new or existing SharePoint site is automatically stored in Oracle WebCenter's central content repository. The Connector can map SharePoint metadata to Oracle WebCenter metadata and is configured according to the SharePoint document library. Documents can be stored in Oracle WebCenter's enterprise content management repository by library, folder location, file size, or extension.

fishbowlsolutions.com

HCL AXON Becomes Oracle Enablement 2.0 Delivery Partner

Oracle Platinum Partner HCL AXON, the enterprise application services division of HCL Technologies, has become an Oracle Enablement 2.0 Delivery Partner. This status recognizes that HCL AXON possesses subject matter expertise across Oracle Fusion Middleware; Oracle E-Business Suite; Oracle Transportation Management; and Oracle's Agile product lifecycle management, Siebel Customer Relationship Management, JD Edwards, Demantra, and PeopleSoft applications.

As an Oracle Enablement 2.0 Delivery Partner, HCL AXON is authorized to train other partners using Oracle-supplied partner boot camp curricula. HCL AXON holds 18 Oracle specializations.

hcltech.com/oracle

Kapow Software's Kapow Katalyst 8 Achieves Oracle Validated Integration with Oracle WebCenter

Kapow Katalyst 8 from Oracle Gold Partner and cloud application integrator Kapow Software has achieved Oracle Validated Integration with Oracle WebCenter. The Kapow Katalyst application integration platform automates the migration of content from many different content management applications, including homegrown systems, into Oracle WebCenter.

Kapow Katalyst supports an automated, repeatable migration process, including workflows for inventory analysis, migration, and verification. Kapow Katalyst also includes an inventory analysis service, Katalyst Analyzer for Content Management, which can be used to rapidly assess the size and extent of the migration project.

kapowsoftware.com

LINDY GROENING

Three Oracle Partners Achieve Diamond Distinction

Three Oracle partners—Deloitte, Fujitsu, and PwC—have achieved Diamond status. The highest level available in Oracle PartnerNetwork, the Diamond distinction recognizes a partner's broad and deep experience across core Oracle technologies and its commitment to helping customers maximize the value of their Oracle investments.

Deloitte and its member firms worldwide employ more than 10,000 Oracle-focused practitioners and thousands of tax, finance, human resources, risk, and business consulting professionals, enabling the company to provide a global perspective on business issues facing multinational enterprises. Deloitte member firms have achieved 28 specializations across Oracle applications, technology, and hardware. The company's expertise spans Oracle product areas including Oracle E-Business Suite, Oracle's JD Edwards and PeopleSoft applications, Oracle's Siebel Customer Relationship Management, Oracle SOA Suite, and Oracle Business Intelligence applications.

Fujitsu, a leading IT services provider, employs more than 3,500 Oracle specialists and has achieved Oracle specializations in more than 32 Oracle technologies. The company has collaborated with Oracle for more than 20 years and has earned advanced specializations in Oracle Database 11*g*, Oracle Solaris, and Oracle's SPARC Enterprise M-Series and SPARC T-Series servers.

PwC helps clients leverage Oracle technologies to realize critical objectives ranging from improving day-to-day operations to large-scale, transformational change. The company employs a global network of Oracle specialists with experience in enterprise resource planning; human capital management; supply chain management; Oracle Business Intelligence; enterprise performance management; Oracle Identity Management; Oracle governance, risk, and compliance applications; and other Oracle solutions. PwC also deployed one of the first Oracle Fusion Human Capital Management projects.

deloitte.com

fujitsu.com

pwc.com

IMS and Aconex Enhance Project Portfolio Management

Oracle Platinum Partner Innovative Management Solutions (IMS) is working with Aconex, a provider of online collaboration solutions to the construction and engineering industries, to deliver project management offerings to architectural, engineering, and construction project teams across the United States.

IMS helps organizations adopt and implement scalable enterprise project portfolio management (EPPM) solutions based on Oracle's Primavera and other technologies. IMS is enhancing its EPPM solutions by offering the Aconex online collaboration platform, which helps clients manage the capture, review, and approval of tasks associated with designs, correspondence, schedules, costing, and other functions—even those managed by existing disparate project management systems.

The Aconex software-as-a-service platform allows the entire project ecosystem to collaborate from any location using a secure, Web-based interface. Each organization on the project can use Aconex to both manage its own project documents and correspondence, and to collaborate on that data with other firms and the project owner.

Other IMS areas of expertise include project management consulting, software, training and education, project management operations and project staff augmentation, technical services, and application hosting.

ims-web.com

Oracle North America Titan Awards Honor Partners

At Oracle OpenWorld 2011, Oracle recognized the innovative solutions and business achievements of its partners with Oracle PartnerNetwork's Oracle North America Titan Awards. Now in its eighth year, the Oracle North America Titan Awards program recognizes partners for their ability to deliver Oracle solutions and services that drive business and customer value. Winning solutions and best practices were developed or delivered in fiscal 2011 and demonstrated excellence in categories including sales, marketing, and solution development. The 2011 categories, subcategories, and winners are

MOMENTUM

- Global Systems Integrator Applications Momentum: **Deloitte**
- Regional Systems Integrator/Reseller Applications Momentum: **Inspirage**
- Global Systems Integrator Technology Momentum: **Accenture**
- Regional Systems Integrator/Reseller Technology Momentum: **Enkitec**
- Hardware Momentum: **BIAS Corporation**

SOLUTIONS

- Business Intelligence and Data Warehousing: **Infosys**
- Business Intelligence Applications: **KPI Partners**
- Cloud Computing: **Deloitte**
- Customer Relationship Management: **IBM Global Business Services**
- Database and Clustering: **Cintra Software**
- Financial Management/EPM: **Deloitte**
- Human Capital Management: **PwC**
- Integration and SOA: **AST Corporation**
- Optimized Data Center Efficiency: **Rolta International**
- Oracle Accelerate for Midsize Companies: **Inspirage**
- Oracle Exadata: **The Pythian Group**
- Oracle Stack: **BIAS Corporation**
- Oracle WebCenter: **Deloitte**
- Security and Identity Management: **SENA Systems**
- Supply Chain Management and Manufacturing: **Kalypso**

INDUSTRY-SPECIFIC SOLUTIONS

- Communications, Media, and Entertainment: **Deloitte**
- Consumer and Retail: **Deloitte**
- Education: **eVerge Group**
- Energy and Utilities: **eVerge Group**
- Financial Services: **The Athene Group**
- Health and Life Sciences: **IBM Global Business Services**
- Manufacturing and Distribution: **Accenture**
- Public Sector: **TechDemocracy**
- Services: **IBM Global Business Services**

Partner Solutions Collect "Ready" Status

Products from two Oracle partners—Smart ERP Solutions and Solix Technologies—have earned Oracle Exastack Ready status. The Oracle Exastack Ready program ensures that applications have been tested and tuned to support component products of Oracle Exadata Database Machine and Oracle Exalogic Elastic Cloud, including Oracle Solaris, Oracle Linux, Oracle VM, Oracle Database, and Oracle WebLogic Server.

Oracle Platinum Partner **Smart ERP Solutions**' Solutions Framework 3.0 for Oracle's PeopleSoft 9.1 financials and human capital management (HCM) applications has achieved Oracle Database Ready, Oracle WebLogic Ready, and Oracle Solaris Ready status. Smart ERP Solutions' offerings address common needs in all PeopleSoft applications, including HCM, supply chain management, and campus solutions. These offerings feature a bolt-on design that enables them to be configured to individual clients' needs.

Oracle Gold Partner **Solix Technologies**' Solix Enterprise Data Management Suite (EDMS) 5.0 has achieved Oracle Database Ready, Oracle WebLogic Ready, and Oracle Linux Ready status. Solix EDMS is a data governance platform that helps organizations meet compliance and data privacy requirements and efficiently transition to cloud infrastructure. It includes components for single-pass database cloning, automated data masking, managing metadata, and more.

Oracle has also expanded the Oracle Exastack Ready program to include Oracle VM Ready status, a differentiator for partners that support the latest major release of Oracle VM.

smarterp.com

solix.com

LINDY GROENING

Instructive and Transformative

Oracle OpenWorld 2011 was an instructive experience for participants and the launch platform for a game-changing technology.

Oracle OpenWorld is always an instructive experience on multiple levels. Customers and partners receive transmissions in bulk about roadmaps across the Oracle product and technology stack, as well as access to a set of best practices that have been battle-tested across a huge community. Less obvious, but no less important, is Oracle's opportunity to listen to customer and partner feedback across literally thousands of personal touch points.

The Oracle ACE Director Technical Briefing that occurs just prior to the conference at Oracle headquarters is the ultimate microcosm of this process. During this intensive and interactive session spanning two days, approximately 50 Oracle ACE Directors examined Oracle's strategic "blueprints" in detail and offered feedback and advice about them—the customer-vendor feedback loop in action.

This year's briefing was perhaps the most interesting in the Oracle ACE program's history. The technologies discussed are pertinent to the hottest topics in enterprise IT today: Oracle Application Development Framework Mobile Client (Oracle ADF Mobile Client), the Oracle Exalytics In-Memory Machine, Oracle NoSQL Database and the associated Oracle Big Data Appliance, and Oracle Public Cloud.

ORACLE PUBLIC CLOUD: GAME CHANGER

Oracle Public Cloud is the most significant offering, in the context of Oracle Technology Network. Thanks to the availability of a one-month free trial, anyone with interest and an internet connection can get hands-on with a full-blown Oracle Database application development environment through a variety of methods (including a RESTful Web service, which enables a number of programmatic access options). And anyone with similar qualifications can deploy a Java application to the Oracle WebLogic Server–based Oracle Java Cloud Service, a component of Oracle Public Cloud, for evaluation as an enterprise-grade home for it.

The Oracle ACE Director reactions to the session on this topic were interesting, and perhaps suggestive of what a technical end-user audience wants from a cloud service. For example, there was a strong preference expressed by some for more-granular control over a cloud "sandbox" (cloudbox?) than that wanted by a software-as-a-service (SaaS) user, who ostensibly looks to the cloud to completely abstract away the complexities of IT and software provisioning. (This preference may have been influenced by the presence of high-profile infrastructure-as-a-service [IaaS] options in the marketplace, which tend to provide the dials and knobs that are typically not delivered by SaaS providers.) The platform-as-a-service (PaaS) category, of which Oracle Public Cloud's database and Java services are an example, is the proper model through which technical end users can seek a balance between its two alternatives. (Oracle Public Cloud's Oracle Social Network—which has a more general-purpose audience—is pure SaaS, by comparison.)

Regardless of where it belongs in the cloud-computing taxonomy, Oracle Public Cloud may change the way we run the Oracle Technology Network program. Although pre-built VMs and raw-install, developer-license software will always have their places, the availability of a cloud service will give developers and evaluators yet another springboard for a deep-dive into Oracle Database and Java.

ORACLE DATABASE 11*g* THE "EXPRESS" WAY

Speaking of raw-install resources: Oracle Database, Express Edition 11*g* is now available on Oracle Technology Network. This edition of Oracle Database, which was initially based on Oracle Database 10*g* Release 2 code when it was released in 2007, was a major success in introducing Oracle Database technology to new users. It was easy to install, easy to manage, and easy to use to build lightweight Web apps. And, no small thing, it was free to use and distribute.

Oracle Database, Express Edition 11*g* moves the ball forward, aggregating the essential updates made to Oracle Database, Enterprise Edition from version 10.2.0.1 through 11.2.0.2—including Universal Connection Pooling, Edition-Based Redefinition, and many other compelling features. Furthermore, the user data limit has expanded to 11 GB (from 4 GB).You can follow the "Web Locator" link below to the download as well as to a "quick tour" article. ◀

Justin Kestelyn (justin.kestelyn@oracle.com) is senior director, Oracle Technology Network and developer programs, as well as Oracle Technology Network editor in chief.

WEB LOCATOR

Oracle ADF Mobile Client
bit.ly/gKrPpm

Oracle Exalytics In-Memory Machine
bit.ly/tHIY5f

Oracle NoSQL Database
oracle.com/technetwork/database/nosqldb

Oracle Big Data Appliance
oracle.com/us/technologies/big-data

Oracle Public Cloud
cloud.oracle.com

Oracle Database, Express Edition 11*g*
bit.ly/uJ5RGl

Tools of the Trade

What's in your architecture toolbox?

It is said that there's a tool for every job. But when that job is IT architecture, in all its permutations, the definition of *tool* can be a bit fuzzy.

When I set out to get a sense of what community members consider the most important tool in their respective architectural toolboxes, I intentionally left the definition of tool open. I was curious to see how those who responded to my questions would interpret the term.

One of those respondents was Farzad Pezeshkpour, head of architecture and engineering for market and credit risk technology at the Royal Bank of Scotland. His personal choice for the most important tool is Enterprise Architect from Sparx Systems.

"In order to do enterprise architecture well," Pezeshkpour says, "there must be a consistent way to represent it, using a number of different views at different levels of detail, including logical static, logical dynamic, and deployment. There also must be a consistent naming and referencing mechanism to tie together all the architecture views. And finally, there must be an enterprise architecture repository to store and cross-reference these artifacts. Having these three core elements in our toolset and processes gives an architectural management information view that helps govern our estate more efficiently and intelligently."

Architecture is deeply connected to the specific business and technological environment in which an organization operates. Pezeshkpour works at one company, in one environment—which is challenging enough. But what happens if your work as an architect takes you into a variety of different environments?

If you find yourself in that situation, Vennster Managing Partner Ronald van Luttikhuizen advises adaptability when it comes to tools. "Especially if you're a consultant working for various clients, it greatly helps to use the tooling that is available and already in use by clients and stakeholders, instead of rigidly sticking to your own toolset," says this Oracle ACE Director. That can mean dealing with a variety of Unified Modeling Language (UML), Business Process Model and Notation (BPMN), and other modeling and design tools. As for his personal favorite, van Luttikhuizen also lists Sparx Systems' Enterprise Architect. "A great tool at a great price," he says.

> **"In order to do enterprise architecture well, there must be a consistent way to represent it."**
>
> *—Farzad Pezeshkpour, Royal Bank of Scotland*

But van Luttikhuizen's toolbox also contains some more-basic applications to help him get his message across. "In the end, architecture is about communication," he says. "So in the beginning of an architecture-oriented project, the most important tools are a whiteboard, Microsoft PowerPoint, and Microsoft Word."

Karina Ishkhanova, a solution architect and technical lead for payment systems at School-Day Solutions, agrees with van Luttikhuizen about the importance of basic communication tools. "The first stage in defining the future architecture happens in close collaboration with business departments," she says. "Whiteboards, paper, and markers are indispensable. Sometimes we even cut paper into components to move them around to help visualize the variations on proximity to other system parts." For modeling, Ishkhanova uses UMlet, an open source UML tool, which she values for its simplicity. "At more-advanced stages, I move to Oracle JDeveloper," she says, "to take advantage of its integration and automation features."

Communication tools are also vital for Lambda Software President Aki Iskandar.

"By far the most important tool in my toolbox is the one that I ask my clients to hand to me before any discussions, let alone architectural work, starts. It's the set of three blueprint documents that jointly define well-articulated and complete business requirements, the constraints within the environment, and the architectural diagrams for network topologies," Iskandar says. "Without them, you may overarchitect or underarchitect the system. You can't architect a system without knowing the constraints before you start."

Perhaps his last point is the IT architect's equivalent of the carpentry maxim "Measure twice, cut once."

While the choice of tools varies among these four architects, that choice is driven by the shared goal of effective communication in order to ensure a good fit between the upfront plan and the completed project. Isn't that what IT architecture is all about? ◀

Bob Rhubart (bob.rhubart@oracle.com) is manager of the architect community on Oracle Technology Network, the host of the Oracle Technology Network ArchBeat podcast series, and the author of the ArchBeat blog (blogs.oracle.com/archbeat).

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Developing a Better Community

A user group conference chair puts community service on the agenda.

I met Edward Roske on a bustling Saturday morning in June 2011 at the Boys and Girls Club in a tough part of Long Beach, California. There were few kids around, and no one playing pool, shooting hoops, or doing homework. Instead, grown-up technologists were scrubbing, sorting, painting, and rewiring the club in a one-day jam to give local kids a better place to hang out and learn.

"Today is our ODTUG community service day," said Roske, event chairperson of the Oracle Development Tools User Group (ODTUG) 2011 Kscope event, which opened the next day at the Long Beach Conference Center. Roske, wearing an "ODTUG Community Day" T-shirt, explained the idea behind the tradition.

"At technology events, people normally get together and attend sessions, then do a bit of partying and networking, and then go home," Roske said. "But we want to grow a deeper sense of community at ODTUG." One of the best ways to do that, Roske and the ODTUG board have discovered, is for the conference attendees to work together for the benefit of someone or something other than themselves.

As Roske and I spoke, a mix of developers and DBAs in matching green shirts worked all around us to improve the Boys and Girls Club. They stripped wallpaper, sanded walls and furniture, and painted most surfaces of the club. They sorted dozens of boxes of donated books and rebuilt the library shelves. They installed a network and ran network cable throughout the building. Outside they painted foursquare lines and repainted basketball court lines. "These are nearly a hundred people from our conference," said Roske. "They are wholly unqualified to be fixing up a Boys and Girls Club, but what they lack in skill they make up for in enthusiasm."

Edward Roske, Event Chairperson, Oracle Development Tools User Group 2011 Kscope

A RESPONSE TO KATRINA

In 2008 ODTUG held its annual Kscope (formerly Kaleidoscope) event in New Orleans, Louisiana—a city in tatters from Hurricane Katrina. To ODTUG leaders, it seemed wrong just to fly in, drop a few dollars into the local economy, and leave without pitching in to help rebuild. So they organized a day of service on the Saturday before the conference and invited members to come early to help out. To their surprise, 100 conference attendees—the maximum number that the project could accommodate—showed up to help rebuild a schoolhouse in the city's hard-hit Ninth Ward.

"We did it because we found ourselves in New Orleans after the storm," said Roske. "We had never heard of a technical user group doing a community service day and frankly didn't know if anyone would want to come. But people loved it so much that they kept asking what we were going to do next," he continued. "So the following year [2009] we cleaned a beach in Monterey, California, and the next year [2010] we helped rebuild a schoolhouse in Washington DC."

A SERIOUSLY TECHNICAL CONFERENCE

Community service aside, ODTUG Kscope is a seriously practical, seriously technical conference. This year's event opened on a Sunday with all-day symposiums built around technology areas such as Oracle Application Express, database development, enterprise process management and business intelligence, and Oracle Fusion Middleware. "People can go through an entire process, from learning to use the products to understanding how to use them best in real-world environments," said Roske. The next three and a half days were packed with sessions, classes, and hands-on labs. "It won't be *all* work," said Roske. "We've rented the Queen Mary for a night of partying."

ODTUG must be doing something right. The organization's membership continues to grow, and attendance at the 2011 conference was up 25 percent from the previous year, to 1,000 registered attendees. Roske suspects that this growth is due in part to the strong sense of community built by ODTUG's members learning together, playing together, and working together to give something back. ◀

Jeff Erickson (jeffrey.x.erickson@oracle.com) is a senior editor with Oracle Publishing.

NEXT STEPS

LEARN more about ODTUG
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BOB ADLER

Demystifying IT

Three peers on faith in end users, straightforward problem solving, and specializing.

SUSAN BEHN

ORACLE ACE

Company: Infosemantics, a professional services company specializing in Oracle E-Business Suite, business intelligence, and Oracle Fusion Middleware solutions

Job title/description: Vice president of Oracle delivery, responsible for managing Infosemantics' Oracle practice

Location: Grapevine, Texas

Length of time using Oracle products: 18 years

Which new features in Oracle applications are you currently finding most valuable? Oracle E-Business Suite Diagnostics is one of the suite's best and most underutilized features. Rolling this out to those in the user community who use our applications to perform their job functions can take a huge load off already overworked IT departments.

How have you seen the relationship between IT and your user community evolve? I remember the days when IT was thought of as that geeky group in the back room who could automate some business processes mysteriously, and any minor deviation required significant help. Now, with everyone using the internet and smartphones, it's not so mysterious. Those of us in IT need to have confidence that the user community can manage more of their own applications, including error corrections.

What advice do you have about how to get into application development and support? Start early, be open to trying new things, and be very self-motivated. When I want to learn something new, I start by trying to build a presentation to teach it to someone else.

CONNOR MCDONALD

ORACLE ACE Director

Company: Self-employed

Job title/description: Independent consultant, responsible for database configuration, tuning, and PL/SQL development

Location: Perth, Australia

Oracle credentials: Oracle Certified Professional (Oracle8*i* Database, Oracle9*i* Database, Oracle Database 10*g*), with 15 years of experience using Oracle products

How did you get started in IT? When I was 10 years old, if you won the weekly classroom math quiz at my school, you got a precious hour on the school's sole Apple II computer. From that point on, I was hooked. I worked as a mainframe IMS [Information Management System] programmer before being exposed to Oracle Database during the client/server boom. A talk by [longtime Oracle expert] Dave Ensor inspired me to invest more time in continuous learning about Oracle technology, rather than being happy with the status quo.

What is your favorite technique on the job? It's actually from the movie *Apollo 13*: "Let's work the problem, people." People think that getting the best out of Oracle technology is some sort of mystical art. It's not. You just need to take a methodical, disciplined approach without resorting to guesswork or unproven claims.

What is your go-to Oracle reference book right now? Probably *Expert Oracle Exadata* by Kerry Osborne, Randy Johnson, and Tanel Põder (Apress, 2011). Everyone seems to be getting on Oracle Exadata, so it's good to be getting some solid insight into it.

ROB ZOETEWEIJ

ORACLE ACE

Company: Zoeteweij Consulting; current clients include ING Bank and Rabobank, both financial services institutions

Job title/description: Independent senior Oracle consultant, involved in the implementation of Oracle Enterprise Manager Grid Control

Location: Various cities in the Netherlands

Length of time using Oracle products: 26 years

Which new features in Oracle Database are you currently finding most valuable? I'm especially enthusiastic about the Oracle Provisioning and Patch Automation Pack [now part of Oracle Database Lifecycle Management Pack]. With this pack you can really achieve a high level of standardization—for instance, when deploying complete Oracle Real Application Clusters [Oracle RAC] and when creating Oracle RAC database instances in a fully configured grid infrastructure and Oracle Automatic Storage Management environment.

What advice do you have about how to get into Oracle technology? As Oracle Fusion Middleware becomes more and more important, try to specialize in this area—and focus in particular on products such as Oracle WebLogic Server, Oracle Universal Content Management, Oracle WebCenter, and Oracle Identity Management.

What technology has most changed your life? I would say Oracle Database has most changed my life—next to Harley-Davidson technology, which has made it possible for me to relax riding my 2010 FLHX Street Glide after a hard day's work. ◀

Learn more about the Oracle ACE program at oracle.com/technetwork/community/oracle-ace.

ORACLE EXCELLENCE AWARDS 2011

Oracle honors customers, partners, and technologists who engineer innovation.

Innovation was the watchword at Oracle OpenWorld 2011, as Oracle, its partners, and its customers demonstrated their creativity and excellence across a variety of applications and technology fields. At the event, Oracle honored customers, partners, and technologists with the Oracle Excellence Awards, which reach across categories ranging from enterprise sustainability and applications implementation to Java advancements and leadership in the field of cloud computing.

The Oracle Excellence Awards include the **CIO of the Year** awards, for global leaders demonstrating outstanding performance and vision in the role of CIO of an organization that uses Oracle products and services; the **Technologist of the Year** awards (formerly the *Oracle Magazine* Editors' Choice Awards), recognizing individuals for their extraordinary efforts and contributions to enterprise technology solutions as DBAs, IT managers, cloud architects, enterprise architects, and developers; the **Specialized Partner of the Year** awards for partner excellence in database, middleware, applications, server and storage, and industry categories; the **Data Warehouse Leader of the Year**, recognizing individuals who demonstrate excellent technical ability and superior knowledge of Oracle data warehouse technologies and consistently apply best practices while demonstrating leadership; the **Eco-Enterprise Innovation** awards, for customers and their partners who are using Oracle products to reduce their environmental footprint while reducing costs; the **Java Innovation** awards, for extreme innovation in the world of Java technology; the **Oracle Fusion Middleware Innovation** awards, for customers who are developing cutting-edge Oracle Fusion Middleware solutions that deliver exceptional business value; and the **Proactive Support: Champion of the Year** awards, for customers or partners driving the proactive adoption of support tools and resources.

BY DAVID A. KELLY
ADDITIONAL REPORTING BY PATTY WADDINGTON

Frederic Vanoosthuyze EUROPE, MIDDLE EAST, AND AFRICA

CIO keeps pace with changing IT needs by speaking the language of business.

Staying ahead of the competition requires speed and agility, especially in the communications field. That's why Moscow, Russia–based US$11 billion-a-year Mobile TeleSystems (MTS) recently signed an unlimited license agreement (ULA) with Oracle covering a range of Oracle solutions that can be deployed as quickly as necessary, in response to business needs.

"Technology is just a means to an end," says Frederic Vanoosthuyze, vice president for information technology and CIO at MTS. "With the ULA, we have the tools to deploy very fast. We can skip the procurement processes that can take a substantial amount of time, such as six or nine months. It allows us to generate savings for the company faster. The payback for MTS is huge."

MTS is the leading telecommunications group in Russia and eastern Europe and one of the largest in Europe, providing both mobile and fixed voice, broadband, TV, and content services to more than 100 million mobile subscribers and close to 10 million households. To give the company a competitive and consistent platform for future growth, Vanoosthuyze—winner of the Oracle Excellence Award for CIO of the Year, Europe, Middle East, and Africa—has helped define and implement a software consolidation strategy. An important part of that strategy has been MTS's 2010 signing of a three-year ULA with Oracle—an agreement that includes Oracle applications, middleware, and database products already used by MTS, as well as solutions Vanoosthuyze foresees deploying in the future.

"Oracle is a strategic partner for MTS," says Vanoosthuyze. "We calculated the net present value [NPV] of our investment in an Oracle ULA, the value of the project, and the savings that we'd achieve with it, and we ended up with a multimillion-dollar positive NPV." MTS has looked to Oracle for its technology solutions for years, including a large deployment of Oracle's Siebel applications for customer interactions and an Oracle E-Business Suite application for accounting, which allows the company to run dual (U.S. and Russian) accounting standards simultaneously.

Although he doesn't claim to be able to predict the future, Vanoosthuyze *does* know what it takes to support future business requirements. "The role of a good CIO is to be able to understand the business, speak its language, and predict what will be needed tomorrow or a year from now," he says. "At the end of the day, it's up to the business to tell us what they expect from IT, rather than IT telling the business what they have to do."

WINNER SPECS

Name: Frederic Vanoosthuyze
Job title: Vice president for IT and CIO
Company: Mobile TeleSystems
Location: Moscow, Russia
Award: Oracle Excellence Award for CIO of the Year, Europe, Middle East, and Africa, 2011

OLEG NIKISHIN/GETTY IMAGES

PAULO FRIDMAN

Christiane Almeida Edington LATIN AMERICA

CIO sees people as key asset as she works to transform IT into a "driving force of the business."

In the past, technical expertise was the primary requirement for a CIO. Nowadays, CIOs need more-comprehensive and flexible skill sets in order to fully understand corporate issues, provide effective solutions, and establish business-minded IT leadership.

"I believe a CIO has to maintain a close relationship with business managers in order to broadly understand the business context and needs and to anticipate what will be required from IT," says Christiane Almeida Edington, CIO of Telefónica Brasil and winner of the Oracle Excellence Award for CIO of the Year, Latin America. "To do that, I have to keep up to date with all new technologies in order to create solutions with the best cost-benefit for the company. It is demanding, but satisfying to see how IT can promote a constant evolution by using state-of-the-art solutions."

Telefónica Brasil, part of the €60-plus billion Telefónica Group, is a leading provider of communications and integrated services in Brazil. As head of IT operations, Edington focuses mainly on helping to transform IT into a driving force of the business, reducing time to market and seeking continuous improvement in IT quality.

WINNER SPECS

Name: Christiane Almeida Edington
Job title: CIO
Company: Telefónica Brasil
Location: São Paulo, Brazil
Award: Oracle Excellence Award for CIO of the Year, Latin America, 2011

Taking on an IT transformation is no small task. Telefónica Brasil has a lot of systems and applications in its mobile and fixed operations that are responsible for providing telecommunications services for more than 79 million customers. To provide a platform for dynamic growth, Telefónica Brasil has created a SOA approach built on Oracle components to integrate disparate systems and enable IT capabilities to align more closely with changing business needs. The company uses a wide range of Oracle solutions, including Oracle SOA Suite, Siebel Customer Relationship Management, Oracle Identity Management, and Oracle Universal Content Management.

For Telefónica Brasil, the choice to standardize on Oracle technologies was clear. "Oracle has a comprehensive product portfolio with end-to-end solutions that addresses all the requirements of our mission-critical applications, such as high availability, scalability, open standards, a well-defined roadmap, and easy integration," says Edington.

Edington adds that by standardizing on Oracle solutions, Telefónica Brasil has reduced operating expenses and application deployment time. "We've seen time-to-market reduction through SOA benefits like reusability, flexibility, new-development agility, and cost reduction," she says.

But to Edington, being a good CIO takes more than simply selecting the right technologies. "I strongly believe that a company's main asset is its people, so first and foremost, the CIO has to be ingenious in order to transform a large group of people into an integrated team with aligned objectives," she says. "One way we can stand out from our competition is our team, so we always need to take care of people and support their ongoing professional development."

PAUL S. HOWELL

WINNER SPECS

Name: Thaddeus Arroyo
Job title: CIO
Company: AT&T
Location: Dallas, Texas
Award: Oracle Excellence Award for CIO of the Year, North America, 2011

Thaddeus Arroyo NORTH AMERICA

AT&T CIO responds to business evolution with IT innovation.

For Thaddeus Arroyo, CIO of AT&T and winner of the Oracle Excellence Award for CIO of the Year, North America, the goal of technology goes beyond simply supporting business operations at the US$124 billion telecommunications giant.

"Our role is to apply technology in ways that transform business processes and market offerings in a manner that ultimately creates business value and has a positive impact on our customers," says Arroyo, who is responsible for all of AT&T's information technology. "I like to view that role as one of a progressive innovator."

Since 2007, Arroyo has been leading a number of innovative changes at AT&T, particularly technology changes related to its merger with BellSouth, which also resulted in full ownership of Cingular Wireless. He is most proud of being able to support AT&T's business evolution across all its markets while concurrently transforming and integrating a massive IT organization composed of roughly 27,000 IT professionals. "We've increased the velocity with which AT&T can bring products to market and successfully scale and commercialize those products," he says.

To do that, Arroyo has consistently focused on building an agile IT infrastructure that can scale to unprecedented levels. As part of this strategy, AT&T uses a wide range of Oracle software supporting a myriad of business processes and enterprise integration capabilities across multiple business segments and functions.

"Oracle plays a key role both in supporting our migration and rationalization of base applications as well as supporting new technologies," explains Arroyo. "Oracle is an important provider of technologies used to support business and operational systems as well as supporting new capabilities."

By integrating and rationalizing systems, AT&T has reduced its number of deployed applications by more than 40 percent. At the same time the company is rationalizing its infrastructure, it's also virtualizing portions of it.

"As we drive to a virtualized environment, Oracle supports us both on the application side and on the infrastructure side," says Arroyo. "We're transforming the way we deliver services and evolving our complete application development process in such a way that we'll have a model that is linked from idea inception all the way through delivery."

While AT&T's consolidation and transformation strategy is paying off for customers and the business, it's also extremely satisfying to Arroyo personally.

"I enjoy solving complex problems and ultimately proving that in fact, even at this scale, you can be nimble and you can have world-leading time to market," he says. "The most interesting part of what I do is solving complex business problems and ultimately exploiting the art of the possible."

Shinichi Ata JAPAN

An aggressive approach to deploying new technologies yields impressive results.

Great IT performance can make people happy," says Shinichi Ata, executive vice president, director, and chief information security officer of Japan's SoftBank Mobile Corporation. Ata ought to know: performance is especially important for an organization such as SoftBank, which handles more than 1 billion call records and 4 billion data records each day. And, through the use of Oracle technologies, Ata has found a way to meet the company's goal of IT-inspired happiness.

Over the years, Ata, winner of the Oracle Excellence Award for CIO of the Year, Japan, has been aggressive in deploying new technologies at SoftBank, including managing the company's replacement of its Teradata data warehouse with an Oracle Exadata system. He's also been instrumental in the deployment of an Oracle Exadata–based private cloud solution for SoftBank and in the development of future public cloud services in Japan, based on Oracle Exadata and Oracle Exalogic.

By deploying an Oracle Exadata Database Machine, SoftBank has been able to create a data warehouse that is eight times larger than its previous Teradata warehouse, while at the same time reducing overall operational costs by 50 percent. Oracle Exadata also allows SoftBank to analyze call records and customer logs in 7 hours rather than the 25 hours it was previously taking. Implementation of the new solution took only three months and was completed in May 2010.

PETER STEMBER

"It's an amazing technology. We were very impressed with Oracle Exadata," says Ata. "We were using 36 racks of Teradata but were able to replace that with only 3 racks of Oracle Exadata," he explains. "The performance of those 3 Oracle Exadata racks was eight times faster than 36 Teradata racks. It was amazing."

SoftBank is also making a big investment in cloud computing with its White Cloud services for enterprises, which are based on Oracle technologies. It's already selling virtual desktop services, which not only help to save electricity but also enable corporate employees to work securely from outside the office—an important consideration in post-earthquake Japan.

In addition, the company is planning to deploy Oracle Exalogic Elastic Cloud to handle Web services requests from more than 6,000 nationwide SoftBank sales stores, which collectively manage more than 50,000 customer visits each day.

"We're expecting Oracle Exalogic to take the place of thousands of Web servers that we use today," says Ata. "The combination of Oracle Exalogic and Oracle Exadata will be fantastic for not only us but also our White Cloud customers. It makes it very quick and easy to test and deploy new applications."

WINNER SPECS

Name: Shinichi Ata
Job title: Executive vice president, director, and chief information security officer
Company: SoftBank Mobile Corporation
Location: Tokyo, Japan
Award: Oracle Excellence Award for CIO of the Year, Japan, 2011

Claire Rawlins ASIA PACIFIC

Australian CIO takes pride in "creating an environment where people can accomplish and deliver outstanding business outcomes."

It's not easy to cover a country as large as Australia with a state-of-the-art broadband network, but NBN Co is up to the task. NBN Co was created in 2009, and its purpose is to deliver Australia's first national wholesale-only, open-access broadband network to all Australians. The company's goal is to connect 93 percent of homes, schools, and workplaces with optical fibre (fibre to the premises, or FTTP), providing high-speed broadband services to Australians in urban centers and regional towns. The remaining 7 percent will be connected to the national broadband network via a combination of fixed wireless and satellite technologies.

"Oracle is critical to our business strategy," says Claire Rawlins, CIO of NBN Co and winner of the Oracle Excellence Award for CIO of the Year, Asia Pacific. "As a low-cost wholesale broadband provider that needs to quickly deploy a complete set of integrated applications, NBN Co is highly reliant on the broad suite of products delivered by Oracle. Its solutions align with our 'Best of Suite' product strategy and support our goal."

NBN Co has implemented a complete portfolio of Oracle applications that run the company, from enterprise resource planning solutions to those for billing, supply chain management, and more. "Oracle plays a major part across much of our application portfolio," says Rawlins. "Oracle E-Business Suite is the heart of our business and commercial systems, with Oracle Communications Billing and Revenue Management providing our billing platform. And we're finding that the cloud-based Oracle CRM On Demand solution provides us with the necessary flexibility and speed of implementation to meet our changing business needs." Rawlins adds that in terms of total cost of ownership, Oracle is a strong fit for NBN Co for a number of reasons, including "the preintegrated nature of the solutions, their scalability, and the broad availability of people with experience in the products—both people from Oracle and from its partners."

ROBERT EDWARDS

NBN Co's choice of and success with Oracle solutions reflects Rawlins' strong belief in "simplifying" the technology. Rawlins also reinforces the importance of end-to-end process alignment, underpinned by clear metrics management as a best practice. "Constantly measure results, in real time when possible," she advises fellow CIOs, "as meaningful business intelligence and analytics are invaluable." Partnering is also high on the agenda at NBN Co, where retail service providers play an important role. "I passionately believe in win-win solutions; anything else is unsustainable," Rawlins says.

That belief seemingly extends to her view of what makes a great CIO.

"Successful CIOs should have a high emotional intelligence quotient, a degree in behavioral economics, and perhaps a few stiff drinks," says Rawlins. Humor aside, it isn't purely the technical challenges that drive her. "Actually, the most satisfying part of being a CIO is creating an environment where people can accomplish and deliver outstanding business outcomes."

WINNER SPECS

Name: Claire Rawlins
Job title: CIO
Company: NBN Co
Location: Sydney, Australia
Award: Oracle Excellence Award for CIO of the Year, Asia Pacific, 2011

WINNER SPECS

Name: Clark Golestani
Job title: Vice president, IT
Company: Merck Research Laboratories
Location: Whitehouse Station, New Jersey
Award: Oracle Excellence Award for CIO of the Year, Global Business Unit, 2011

Clark Golestani GLOBAL BUSINESS UNIT

Biopharma CIO sees IT as "the heart and the future" of the company.

For Merck, the second-largest biopharmaceutical company in the world, strategic competitive advantage comes from being able to operate at scale. That's especially important when you spend, as Merck does, US$8 billion a year on research and development and have a user base of more than 12,000 internal and 100,000 external users. That's why Clark Golestani, vice president of IT at Merck Research Laboratories and winner of the Oracle Excellence Award for CIO of the Year, Global Business Unit, likes Oracle solutions.

"We went with Oracle because of the architecture, strategy, and vision that it brings forward," says Golestani. "In our testing of Oracle's technology layer as well as its application layer, we've found that Oracle delivers."

Golestani notes that Oracle's life sciences product set is the foundation for Merck's integrated development platform (IDP), a solution in which "information is captured in the clinic and managed all the way through to when the product goes to market." From a scope and scale perspective, that end-to-end process involves clinical investigators conducting trials in more than 50 countries. By the end of 2012, Merck hopes to be integrated on a single instance of its IDP across all key components, from electronic data capture to clinical trial management.

Merck is also leveraging Oracle technology to gain new insight into the science of biopharmacology. Golestani notes that Merck currently runs one of the largest integrated single chemical repositories in the world on Oracle Exadata—with more than 5,000 concurrent users. "Now, people are able to leverage our chemical repository not just for patent purposes but for research," he says. "They can visualize and mine all the information in it effectively and efficiently."

When Merck finishes deploying its Oracle-based IDP, the combination of that IDP and the Oracle Exadata chemical repository will provide even more value. "We'll have a single repository of all clinical and pharmacovigilance information. Then we'll have the ability to mine that information in complex ways, because we made the decision to standardize all our clinical information on Oracle solutions."

In Golestani's view, the Oracle-based product development infrastructure will help Merck deliver on its core mission: to discover, develop, and provide innovative products and services that save and improve lives.

"We've given our researchers arguably some of the best tools in the industry for being able to hopefully find greater scientific insight," he says. "We believe that will lead to new innovation."

CATHERINE GIBBONS

Syed Jaffer Hussain DBA

The learning never stops for Oracle RAC expert.

WINNER SPECS

Name: Syed Jaffer Hussain
Job title: Oracle Database support manager
Company: Alinma Bank
Location: Riyadh, Saudi Arabia
Award: Oracle Excellence Award for Technologist of the Year: DBA, 2011

Today's best DBAs have a dual role: mastering intricate technologies while remaining closely connected to the needs and processes of the businesses they serve.

"Being a DBA for Alinma Bank gives me the immense satisfaction of managing one of the most complex Oracle RAC [Oracle Real Application Clusters] environments in the Middle East region," says Syed Jaffer Hussain, Oracle Database support manager for Riyadh, Saudi Arabia–based Alinma Bank, an Oracle ACE Director, and winner of the Oracle Excellence Award for Technologist of the Year: DBA. "I know our management appreciates the database team's ability to prevent rather than only resolve business-critical and challenging database and technology problems."

Established in 2008, Alinma Bank is a rapidly growing bank based on the principle of Islamic law. The bank runs its complete business solutions on Oracle cluster technologies. "In order to provide uninterrupted service availability around-the-clock to our valued customers, we rely on Oracle cluster technologies," says Hussain.

On top of these clusters, Alinma has implemented a sophisticated Oracle RAC 10*g* Release 2 environment with four systems running nearly 200 database instances. Hussain and his team recently upgraded all four Oracle RAC environments and databases to Oracle 11*g* Release 2.

"Most of our critical business processes run on Oracle databases and use Oracle E-Business Suite solutions, and we are also in the process of implementing other Oracle-related solutions," says Hussain. "Beyond any doubt, Oracle technology is the integral part of our organization. We strongly rely on Oracle technologies for our reputation and business growth."

Having mastered a wide range of Oracle technologies and gained experience putting them into practice in real-world situations, Hussain likes to give back to the Oracle community. He's continually sharing his knowledge of Oracle database technology both as a blogger (at jaffardba.blogspot.com) and as the coauthor of *Oracle 11g R1/R2 Real Application Clusters Essentials* (Packt, May 2011), a book focused on real-world Oracle RAC scenarios.

In addition, he continues to refine his expertise by exploring new technologies and implementation challenges, so he can deliver more at work and contribute more to the community. "To be a good DBA, one needs to be hungry for new skills," says Hussain, "and keen to learn, test, and apply new technologies that could have a big impact on the organization."

ALI AL MUBARAK/GETTY IMAGES

Sreekanth Chintala IT MANAGER

Dell Inc. grid team lead helps usher in new era of scalability and efficiency.

For Sreekanth Chintala, database strategist and senior manager of the grid team at Dell Inc., grid computing is not only more efficient from a technology perspective; it's also cost effective from a business perspective.

"So far, the grid/cloud program at Dell has resulted in about [US]$18-plus million savings overall in cost avoidance," says Chintala, one of the architects of Dell's Oracle-based grid computing solution and winner of the Oracle Excellence Award for Technologist of the Year: IT Manager. Dell's grid solution hosts more than 1,300 database instances on 200 Oracle Real Application Clusters (Oracle RAC) nodes.

Dell IT started the private cloud program in 2008, when the organization's data centers were at capacity. Although the original architecture and process had served well for a few years, they were unable to scale with customer needs. Chintala was brought in to manage Dell's grid team, improve processes, and design the next-generation grid program. He helped lead the transformation by introducing various architectural and process changes—and he also helped facilitate the cultural changes necessary for the application and database teams to understand the benefits of the new shared-infrastructure approach. "I am very fortunate to have a team that is committed to making a difference," says Chintala. "It's all about dedication, integrity, and passion to make it better."

PAUL S. HOWELL

Consolidating databases and servers into an Oracle grid architecture reduced the number of Dell's physical servers by more than 1,000 and saved more than 500 terabytes of usable storage. The program also saved data center space and operational costs, and significantly reduced the number of hours required for database provisioning and maintenance operations. The infrastructure is all run on Dell enterprise products, and Dell's open hardware solutions and Oracle software combine to run an efficient database environment.

"Oracle and Dell are key partners," says Chintala. "We work closely with Oracle on what our day-to-day challenges are and how they can improve their products."

Since its initial deployment in 2008, Dell's grid has continued to grow, with a more than 30 percent yearly increase in the number of database instances. Succeeding with such rapid growth requires good collaboration between an organization and its partners—something Chintala and his team have fostered. Additionally, the team has proven the efficiency of running Oracle technology on Dell standard platforms for a more efficient environment, Chintala says, adding, "It's a winning situation for both companies and, most importantly, the customers."

WINNER SPECS

Name: Sreekanth Chintala
Job title: Senior manager, grid team
Company: Dell Inc.
Location: Austin, Texas
Award: Oracle Excellence Award for Technologist of the Year: IT Manager, 2011

WINNER SPECS

Name: Gürcan Orhan
Job title: Software architect and senior developer
Company: Turkcell Technology
Location: Istanbul, Turkey
Award: Oracle Excellence Award for Technologist of the Year: Enterprise Architect, 2011

Gürcan Orhan ENTERPRISE ARCHITECT

Architect troubleshoots network alarms with customized Oracle Data Integrator solution.

For Gürcan Orhan, software architect and senior developer at Turkcell Technology—a firm that develops applications and building infrastructure for Turkcell, the leading communications and technology company in Turkey and the third-largest mobile phone operator in Europe—success comes down to quickly diagnosing critical problems across a diverse and heterogeneous network infrastructure.

"We wanted to be able to quickly detect network alarm locations, which is difficult because alarms can be originated from more than 200,000 network nodes and produced from 50 different source systems, and their location is hidden in two unstructured columns," says Orhan, winner of the Oracle Excellence Award for Technologist of the Year: Enterprise Architect. "To overcome these challenges, we needed a robust, solid software solution that leverages an ELT [extract, load, and transform] approach." In 2008, Turkcell Technology created a team to compare different data integration products and ultimately selected Oracle Data Integrator.

"We selected Oracle Data Integrator because its architecture leveraged the database engine power and provided best-in-class performance and scalability," says Orhan. "It eliminated the use of a middle-tier transformation server and thereby avoided additional hardware investment."

Orhan's integration solutions feed into a multiterabyte Oracle Real Application Clusters data warehouse called NODI (Network Operations Data Infrastructure), which is running on Oracle Database 11*g* Release 2. NODI is unique because it has an unprecedented model design and is flexible, easy to maintain and implement, and modular.

Some of the data flowing into NODI is unstructured data from network monitors and alarms, so Orhan's team had to build algorithms to analyze it and successfully identify the exact location of more than 100,000 alarms each day. "We're currently correctly identifying the five unstructured dimensions, such as reason, source system, vendor, and more, for the alarms 100 percent of the time, and the location of the alarms more than 99.99 percent of the time," says Orhan.

In the end, Turkcell's bet on Oracle infrastructure is paying off, especially when it comes to creating flexible solutions that will continue to address any future need.

"Oracle Data Integrator is a tool that can talk, or learn how to talk, with any database or operating system in its own language," says Orhan. "That's the power of Oracle Data Integrator."

ALI KABAS/GETTY IMAGES

Dr. Frank Munz CLOUD ARCHITECT

Cloud evangelist helps organizations embrace Oracle software in a virtual data center.

When it comes to designing successful and scalable solutions, Dr. Frank Munz, an independent Oracle architect, consultant, and trainer, thinks companies should start at square one.

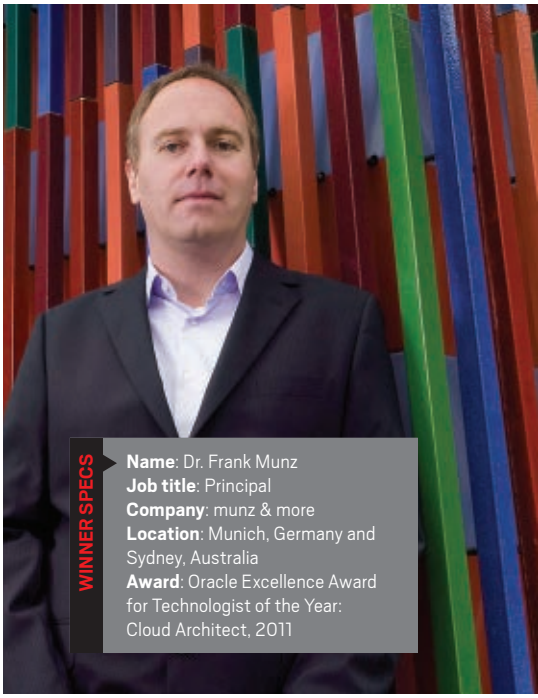
"It's important to thoroughly understand the technology and the architecture alternatives before you make your design decisions," says Munz, winner of the Oracle Excellence Award for Technologist of the Year: Cloud Architect. "Very often I see people who make their design decisions and then attend a technical workshop. I think it's just the wrong way around."

As founder of the Munich, Germany and Sydney, Australia–based consulting firm munz & more, Munz has helped organizations from telecommunications companies to logistics giants optimize, fix, and fine-tune their SOA; cloud; Java Platform, Enterprise Edition; and Oracle Fusion Middleware solutions. He's also an expert on the integration of heterogeneous technologies with Oracle-based solutions.

In addition to helping his consulting customers, Munz also enjoys sharing his expertise with the general public. He has published more than 200 articles on Oracle Fusion Middleware and cloud computing on Oracle Technology Network and in his blog. In his new book, *Middleware and Cloud Computing* (munz & more Publishing, 2011), he explains what it takes to achieve availability, elasticity, and management of Oracle Fusion Middleware in clouds.

Munz' focus on cloud computing comes as organizations join the rush to design and deploy new cloud-based solutions, and he's particularly impressed with Oracle's new public cloud offering.

"I think that Oracle is making a dramatic achievement with Oracle Public Cloud," he says. "It offers an easier-to-use solution that's more accessible to most users."



TON HENDRIKS

WINNER SPECS

Name: Dr. Frank Munz
Job title: Principal
Company: munz & more
Location: Munich, Germany and Sydney, Australia
Award: Oracle Excellence Award for Technologist of the Year: Cloud Architect, 2011

Shlomi Noach DEVELOPER

Work of open source developer extends MySQL capabilities and gives back to community.

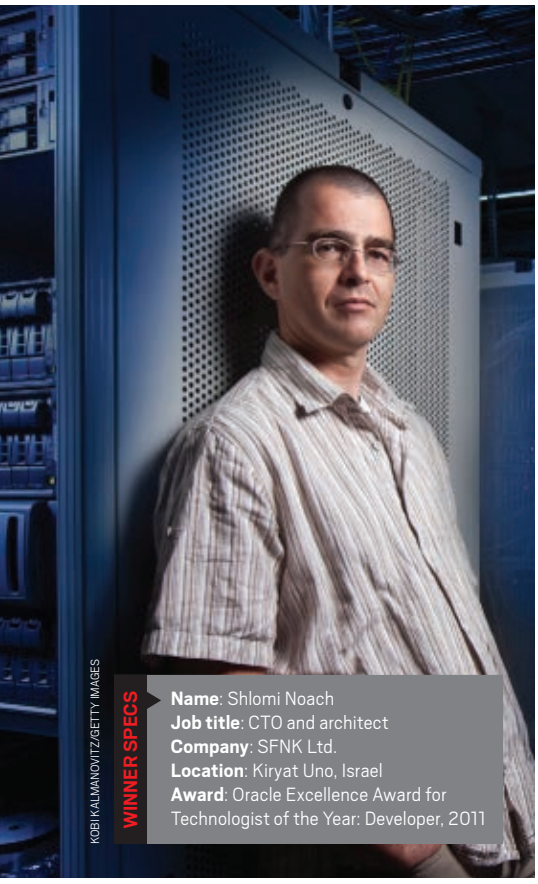
When Shlomi Noach—CTO and architect at Kiryat Uno, Israel–based SFNK Ltd. and winner of the Oracle Excellence Award for Technologist of the Year: Developer—encounters technology challenges, he doesn't look for help. Instead, he creates solutions.

Noach, an active MySQL community member (openark.org), has spent years developing complex, scalable systems using MySQL, publishing much of his work as open source software.

SFNK's product, *makam*, provides real-time social media analysis services to companies, based on information flowing in from Facebook, Twitter, and other types of social media. The company's core systems are built on MySQL Community Edition 5.1 and 5.5, so Noach devotes much of his time to developing open source tools for managing and extending MySQL implementations. One example is a tool he created that enables organizations to manage large MySQL instances and allows for live, nonblocking schema changes.

"We had large MySQL tables and needed to be able to make changes on the fly," says Noach. "I came up with an algorithm using available MySQL tools that enables organizations to refactor MySQL tables dynamically." The resulting solution was so successful, says Noach, that his ideas on refactoring live MySQL databases inspired similar efforts by the MySQL team at Facebook.

"I'm thrilled to have people use my code to their advantage. It's a wonderful feeling," says Noach. "Of course, those people also give me feedback that helps improve the code I write, so it's a beneficial situation for everyone."



KOBI KALMANOVITZ/GETTY IMAGES

WINNER SPECS

Name: Shlomi Noach
Job title: CTO and architect
Company: SFNK Ltd.
Location: Kiryat Uno, Israel
Award: Oracle Excellence Award for Technologist of the Year: Developer, 2011

SPECIALIZED, DATA WAREHOUSE, ECO-ENTERPRISE, JAVA, ORACLE FUSION MIDDLEWARE, AND PROACTIVE SUPPORT

Eco-Enterprise Innovation Award Winners
Front row (from left to right): Tapas Roy, Raqmiyat (partner); Deug-ha Park, Gunsan City Hall; Beverly Townsend, University of Western Ontario; Jong Hee Kim, Gunsan City Hall; Jeff Henley, Chairman of the Board, Oracle; Valentin Tcherkezov, Telenor ASA; Bryon Rickey, AT&T; Marion Wilson, Association of Chartered Certified Accountants. Back row (from left to right): Ivan Vojvodić, Juniper Networks; Ross Sharman, Knowledge Global (partner); Shawn Pressley, Hill International; Erick Hahne, Denver Health Hospital; Michel Schoolenaar, Centre Consulting Netherlands (partner); Hans Verlouw, Geodan; Massimo Vogesi, Oracle

SPECIALIZED PARTNER OF THE YEAR

These awards recognize global Oracle PartnerNetwork Specialized partners excelling in five categories. Nominees are judged by a renowned team of International Data Corporation executives and analysts.

- **Database:** Cintra Software & Services
- **Middleware:** Deloitte Consulting
- **Applications:** Capgemini UK
- **Server and Storage:** Jet Infosystems
- **Industry:** Accenture

DATA WAREHOUSE LEADER OF THE YEAR

Data Warehouse Leader of the Year recognizes an individual who demonstrates excellent technical ability and superior knowledge of Oracle data warehouse technologies and consistently applies best practices while demonstrating leadership and sharing experience both within and outside of his or her business.

Data Warehouse Leader of the Year, Europe, Middle East, and Africa: Jim Duffy, Head of Data Warehouse Development, BNP Paribas

Data Warehouse Leader of the Year, Asia Pacific: Chan Sung Lee, Deputy General Manager, Asiana IDT

Data Warehouse Leader of the Year, Latin America: Rabih Youssef, Head of IT, Digicel Group Haiti

Data Warehouse Leader of the Year, North America: Brian Beckman, Enterprise Data Warehouse Platform Owner, Procter & Gamble

ECO-ENTERPRISE INNOVATION

Oracle Eco-Enterprise Innovation honors customers for their use of Oracle products to take an environmental lead, as well as to reduce costs and improve business efficiencies using green business practices. Several partners were also honored because they helped these winning customers with their sustainability initiatives.

- Marion Wilson, Solution Architect and

HARTMANN STUDIOS; OSCAR EINZIG PHOTOGRAPHY/MICHAEL VAN AUKEN

Specialized Partners of the Year
Left to right: Abdul Sheikh, Cintra; Stef Oud, Deloitte; Jean-Claude Viollier, Capgemini; Atsushi Egawa, Accenture; Eugeny Shablugin, Jet Infosystems; Jeff Henley, Chairman of the Board, Oracle

Data Warehouse Leaders
Left to right: Andy Mendelsohn, Senior Vice President of Database Server Technologies, Oracle, with Jim Duffy, BNP Paribas; Brian Beckman, Procter & Gamble; Rabih Youssef, Digicel Group Haiti

Winners of the Java Innovation award pictured with Adam Messinger, Vice President of Development, Oracle (second row, far left)

Design Group Manager, Association of Chartered Certified Accountants
- Bryon Rickey, Executive Director , AT&T (partner: Stan Bartel, Area Vice President–Key Account Director, Oracle)
- Erick Hahne, Citrix/Sun Application Support Supervisor, Denver Health Hospital
- Hans Verlouw, Engineer, Geodan
- Jong Hee Kim, Director of Local Administration Bureau, and Deug-ha Park, Junior Official, Office of Information and Communications, Gunsan City Hall (partner: Jeong Gwon Go, CEO, SysGen)
- Shawn Pressley, Vice President of Project Management, Hill International
- Ivan Vojvodić, Senior Director, Software Engineering, Juniper Networks (partner: Ross Sharman, Technical Director, Knowledge Global)
- Dr. Manfred Härdtner, Deputy Manager, Data Center, Klinikum rechts der Isar der Technischen Universität München (partner: Tilo Kaspar, Sales Manager, Research & Development, circular Informationssysteme GmbH)
- Yunus Dohadwala, CFO, Masafi Company (partner: Tapas Roy, CEO, Raqmiyat)
- Takakazu Imai, CIO, Rakuten Securities
- Valentin Tcherkezov, Accounting Director, Telenor ASA (partner: Michel Schoolenaar, Senior Consultant, Oracle Enterprise Performance Management, Centre Consulting Netherlands)
- Beverly Townsend, Energy and Environment Manager, University of Western Ontario

JAVA INNOVATION

Following in the tradition of previous years' Duke's Choice Awards, the Java Innovation awards celebrate extreme innovation in the world of Java technology and are granted to the best and most-innovative projects using the Java platform.

- Andrew Lee Rubinger, Arquillian Project
- Antoine Mischler, Cofounder, dooApp

ORANGE PHOTOGRAPHY

SPECIALIZED, DATA WAREHOUSE, ECO-ENTERPRISE, JAVA, ORACLE FUSION MIDDLEWARE, AND PROACTIVE SUPPORT

Proactive Support Executive Champion William VanCuren, NCR

Proactive Support Individual Champion Rakesh Pandey, Infosys

Winners of the Oracle Fusion Middleware Innovation award

- Colby Clegg, Ignition by Inductive Automation
- Vinicius Senger, Cofounder, Global Code, jHome
- Shlomi Ben-Haim, JFrog's Artifactory
- Oliver White, JRebel
- Trisha Gee, Disruptor by LMAX
- Scot Tutkovics, Vice President of Engineering, Rockwell Automation
- Dr. Andreas Stefik, Project Lead, SodBeans
- Trustin Lee, The Netty Project

ORACLE FUSION MIDDLEWARE INNOVATION

Oracle Fusion Middleware Innovation honors Oracle customers for their cutting-edge solutions using Oracle Fusion Middleware. Winners are selected based on the uniqueness of their business case, business benefits, level of impact relative to the size of the organization, complexity and magnitude of their implementation, and the originality of their architecture.

Application Development Framework:
- Herbalife International
- Etiya Bilgi Teknolojileri
- Callista Software Services
- KCI (Honorable Mention)

SOA/AIA/BPM:
- Choice Hotels
- Siram S.p.A
- Turk Telecom
- Electronic Arts
- Premium Wine Brands (Honorable Mention)

Oracle WebCenter:
- Agilent
- Medtronic
- Dutch Prosecutors Office (Openbaar_Ministerie)
- Schneider National (Honorable Mention)

Application Grid and Oracle Exalogic:
- Banco de Chile
- Telecom Italia
- AT&T
- All Nippon Airways (ANA)
- Haier (Honorable Mention)

BI and EPM:
- HealthSouth
- State of Maryland—Governor's Office of Crime Control & Prevention
- Telenor ASA
- The Clorox Company
- Dunkin Brands (Honorable Mention)

Data Integration:
- Sabre Holdings
- BT
- Elsevier

Identity Management:
- ING North America Insurance
- College Board
- TTNET A.S.
- Manpower (Honorable Mention)

PROACTIVE SUPPORT: CHAMPION OF THE YEAR

Proactive Support Executive Champion and Proactive Support Individual Champion honor Oracle customers or partners for driving the proactive adoption of tools and resources within their own or a customer's company.

Proactive Support Executive Champion:
- William VanCuren, Vice President and CIO, NCR Corporation

Proactive Support Individual Champion:
- Rakesh Pandey, Senior Consultant, Infosys

ORANGE PHOTOGRAPHY

TOGETHER ORACLE AND NATIONAL GEOGRAPHIC EDUCATION ARE

Leading the Way in Ocean Education and Marine Research

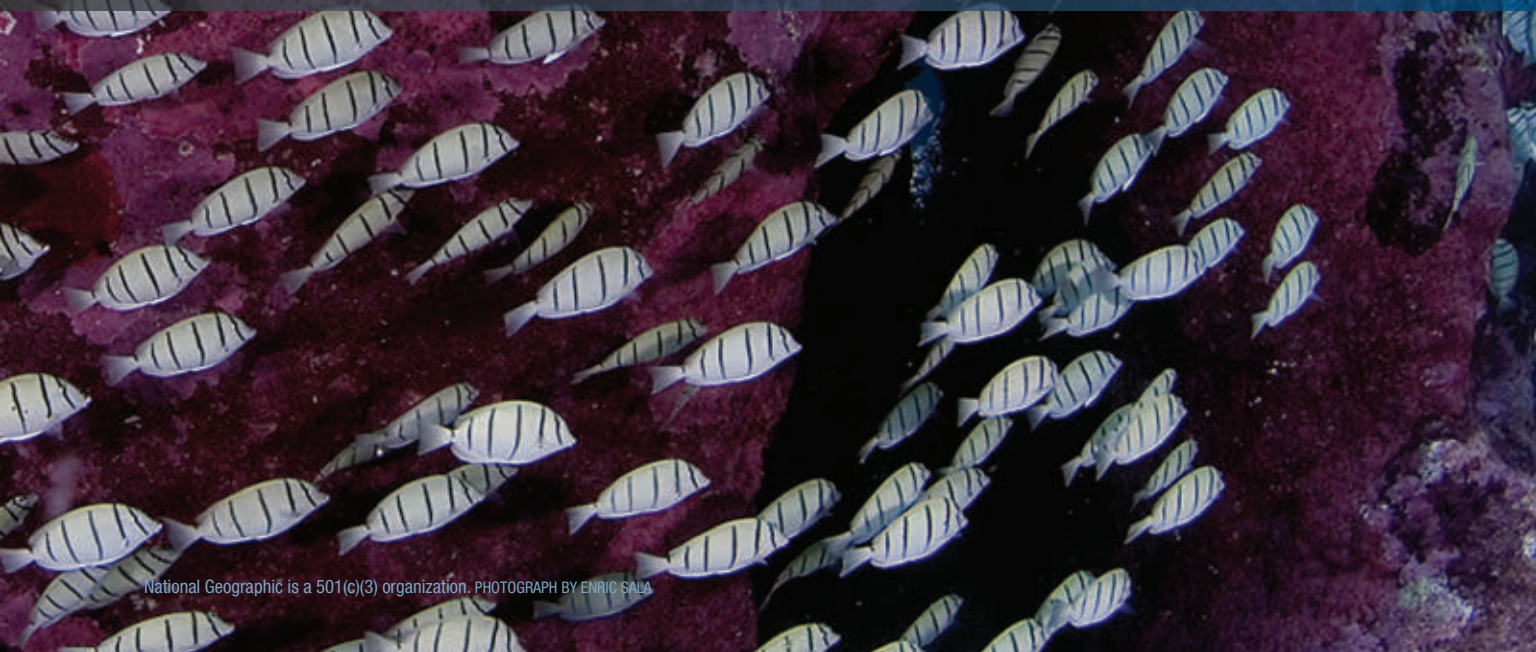
NATIONAL GEOGRAPHIC education

ORACLE

National Geographic Education supports the mission of the National Geographic Society to inspire people to care about the planet by creating compelling educational materials for young people and the adults who teach them. NG Education provides unique learning experiences to educators and advocates for improved education in geography, the environmental sciences, and other disciplines that are critical to understanding our world.

With support from Oracle, National Geographic Education is engaged in a major project to develop teacher leaders in marine ecology and create materials about ocean science and geography for students, families, the ocean recreation community, and the general public.

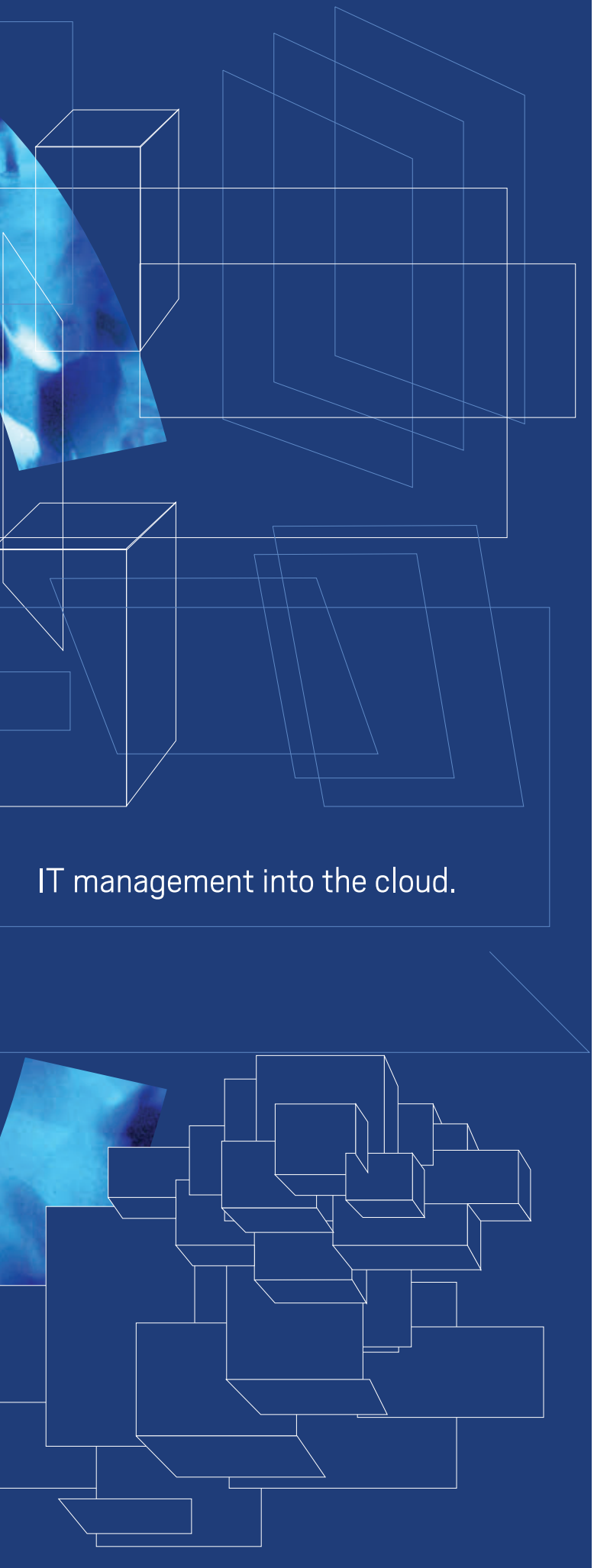
Support our work today.
Visit nationalgeographic.org/education.



National Geographic is a 501(c)(3) organization. PHOTOGRAPH BY ENRIC SALA

Is for Cloud

Oracle Enterprise Manager 12*c* launches business-driven



IT management into the cloud.

BY DAVID BAUM

Designed to manage data center and cloud environments, Oracle Enterprise Manager has consistently focused on business-driven IT management. The latest release, Oracle Enterprise Manager 12*c*, continues this focus and expands its cloud management capabilities to deliver a complete solution for setting up, managing, provisioning, and charging back for Oracle technology–based enterprise clouds.

Organizations using Oracle Enterprise Manager 11*g* are already seeing the benefits of Oracle Enterprise Manager's commitment to applications-to-disk management, and are looking forward to even better control in the cloud with Oracle Enterprise Manager 12*c*.

PAULINA MCFARLAND

Anton Topurov, an IT professional on the database and middleware administration team at CERN, says CERN's IT specialists rely on Oracle Enterprise Manager to monitor CERN's Oracle infrastructure, which includes single-instance databases, Oracle Real Application Clusters databases, Oracle VM, and Oracle WebLogic Server.

TON HENDRIKS

MANAGEMENT AS A SCIENCE

Since the 1950s, some of the world's leading physicists have converged at the European Organization for Nuclear Research (CERN) to study the properties of subatomic particles. Today these researchers—who are located throughout the world—process a staggering amount of information. All told, CERN's four big-particle detectors produce more than 15 million gigabytes of data per year.

In addition to obvious business functions, Oracle databases are essential for management of these particle detectors, as well as for the Large Hadron Collider accelerator. For years CERN's IT specialists have used Oracle Enterprise Manager to monitor the associated database infrastructure, which includes Oracle WebLogic Server and Oracle VM.

"We rely on Oracle Enterprise Manager 11*g* as a monitoring tool for our Oracle infrastructure, including single-instance databases and Oracle Real Application Clusters databases," says Anton Topurov, an IT professional on the database and middleware administration team at CERN. "The core value of Oracle Enterprise Manager is proactive monitoring."

Oracle Enterprise Manager 11*g* lets Topurov and his colleagues monitor the physical hardware and software assets, as well as the quality and availability of the associated services that rely on those assets. His team has grouped databases, hosts, listeners, and application servers together so they can monitor them as a unit. This lets them gauge the performance and availability of complete business services rather than individual IT components.

During 2011, CERN evaluated a beta version of Oracle Enterprise Manager 12*c*. IT professionals there determined that the new software will make it easier to maintain database and middleware services in a virtualized environment for several hundred developers in the U.S., France, Russia, Switzerland, and other locations.

Overall, CERN's IT professionals found Oracle Enterprise Manager 12*c* to be more developer friendly because it lets them handle many debugging, performance testing, and tuning exercises on their own. "The improved Automatic Workload Repository feature, with its Active Session History statistics, is a good example of this enhanced usability," Topurov says. "In addition, the new named credentials are a real game changer because they provide more flexibility for authorizing access to hardware and software resources and provide a clean separation between security officers and operators."

Topurov also likes Oracle Enterprise Manager's new functionality for consolidation management, which analyzes usage patterns and loads on a hardware infrastructure and makes recommendations for consolidating databases. As in most large IT shops, some of CERN's servers are underutilized and others are maxed out. "The consolidation management functionality of Oracle Enterprise Manager 12*c* looks quite attractive to us, because it also addresses our electricity and cooling shortage," he explains. "We plan to continue to virtualize more resources in the computer center, and this functionality of Oracle Enterprise Manager will accelerate the rollout. We can select a set of production machines on the one hand, and propose a set of new machines as a destination. Oracle Enterprise Manager analyzes

the existing usage levels and proposes a consolidation plan."

The result of the collected new features and improvements is not an incremental product release. "We see Oracle Enterprise Manager 12*c* as a major step forward," concludes Topurov.

MANAGING BUSINESS SERVICES

According to Richard Sarwal, senior vice president of product development at Oracle, consolidating and virtualizing an IT infrastructure are important activities, but they are just the starting point for creating an enterprise cloud environment. "The long-term goal is to manage cloud resources as business services rather than just a collection of technical components," he explains. "This lets you relate those resources to users and monitor the performance of their applications to make sure they are receiving adequate service levels."

Such was the motivation for Cerner, one of the world's largest healthcare IT companies. The Kansas City, Missouri–based company currently depends on Oracle Enterprise Manager 11*g* to manage more than 1,000 client databases associated with its Millennium healthcare applications—about 18 petabytes of healthcare data in all. Customers can install Millennium at their own premises or access the functionality on demand through the CernerWorks hosting facility.

Cerner solutions are licensed by approximately 9,000 facilities around the world, including more than 2,600 hospitals; 3,500 physician practices covering more than 30,000 physicians; 500 ambulatory facilities, such as laboratories, ambulatory centers, cardiac facilities, radiology clinics, and surgery centers; 800 home health facilities; and 1,600 retail pharmacies.

"Our data center hosts applications that support more than 150,000 beds, which equates to 17 percent of U.S. hospital capacity," says Tony Myers, Oracle strategist for the CernerWorks hosting facility. "Oracle Enterprise Manager plays an important role by helping us keep an eye on that vital data."

By providing integrated applications-to-disk management capabilities for its public and private clouds, Oracle Enterprise Manager has enabled Cerner to increase its return on investment and pursue new business opportunities without incurring incremental IT costs. This success is partly what motivated Cerner to offer a new cloud-based service supported by Oracle Enterprise Manager. Cerner had already created a multitenant version of Oracle Enterprise Manager for use internally within its private cloud. It simply extended that architecture to enable a secure and private management layer for external clients as well. The database-as-a-service offering is now part of an on-demand software suite called SkyBox that includes cloud-based messaging, storage, and virtual desktop functionality.

Oracle Enterprise Manager allows Myers and his team to monitor and manage the experience of their clients—including all business

SNAPSHOTS

European Organization for Nuclear Research (CERN)
cern.ch
Industry: Scientific research
Employees: 2,500 employees plus 10,000 visiting scientists
Oracle products and services: Oracle Database 11*g*, Oracle Enterprise Manager, Oracle WebLogic Server, Oracle JRockit Virtual Edition, Oracle Streams, Oracle Active Data Guard, Oracle Real Application Clusters, Oracle Advanced Compression, StorageTek tape libraries, Oracle E-Business Suite, Oracle VM

Cerner
cerner.com
Industry: Healthcare
Employees: 8,000
Revenue: US$1.85 billion in 2010
Oracle products and services: Oracle Database, Oracle Enterprise Manager, Oracle Real Application Clusters

Epsilon
epsilon.com
Industry: Marketing services
Employees: 3,000
Revenue: US$613 million in 2010
Oracle products and services: Oracle Database 11*g*, Oracle Enterprise Manager, Oracle Exadata Database Machine, Oracle Active Data Guard

Total Cloud Control with Oracle Enterprise Manager 12*c*

Creating Oracle Enterprise Manager 12*c* was a three-year project that represents 2 million developer hours. Oracle's goal with this foundational product was to automate operations for traditional data centers, virtualized environments, and cloud computing environments.

"For years Oracle has been enhancing its integrated technology stack with an integrated management stack," says Richard Sarwal, senior vice president of product development at Oracle. "We build manageability into each product and expose it in a meaningful way through one integrated management environment. This philosophy has driven the creation of total cloud control embodied in Oracle Enterprise Manager 12*c*: one holistic tool that helps you set up and manage the entire cloud lifecycle."

The cloud lifecycle has three basic phases: planning/setup, deployment, and optimization. To assist with planning/setup, Oracle Enterprise Manager 12*c* features new discovery capabilities to identify all the elements of an IT environment, as well as capacity-planning tools to advise IT professionals on how to combine that environment into a shared infrastructure. Oracle's new management software also helps administrators determine what types of services they want to offer—infrastructure as a service, with basic computing, memory, and storage capabilities, or higher-level offerings such as platform as a service.

To streamline cloud deployment, developers can provide a complete suite of applications as virtual assemblies that can be uploaded into Oracle Enterprise Manager's software library. Users have self-service access to those resources through a modern cloud management portal, according to their predefined levels of authorization.

To optimize production clouds, Oracle Enterprise Manager 12*c* provides a new centralized console called Oracle Enterprise Manager Cloud Control. This wizard-driven, role-based management platform helps administrators manage the entire cloud lifecycle, including consolidation and capacity planning, self-service, testing, monitoring, and metering and charge-back. The software can monitor resource use at a discrete level and charge back for that usage based on common metrics such as CPU consumption and storage consumption, as well as by the types of technologies being utilized.

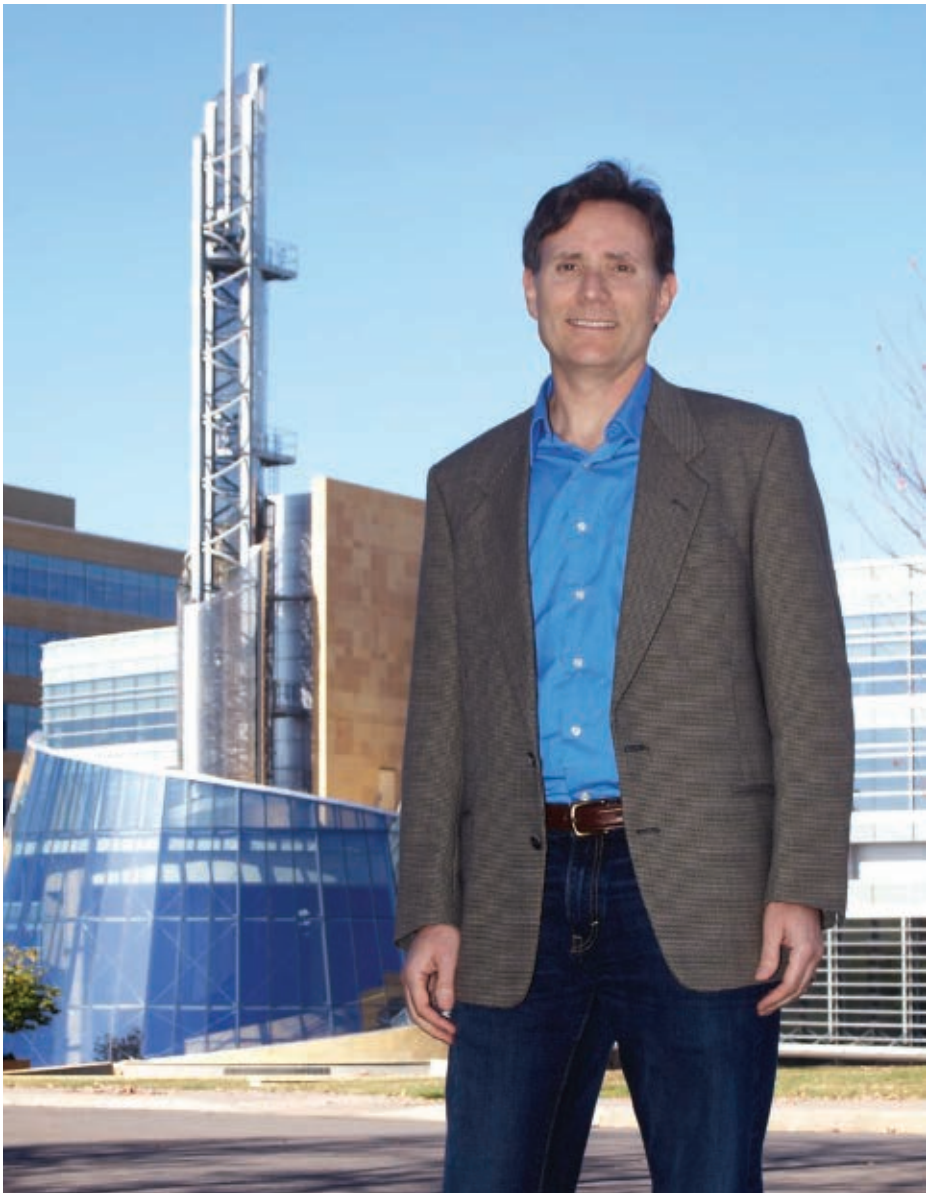
"Enterprise customers are struggling to develop more-comprehensive cloud management strategies that go beyond today's self-service provisioning and VM [virtual machine] control projects," says Tim Grieser, program vice president, enterprise system management software, at IDC. "Oracle has raised the bar by including mission-critical database, middleware, and application self-service provisioning and dynamic scaling in the corporate cloud management discussion. They have laid out a comprehensive cloud lifecycle approach, and—especially for those customers who deploy Oracle engineered systems or a complete Oracle technology stack—Oracle has been remarkably clear on the steps needed to plan, implement, operate, and manage clouds to derive business value from increasingly complex application deployments."

transactions and application interactions—from one management console. By adopting a proactive philosophy of prevention rather than constantly reacting to incidents, the team has reduced database incidents by 50 percent; 17 percent of problems are now identified without DBA intervention. According to Myers, fine-tuning Cerner's database assets to maximize server utilization has saved the company US$9.5 million in capital expense.

> **"Oracle Enterprise Manager plays an important role by helping us keep an eye on that vital data."**
>
> *—Tony Myers, Oracle Strategist, Cerner*

"Our service-level agreements [SLAs] call for 99.9 percent uptime, but we've been able to surpass that and achieve 99.99 percent as a direct result of Oracle Enterprise Manager," says Myers. "Our DBAs are more efficient, which has allowed us to increase our client base without increasing our head count. Oracle Enterprise Manager automates many mundane tasks, which enables us to be more proactive and to focus on new technologies that improve client services."

CernerWorks has 350 Oracle Enterprise Manager users—50 of whom are external and access the management software as a cloud service. According to Myers, many of these users are intrigued by Oracle Enterprise Manager 12c, which he says will allow them "to analyze the data more closely and conduct deeper analysis" than they can do with Oracle Enterprise Manager 11g. "If the database hangs, previously you couldn't connect to it, but Oracle Enterprise Manager 12c lets you go around the database and access the data that's necessary to continue the analysis," he adds. "That's phenomenal."



Tony Myers, Oracle strategist for Cerner's CernerWorks hosting facility, says a proactive philosophy of prevention rather than constantly reacting to incidents has resulted in a 50 percent reduction in database incidents and 17 percent of problems being identified without DBA intervention.

WILBORN & ASSOCIATES

AN EVOLVING STANDARD

As vice president, technology, Strategic Database Services, at Epsilon, Jeff White values Oracle Enterprise Manager for its standard processes, procedures, and consolidated interface. "We looked at other solutions, but for integrated monitoring, configuration, and management, Oracle Enterprise Manager was the best," he states. "The majority of DBAs are familiar with Oracle Enterprise Manager, and we heavily utilize templates to standardize common tasks and actions. This standardization allows us to save time that we would have spent writing, maintaining, and deploying scripts, so we can focus on higher-value tasks that provide ROI such as application system performance and tuning that enhances the customer experience."

Epsilon offers a broad array of data-driven, multichannel marketing solutions that help brands deepen their relationships with customers. White's group develops and manages customer loyalty programs, which

Jeff White, vice president, technology, Strategic Database Services, at Epsilon, says his company uses Oracle Enterprise Manager and Oracle Exadata to provide real-time support for tens of thousands of point-of-sale terminals at a large U.S. retailer.

PAUL S. HOWELL

generate large amounts of data that require transaction processing, tracking, configuring, offer/content targeting, personalization, logging, and campaign execution. With many of its information systems seeing 40 percent growth year over year and increased demand for real-time reporting and conversation with end users, Epsilon decided to deploy an Oracle Exadata Database Machine to meet strict performance and availability requirements for some of its client programs.

"Client needs for real-time data and near-real-time reports are in high demand and growing," says White. "We deliver highly available and performing marketing solutions that adhere to strict SLAs that govern the customer experience."

White and his team used to spend considerable time architecting, configuring, and deploying high-performance computing systems. "We decided to purchase Oracle Exadata because we wanted an integrated server, storage, and network solution, so we would not have to manually select, configure, and validate hardware and software configurations," he notes.

Today Epsilon uses Oracle Enterprise Manager and Oracle Exadata to support a large U.S. retailer, including providing real-time support for tens of thousands of point-of-sale terminals, resulting in peak loads exceeding 500 Web service calls per second and reaching 200,000 IOPS [input/output operations per second]. Each Web service call can include tens to hundreds of transactions, yet these transactions average between 10 and 150 milliseconds, meeting the stringent expectations of true real-time data processing. White's team closely monitors these information systems to ensure that they are online, up to date, and meeting customer requirements.

Oracle Enterprise Manager 11*g* gives Epsilon a cohesive view of all Oracle Exadata components, either individually or in a consolidated snapshot. System administrators rely on this centralized management insight to monitor many database systems and attributes, eliminating "shadow management consoles" for independent database servers. Administrators throughout the company now have a common management interface for the entire Oracle-based infrastructure.

According to Tim Grieser, program vice president, enterprise system management software, at International Data Corporation (IDC), the latest Oracle Enterprise Manager release is optimized to support highly integrated "full stack" Oracle environments and engineered systems. "While Oracle Enterprise Manager 12*c* can be used to coordinate the provisioning of third-party infrastructure and hypervisors supporting Oracle databases, applications, and middleware, customers can anticipate the greatest cost savings, performance improvements, and productivity increases by implementing Oracle Enterprise Manager 12*c* to manage full-stack Oracle environments," he says.

Epsilon's IT team is looking forward to implementing Oracle Enterprise Manager 12*c* in this context. White is particularly interested in the product's enhanced management capabilities for Oracle engineered systems. "Oracle Enterprise Manager 12*c* monitors an entire Oracle Exadata or Oracle Exalogic system, with performance and monitoring views for all hardware and software components," he says. "For example, built-in schematics let you visualize all the ports in the InfiniBand switches. That makes it easier to monitor the load and isolate throughput or latency issues." He also looks forward to using Oracle Enterprise Manager's Active Session History analytics capabilities to slice and dice tuning metrics via a GUI.

According to Oracle's Sarwal, Active Session History analytics is just one of more than 200 new features and 500 enhancements in Oracle Enterprise Manager 12*c*, many of which Oracle created in response to specific requests from customers. "Oracle Enterprise Manager 12*c* is a transformative product," he says. "It helps you do everything, from creating a cloud to deploying it and charging back for usage, along with capacity planning, self-service provisioning, and management and monitoring of all the underlying components. Oracle Enterprise Manager 12*c* enables organizations to view cloud resources as meaningful business services rather than isolated IT components." ◀

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ORACLE JDEVELOPER and ORACLE APPLICATION DEVELOPMENT FRAMEWORK

Security for Everyone

Protect your Oracle ADF applications from unauthorized access using the Oracle ADF Security feature.

Historically, Java EE developers have used container-managed security and Java Authentication and Authorization Service (JAAS) to implement security in their applications. For implementing security in Oracle Application Development Framework (Oracle ADF) and Oracle Fusion Middleware applications, however, Oracle provides Oracle platform security services, an integrated security environment that builds on the underlying Java EE standards and is portable across application servers.

The Oracle ADF Security feature provides a declarative and visual development environment for building Oracle platform security services–based security into Oracle ADF applications. Together, Oracle ADF Security and Oracle platform security services enable developers to focus more on *what* needs to be protected than on *how* it should be protected.

This article introduces Oracle ADF Security and shows how developers can use it to implement security within their enterprise Oracle ADF applications.

INTRODUCING ORACLE ADF SECURITY AND ORACLE PLATFORM SECURITY SERVICES

Three key concepts are critical in understanding Oracle ADF Security and Oracle platform security services: *user identities*, *enterprise roles*, and *application roles*.

User identities define users in an enterprise. Users—such as company employees—usually have a single username/password pair they use to authenticate themselves to applications within an organization. A user identity defines only who the user is—it does not define any access privileges.

To ease system deployment, administrators often organize users into enterprise roles, which provide a way to manage groups of users who have similar requirements when accessing enterprise resources. For example, employees may all be grouped into an enterprise role called Employees to give them access to all employee self-service applications within an enterprise. From an administrative point of view, it is easier to add users to or remove them from an enterprise role than to maintain individual user grants for an application.

Application roles are specific to an application and are used to grant privileges to users defined in enterprise roles. Application roles make it possible for all users who belong to an enterprise role (such as Employees) to have specific access privileges defined for various applications. For users within an enterprise role to work within an application, application roles must be granted to the enterprise role. Application roles can be granted directly to users, but this practice is rare and is not considered good programming design.

Figure 1 shows the Oracle platform security services architecture, both at design time in Oracle JDeveloper and at runtime in Oracle WebLogic Server. At design time, user identities, enterprise roles, and security policies are defined in a local file called **jazn-data.xml**. It is located in the src\META-INF directory of the application root folder on the file system.

For testing applications by using Oracle WebLogic Server integrated with Oracle JDeveloper, security policies defined in **jazn-data.xml** are copied into the **system-jazn-data.xml** policy file in the config\fmwconfig directory of the target Oracle WebLogic Server domain. In this scenario, user identities and enterprise roles defined in the **jazn-data.xml** file are deployed to the integrated Oracle WebLogic Server in Oracle JDeveloper.

In a production environment, user identities and enterprise roles defined in the application **jazn-data.xml** file generally cannot be deployed to Oracle WebLogic Server instances. On a production server, user authentication is instead performed with the identity management system set up for the enterprise. Typical mechanisms include LDAP, RDBMS, Oracle Internet Directory, and Microsoft's Active Directory.

SAMPLE APPLICATION OVERVIEW

This article walks through a sample application designed to show how Oracle ADF Security and Oracle platform security services work. You can download this application, containing configuration and code examples for you to explore at design time and

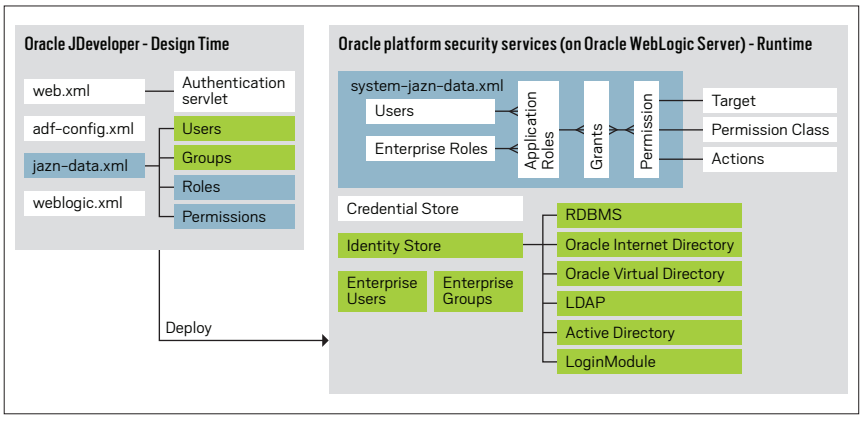

Figure 1: Oracle ADF Security design time and runtime architecture

runtime, at oracle.com/technetwork/issue-archive/2011/12-jan/o12adf-524995.zip.

To get started, make sure you have an Oracle Database instance installed and running, with the HR schema unlocked. Then unzip the **o12adf-524995.zip** file into a directory on your local machine. Next, launch Oracle JDeveloper 11*g* Release 2, select **File -> Open**, and navigate to the directory where you unzipped the sample application. In the OramagAdfSecurity folder, select the **OramagAdfSecurity.jws** file and click **Open**.

The sample application contains three projects: EmployeeEdit, Model, and ViewController. The Model project contains a business service, based on Oracle ADF's Business Components feature, that queries the Departments and Employees tables in the HR schema.

The EmployeeEdit project defines a single bounded task flow, edit-employees-flow-btfsdc, that edits a selected employee record. Because it is designed as a reusable task flow deployed in an Oracle ADF library, this project would usually be created in a separate Oracle JDeveloper workspace. For this simple demo, however, it is part of the OramagAdfSecurity.jws workspace.

The ViewController project references the edit-employees-flow-btfsdc task flow described above. To see this reference, double-click the **ViewController** project node and expand the **Libraries and Classpath** node in the dialog box that appears. Select **ADF Library**, and click **Edit** to see the ADF Library reference and understand how to authorize application content located in ADF Library files.

Before running the sample application, change the database configuration to point to an accessible HR database schema. In Oracle JDeveloper, select **View -> Database -> Database Navigator**. Expand the **OramagAdfSecurity** node, right-click the **hrconn** node, and choose **Properties** from the context menu to edit the database connection information. Close the configuration dialog box by clicking **OK** after applying the changes.

Run the sample application by opening the Oracle JDeveloper Application Navigator. Expand the **ViewController** project node, and select the **Home.jsf** page from the Web Content folder. Right-click **Home.jsf**, and select **Run** from the context menu. (If this is the first time you have run an application in Oracle JDeveloper and you see a Create Default Domain dialog box asking you to create the Oracle WebLogic Server domain, fill out the form fields and click **OK**.)

Figure 2 shows the running application. Click the application **Login** link, and try authenticating as sking (HR manager), ahunold (Manager), and dfaviet (Employee). The password for all three accounts is welcome1.

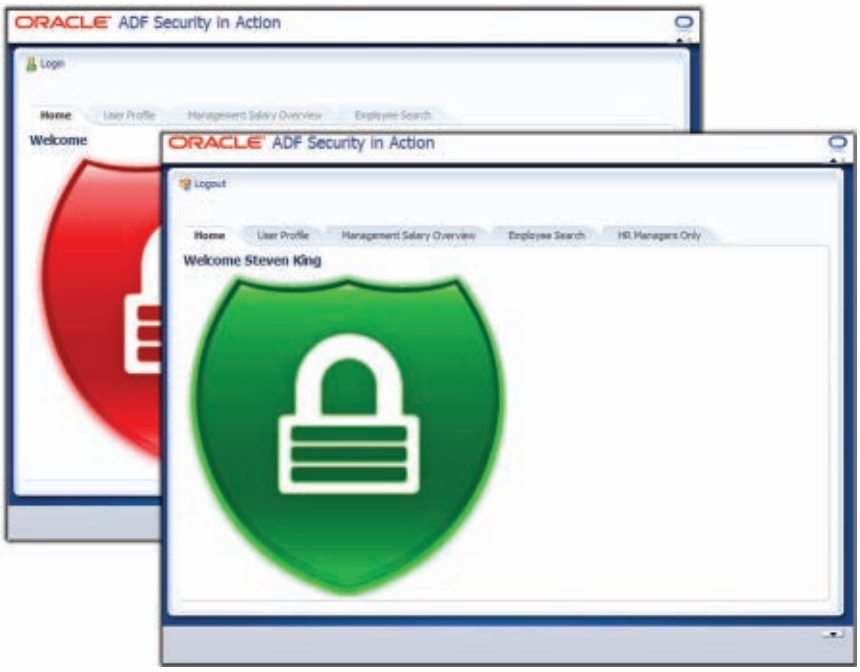

Figure 2: Oracle ADF Security sample application

The sample application enforces the following security rules for the different users:

- The **Home** tab is public and accessible by all (the home page is granted to the anonymous role).
- Other tabs only require the user to be authenticated (security expression language [EL] is used on the panel tabs to check the user's authentication status).
- The **User Profile** tab enables managers to create new reporting employees (security EL is used on the command button to check if the user is in a manager role).
- Only HR managers are allowed to change the employee salary for existing employees (entity security is defined in Oracle ADF Business Components).
- All managers can define the salary of new employee records (custom permission is created in **jazn-data.xml** and programmatically checked inside the Employees entity class).
- The **Management Salary Overview** tab is enabled for managers (security EL is used on the panel tabs to check the user's authentication status).
- The **Employee Search** tab allows all users to search for employee records. Only HR managers are allowed to edit employees in this context (EL is used on a command button and the train stop definition of the edit-employees-flow-btfsdc task flow call activity in the browse-employees-btf task flow).
- A hidden tab, **HR Managers Only**, is read-only for all managers except HR Managers, for whom it is enabled (EL is used on the tab component to check a custom resource permission).

After a user has been successfully authenticated, the **Login** link changes to a **Logout** link to allow logout and login as a different user.

ENABLING ORACLE ADF SECURITY

By digging deeper inside the sample Oracle ADF application, you can see how the security rule definitions described above are implemented for the three defined user accounts.

The first step in securing an application is to enable Oracle ADF Security. In the OramagAdfSecurity project, select **Application -> Secure -> Configure ADF Security** to open the Oracle ADF Security wizard. This wizard is re-entrant, so you can safely open it and browse security settings without worrying about losing data.

The first dialog box in the configuration wizard enables you to define the type of security you want. The **ADF Authentication and Authorization** option, used in the sample application, enables you to configure login information as well as access to specific application features. Another option, **ADF Authentication**, is for controlling only who can access the application (via a login dialog box when a user requests access to the application). The **Remove ADF Security Configuration** option does not delete any existing policy definitions, but it disables the enforcement of Oracle ADF Security. This option can be useful for allowing application testing while temporarily disabling security.

The next dialog box, Select Authentication Type, is where you define the type of authentication to use (such as form-based or basic). The authentication mechanism you choose depends on whether you want to provide your own login form or if you want to use client browser certificates for authentication.

The sample application uses basic authentication, which performs programmatic authentication leveraging a specific Oracle WebLogic Server–proprietary API. If you select form-based authentication instead, Oracle JDeveloper will generate a login form for you. The login form, built in HTML, is configured in the **web.xml** file of your Web project.

The next dialog box, Enable Automatic Policy Grants, enables you to define how to protect existing resources, views, and task flows in your project.

For large projects, you would ideally choose the **No Automatic Grants** option, which basically locks the application down until you explicitly grant access permissions to application roles and then map those application roles to users and enterprise roles defined in the **jazn-data.xml** file.

Alternatively, the **Grant to Existing Objects Only** option enables authentication and authorization for an Oracle ADF application while ensuring that the application remains accessible to everyone. Use this option to enable security for an existing application without interrupting the current development process. With this option, pages and task flows created after security is enabled are not accessible, by default. To make them accessible, you need to explicitly grant them to application roles defined in the application.

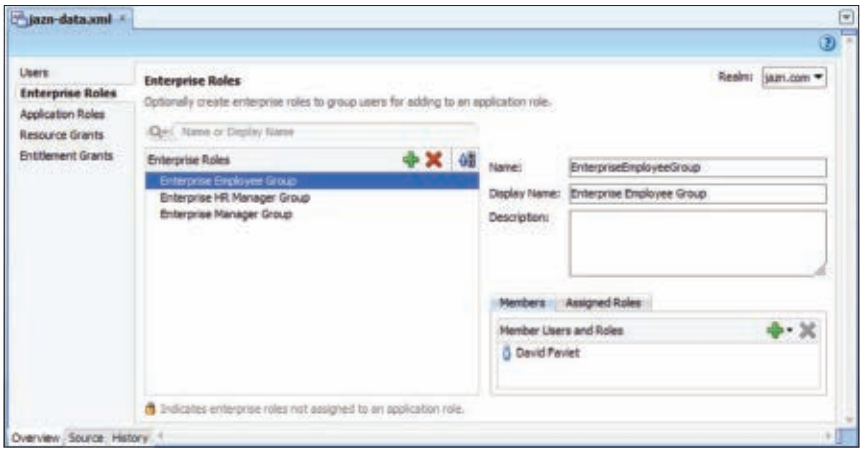

Figure 3: To create enterprise roles, click the Enterprise Roles tab.

The **Grant to All Objects** option is similar to **Grant to Existing Objects Only**, except that it also grants all users access to new pages and task flows created after security is enabled. Use this option to add security to an application for which you don't have any application roles or user identities defined.

The next wizard dialog box, Specify Authentication Welcome Page, is where you define a landing pad—a page to which all authenticated users are redirected after login. If this option is not set, the redirect will go to the protected view that triggered the authentication process.

When you are done, click **Finish** to close the Specify Authentication Welcome Page dialog box and the Oracle ADF Security wizard.

CREATING USERS, ENTERPRISE ROLES, AND APPLICATION ROLES

Before building authorization into Oracle ADF applications, you need to create users, enterprise roles, and application roles for testing. Oracle JDeveloper provides a declarative configuration console where you can easily create users and enterprise roles that simulate identities as they would exist in the identity management system in a production environment.

Application roles in Oracle ADF Security are specific to an application and decouple security grants from identities. Upon deployment, application roles are copied to the policy store. Although you can grant permissions to users and enterprise roles directly, it is not recommended—you should use application roles instead.

To create users and enterprise roles, select **Application -> Secure -> Users**. If you do this for the sample application, you will see user accounts for Steven King, Alexander Hunold, and David Faviet.

Next, select the **Enterprise Roles** tab, as shown in Figure 3.

The sample application has three enterprise roles defined: Enterprise Employee Group, Enterprise HR Manager Group, and Enterprise Manager Group. Individual user identities can be assigned to one or many roles.

Select the **Application Roles** tab to create application roles to which you will later grant resource permissions. Application roles are mapped to users and enterprise roles available on the target server. (The sample application has three application roles defined.)

ENABLING SECURITY IN ORACLE ADF BUSINESS COMPONENTS

When you enable Oracle ADF Security for an application, the change does not immediately affect Oracle ADF Business Components. To enforce authorization on an Oracle ADF Business Component entity

or entity attribute, locate the entity in the Oracle JDeveloper Application Navigator and right-click it. In the sample application, entity security is defined on the **Employees** entity, which can be found in the Model project in **Application Sources** -> **adf.sample.model** -> **model** -> **entities**.

To view entity security options in the sample application, right-click the **Employees** entity and select **Open Employees** to open the entity editor. In the editor, expand the **Security** node of the General category and select the entity actions on which you want to enforce framework security. Oracle ADF Business Component entities can be protected for read, update, and removal.

To secure entity attributes, select an attribute in the Attributes section of the entity editor and select the **Security** tab. Attributes can be protected against update. When this option is enabled, only authorized users can see editable input fields in the user interface for the selected attribute.

In the sample application, the **Employees** entity's security configuration is set up so that only HR managers can change the salary of an existing employee. You can test this configuration by running the application and testing the **User Profile** tab after being authenticated as both ahunold and sking.

Note that although the steps described above enable entity security in Oracle ADF Business Components, they don't define which specific roles are authorized for access. The next step shows how these security policies are defined.

DEFINING SECURITY POLICIES

A security policy is a rule that defines the users who can access a resource, along with the actions they can perform on it. Technically, policies associate access permissions with application roles by using a GRANT statement.

At runtime, security policies are enforced on a resource by Oracle ADF or programmatically in the application with either specialized EL or Java.

Enabling Oracle ADF Security for an application immediately secures application pages in all unbounded and bounded task flows. The protection of other resources such as Oracle ADF Business Component entities, entity attributes, and custom resources such as menu items and Java methods in Oracle ADF is optional but recommended.

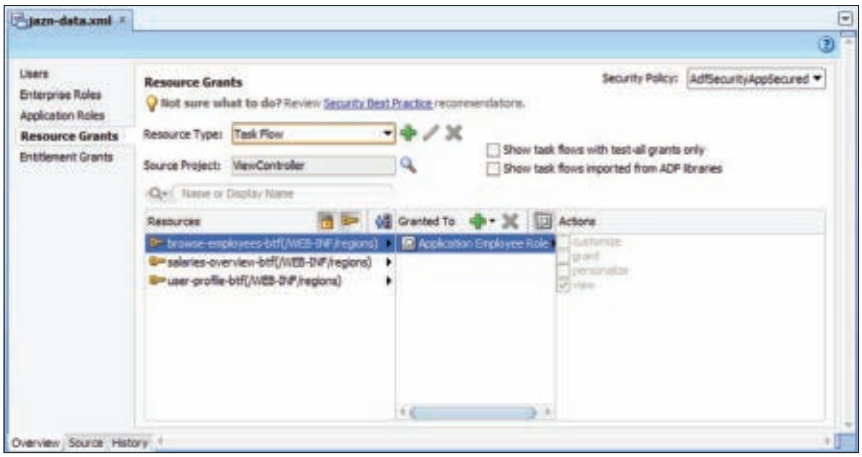

Figure 4: To edit resource grants, click the Resource Grants tab.

Pages and page fragments contained in bounded task flows are not separately checked for security but, rather, run under the protection defined for the bounded task flow. If a page or a page fragment in a bounded task flow requires extra security to be enforced by the framework, you can enable this declaratively by moving the page or the page fragment into its own task flow or by issuing a manual permission check, using Oracle ADF security expressions or Java.

An example of a manual permission check is a router activity in a task flow that navigates to different views, depending on user-granted permissions. The next section ("Using Security Expressions") shows how to use security expressions to manually protect views and controller activities.

Oracle ADF Security provides a visual and declarative environment to enable developers to define security policies in the **jazn-data.xml** file. To open the Oracle ADF Security policy editor (as shown in Figure 4), select **Application** -> **Secure** -> **Resource Grants**.

The **Resource Type** and **Source Project** fields are where you select the type of resource and a project filter, and Oracle JDeveloper lists all available resources used in the application that meet these criteria. For example, Figure 4 shows all the task flow resources available in the ViewController project. If you also want to see task flows contained in Oracle ADF libraries (such as edit-employees-flow-btfsdc in the provided sample application), check the **Show task flows imported from ADF libraries** checkbox. For a selected task flow resource, use the green plus (**+**) icon to grant access to users, enterprise roles, application roles, or code sources. Note that for task flows and page views, you can grant only the "view" action. Grants of other actions listed for task flows are enforced only with Oracle WebLogic.

Among the other framework-provided resource types are ADF Entity Object, ADF Entity Object Attribute, Web Page, and custom resource permissions. You can use custom resource permissions to perform manual security checks for user access to menus, tabs, or custom application functionality. To create new resource permissions, click the green plus (**+**) icon next to the **Resource Type** field.

A custom resource permission is defined by a name, a permission class, and a list of actions that can be performed on it. For example, the sample application uses a custom permission named InsertEntityAttribute to define the user privilege to update an attribute while a row is new. The custom permission uses the oracle.security.jps.ResourcePermission class at runtime and has a single action—"insert"—defined. The InsertEntityAttribute resource permission is checked programmatically with Java in the isAttributeUpdateable method contained in the adf.sample.model.entities.EmployeesImpl class of the Model project. With the InsertEntityAttribute permission in the sample application, managers such as ahunold can update a salary only

when an employee record is newly created.

Another custom resource permission in the sample application is PanelTabProtection, which Oracle ADF Security EL checks in the rendered attribute of the af:showDetail item component that represents the **HR Managers Only** tab.

In the Security Policy editor, the **Entitlement Grants** tab enables you to group resources that have the same access protection requirements to be granted in a single grant statement. The concept of entitlements in Oracle ADF Security simplifies security administration, because you don't need to grant access to individual resources. Instead, you can perform grants by using a single bulk statement.

The sample application has a single Public Task Flows entitlement defined, which references all task flows accessible to all employees.

To create new entitlements in your custom project, click the green plus (**+**) icon next to the Entitlements header and define a name for the new security group. Then click the green plus (**+**) icon on the **Resources** tab to choose the resources to combine in this entitlement. When selecting a resource type in the Select Resources dialog box, ensure that the **Resource Projects** field contains the name of the project that holds the resource. If a project is not shown, use the magnifier icon to add it to the list of projects.

In Oracle JDeveloper 11*g* Release 2, entitlements can contain only resources that are defined in application projects. To secure resources stored in Oracle ADF libraries, use the **Resource Grants** option. After defining the resources in an entitlement, you select the resource action to be granted to an application role. To grant an entitlement to an application role, select the **Grants** tab and click the green plus (**+**) icon to choose one or many application roles.

USING SECURITY EXPRESSIONS

For checking security in the user interface or in the Oracle ADF binding layer, Oracle ADF provides the following set of specialized security expressions:

- #{securityContext.authenticated}
- #{securityContext.userName}
- #{securityContext.userInRole['roleList']}
- #{securityContext.userInAllRoles['roleList']}
- #{securityContext.taskflowViewable['target']}
- #{securityContext.regionViewable['target']}
- #{securityContext.userGrantedResource['permission']}
- #{securityContext.userGrantedPermission['permission']}

To add a security expression to a user interface component, select the component in the visual page editor and open the Property Inspector. Click the down-arrow icon to the right of the property to which you want to add the expression (such as the disabled property on an af:showDetail item on a panel tab). Choose **Expression Builder** from the context menu that appears.

In the Expression Builder, expand the **ADF Bindings** node and the **securityContext** node it contains. To get help on how to use an expression, expand the **Description** node at the bottom of the expression editor.

The sample application uses security expressions on the **Home.jsf** page to enable and disable panel tabs, based on the user authentication state and that person's role membership. The browse-employees-btf.xml task flow definition in the WEB-INF\regions folder uses security expression on the edit-employees-flow-btfsdc task flow call activity to skip the train stop for all users except HR managers.

USING JAVA FOR SECURITY

All permissions in Oracle ADF Security are represented at runtime by a Java class that can be instantiated and dynamically checked. Commonly used classes are

- oracle.security.jps.ResourcePermission, for custom resource definitions
- oracle.adf.controller.security.TaskFlowPermission, for bounded task flows
- oracle.adf.share.[...].RegionPermission, for page permissions in unbounded task flows
- oracle.adf.share.[...].EntityPermission, for entities
- oracle.adf.share.[...].EntityAttributePermission, for entity attribute permissions

The sample application checks Oracle ADF Security from Java in two places: in the **EmployeesImpl.java** file in the Model project and in the UserSearchBean.java managed bean in the ViewController project. The entity implementation class has a security check for a custom resource permission that allows managers (such as ahunold) to update employee salaries for newly created employee records. The permission check in the managed bean verifies the user privilege to access the task flow referenced by a dynamic region and returns an empty region if permission is not granted. This check is also an example of defense in depth, in that task flow security is also checked by the framework.

IN CONCLUSION

Oracle ADF Security simplifies a complex topic by abstracting JAAS authorization and Java EE authentication. With Oracle ADF, you use visual editors to protect the resources you care about the most and enforce security configurations. You can also use security expression language or Java in applications to verify user access rights. With all the simplicity added, the most important thing to be aware of is that applying security to an application is a journey and not a destination. ◀

Frank Nimphius is a senior principal product manager for Oracle JDeveloper and Oracle Application Development Framework. He is a coauthor of *Oracle Fusion Developer Guide: Building Rich Internet Applications with Oracle ADF Business Components and Oracle ADF Faces* (McGraw-Hill, 2010).

NEXT STEPS

READ more about Oracle ADF

Oracle Fusion Middleware Fusion Developer's Guide for Oracle Application Development Framework 11g Release 2 (11.1.2.0.0)
download.oracle.com/docs/cd/E16162_01/web.1112/e16182/reusing_components.htm

Oracle ADF Security

Oracle Fusion Middleware Fusion Developer's Guide for Oracle Application Development Framework 11g Release 2 (11.1.2.0.0), Chapter 35: "Enabling ADF Security in a Fusion Web Application"
download.oracle.com/docs/cd/E16162_01/web.1112/e16182/adding_security.htm

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Working with Dates in PL/SQL

Part 5 in a series of articles on understanding and using PL/SQL

The previous articles in this introductory PL/SQL series focused on working with strings and numbers in PL/SQL-based applications. Without a doubt, strings and numbers are important, but it is certainly a very rare application that does not also rely on dates. You need to keep track of when events occurred, when people were born, and much more.

As a result, you will quite often need to

- Declare variables and constants for dates
- Use built-in functions to display and modify date values
- Perform computations on dates

A date is also a considerably more complex datatype than a string or a number. It has multiple parts (year, month, day, hour, and so on), and there are many rules about what constitutes a valid date. This article gives you all the information you need in order to begin working with dates in your PL/SQL programs.

DATES, TIME STAMPS, AND INTERVALS IN PL/SQL

Most applications require the storage and manipulation of dates and times. Unlike strings and numbers, dates are quite complicated: not only are they highly formatted data, but there are also many rules for determining valid values and valid calculations (leap days and years, daylight saving time changes, national and company holidays, date ranges, and so on).

Fortunately, Oracle Database and PL/SQL provide a set of true date and time datatypes that store both date and time information in a standard internal format, and they also have an extensive set of built-in functions for manipulating the date and time.

There are three datatypes you can use to work with dates and times:

- DATE—This datatype stores a date and a time, resolved to the second. It does not include the time zone. DATE is the oldest and most commonly used datatype for working with dates in Oracle applications.
- TIMESTAMP—Time stamps are similar to dates, but with these two key distinctions: (1) you can store and manipulate times resolved to the nearest *billionth* of a second (9 decimal places of precision), and (2) you can associate a time zone with a time stamp, and Oracle Database will take that time zone into account when manipulating the time stamp.
- INTERVAL—Whereas DATE and TIMESTAMP record a specific point in time, INTERVAL records and computes a time *duration*. You can specify an interval in terms of years and months, or days and seconds.

Listing 1 includes example variables whose declaration is based on these datatypes.

Working with intervals and time stamps with time zones can be very complicated; relatively few developers will need these more advanced features. This article focuses on the core DATE and TIMESTAMP types, along with the most commonly used built-in functions.

Choosing a datatype. With such an abundance of riches, how do you decide which of these date-and-time datatypes to use? Here are some guidelines:

- Use one of the TIMESTAMP types if you need to track time down to a fraction of a second.
- You can, in general, use TIMESTAMP in place of DATE. A time stamp that does not contain subsecond precision takes up 7 bytes of storage, just as a DATE datatype does. When your time stamp does contain subsecond data, it takes up 11 bytes of storage.
- Use TIMESTAMP WITH TIME ZONE if you need to keep track of the session time zone in which the data was entered.
- Use TIMESTAMP WITH LOCAL TIME ZONE if you want the database to automatically convert a time between the database and session time zones.
- Use DATE when it's necessary to maintain compatibility with an existing application written before any of the TIMESTAMP datatypes were introduced.
- Use datatypes in your PL/SQL code that correspond to, or are at least compatible with, the underlying database tables. Think twice, for example, before reading a TIMESTAMP value from a table into a DATE variable, because you might lose information (in this case, the fractional seconds and perhaps the time zone).

Getting the current date and time. PL/SQL developers often need to retrieve and work with the current date and time. Most developers use the classic SYSDATE function, but

Code Listing 1: Declaring DATE, TIMESTAMP, and INTERVAL variables

```
DECLARE
   l_today_date        DATE := SYSDATE;
   l_today_timestamp   TIMESTAMP := SYSTIMESTAMP;
   l_today_timetzone   TIMESTAMP WITH TIME ZONE := SYSTIMESTAMP;
   l_interval1         INTERVAL YEAR (4) TO MONTH := '2011-11';
   l_interval2         INTERVAL DAY (2) TO SECOND := '15 00:30:44';
BEGIN
   null;
END;
```

I-HUA CHEN

Oracle Database now offers several functions to provide variations of this information, as shown in Table 1.

Listing 2 displays the values returned by calls to SYSDATE and SYSTIMESTAMP.

Because I have passed dates and time stamps to DBMS_OUTPUT.PUT_LINE, Oracle Database implicitly converts them to strings, using the default format masks for the database or the session (as specified by the National Language Settings NLS_DATE_FORMAT parameter). A default installation of Oracle Database sets the default DATE format to DD-MON-YYYY. The default TIMESTAMP format includes both the date offset and the time zone offset.

Note that it is possible to perform date arithmetic: I subtract the value returned by SYSTIMESTAMP from the value returned by SYSDATE. The result is an *interval* that is *very close* (but not quite equal) to zero.

Converting dates to strings and strings to dates. As with TO_CHAR for numbers, you use another version of the TO_CHAR function to convert a date or a time stamp to a string. And, again as with numbers, Oracle Database offers a large set of format elements to help you tweak that string so it appears exactly as you need it. Here are some examples:

1. Use TO_CHAR without a format mask. If you do not include a format mask, the string returned by TO_CHAR will be the same as that returned when Oracle Database performs an implicit conversion:

```
BEGIN
   DBMS_OUTPUT.put_line (
     TO_CHAR (SYSDATE));
   DBMS_OUTPUT.put_line (
     TO_CHAR (SYSTIMESTAMP));
END;
/
07-AUG-11
07-AUG-11 08.55.00.470000000 AM -05:00
```

2. Use TO_CHAR to display the full names of both the day and the month in the date:

```
BEGIN
   DBMS_OUTPUT.put_line (
TO_CHAR (SYSDATE,
'Day, DDth Month YYYY'));
END;
/
Sunday    , 07TH August     2011
```

Note: The language used to display these names is determined by the NLS_DATE_LANGUAGE setting, which can also be specified as the third argument in the call to TO_CHAR, as in

```
BEGIN
  DBMS_OUTPUT.put_line (
    TO_CHAR (SYSDATE,
'Day, DDth Month YYYY',
'NLS_DATE_LANGUAGE=Spanish'));
END;
/
Domingo   , 07TH Agosto     2011
```

3. Use TO_CHAR to display the full names of both the day and the month in the date—but without all those extra spaces in the date-as-string. Oracle Database, by default, pads the string with spaces to match the maximum length of the day or the month. In most situations, you don't want to include that extra text, and Oracle Database offers a format element modifier, FM, to control blank and zero padding. In the following block, I prefix the format mask with FM and remove the 0 (before 7) and extra spaces after August:

```
BEGIN
  DBMS_OUTPUT.put_line (
     TO_CHAR (SYSDATE,
'FMDay, DDth Month YYYY'));
END;
/
Sunday, 7TH August 2011
```

You can also use the format mask to extract just a portion of, or information about, the date, as shown in the following examples:

1. What quarter is it?

```
TO_CHAR (SYSDATE, 'Q')
```

2. What is the day of the year (1–366) for today's date?

```
TO_CHAR (SYSDATE, 'DDD')
```

3. What are the date *and time* of a DATE variable? (This is a very common requirement, because the default format mask for a date does *not* include the time component, which means that asking DBMS_OUTPUT.PUT_LINE to display a date leaves out the time.)

```
BEGIN
  DBMS_OUTPUT.put_line (
    TO_CHAR (SYSDATE,
```

Function	Time Zone	Datatype Returned
CURRENT_DATE	Session	DATE
CURRENT_TIMESTAMP	Session	TIMESTAMP WITH TIME ZONE
LOCALTIMESTAMP	Session	TIMESTAMP
SYSDATE	Database server	DATE
SYSTIMESTAMP	Database server	TIMESTAMP WITH TIME ZONE

Table 1: SYSDATE and other options for working with the current date and time

Code Listing 2: Calls to SYSDATE and SYSTIMESTAMP and the returned values

```
BEGIN
  DBMS_OUTPUT.put_line (SYSDATE);
  DBMS_OUTPUT.put_line (SYSTIMESTAMP);
  DBMS_OUTPUT.put_line (SYSDATE - SYSTIMESTAMP);
END;
/
```

Here is the output:

```
07-AUG-11
07-AUG-11 08.46.16.379000000 AM -05:00
-000000000 00:00:00.379000000
```

```
'YYYY-MM-DD HH24:MI:SS'));
END;
/
```

You can also use EXTRACT to extract and return the value of a specified element of a date. For example

1. What year is it?

```
EXTRACT (YEAR FROM SYSDATE)
```

2. What is the day for today's date?

```
EXTRACT (DAY FROM SYSDATE)
```

To convert a string to a date, use the TO_DATE or the TO_TIMESTAMP built-in function. Provide the string and Oracle Database returns a date or a time stamp, using the default format mask for the session:

```
DECLARE
  l_date   DATE;
BEGIN
  l_date := TO_DATE ('12-JAN-2011');
END;
```

If the string you provide does not match the default format, Oracle Database will raise an exception:

```
DECLARE
  l_date   DATE;
BEGIN
  l_date := TO_DATE ('January 12 2011');
END;
/

ORA-01858: a non-numeric character was
found where a numeric was expected
```

You should not assume that the literal value you provide in your call to TO_DATE

Take the Challenge!

Each PL/SQL 101 article offers a quiz to test your knowledge of the information provided in the article. The quiz questions are shown below and also at PL/SQL Challenge (plsqlchallenge.com). You can read and take the quiz here in *Oracle Magazine* and then check your answers in the next issue. If, however, you take the quiz at PL/SQL Challenge, you will be entered into a raffle to win an e-book from O'Reilly Media (oreilly.com).

Question 1
Oracle Database provides a function for returning the date of the last day of the month. It does not, however, provide a function for returning the date of the first day. Which of the following can be used to do this?

a.
```
CREATE OR REPLACE FUNCTION plch_first_day (date_in IN DATE)
   RETURN DATE
IS
BEGIN
   RETURN TRUNC (date_in);
END;
/
```

b.
```
CREATE OR REPLACE FUNCTION plch_first_day (date_in IN DATE)
   RETURN DATE
IS
BEGIN
   RETURN TRUNC (date_in, 'MM');
END;
/
```

c.
```
CREATE OR REPLACE FUNCTION plch_first_day (date_in IN DATE)
   RETURN DATE
IS
BEGIN
   RETURN TRUNC (date_in, 'MONTH');
END;
/
```

d.
```
CREATE OR REPLACE FUNCTION plch_first_day (date_in IN DATE)
   RETURN DATE
IS
BEGIN
   RETURN TO_DATE (TO_CHAR (date_in, 'YYYY-MM')
|| '-01', 'YYYY-MM-DD');
END;
/
```

Question 2
Given this declaration section:

```
DECLARE
   c_format   CONSTANT VARCHAR2 (22)
      := 'YYYY-MM-DD HH24:MI:SS' ;
   l_new_year          DATE
      := TO_DATE (
            '2012-01-02 00:00:01'
          , c_format);
```

which of the following blocks offers an exception section so that after that block is executed, the date and time 2012-01-01 00:00:01 will be displayed on the screen?

a.
```
BEGIN
   DBMS_OUTPUT.put_line (
      TO_CHAR (
         l_new_year - 24
       , c_format));
END;
```

b.
```
BEGIN
   DBMS_OUTPUT.put_line (
      TO_CHAR (l_new_year - 1
             , c_format));
END;
```

c.
```
BEGIN
   DBMS_OUTPUT.put_line (
      TO_CHAR (
           l_new_year
         - 24 * 60 * 60
       , c_format));
END;
```

d.
```
BEGIN
   DBMS_OUTPUT.put_line (
      TO_CHAR (
           TRUNC (l_new_year)
         - 1
         + 1 / (24 * 60 * 60)
       , c_format));
END;
```

matches the default format. What if the format changes over time? Instead, always provide a format mask when converting strings to dates, as in

```
l_date := TO_DATE ('January 12 2011',
'Month DD YYYY');
```

Date truncation. Use the TRUNC built-in function to truncate a date to the specified unit of measure. The most common use of TRUNC is TRUNC (date)—without any format mask specified. In this case, TRUNC simply sets the time to 00:00:00. You can also use TRUNC to easily obtain the first day in a specified period. Here are some TRUNC examples:

1. Set l_date to today's date, but with the time set to 00:00:00:

```
l_date := TRUNC (SYSDATE);
```

2. Get the first day of the month for the specified date:

```
l_date := TRUNC (SYSDATE, 'MM');
```

3. Get the first day of the quarter for the specified date:

```
l_date := TRUNC (SYSDATE, 'Q');
```

4. Get the first day of the year for the specified date:

```
l_date := TRUNC (SYSDATE, 'Y');
```

Date arithmetic. Oracle Database enables you to perform arithmetic operations on dates and time stamps in several ways:

- Add a numeric value to or subtract it from a date, as in SYSDATE + 7; Oracle Database treats the number as the number of days.
- Add one date to or subtract it from another, as in l_hiredate - SYSDATE.
- Use a built-in function to "move" a date by a specified number of months or to another date in a week.

Here are some examples of date arithmetic with a date and a number (assume in all cases that the l_date variable has been declared as DATE):

1. Set a local variable to tomorrow's date:

```
l_date := SYSDATE + 1;
```

2. Move back one hour:

```
l_date := SYSDATE - 1/24;
```

3. Move ahead 10 seconds:

```
l_date := SYSDATE + 10 / (60 * 60 *
24);
```

When you add one date to or subtract it from another, the result is the number of days between the two. As a result, executing this block:

```
DECLARE
   l_date1   DATE := SYSDATE;
   l_date2   DATE := SYSDATE + 10;
BEGIN
   DBMS_OUTPUT.put_line (
      l_date2 - l_date1);
   DBMS_OUTPUT.put_line (
      l_date1 - l_date2);
END;
```

returns the following output:

```
10
-10
```

And the following function can be used to compute the age of a person, assuming that the person's correct birth date is passed as the function's only argument:

```
CREATE OR REPLACE FUNCTION
your_age (birthdate_in IN DATE)
   RETURN NUMBER
IS
BEGIN
   RETURN SYSDATE -
          birthdate_in;
END your_age;
```

Oracle Database offers several built-in functions for shifting a date by the requested amount or finding a date:

- ADD_MONTHS—adds the specified number of months to or subtracts it from a date (or a time stamp)
- NEXT_DAY—returns the date of the first weekday named in the call to the function
- LAST_DAY—returns the date of the last day of the month of the specified date

Here are some examples that use these built-in functions:

1. Move ahead one month:

```
l_date := ADD_MONTHS (SYSDATE, 1);
```

2. Move backward three months:

Code Listing 3: Calls to ADD_MONTHS

```
BEGIN
   DBMS_OUTPUT.put_line (
      ADD_MONTHS (TO_DATE ('31-jan-2011', 'DD-MON-YYYY'), 1));
   DBMS_OUTPUT.put_line (
      ADD_MONTHS (TO_DATE ('27-feb-2011', 'DD-MON-YYYY'), -1));
   DBMS_OUTPUT.put_line (
      ADD_MONTHS (TO_DATE ('28-feb-2011', 'DD-MON-YYYY'), -1));
END;
```

Here is the output:

```
28-FEB-11
27-JAN-11
31-JAN-11
```

Answers to the Challenge

Here are the answers to the PL/SQL Challenge questions in last issue's "Working with Numbers in PL/SQL" article:

Answer 1: The plch_ceil_and_floor function always returns either 1 or 0: 0 if the number passed to the function is an integer, 1 otherwise.

Answer 2: (a) and (b) are correct; (c) is incorrect.

For full explanations of both of these answers, visit plsqlchallenge.com, register or log in, and click the **Closed/Taken** tab in Play a Quiz, or go to bit.ly/r1SwvP.

```
l_date := ADD_MONTHS (SYSDATE, -3);
```

3. Starting with the last day of January, move ahead one month. Starting from a different date, go back one month. Starting with the last day of February, go back one month. Listing 3 shows three different calls to the ADD_MONTHS function along with the results.

You might be surprised at the third date in Listing 3. The first date (28 February) makes perfect sense. There is no 31st day in February, so Oracle Database returns the last day of the month. The second call to ADD_MONTHS moves the date from 27 February to 27 January: exactly one month's change. But in the third call to ADD_MONTHS, Oracle Database notices that 28 February is the last day of the month, so it returns the last day of the month specified by the second argument.

4. Find the next Saturday after today's date:

```
l_date := NEXT_DAY (SYSDATE, 'SAT');
-- or
l_date := NEXT_DAY (SYSDATE,
'SATURDAY');
```

The second argument must be a day of the week in the date language of your session (specified by NLS_DATE_LANGUAGE), provided as either the full name or the abbreviation. The returned date has the same time component as the date.

BAD THINGS HAPPEN—EVEN IN GOOD PROGRAMS

Now that you have a solid foundation in working with key datatypes such as strings, numbers, and dates, I will switch focus in the next article of this series to an in-depth introduction to exceptions: how they can be raised and how you can handle them. ◀

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ORACLE DATABASE 11*g*

On History, Basics, and Network Performance

Our technologist recalls a Web seminar, gives the right hint, and dishes on network performance.

I recently delivered an online Web seminar on Oracle Database security. At the end of the seminar, I took questions from the audience. There were many participants—a lot of questions on Oracle Total Recall—and when it was done, many unanswered questions.

Until now. The unanswered questions were forwarded to me, and I'll be addressing them here in this column. But before I begin, here's a quick overview of what Oracle Total Recall is and does.

HOW ORACLE TOTAL RECALL WORKS

The purpose of Oracle Total Recall is to provide long-term flashback query capability—the flashback query can go many days, weeks, months, or even years into the past. Syntactically, an Oracle Total Recall query looks no different than a standard flashback query. It uses the AS OF and VERSIONS BETWEEN syntax in the FROM list. But under the covers, it operates very differently.

When flashback query was first introduced in Oracle9*i* Database, I heard from many developers asking if this new database feature could be used to replace their own custom audit trails. The developers had developed custom triggers that would save the :OLD records in an audit trail, and this approach enabled them to reconstruct the data their tables contained at any prior point in time. The problem with this implementation was twofold. First, coding the query to retrieve the point-in-time data was nontrivial; it required a UNION ALL between the current table and the history table and a messy, complex WHERE clause to get the right version of a row. Second, it necessarily made the original UPDATE and DELETE transactions at least twice as big datawise as they were before the addition of these custom triggers, which resulted in increased response time for the end users. So, the developers were motivated to find another approach that was less intrusive and easier to implement.

The purpose of Oracle Total Recall is to provide long-term flashback query capability.

When they asked, "Can we use flashback query instead of our own custom audit trails," the answer was simply, "No." There were a few technical reasons why that was the answer. The first was that flashback query is based on UNDO, so to execute a flashback query on the data as of five hours ago, you would have to have all of the UNDO generated in the last five hours available online. Likewise, to execute a flashback query on the data as of two days ago, you'd need all of the UNDO generated in the last two days to be available online. I do not know of many systems in which the DBA would configure the UNDO tablespace to be able to contain two days of UNDO—even five hours is somewhat rare—let alone months or years of UNDO. The UNDO tablespace would be huge.

Another reason flashback query is not a replacement for custom audit trails is that the theoretical limit for a flashback query is five days, so using UNDO-based flashback query is strictly limited to the last five days of uptime for the database. So, even if you kept the UNDO for a really long time, you still couldn't execute a flashback query on data as it stood more than five days ago.

The last reason is that UNDO-based flashback query is somewhat nonscalable. The further back in time you use flashback query, the longer it takes, because more work has to be performed. To execute a flashback query on data as of one hour ago, the database would have to roll back all the blocks it hit during the query to put them back the way they were an hour ago. If, for instance, a given block was modified by 100 different transactions in that last hour, the database would have to perform 100 rollback operations. Now, if you asked for the same data as of two hours ago, the database would likely have to roll back many more changes to that block—it would take longer to execute a flashback query as of two hours ago than it would to execute a flashback query as of one hour ago. The further back in time you execute a flashback query, the longer it is likely to take for the query to execute, because there are many more changes to roll back.

Enter Oracle Total Recall, available as of Oracle Database 11*g*. It solves both the performance issue and the UNDO storage and scalability issues associated with flashback query. With Oracle Total Recall, the client transaction is not affected: the processing performed by Oracle Total Recall takes place in the background, using a new database process called Flashback Data Archiver (FBDA). The client transaction just does its modifications, generates the UNDO for those modifications (as it always has done), and commits. Shortly after that client transaction commits, the FBDA process will mine the generated UNDO, looking for UNDO generated against tables in the flashback data archive. The DBA will have identified which tables need the special long-term query capability of the flashback data archive, and the FBDA process will look for UNDO generated against those tables.

When the FBDA process finds "interesting" UNDO—for tables in the flashback data

archive—it rolls back the change, then and there, and reconstructs the row as it appeared before the UPDATE or DELETE operation. This reconstructed row is inserted into a flashback data archive table—a history table, if you will—and the client transaction response time is not affected. That solves the performance issue as well as the scalability issue. To execute a flashback query as of six months ago against data in the flashback data archive, the database does not have to roll back all the changes made in the last six months, because the FBDA process has been doing that all along. Instead, the database just has to query the row that was in place six months ago—a much easier challenge, with the same amount of time needed to query the data as of six months ago as six years ago. Oracle Total Recall also helps reduce storage requirements. UNDO-based flashback query would require preservation of all UNDO generated against every single table in the database. With the flashback data archive used by Oracle Total Recall, you store only the historical rows of interesting tables—not the entire database.

So, with that background in place, I can start looking at the questions received online during the Web seminar. I also encourage you to check out the Oracle Total Recall product page at oracle.com/us/products/database/options/total-recall.

ORACLE TOTAL RECALL: THE QUESTIONS

What is the performance impact of enabling Oracle Total Recall?

Oracle Total Recall was designed to be as nonintrusive as possible. The vast majority of the work performed by Oracle Total Recall happens asynchronously—in the background—*after* your transaction commits. Therefore, assuming that your database server has the excess capacity to handle this background processing, the impact on existing applications will be nominal.

If that assumption is not true—if your existing database server is running at full utilization right now—it would have an impact, of course, but that impact can be mitigated by rightsizing your hardware. You would need some additional CPU for the FBDA process, some additional I/O capabilities (you'll generally be reading the UNDO out of the buffer cache, but you'll be generating more overall UNDO at the system level; more overall REDO at the system level; and of course, writing to the flashback data archive itself), and you might need a little more memory to make this all run smoothly.

As always, I recommend benchmarking any change such as this before introducing it in production. You can benchmark either with your own tools or by using a product such as Oracle Real Application Testing (oracle.com/us/products/database/options/real-application-testing).

If a table is set up for Oracle Total Recall, will it affect DML and DDL on that table?

This question is somewhat version-specific and has two parts: data manipulation language (DML) and data definition language (DDL).

As for DML, the short answer is that it will not affect DML operations, except that it will permit you to use flashback query syntax to query the table as of a long time ago. So a SELECT statement would be affected, but only in a positive way. Your other DML operations are not affected.

As for DDL, the answer is version-dependent. In the first release of Oracle Total Recall, in Oracle Database 11*g* Release 1, DDL was very much restricted. Just about the only DDL that was permitted against a table used with Oracle Total Recall was the ALTER statement for adding a column. You could not drop a column, truncate the table, and so on. In short, pretty much anything that did not generate UNDO could not be performed against the table.

These restrictions have been removed as of Oracle Database 11*g* Release 2. In this release, most DDL is natively supported for tables used with Oracle Total Recall, and even the DDL that is not directly supported can be executed by administrators. If administrators need to perform an unsupported operation, such as an ALTER statement to exchange a partition in a partitioned table, they can first invoke the DBMS_FLASHBACK_ARCHIVE.DISASSOCIATE_FBA procedure, perform their operations, and then invoke DBMS_FLASHBACK_ARCHIVE.REASSOCIATE_FBA so the modified table will be rejoined with its history.

So, in short, there are no DML restrictions and effectively no DDL restrictions for Oracle Total Recall in Oracle Database 11*g* Release 2.

You said that it would take thousands of GB for an UNDO-based flashback query to be able to query months or years in the past. How much space would be needed for Oracle Total Recall?

Yes, I did say that if you attempted to do a long-term UNDO-based flashback query, you'd have to have all of the UNDO generated for that entire period of time—for the entire database—online and available. And that would quickly get into many terabytes of UNDO over time.

The Oracle Total Recall processing will minimize the overall amount of storage you need, because it is enabled table by table—not databasewide—and is stored in a compressed format. So, first and foremost, you'll need sufficient storage for only your interesting tables, not for every table in the database.

The answer to how much space you will need is that it depends. If you have a table you mostly insert into and hardly ever delete from or update, your Oracle Total Recall storage needs will be minimal, because you need to log only the before images of rows that were updated or deleted. On the other hand, if you have a one-row table that gets updated 1,000 times per day, your Oracle Total Recall storage for the table will be many times larger than the base table itself, because you will have to enter 1,000 rows in

What Is Oracle Total Recall?

Introduced in Oracle Database, Enterprise Edition 11*g*, Oracle Total Recall is a database option that provides a secure, efficient, easy-to-use, and application-transparent solution for long-term storage and auditing of historical data. Oracle Total Recall also makes it simple to securely track and query historical data for any database table. Oracle Total Recall can be used for many purposes. Examples include

- Data forensics—find and revert changes made by a disgruntled employee
- Information lifecycle management (ILM)—guarantee immutable history of data
- Retention policy enforcement—automatically purge history more than five years old
- Historical reporting—analyze product changes over time
- Error recovery—restore erroneously removed or updated records
- Employee fraud detection—find assets that were deleted but never sold

the archive history every single day—while the table itself remains small.

So, you will need to understand how often you update and delete in the table(s) in your archive to determine how much storage will be required over time.

With the flashback data archive used by Oracle Total Recall, you store only the historical rows of interesting tables—not the entire database.

Can Oracle Total Recall be used in the application realm as well as for security? For example, instead of using "effective dating," could I use Oracle Total Recall to get a view of historic data?

Absolutely. This is definitely one of the use cases for Oracle Total Recall. You can enable it on tables that do not use effective dating processing—without modifying the application—and it helps solve data purging issues as well.

Typically, when applications use the effective dating type of processing, they need to retain the data for some period of time and then purge it. This purging is often accomplished with the DELETE statement, which is probably the slowest, most resource-intensive approach to purging old data. Additionally, after the DELETE, you may feel compelled to reorganize your tables and rebuild your indexes to reclaim the space you just freed up. With Oracle Total Recall, you get the ability to purge old information simply, without using DELETE and without consuming resources.

When DBAs create flashback data archives with Oracle Total Recall, they specify a retention period that tells Oracle Total Recall how far back in time they want to flashback-query the tables in the archive. Oracle Total Recall will set up a partitioned table (don't worry if you don't have the partitioning option; it comes with Oracle Total Recall), and over time it will simply drop old partitions as they become older than needed. The dropping of a partition doesn't generate REDO or UNDO (as opposed to DELETE), and any indexes on the flashback data archive will be maintained through DDL as well (for example, dropping a table partition will drop the corresponding local index partitions).

Will the database halt if the Oracle Total Recall allocated space is exceeded?

The database will not halt, but DML in affected tables may be prevented. For example, if the tablespace containing the flashback data archive for a table is full and the FBDA process cannot log more changes in it, applications that attempt to modify the table will receive an ORA-55617 "Flashback Archive <name> has run out of space and tracking on <name> is suspended" error message. So the outage will be contained to only those tables in the affected flashback data archive.

There were a few more questions, but they were all variations on these. You can watch a replay of this Webcast anytime, at bit.ly/omagdbsecurity.

BACK TO BASICS

We use indexed tables and well-tuned queries in our application, but some of the tables are not making use of the indexes.

The database table and index are

```
create table records
(system_no char(3),
 cust_id char(10),
 rec_no char(4),
 start_date char(8),
 end_date char(9),
 ...);

create index recpk
on records
(system_no,cust_id,rec_no);
```

The rec_no field contains the values in descending order from 9999 to 0001.

While selecting a row from the table, we are getting unexpected results—as if the index hadn't been created. By "unexpected results," I mean that the following query

```
select /*+ INDEX_ASC
       (records recpk) */ *
 from records
 where system_id='123'
  and cust_id='3456218791'
  and rec_no>'0000'
  and rownum<2
 order by system_id asc,
       cust_id asc,
       rec_no asc;
```

is working fine in instance1, but it's returning wrong information in instance2, and vice versa.

Your query—nothing else—is the problem. You cannot assume that a hint will be observed. A hint is a hint; it isn't a directive. If the index is unavailable for any reason (due to a different name, because it's unusable . . . whatever), the query will just ignore it.

The solution is to code the query the way I'll demonstrate, and I recommend not using the INDEX_ASC hint at all.

What your query is asking for is to find *the first record* that matches your predicate on SYSTEM_ID, CUST_ID, and REC_NO. (The ROWNUM<2 portion of the predicate happens before the ORDER BY does.) Hence, you are getting a record—any record at all—that matches your predicate and then sorting it.

You are getting the right answer for both of your instances. The SQL is allowed to return pretty much anything here, because you've said, "Find the first record such that this condition is true, and then sort it."

What you need to do instead is say, "Sort these matching records, and return the first one." But you must ask the right question—that is imperative.

The right question for you would look like this:

```
select *
  from
(
select /*+ first_rows(1) */ *
  from records
 where system_id='123'
   and cust_id='3456218791'
   and rec_no>'0000'
 order by system_id
```

```
        asc,cust_id asc,
        rec_no asc
)
 where rownum < 2;
```

That tells the database to find the records that match your predicate, sort them, and then return the first one. The database probably doesn't have to do that much work—it would tend to use the index all by itself (without a hint), now that it knows that you want the first row of that ordered set and only that row. The FIRST_ROWS(1) hint is a much better choice than your INDEX_ASC hint, because it tells the optimizer what your goal is, and the optimizer will find the fastest way to meet that goal. If your index is unavailable, the database will use a top-n query optimization to find the row as quickly as possible, but if an index is available, the database will tend to use that instead.

But you'll always get the right answer, because you've asked the right question.

ORACLE OPENWORLD: ONE THING

I was not able to attend Oracle OpenWorld 2011, but I heard about your "Five Things" presentations. Could you walk through some of those?

Yes, at Oracle OpenWorld 2011, I gave two presentations that started with "Five things you probably didn't know about . . . ." One was for SQL, and the other was for PL/SQL. Here is one highlight from the SQL talk.

Oracle Net Services compression. Did you know that Oracle has been silently compressing your data on the network for quite a few years now? Oracle Net Services automatically compresses data in the data stream by putting only the changes from the previous row into the data stream from the server to the client—the deltas from the previous row, if you will. So, if you return two rows that contain many of the same values, the second row will not send back very many bytes at all—just the differences from the first row. This sort of compression works amazingly well on database data, especially when you use an ORDER BY clause.

Here is a small example demonstrating this compression. I'll start with a test table:

```
SQL> create table t
  2  as
  3  select *
  4    from all_objects;
Table created.

SQL> begin
  2    dbms_stats.gather_table_stats
  3    ( user, 'T' );
  4  end;
  5  /
PL/SQL procedure successfully completed.
```

Now, using AUTOTRACE TRACEONLY STATISTICS in SQL*Plus, I'll retrieve that data and measure the bytes transferred, as shown in Listing 1.

Note that it took about 8 MB of network traffic to deliver that result set and that the query performed 5,794 logical I/Os (consistent gets). If I modify the query slightly by adding an ORDER BY clause, I can change those numbers dramatically. I'm going to use ORDER BY TIMESTAMP in this case, because I know that this column is very wide (19 bytes), is NOT NULL, and has few distinct values compared to the number of rows in the table. The results are shown in Listing 2.

That was pretty dramatic. It dropped from 8 MB to 3.4 MB of data transferred, and that was entirely due to this Oracle*Net compression taking place. Because the TIMESTAMP value repeated so often, it didn't need to be sent over and over again. Additionally, you might have noticed that the consistent gets

Code Listing 1: Testing Oracle Net Services compression—control

```
SQL> select * from t;
72228 rows selected.

Statistics
----------------------------------------------------------
       5794  consistent gets
    8015033  bytes sent via SQL*Net to client
      53385  bytes received via SQL*Net from client
       4817  SQL*Net roundtrips to/from client
      72228  rows processed
```

Code Listing 2: Testing Oracle Net Services compression—ordered

```
SQL> select * from t order by timestamp;
72228 rows selected.

Statistics
----------------------------------------------------------
       1031  consistent gets
    3427630  bytes sent via SQL*Net to client
      53385  bytes received via SQL*Net from client
       4817  SQL*Net roundtrips to/from client
      72228  rows processed
```

Code Listing 3: Testing Oracle Net Services compression—very ordered

```
SQL> select *
       from t
      order by timestamp,
        object_type, owner;
72228 rows selected.

Statistics
----------------------------------------------------------
       1031  consistent gets
    3280011  bytes sent via SQL*Net to client
      53385  bytes received via SQL*Net from client
       4817  SQL*Net roundtrips to/from client
      72228  rows processed
```

	No Order 15	Some Order 15	Very Ordered 15	No Order 100	Some Order 100	Very Ordered 100
Bytes Sent	8.01 MB	3.42 MB	3.28 MB	7.48 MB	2.90 MB	2.76 MB
% of Original	100%	43%	41%	93%	36%	34%
Consistent Gets	5,794	1,031	1,031	1,741	1,031	1,031

Table 1: Comparing Oracle*Net compression impact of 15- and 100-row fetches

	No Order 1,000	Some Order 1,000	Very Ordered 1,000
Bytes Sent	7.39 MB	2.82 MB	2.67 MB
% of Original	92%	35%	33%
Consistent Gets	1,105	1,031	1,031

Table 2: Comparing Oracle*Net compression impact of 1,000-row fetches

went from 5,794 down to 1,031. This was another side effect of the ORDER BY. The first run of the query read the data directly out of the table but did not sort it and did not need to write it into temporary space. So every time I fetched data (the default array fetch size in SQL*Plus is 15 rows at a time), I had to get a block from the buffer cache and get 15 rows from it. My table stores approximately 73 records per block, so that meant that when I did not use ORDER BY, I had to retrieve the first block from the cache about five times to get all 73 rows from it, 15 rows at a time. When I sorted the data, I needed to read all the rows and sort them into temporary memory or temporary space on disk. When I retrieved them 15 at a time, I had to read them out of temporary space—not from the buffer cache.

So, what can you take away from that? Should you be applying ORDER BY statements to all your SQL to reduce the data transferred and to decrease logical I/Os? Of course not. The cost of sorting the data would almost certainly outweigh any gains achieved by compression and the reduction in the number of logical I/Os. That would be adding a lot of work (sorting). What you can take away is that if you are already sorting data, as you must in order to meet the application requirements, you are deriving some benefit, likely in the form of reduced data on the network and possibly less buffer cache contention.

Now, what if I went a step further and sorted the data even more? Because TIMESTAMP repeats frequently and I know that OBJECT_TYPE and OWNER do as well (SYS owns a lot of TABLES, for example), I might expect to see a further reduction in transferred data, as shown in Listing 3.

The transferred data dropped from 3.4 MB to 3.2 MB. Note that the logical I/Os did not change—they cannot. The query must read every block in the table at least once, so 1,031 is the minimum number of I/Os, but the amount of data being transferred decreased a little bit.

Now, you may be asking, "What happens if I get more than 15 rows at a time?" It seems logical that the array size could have some impact on the amount of data transferred. If I send more rows back at a time, I'll have more data that could be repeating and I could likely compress it better. Indeed, testing proves that.

Table 1 shows the amount of data transferred (in megabytes), data transferred as a percentage of the original query (showing the percentage reduction), and number of consistent gets. The "No Order" columns represent the query executed without an ORDER BY, the "Some Order" columns represent the ORDER BY TIMESTAMP executions, and the "Very Ordered" columns represent the three-column sort. The number in the column headings represents the array size.

As you can see, introducing a larger array size—100 instead of 15—had a material effect on the amount of data transferred. The original unordered query benefited from it by the same percentage as the other queries—they all dropped another 7 percent. Before you get too excited thinking, "If 100 was better than 15, then 1,000 will be even better"—don't. You will hit the law of diminishing marginal returns here. I did the test with an array size of 1,000, and Table 2 shows the results.

As you can see, 1,000 was not much different from 100. There was about a 1 percent drop in data transferred—not really worth it. Also, the amount of client and server memory needed to package this 1,000-row fetch was about an order of magnitude more than in the case of the 100-row fetch. In my experience, somewhere between 100 and 500 rows at a time generally works extremely well, with 100 being a historically good number for me. I recommend making the array size your applications use a configurable parameter so you can try various values.

I'll post more of the "Five things you probably didn't know about . . ." presentations in future columns. ◀

Tom Kyte is a database evangelist in Oracle's Server Technologies division and has worked for Oracle since 1993. He is the author of *Expert Oracle Database Architecture* (Apress, 2005, 2010) and *Effective Oracle by Design* (Oracle Press, 2003), among other books.

NEXT STEPS

ASK Tom
Tom Kyte answers your most difficult technology questions. Highlights from that forum appear in this column.
asktom.oracle.com

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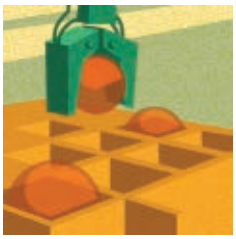
ORACLE DATABASE

Getting Answers with SELECT

Part 3 in a series on the basics of the relational database and SQL



Part 2 in this series, "Modeling and Accessing Relational Data" (*Oracle Magazine*, November/December 2011), introduced readers to the ways data entities (tables) can relate to one another in a relational database. When your logical models and physical implementations use meaningful entities and well-chosen datatypes, you have multiple options for accessing the data. This article focuses on the purpose and anatomy of the SQL SELECT statement—also called a *query*—and explains how to use Oracle SQL Developer and Oracle Application Express to construct queries and view their results. (Although I'll briefly review the concepts covered in Part 2, I encourage you to read that installment before starting this one.)

IT ALL BEGINS WITH A QUERY

The goal of writing a SQL query is usually to get the answer from the database to a question or questions. For example, you might want to ask

- How many employees work in the accounting department?
- Of those employees, which ones are currently working on multiple projects?
- Which employees working on multiple projects in the accounting department have received a salary increase between their date of hire and today, and which employees haven't?

You obtain the answers to these questions by using a SQL SELECT statement. A SELECT statement has at least two parts: the *SELECT list* and the *FROM clause*. The SELECT list specifies one or more columns (or *expressions*, to be explained in subsequent installments of this series)—selected from one or more tables—that you want to display. The FROM clause lists the table(s) from which your desired column data should be obtained.

KNOW YOUR DATA

Before you write a SELECT statement, you must determine which table or tables contain the information of interest. For example, if you want to know all employees' hire dates, you must first determine which table contains employee information. Perusal of your schema diagram reveals that employee data is in a table called

Code Listing 1: SELECT statement result for three columns

```
SELECT first_name, last_name, hire_date
  FROM employee

FIRST_NAME                          LAST_NAME                           HIRE_DATE
----------------------------------- ----------------------------------- -----------
Frances                             Newton                              14-SEP-05
Emily                               Eckhardt                            07-JUL-04
Donald                              Newton                              24-SEP-06
Matthew                             Michaels                            16-MAY-07
```

Code Listing 2: SELECT statement result for all columns

```
SELECT *
  FROM employee

EMPLOYEE_ID  FIRST_NAME  LAST_NAME  HIRE_DATE   SALARY  MANAGER  DEPARTMENT_ID
-----------  ----------  ---------  ----------  ------  -------  -------------
37           Frances     Newton     2005-09-14  75000
28           Emily       Eckhardt   2004-07-07  100000
1234         Donald      Newton     2006-09-24  80000   28       10
7895         Matthew     Michaels   2007-05-16  70000   28       10

4 rows selected
```

Code Listing 3: DESCRIBE result for the EMPLOYEE table

```
describe employee

Name                                Null     Type
----------------------------------- -------- ------------
EMPLOYEE_ID                                  NUMBER
FIRST_NAME                                   VARCHAR2(30)
LAST_NAME                                    VARCHAR2(30)
HIRE_DATE                                    DATE
SALARY                                       NUMBER(9,2)
MANAGER                                      NUMBER
DEPARTMENT_ID                                NUMBER

7 rows selected
```

LINDY GROENING

EMPLOYEE. You can then use the following SELECT statement:

```
SELECT first_name, last_name, hire_date
  FROM employee
```

The SELECT list in the above statement specifies three columns—listing the first name, last name, and date of hire for every employee contained in the EMPLOYEE table, which is specified in the FROM clause. (To specify multiple columns in a SELECT list, you separate the column names with commas; a good practice is to insert a space after each comma for readability.)

When the above statement is executed, the *result set* is a list of all the values found in the first_name, last_name, and hire_date columns of the EMPLOYEE table, as shown in Listing 1.

EVERYTHING WITH A MERE *

If you want to display *all* the columns for a particular table, you can use the asterisk (*) wildcard character as the SELECT list instead of typing the name of every column. For example

```
SELECT *
  FROM employee
```

When this statement executes, the result set displays the columns in the order in which they are defined in the table, as shown in Listing 2.

This is the same column order you see when you issue the `DESCRIBE` command (or when you click the **Columns** tab in Oracle SQL Developer), as shown in Listing 3.

You should use the asterisk wildcard character primarily for ad hoc querying—when you want an answer from the database that you have not already asked for via programmatic code. When you include SELECT statements in programmatic blocks of code (which you'll learn about in subsequent articles in this series), it is a good practice to list your columns of interest by name in your SELECT lists.

SELECT WITH ORACLE SQL DEVELOPER

In Oracle SQL Developer, an easy way to construct a SELECT statement is to drag and drop a table name from the **TABLES** node in the Connections Navigator into the SQL Worksheet. This action automatically creates an editable SELECT statement in the SQL Worksheet whose select list includes all the columns in the table. Figure 1 shows the result of dragging and dropping the EMPLOYEE table into the Oracle SQL Developer SQL Worksheet.

Figure 2 shows the SQL Worksheet icons.

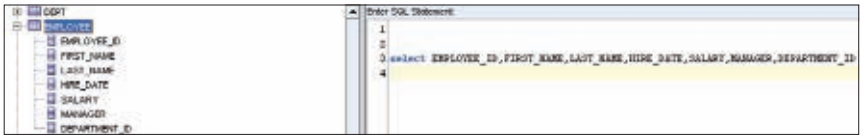


Figure 1: Result of dragging and dropping the EMPLOYEE table into the SQL Worksheet

Figure 2: The SQL Worksheet icon tool bar

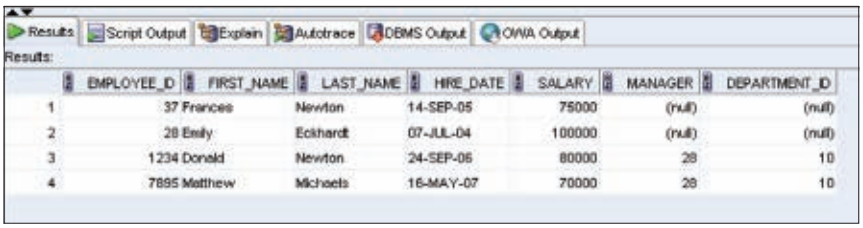


Figure 3: The Results tab in the SQL Worksheet

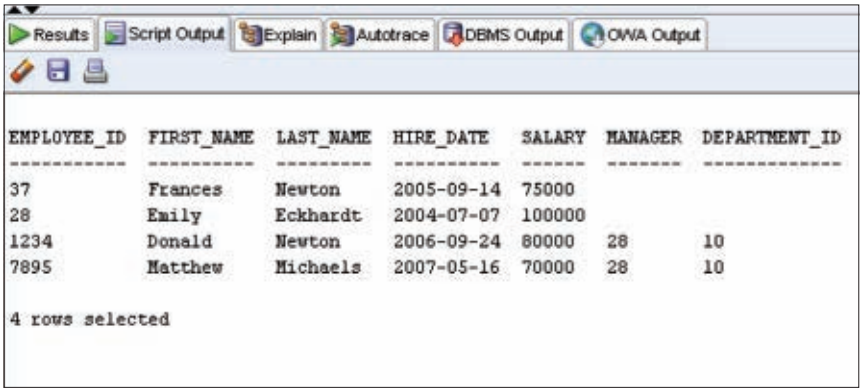


Figure 4: The Script Output tab in the SQL Worksheet

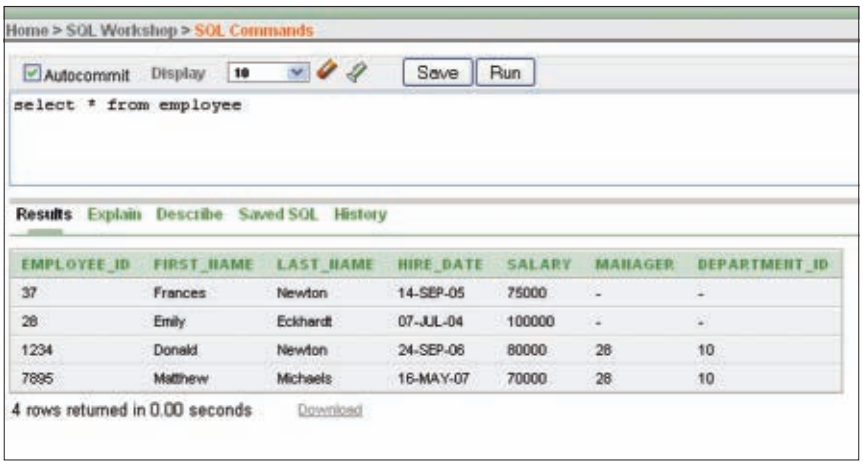


Figure 5: The Results section in SQL Workshop

In Oracle SQL Developer, an easy way to construct a SELECT statement is to drag and drop a table name from the TABLES node in the Connections Navigator into the SQL Worksheet.

The leftmost green arrow in Figure 2 is the Execute Statement icon. When you want to obtain the results for a single statement, place your cursor anywhere on the statement line and click the Execute Statement icon. The results appear on the **Results** tab, as shown in Figure 3.

In the tool bar, the small green arrow superimposed on the image of a piece of paper is the Run Script icon. By clicking it, you execute a SQL*Plus-like script consisting of multiple statements (as I'll illustrate in the next article in this series). The results are displayed on the **Script Output** tab, as shown in Figure 4.

BUILD AND RUN A SELECT STATEMENT WITH ORACLE APPLICATION EXPRESS

You can also construct a SELECT statement in the SQL Commands window of Oracle Application Express' SQL Workshop, a Web-based interface to the database. The SQL Workshop SQL Commands window has no drag-and-drop facility, so you must type your statement explicitly. Next, click **Run** to see your result set in the Results section of SQL Workshop, as shown in Figure 5. The results format is similar to that used on the **Results** tab of the SQL Worksheet, as you can see by comparing Figure 5 with Figure 3.

Constructing a SELECT statement in the SQL Commands window of the SQL Workshop in Oracle Application Express is similar to constructing a SELECT statement in SQL*Plus (as I will illustrate in the next article in this series).

ELIMINATE REDUNDANCY WITH DISTINCTION

As you know from previous installments in this series, one of your database design goals should be to eliminate redundancy. Sometimes, however, the way you select data might cause the results to include duplicate values. Use of the DISTINCT or UNIQUE keyword in your SELECT list, however, helps you eliminate duplicate data in your result sets.

In the example in Figure 6, four rows are returned yet only two employees are assigned to departments. Frances Newton and Emily Eckhardt have NULL values for DEPARTMENT_ID.

If you want to display only the distinct (or unique) DEPARTMENT_ID values in the EMPLOYEE table, you can construct a SELECT statement like the one in Figure 7.

Using the DISTINCT keyword to query a table containing only a few rows (as in this example) is probably unnecessary, because duplicate data would be obvious in the full results. But in a table with hundreds or thousands of EMPLOYEE records, it might not be at all obvious which departments are represented (or not).

IMPROVE READABILITY THROUGH CONSISTENT FORMATTING

The more consistently code is formatted, the easier it is to read. The easier code is to read, the easier it is for people reviewing it to discover obvious or potential bugs and suggest improvements. If your IT management insists that all developers adhere to a standard code format, Oracle SQL Developer's formatting facilities can help you comply with such mandates more easily.

For example, this article's examples show a mix of uppercase and lowercase keywords. However, your environment's standards might dictate that you use a particular casing style. Oracle SQL Developer provides several methods to help you achieve consistency. At a minimum, you can make a statement's keywords all uppercase, lowercase, or initial-capped by highlighting the statement, right-clicking in the

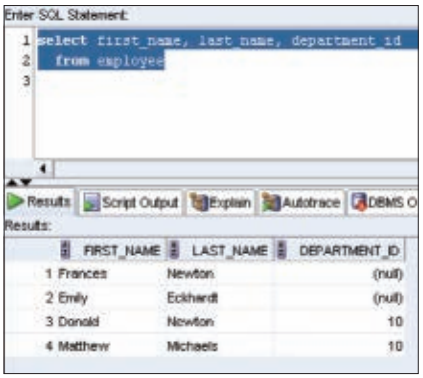


Figure 6: Employee first and last name data with corresponding departments

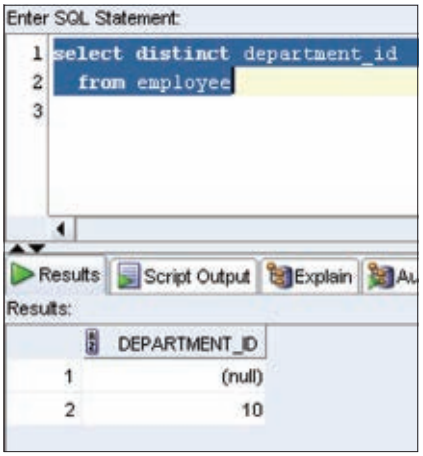


Figure 7: A DISTINCT list of the DEPARTMENT_ID values in the EMPLOYEE table

Figure 8: Changing keyword case

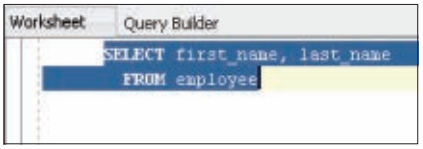


Figure 9: Keyword case changed

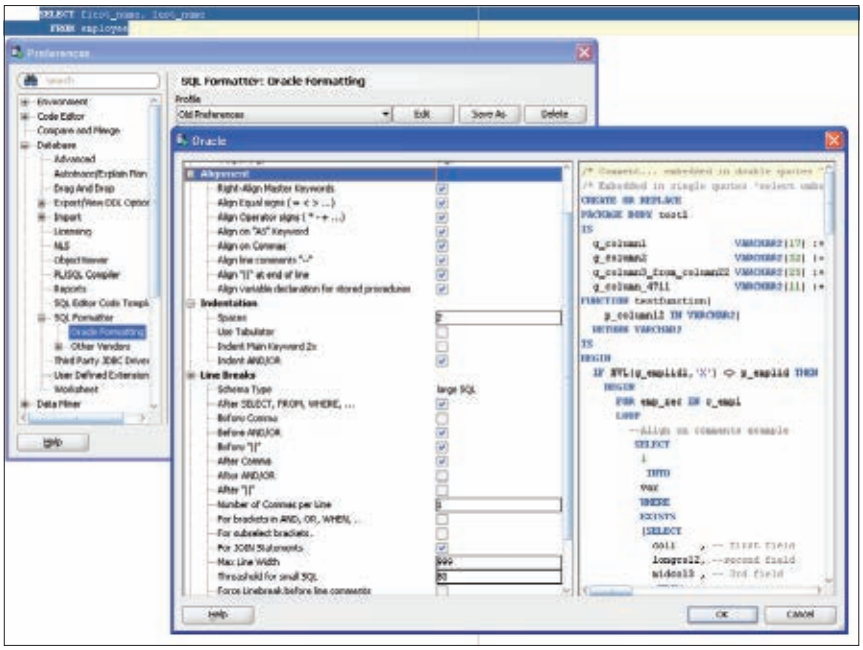


Figure 10: SQL Formatter options in Oracle SQL Developer

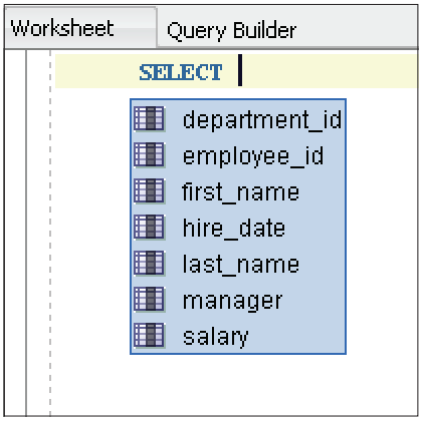


Figure 11: Code completion facility in Oracle SQL Developer

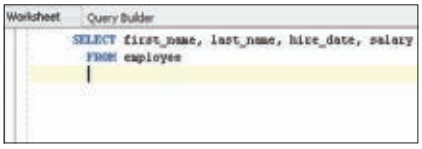


Figure 12: Syntax highlighting in Oracle SQL Developer

SQL Worksheet, and selecting **To Upper/Lower/InitCap** (or typing Ctrl+Quote), as shown in Figure 8.

Figure 9 shows the result of changing a statement's keywords to uppercase via the mechanism illustrated in Figure 8.

Another way to control your code's formatting is to right-click in the SQL Worksheet and choose **Format** (or type Ctrl-F7). (Be aware that selecting this option affects all the code in the SQL Worksheet—as of Oracle SQL Developer Release 3.0.04). To set your preferences for this option, select **Tools -> Preferences -> Database -> SQL Formatter -> Oracle Formatting** and click **Edit**. Figure 10 shows some of the available formatting options.

FINISHING YOUR THOUGHT

You might occasionally need to refer to your schema diagram to identify the table(s) you want to include in a query or to look up the syntax for correct statement construction in the Oracle documentation. The *code completion* facility in Oracle SQL Developer helps you with both tasks. If you pause while typing your statement, the code completion facility will prompt you with a list of appropriate table names, column names, and commands you can select from. Figure 11 shows an example of this feature in action.

HIGHLIGHT YOUR CODE

Syntax highlighting in Oracle SQL Developer marks the SQL language keywords in your code with a color different from that of the table names, column names, and other statement criteria. When this feature is enabled, your SQL language commands appear by default in blue and other statement criteria appear in black. Syntax highlighting, illustrated in Figure 12, can greatly improve your code's readability, enabling you and others to spot errors more readily.

Syntax highlighting, along with the other Oracle SQL Developer formatting facilities I've described in this article, can be edited or disabled via **Tools -> Preferences**. By default, they are enabled and exhibit the behavior and results shown in this article.

CONCLUSION

This article has shown you how to construct and execute simple SQL SELECT statements with Oracle SQL Developer and the SQL Workshop SQL Commands facility in Oracle Application Express. You've also seen how the formatting, syntax highlighting, and code completion facilities in Oracle SQL Developer can enhance your code's readability and accuracy.

The next installment of SQL 101 will examine the WHERE and ORDER BY clauses of a SQL statement and take a closer look at Oracle's SQL*Plus tool. ◀

Melanie Caffrey is a senior development manager at Oracle. She coauthored *Expert PL/SQL Practices for Oracle Developers and DBAs* (Apress, 2011) and *Expert Oracle Practices: Oracle Database Administration from the Oak Table* (Apress, 2010).

NEXT STEPS

READ more about relational database design, concepts, and SQL

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Building the Knowledgebase

IOUG survey results drive the user group agenda, affect product development, and inform the wider public.

The most valuable benefit that members of the Independent Oracle Users Group (IOUG) share is our collective knowledge about our industries, technology, and Oracle products. It is why IOUG exists, and it is why people come to our conferences, read our periodicals, and attend our online or in-person seminars.

This benefit is not confined to the IOUG community: increasingly, IOUG members' opinions and insights into many of today's challenges are sought after and referenced by individuals and groups outside of our user group. The next time you see a presentation from Oracle on how it is addressing security, data warehousing, business intelligence, cloud computing, or big data, for example, look for the IOUG logo. In such presentations, the problem the technology solves is framed in introductory slides that show trends in the technology and what customers are saying about their current challenges—and it's there that you will often see data from IOUG surveys.

IOUG is proud that our membership's opinions are valued, not only by those outside of our community but also by Oracle specifically. This is how we directly, proactively, and positively have an impact on solutions to some of our technology challenges. In fact, Oracle and other vendors have been so interested in our surveys that they are increasingly eager to participate in them with a few targeted questions of their own. IOUG and Unisphere Media, the firm used to execute and manage IOUG surveys, maintain control of the overall direction and content of the surveys. Yet having other vendors voice genuine interest in our members' opinions is part of the advocacy mission of IOUG.

Perhaps not surprisingly, the surveys help shape this column, because what is important to our members has a high probability of being important to the readers of this magazine. The surveys also direct the strategy of IOUG. Our annual review of IOUG programs evaluates the information from these surveys so that we can ensure critical, topical programs and educational events are appropriately funded.

> ***The Petabyte Challenge* focused on the explosion of data managed by organizations.**

One of our most recent surveys, *The Petabyte Challenge*, focused on the explosion of data managed by organizations. Not only do we need to manage all of this data from a physical perspective (that is, how do we effectively store and retrieve this much data?), but we also need to get value out of this big data store through analytics and business intelligence. The following nuggets of information from *The Petabyte Challenge* survey are some that I found interesting. Each finding is followed by the corresponding question IOUG membership should help to answer.

SURVEY FINDING: 30 percent of organizations have seen data grow at an annual rate of more than 25 percent, with 10 percent seeing greater than 50 percent growth. 27 percent of respondents currently have more than 100 TB of data. Nearly 1 out of 10 sites now has data stores in the petabyte range.
IOUG assignment: The more data we have, the faster it grows. How do we manage this explosion?
SURVEY FINDING: Data warehousing and business intelligence, online requirements for data, and business protection and compliance account for a majority of the data growth.
IOUG assignment: A diversity of factors drives this data growth, implying that there must be more than one approach to managing it. What are the best strategies for managing the factors driving your growth?
SURVEY FINDING: Having multiple copies of data, in addition to production data, also drives growth. Nearly half of the respondents have three to five copies of their data, and 71 percent maintain all their data in-house.
IOUG assignment: Most organizations are throwing hardware at the data-growth challenge, with some implementing directed archiving strategies. But what about a fundamental rethinking of how data is managed?

The IOUG assignments above are just some of the issues our members will be focusing on in the future, with the goal of providing solutions, recommendations, and direction to add to IOUG's collective knowledge.

What can you do to take advantage of this IOUG knowledgebase or to add to it? Download the executive summary of our surveys from the IOUG Website (ioug.org). (IOUG members can download the complete surveys.) More importantly, you should join the conversation with your peers at IOUG and share your solutions with them, and learn from what other members are doing. Become an IOUG member and add your voice to a chorus to which industry insiders are increasingly listening. ◀

Andy Flower
(andy_flower@ioug.org) is president of IOUG and has been an active volunteer with the organization since 1998. In his day job, he is an information management and business intelligence consultant with Right Triangle Consulting.

NEXT STEPS

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IT Management Takes Off

Today's leading management tools work with the entire cloud lifecycle.

Oracle Magazine spoke with Tim Grieser, program vice president of enterprise system management software at International Data Corporation (IDC), about the challenge of creating, managing, and provisioning enterprise information systems, on premises and in the cloud.

Oracle Magazine: What is the state of system management solutions today?

Grieser: Today's system management solutions increasingly rely on automation and orchestration to help guarantee performance, availability, and security of highly complex, dynamic system infrastructures. Today's management scope goes beyond component management to focus on service management and application management—especially the experience perceived by end users. Service levels such as business transaction rates, response times, and application availability are determined by quantitative measurements based on monitoring. These monitoring activities can be for *synthetic transactions*—standard transactions that are run periodically to measure performance—or *real transactions* based on end-user activities, often measured through network traffic events. Business-oriented metrics like online sales transactions are particularly important.

Oracle Magazine: What drives organizations to deploy automated management tools?

Grieser: IT infrastructures have grown enormously in terms of complexity and scale. Deployment of scale-out architectures means that IT operations often must manage many hundreds or even thousands of physical servers. Virtualization creates a new layer that must be managed and adds virtual machine images in ratios typically 8 to 10 times the number of physical servers. Dynamic management operations—such as moving virtual machine images between virtualized physical servers to achieve performance objectives—add even more complexity because you must manage a number of functions at different levels of the infrastructure stack. These functions include support for the basic virtualized server environment at the hypervisor layer; creating, configuring, and provisioning virtual machines; loading guest operating systems and applications; and ongoing management of the operational environment. Functions such as performance management apply to virtualized servers, virtual machines, and applications.

There is an evolution toward integrated toolsets that support specific cloud lifecycles and platforms.

Oracle Magazine: How is cloud computing changing systems management?

Grieser: Cloud computing builds on automated virtualized infrastructures by using extended management software to deliver environments where users can define, provision, and operate their own services in service models such as IaaS [infrastructure as a service], PaaS [platform as a service], or SaaS [software as a service]. Management software enables cloud facilities such as self-service portals; service catalogs; and automated monitoring, metering, and chargeback. System administrators must focus on delivering and achieving service levels for cloud environments. This means ensuring service objectives for both cloud providers and cloud consumers and can include managing public, private, and hybrid cloud environments. Monitoring, metering, and chargeback let cloud providers measure and account for cloud resource usage and assign costs to users. Cloud consumers need to be able to understand the level of service they are actually receiving by having their own views of performance metrics and usage metrics based on monitoring.

Oracle Magazine: How are toolsets evolving to work with the cloud lifecycle?

Grieser: The cloud lifecycle involves a number of major stages including planning and setup; building and deploying prototypes for self-service provisioning of infrastructure, applications, and other resources; and operational management including monitoring, metering, and chargeback. While these activities can be performed using a combination of available management tools, there is an evolution toward integrated toolsets that support specific cloud lifecycles and platforms. At the user level, integrated management toolsets include common menus or graphical interfaces across functions and the implementation of a common master console or "single pane of glass" top-level interface. Between layers in the software stack, integrated toolsets connect service management, application management, virtualization management, and physical resource management components. Use of standards-based languages and APIs can enable the same set of management tools to handle both on-premises and cloud-based systems. For example, the use of Java for applications can help support portability and migrations across platforms. ◀

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