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**Cloud Computing, Web 2.0 and Cyber Security:
Linking the Headlines to Reality**

David Knox
Senior Director
Oracle U.S.A., Inc.



Agenda

- Top IT Headlines: Web 2.0, Cloud, Cyber Security
- Top Security Headlines: Privacy, Compliance, IP
- Practices and Focus
- Way Forward



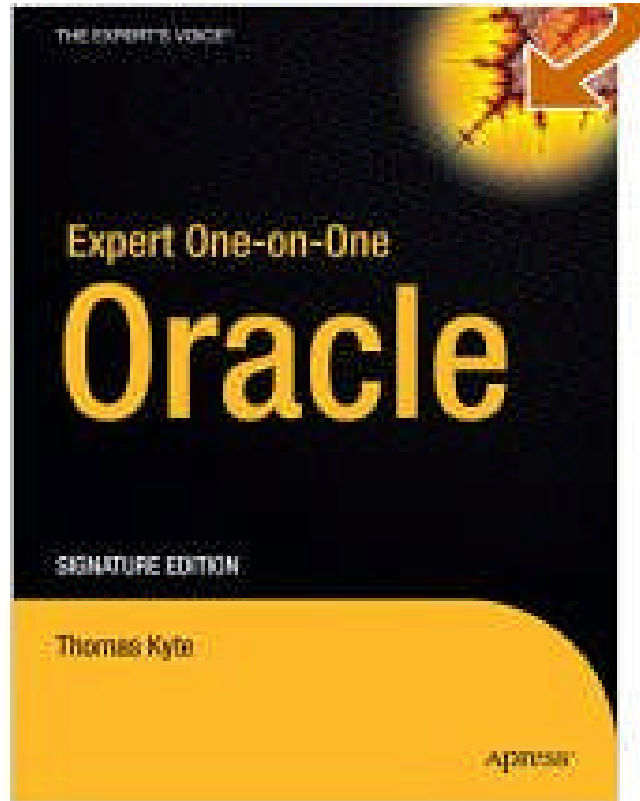
“Allow myself to introduce myself”



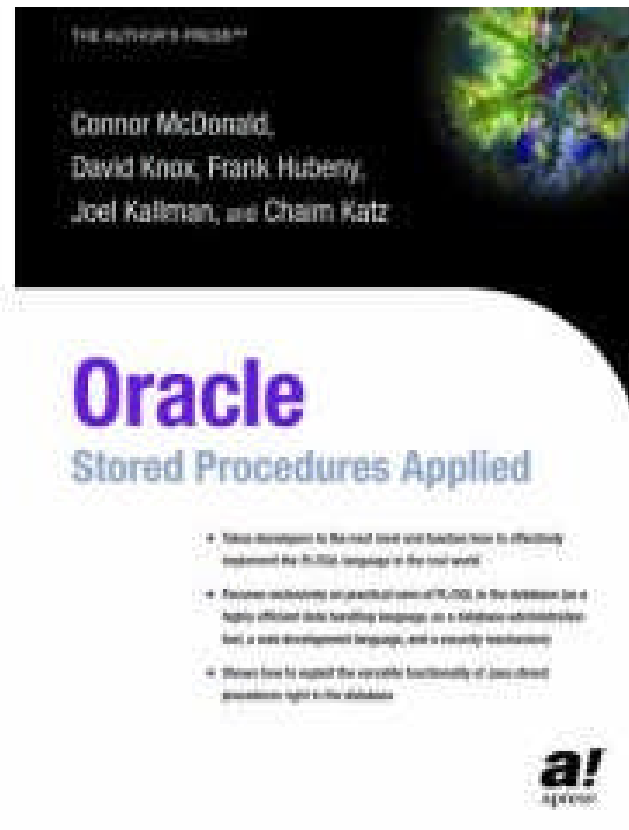
- Austin Powers, Baby

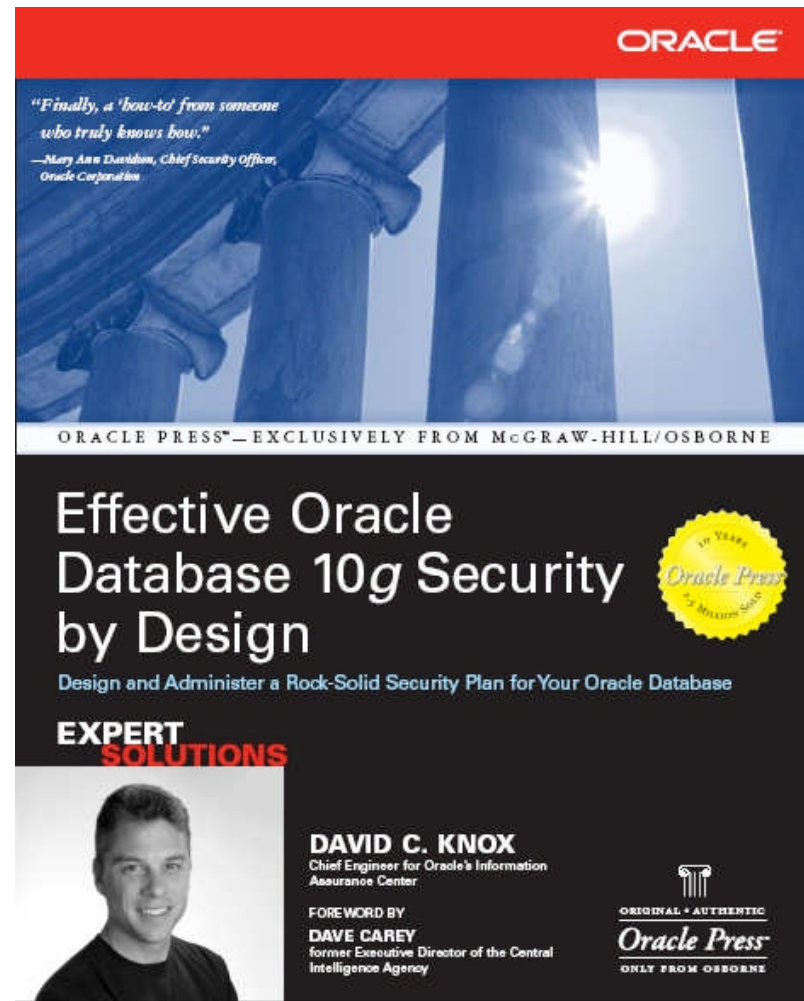


My contribution: 5 pages



My Contribution: 1 Chapter







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Top IT Headlines



100



Web2.0: Influencing Behavior and Technology

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What Is Web 2.0

Design Patterns and Business Models for the Next Generation of Software

by [Tim O'Reilly](#)
09/30/2005

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The bursting of the dot-com bubble in the fall of 2001 marked a turning point for the web. Many people concluded that the web was overhyped, when in fact [bubbles and consequent shakeouts appear to be a common feature of all technological revolutions](#). Shakeouts typically mark the point at which an ascendant technology is ready to take its place at center stage. The pretenders are given the bum's rush, the real success stories show their strength, and there begins to be an understanding of what separates one from the other.

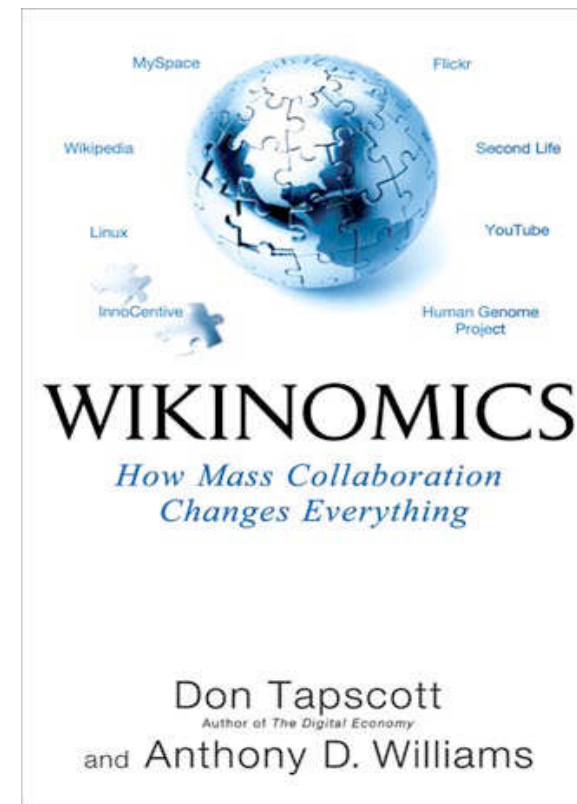
The concept of "Web 2.0" began with a conference brainstorming session between O'Reilly and MediaLive International. Dale Dougherty, web pioneer and O'Reilly VP, noted that far from having "crashed", the web was more important than ever, with exciting new applications and sites popping up with surprising regularity. What's more, the companies that had survived the collapse seemed to have some things in common. Could it be that the dot-com collapse marked some kind of turning point for the web, such that a call action such as "Web 2.0" might make sense? We agreed that it did, and so the [Web 2.0 Conference](#) was born.

In the year and a half since, the term "Web 2.0" has clearly taken hold, with more than 9.5 million citations in Google. But there's still [a huge amount of disagreement about just what Web 2.0 means](#), with some people decrying it as a meaningless marketing buzzword, and others accepting it as the new conventional wisdom.













This article is an attempt to clarify just what we mean by Web 2.0.

In our initial brainstorming, we formulated our sense of Web 2.0 by example:






Web 1.0		Web 2.0
DoubleClick	-->	Google AdSense
Ofoto	-->	Flickr
Akamai	-->	BitTorrent
mp3.com	-->	Napster
Britannica Online	-->	Wikipedia
personal websites	-->	blogging
evite	-->	upcoming.org and EVDB
domain name speculation	-->	search engine optimization
page views	-->	cost per click
screen scraping	-->	web services
publishing	-->	participation
content management systems	-->	wiki



Web 2.0 Tools & Technologies

Interactions	Blog: Reflecting the collective conscience	
Collaboration	Wikis: Fully collaborative knowledge creation – self-built, self-managed	
Social Sharing & Organization	Folksonomies/Tags: Track interests and share with others – relevant information found intuitively	 
Socialization	Organize and connect to others with purpose	  
Information dissemination	RSS: Instant and channel subscriptions done simply	
Communication	Private one-on-one or group interactions	  
Virtual Worlds	Meet and interact with others in various (artificial) contexts	

Web 2.0 Tools & Technologies

Entertainment	Media sharing and distribution to any device	 
Business models	Indirect partner and referral revenues – Prosumers, SAS, Perpetual betas, Open-source	
Information assembly	Mashups: Combining data artifacts into new information correlations and summaries	
Information representation	RIA: Rich experiences in a single representation; AJAX: Dynamic, updated, standards	



Web 2.0 in a Nutshell

- Extreme socialization and interactions

- Communities of Collaboration

- The Web as an *interactive* platform



http://dagger.us.oracle.com/ABC/ - Microsoft Internet Explorer

File Edit View Favorites Tools Help

User: Normal Rockwell
Empl ID: 2103

My Tasks

New Item:
 Add

high Send HQ reports for FY07

high Conference with sales leads

high Feed Carrot

med Reconfigure secondary network

med Balance Sept 07 budget

low Get fabric softener

low Email Ted

My Calendar

«	July 2007							»
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5	6	7	8	9	10	11		

Quick Add Create Event Show Agenda

My Stores

Search for Store

By name: Search

By zip code: Search

OR

Browse by Criteria

Top 3 stores by: Revenue

1 312 Driftwood Blvd. GO!

2 1859 Remora Ave. GO!

3 84 Oceanview Point GO!

My BI

East/West Traffic Report for July 2007

Last YearLast MonthThis Month

Eastbound Traffic

Westbound Traffic

Print Report

Email Report

Change Format

Change Report Date

June 2007

May 2007

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Archive

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My Stores

Map Satellite Hybrid

POWERED BY Google

Map data ©2007 Tele Atlas

My BI

East/West Traffic Report for July 2007

Last YearLast MonthThis Month

Eastbound TrafficWestbound Traffic

[Print Report](#)
[Email Report](#)
Change Format
Change Report Date
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April 2007
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New Item:

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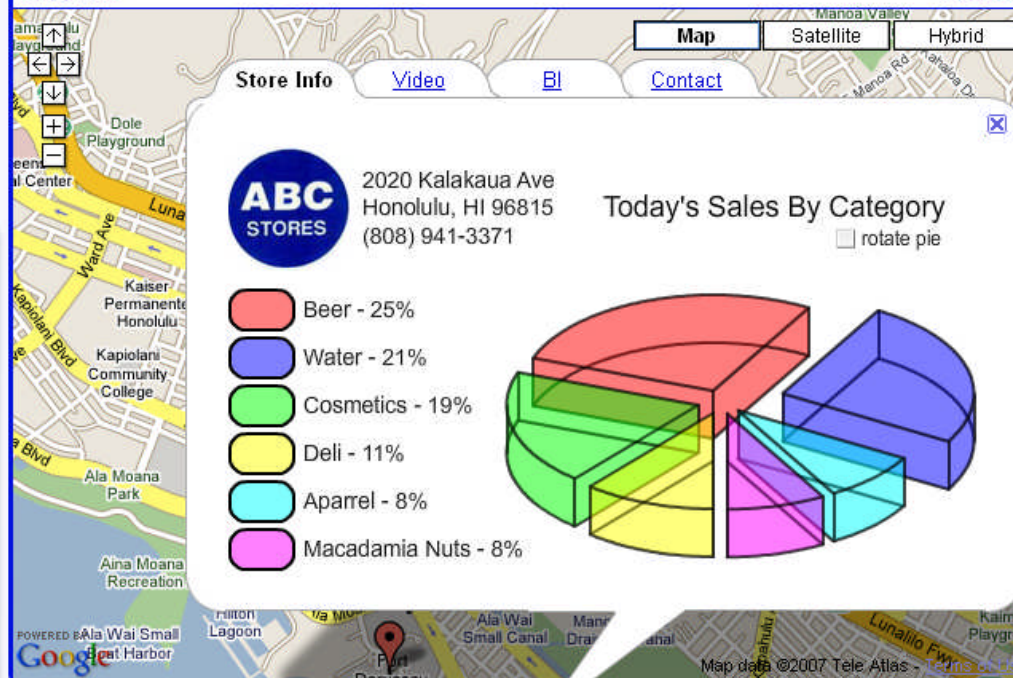
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| high | Conference with sales leads |
| high | Feed Carrot |
| med | Reconfigure secondary network |
| med | Balance Sept 07 budget |
| low | Get fabric softener |
| low | Email Ted |

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July 2007						
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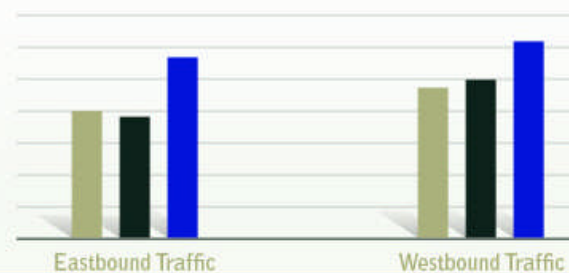
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East/West Traffic Report for July 2007

■ This Month



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Feed Carrot

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Get fabric softener

low

Email Ted

My Stores

Map

Satellite

Hybrid

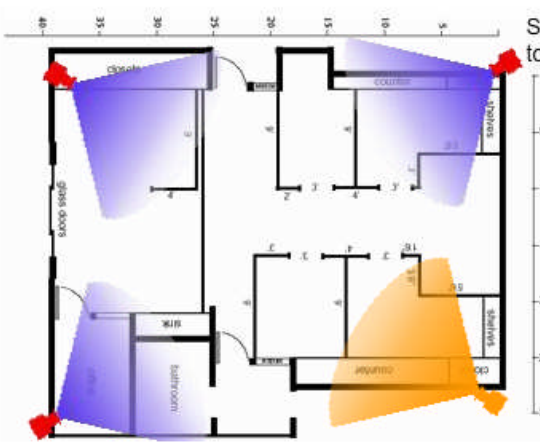
Store Info

Video

BI

Contact

Select a Camera to View Live Video



My Calendar

July 2007

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29	30	31	1	2	3	4
5	6	7	8	9	10	11

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My BI

East/West Traffic Report for July 2007

Last Year

Last Month

This Month



Traffic Type	Last Year	Last Month	This Month
Eastbound Traffic	~1.0	~1.0	~2.5
Westbound Traffic	~1.5	~1.6	~2.0

[Print Report](#)

[Email Report](#)

Change Format

Change Report Date

[June 2007](#)

[May 2007](#)

[April 2007](#)

[Archive](#)

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low

Get fabric softener

low

Email Ted

My Stores

Map

Satellite

Hybrid

Store Info


Video

BI

Contact

00/07/07 21:12

Uncle Camera Test



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Calibration

Set Home

Back to Floorplan View Video Console

Map data ©2007 Tele Atlas

My Calendar

July 2007

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My BI

East/West Traffic Report for July 2007

Last Year

Last Month

This Month

Eastbound Traffic

Westbound Traffic

Print Report

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Change Format

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June 2007

May 2007

April 2007

Archive

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|------|-------------------------------|
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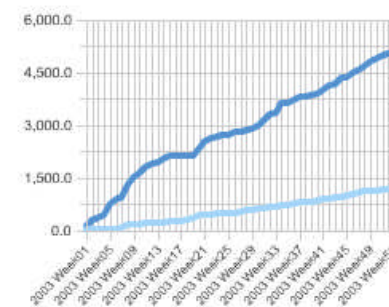
[Video](#)

[Contact](#)

Satellite

Hybrid

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Daily Sales vs. Prev Year

Average Transaction Size

Category Breakdown

[View Oracle BI Dashboard](#)

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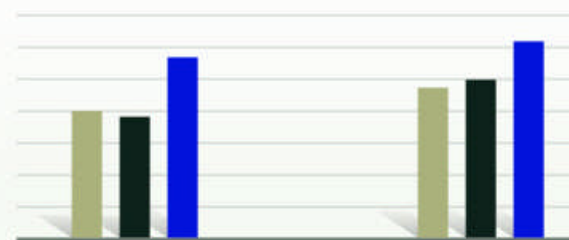
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29	30	31	1	2	3	4
5	6	7	8	9	10	11

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East/West Traffic Report for July 2007

■ Last Month

■ This Month



Eastbound Traffic

Westbound Traffic

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June 2007

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New Item: Add

- high Send HQ reports for FY07
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- med Reconfigure secondary network
- med Balance Sept 07 budget
- low Get fabric softener
- low Email Ted

My Stores

Map Satellite Hybrid

Store Info Video BI Contact

Store Manager
Norman Rockwell

Security
Stephen Karafiath

Test Contact
Glenn Nishida

My Calendar

July 2007

Su	M	Tu	W	Th	F	Sa
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My BI

East/West Traffic Report for July 2007

Last Year Last Month This Month

Eastbound Traffic Westbound Traffic

Print Report
Email Report
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Change Report Date
June 2007
May 2007
April 2007
Archive
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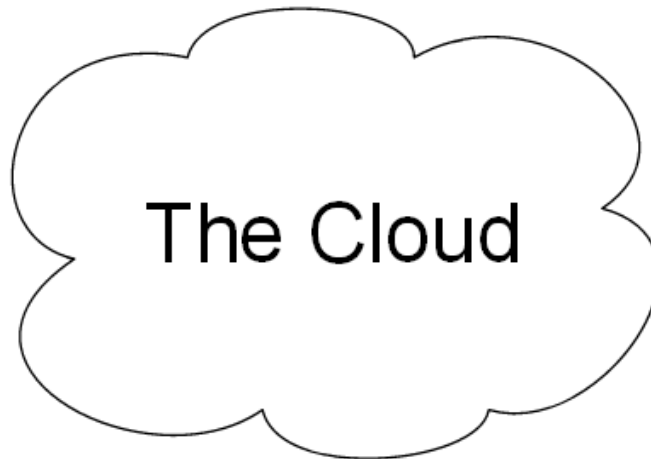
Challenges to Web 2.0 in the Enterprise

- Will it compromise security?
- Will it give disgruntled employees a public forum?
- What about compliance, regulations?
- What about mounting costs for storage, power and space?
- How do you manage related, yet disparate products?
- How mature are the technologies?
- Can we trust the small vendors to survive?
- Will it scale?

**IT can enable Web 2.0 while
maintaining control**



Computing Architecture v4.0





Home Computing Today

37,864



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Cloud Computing Example



The easy way to find, edit, and share your photos



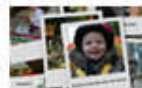
Organize

Manage your photos in one place, and find photos you forgot you had



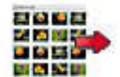
Edit

Eliminate scratches & blemishes, fix red-eye, crop and more



Create

Turn photos into movies, collages, slideshows and more



Share

Upload seamlessly to [Picasa Web Albums](#) to share with friends, family & the world

Download Picasa 3

...and go to [Picasa Web Albums](#) to share and explore photos.

System Requirements:

- Windows XP/Vista or [Linux](#)
- 256MB RAM
- 100MB available hard disk space

Picasa also runs on [Mac OS X](#) and [Linux](#).

Download our [Mac uploader](#) for Picasa Web Albums.

Benefits to the Cloud

1. Simplification

- Software
- Hardware
- Backups



2. Costs



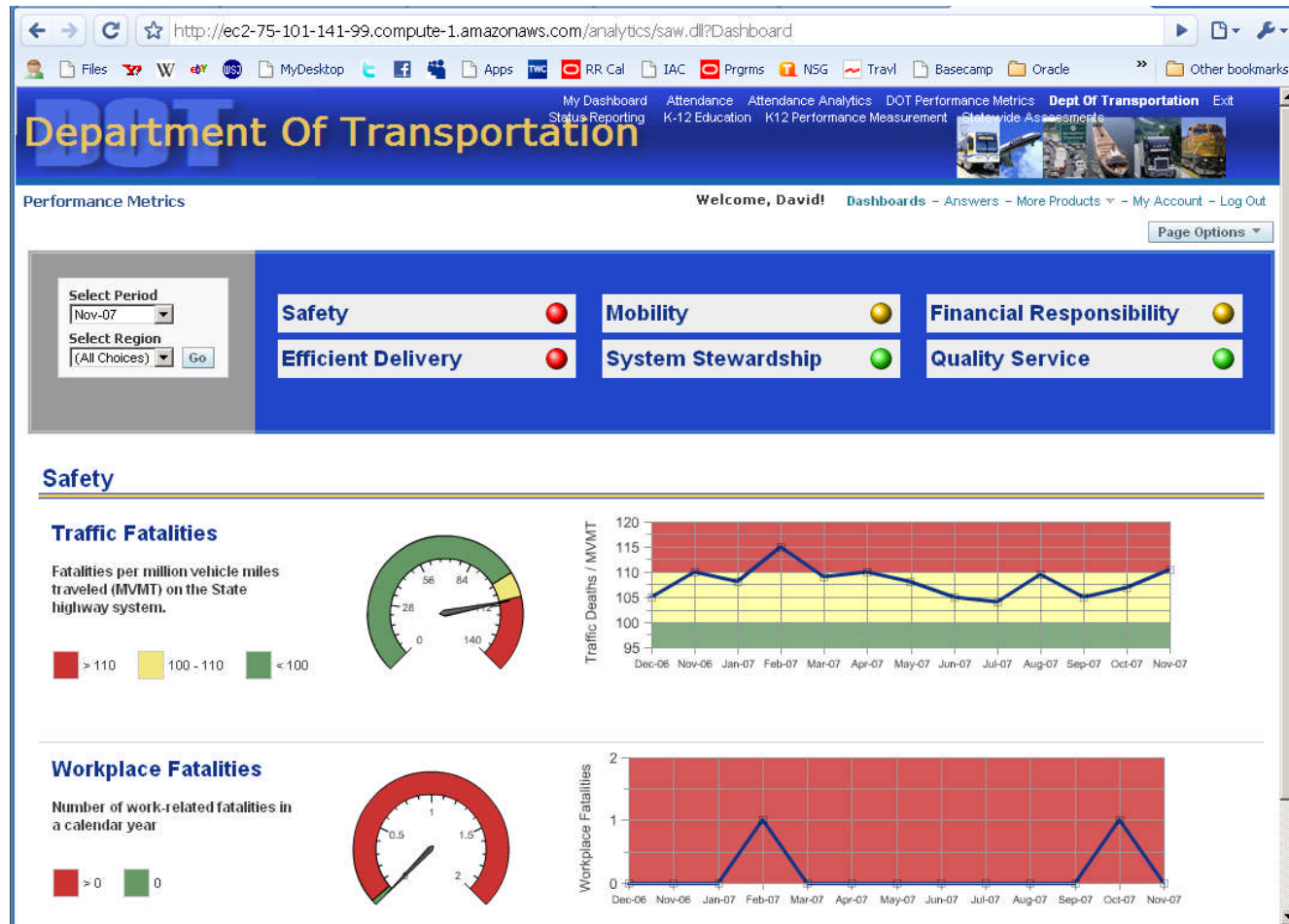
3. Sharing & Collaboration



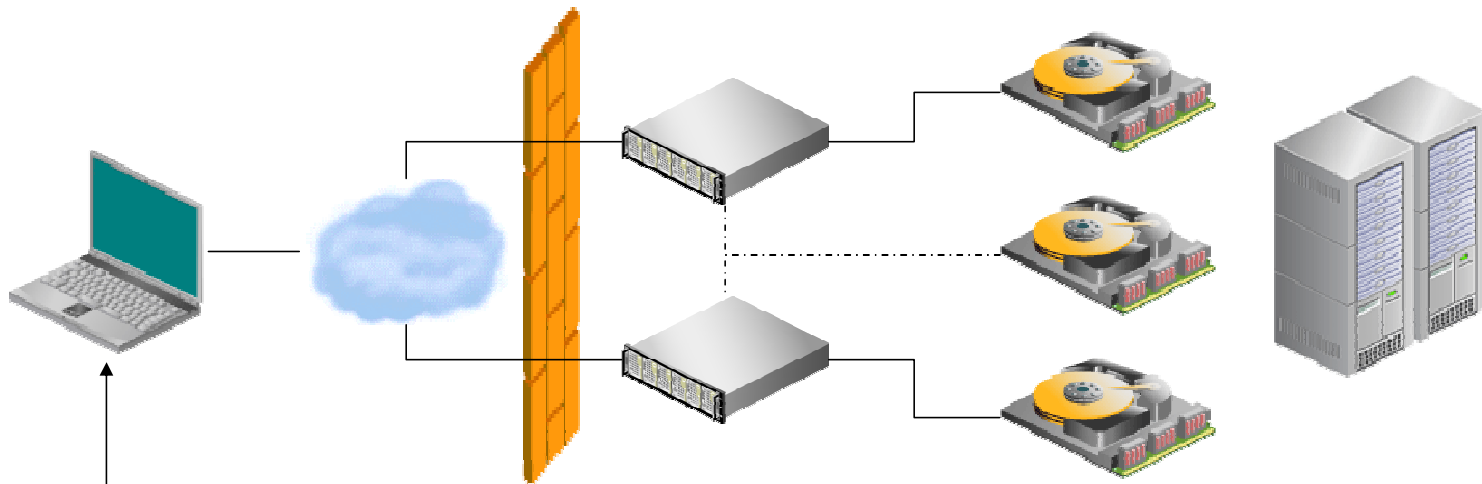


In business, who is the biggest benefactor?

Enterprise Cloud Example



PS BI Shared demo environment



Administration Client

EC2 Command line tools

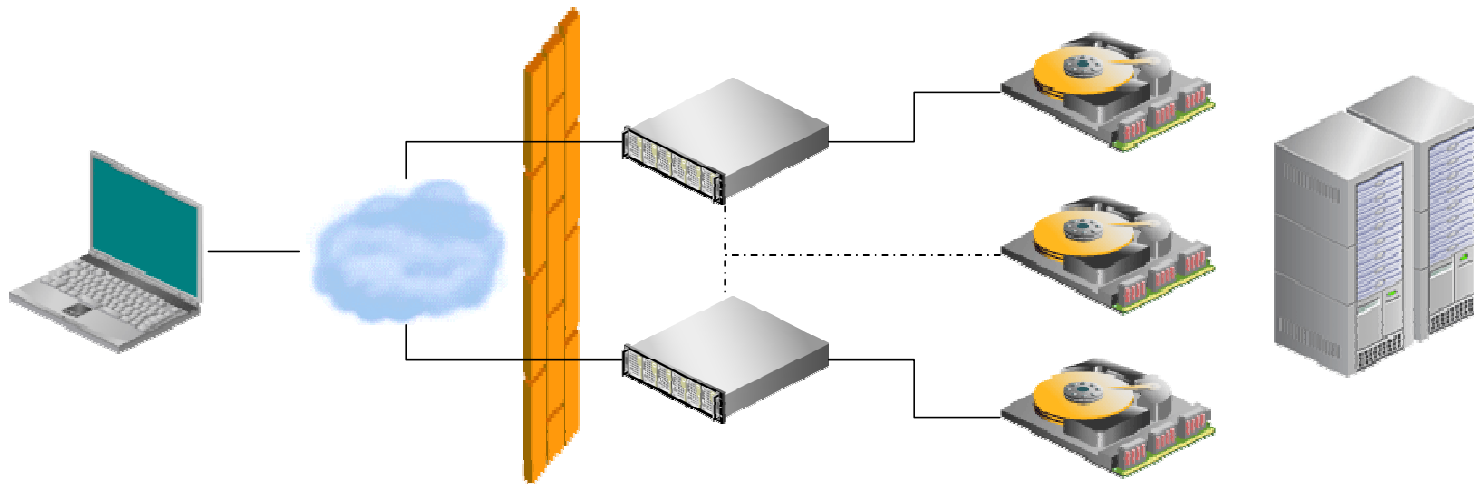
Putty

VNC client

Elasticfox (Firefox plugin) – GUI to manage EC2 instances

S3 Organizer (Firefox plugin) – GUI to manage files in S3

PS BI Shared demo environment



Firewall

All ports closed by default

Must manually open any port you wish to use

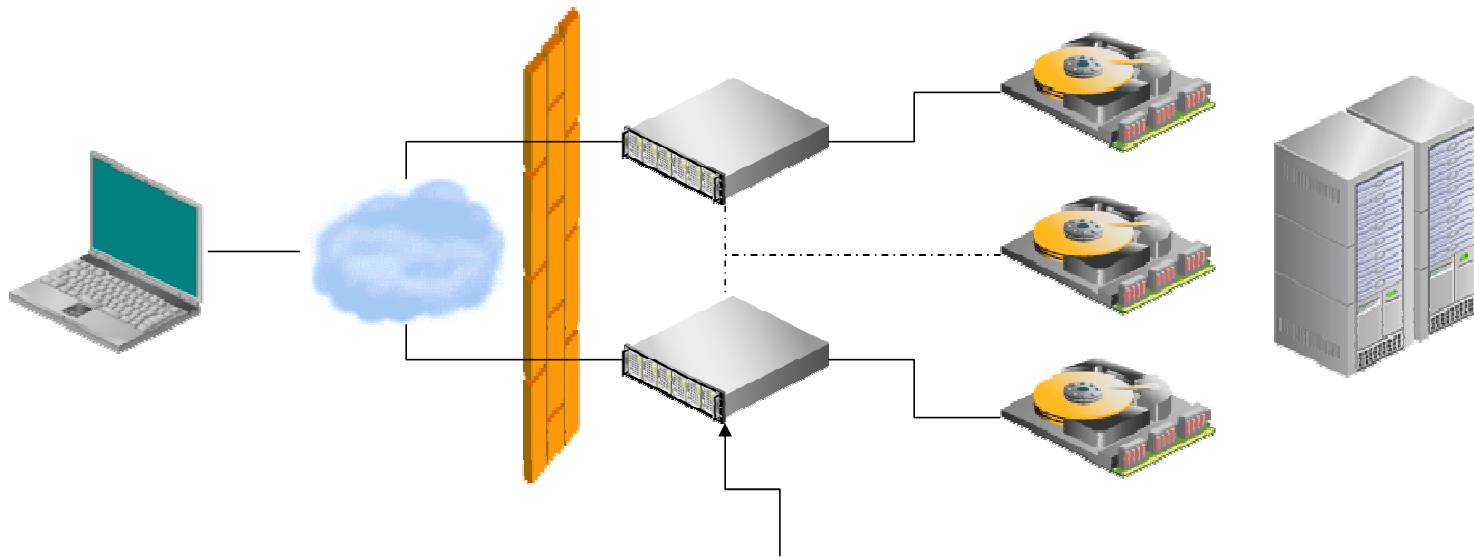
EC2 Command line or Elasticfox

The following are open on my system:

Both Boxes: 22 (SSH), 5901 (VNC)

BI Box: 80 (APFX BI Manviewer)

PS BI Shared demo environment



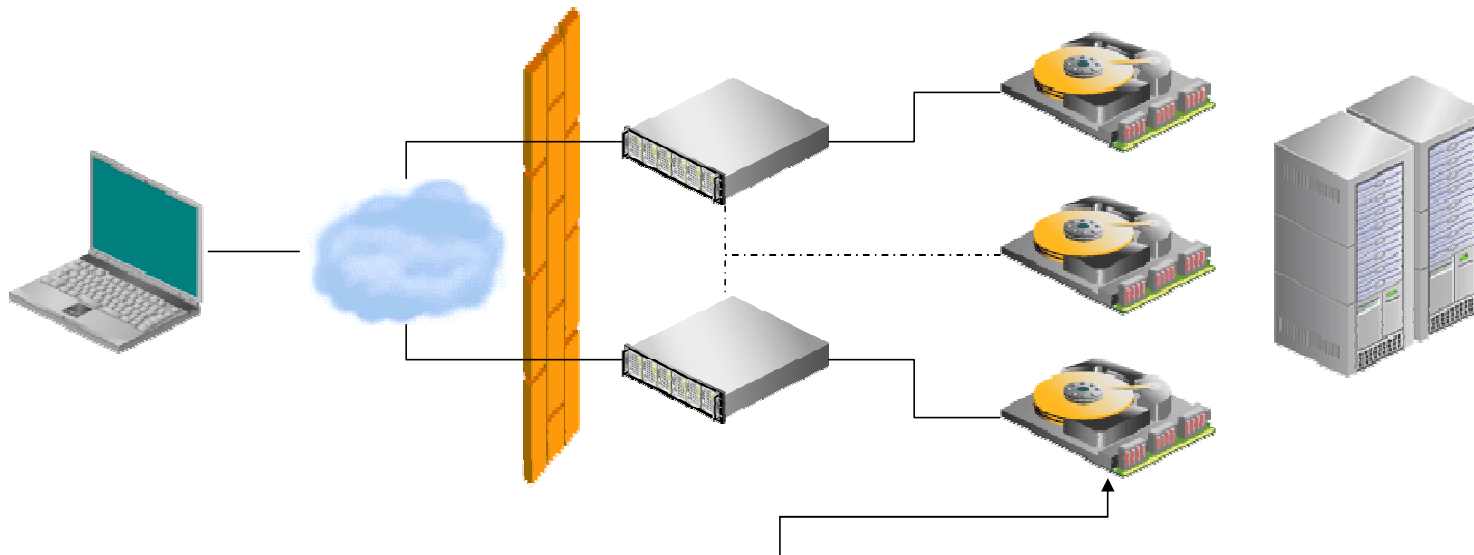
Servers

2 Small Instances (1 Database, 1 BI EE)

**Static External IP address and hostname
(elastic IP) for BI only**

**Single CPU, 1.7 GB RAM, 150 GB internal
storage**

PS BI Shared demo environment



Elastic Block Storage

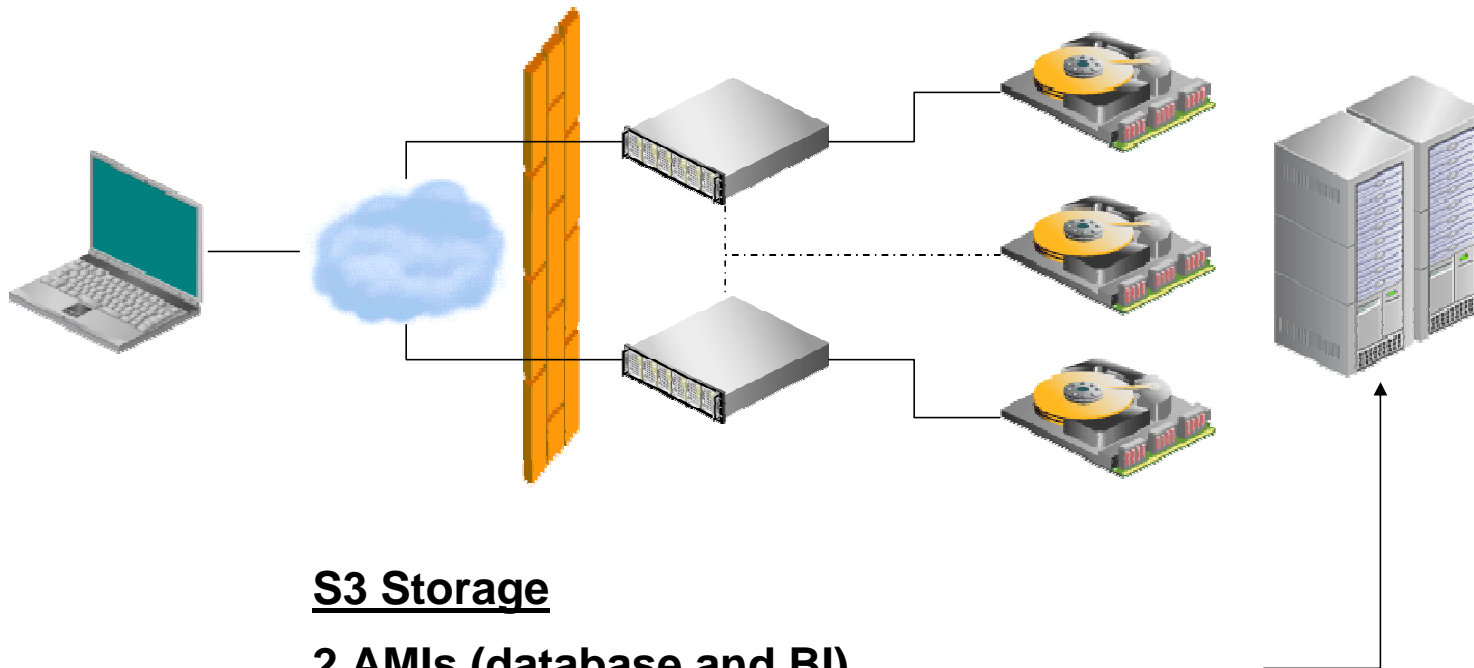
10 GB for software binaries – might be cheaper to just download each time you need it

10 GB for database data files and flash recovery area

5 GB for BI metadata and cache



PS BI Shared demo environment



S3 Storage

2 AMIs (database and BI)

Backups of EBS volumes

Could do database backups here as well



Instance Types

- **Standard Instances**
 - Instances of this family are well suited for most applications.
- **Small Instance (default)***
 - 1.7 GB memory
 - 1 EC2 Compute Unit (1 virtual core with 1 EC2 Compute Unit)
 - 160 GB instance storage (150 GB plus 10 GB root partition)
 - 32-bit platform
 - I/O Performance: Moderate
 - Price: \$0.10 per instance hour **\$75/month***
- **Large Instance**
 - 7.5 GB memory
 - 4 EC2 Compute Units (2 virtual cores with 2 EC2 Compute Units each)
 - 850 GB instance storage (2x420 GB plus 10 GB root partition)
 - 64-bit platform
 - I/O Performance: High
 - Price: \$0.40 per instance hour **\$300/month***
- **Extra Large Instance**
 - 15 GB memory 8 EC2 Compute Units (4 virtual cores with 2 EC2 Compute Units each)
 - 1,690 GB instance storage (4x420 GB plus 10 GB root partition)
 - 64-bit platform
 - I/O Performance: High
 - Price: \$0.80 per instance hour **\$600/month***
- **High-CPU Instances**
 - Instances of this family have proportionally more CPU resources than memory (RAM) and are well suited for compute-intensive applications.
- **High-CPU Medium Instance**
 - 1.7 GB of memory
 - 5 EC2 Compute Units (2 virtual cores with 2.5 EC2 Compute Units each)
 - 350 GB of instance storage
 - 32-bit platform
 - I/O Performance: Moderate
 - Price: \$0.20 per instance hour **\$150/month***
- **High-CPU Extra Large Instance**
 - 7 GB of memory
 - 20 EC2 Compute Units (8 virtual cores with 2.5 EC2 Compute Units each)
 - 1690 GB of instance storage
 - 64-bit platform
 - I/O Performance: High
 - Price: \$0.80 per instance hour **\$600/month***

***Includes server fee only. IO, AMI storage, EBS fees also apply**

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Pricing Calculator – 2 servers full time, 2 AMLs (<http://calculator.s3.amazonaws.com/calc5.html>)

Amazon S3 (US)	Storage:	<input type="text" value="15"/>	GB-months
	Data Transfer-in:	<input type="text" value="5"/>	GB
	Data Transfer-out:	<input type="text" value="5"/>	GB
	PUT/LIST Requests:	<input type="text" value="0"/>	Requests
	Other Requests:	<input type="text" value="0"/>	Requests
Amazon S3 (EUR)	Storage:	<input type="text" value="0"/>	GB-months
	Data Transfer-in:	<input type="text" value="0"/>	GB
	Data Transfer-out:	<input type="text" value="0"/>	GB
	PUT/LIST Requests:	<input type="text" value="0"/>	Requests
	Other Requests:	<input type="text" value="0"/>	Requests
Amazon EC2	Small Instance Compute Usage:	<input type="text" value="1488"/>	Instance Hours
	Large Instance Compute Usage:	<input type="text" value="0"/>	Instance Hours
	Extra Large Instance Compute Usage:	<input type="text" value="0"/>	Instance Hours
	High-CPU Medium Instance Compute Usage:	<input type="text" value="0"/>	Instance Hours
	High-CPU Extra Large Instance Compute Usage:	<input type="text" value="0"/>	Instance Hours
	Data Transfer-in:	<input type="text" value="10"/>	GB
	Data Transfer-out:	<input type="text" value="5"/>	GB
	EBS Storage (Volumes):	<input type="text" value="25"/>	GB-months
	EBS I/O Requests:	<input type="text" value="31"/>	Million Requests
	EBS Snapshots Storage:	<input type="text" value="0"/>	GB-months
	EBS Snapshots GET Requests:	<input type="text" value="0"/>	Requests
	EBS Snapshots PUT Requests:	<input type="text" value="0"/>	Requests

Estimate of Your Monthly Bill			
Amazon S3 (US)	Storage	\$	<input type="text" value="2.25"/>
	Data Transfer	\$	<input type="text" value="1.35"/>
	Requests	\$	<input type="text" value="0.00"/>
	Amazon S3 (US) Bill:		\$ <input type="text" value="3.60"/>
Amazon S3 (EUR)	Storage	\$	<input type="text" value="0.00"/>
	Data Transfer	\$	<input type="text" value="0.00"/>
	Requests	\$	<input type="text" value="0.00"/>
	Amazon S3 (EUR) Bill:		\$ <input type="text" value="0.00"/>
Amazon EC2	Compute	\$	<input type="text" value="148.80"/>
	Data Transfer	\$	<input type="text" value="1.85"/>
	EBS Volumes	\$	<input type="text" value="5.60"/>
	EBS Snapshots	\$	<input type="text" value="0.00"/>
	Amazon EC2 Bill:		\$ <input type="text" value="156.25"/>
Amazon SQS	Messaging	\$	<input type="text" value="0.00"/>
	Data Transfer	\$	<input type="text" value="0.00"/>
	Amazon SQS Bill:		\$ <input type="text" value="0.00"/>
Total Monthly Payment:		\$	<input type="text" value="159.85"/>

BI Demo Environment < \$200/month

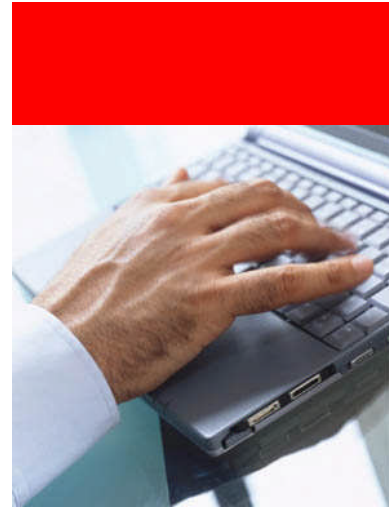


Cloud Computing Summary

- Changes software development processes
 - Biggest impact on IT
 - Developers impacted -> Tech Bus. Dev -> Users
- Allows new levels of developmental collaboration
- Direct costs measurements changes economics of computing
 - This will make it succeed
- Security, availability, reliability
 - These could make it fail



Top Security Headlines



Cyber Security

THE WALL STREET JOURNAL Digital Network

WSJ.com

MarketWatch

BARRONS

All Things Digital

SmartMoney

More ▾

News, Quotes, Companies, Videos

SEARCH

Saturday, February 21, 2009 As of 12:00 PM GMT

THE WALL STREET JOURNAL

OPINION JOURNAL

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TOP STORIES IN Opinion

1 of 10 Treasury's Unreality Show

2 of 10 William McGurn: In Obama We Trust

3 of 10 Matt Miller: Obama Wants to Move the Sunshine

REVIEW & OUTLOOK | FEBRUARY 21, 2009

Winning a Cyber War

The 'soft underbelly' of U.S. security.

Article

MORE IN OPINION »

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The Central Asian Republic of Kyrgyzstan experienced a cyber attack last month that took down its two largest Web sites. But that's small beer compared to what happened to the Pentagon and several other U.S. agencies in 2007, when cyber attackers successfully hacked into their computer systems, including Defense Secretary Robert Gates's email.



AP

Welcome to the brave new world of cyber war, an area where the U.S. lacks the dominance it enjoys in traditional military arenas. President Obama's recent appointment of Melissa Hathaway to head a 60-day cyber security review is a sign that he is serious about stepping up the battle in cyber space.

Like other forms of terrorism,



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Breaches Common Front Page News

This collage illustrates the prevalence of security breaches in front-page news. It features four distinct news snippets:

- msnbc**: A headline in red text reads "2.3 million consumer financial records stolen". Below it, a sub-headline mentions "Data Breach at [redacted]". The article is by THE ASSOCIATED PRESS, dated March 24, 2006, and reports on a laptop theft from a mutual fund manager.
- The New York Times**: A headline reads "Outside the Beltway" with a sub-headline "Another Government Computer Security Breach - FBI". The article is by Richard Gardner, dated Thursday, July 6, 2006.
- GOVERNMENT EXECUTIVE .COM**: A headline reads "More sensitive information goes missing from VA". The article is by Daniel Pulliam, dated August 7, 2006, and discusses the loss of sensitive information from the Department of Veterans Affairs.
- money.com**: A headline reads "Security breach may be biggest yet". The article is dated Thursday, June 22, 2006, and mentions a theft of a file server and other hardware from an insurance provider.

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Publicly Available = Public Exposure

A Chronology of Data Breaches

Posted April 20, 2005
Updated February 23, 2009

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Privacy Rights Clearinghouse / UCAN

Privacy Rights CLEARINGHOUSE

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www.privacyrights.org/search/search.php
Have a Question?
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HOME

A Chronology of Data Breaches



TOTAL number of records containing sensitive personal information involved in security breaches in the U.S. since January 2005.	253,399,762 What does the total number indicate?
---------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------

Printing tip: Use the "landscape" setting for best results when printing the breach list

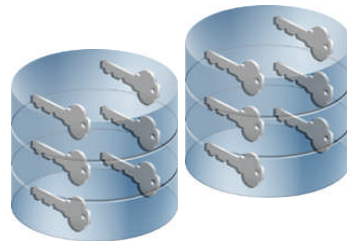


Enterprise Security Challenges

Legacy Tech



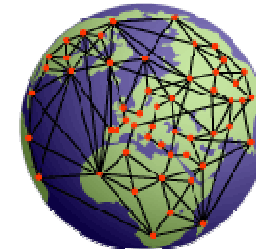
Security Silos



Compliance



Global Threats



ORACLE



Practices & Focal Points





Who...

David C. Knox
Senior Director
National Security Group
Oracle U.S.A., Inc.
Earth
Milky Way



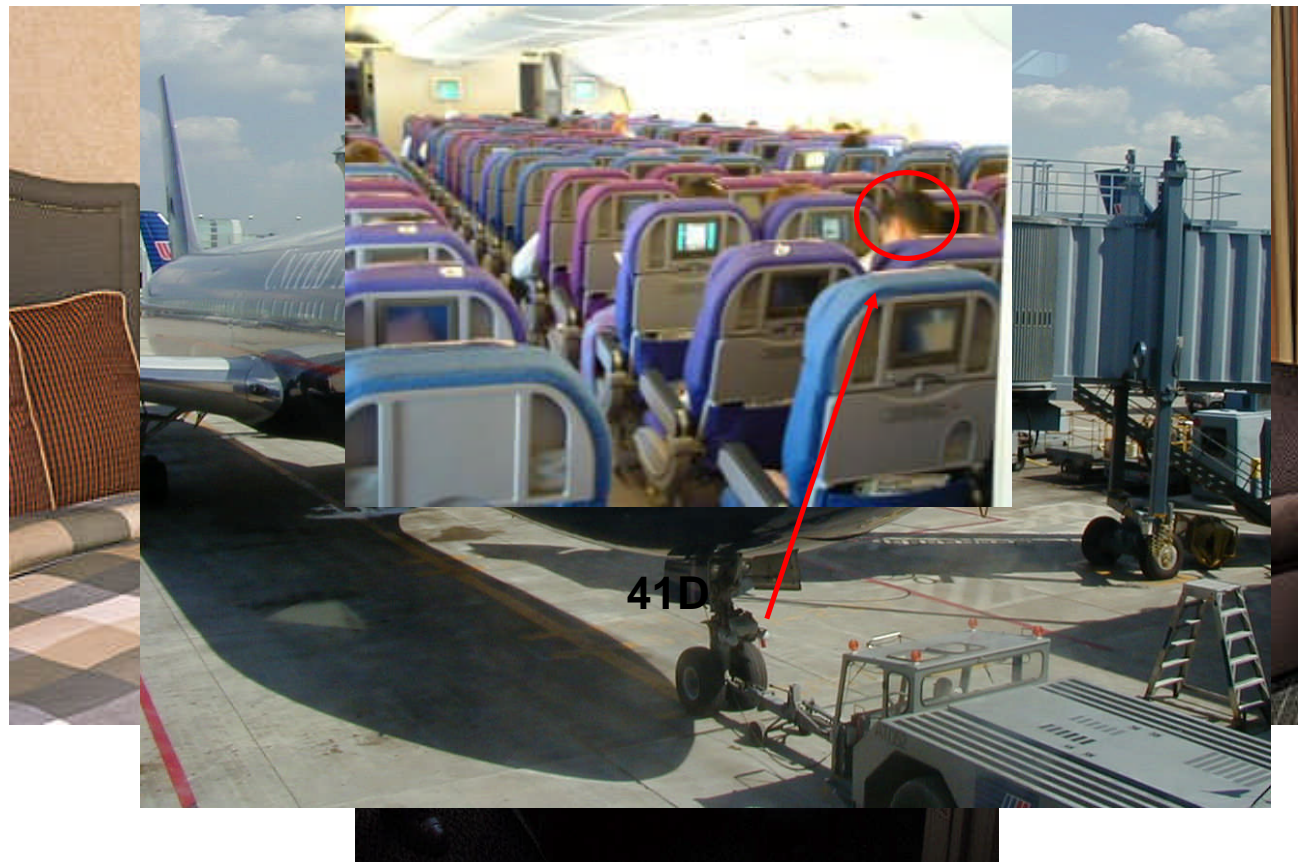
Identification & Authentication

Has Access to What...



Authorizations

From Where





When



Access Controls



and How...



Auditing

ORACLE



So why is this so hard?



Passwords

Authentication tool that, when properly implemented, drives growth at the help desk



Password Policy Example

- Cannot be similar to user's name
- Cannot be easily guessed
- Must be at least 8 characters
- Contains upper and lower case letters
- Contains at least one digit
- Contains at least one special character
- Rotated every 90 days
- Cannot be re-used for 5 years

My current password:

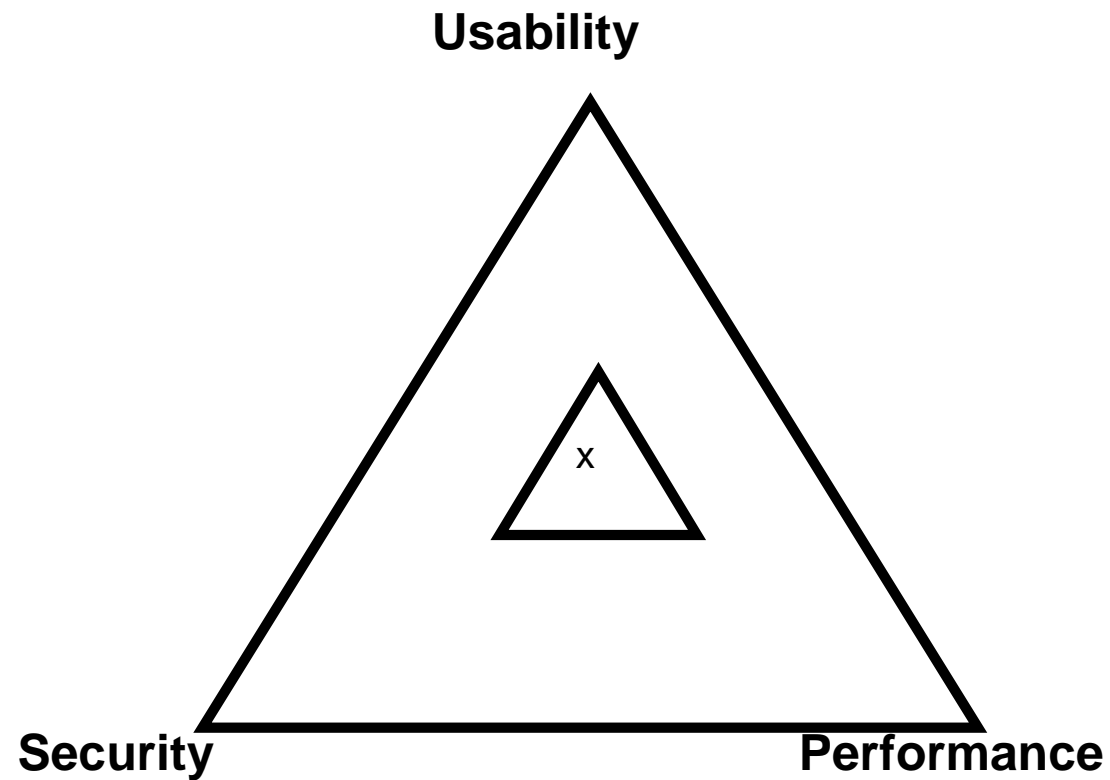
"This1is2Hard!"

s



Balancing the Business

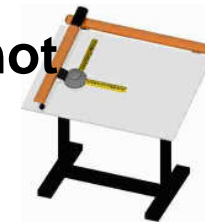
Best Case: Accommodate all requirements





Security Tenets

- Security has to be built in to the system, not bolted on afterwards

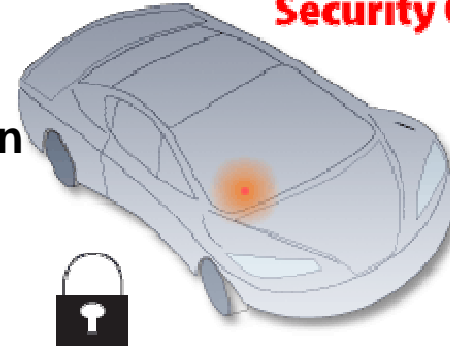




Security Tenets

- Defense in depth
 - Security in layers for higher assurance

**DoorLock
Security ON**



ORACLE™



Security Tenets

- Abide by the least-privilege principle

Create Session

Create Table

Alter Session

Create Procedure

Drop Table

Create View

Create Synonym

Create Sequence





Security Tenets

- Abide by the least-privilege principle

Create Session

Create Table

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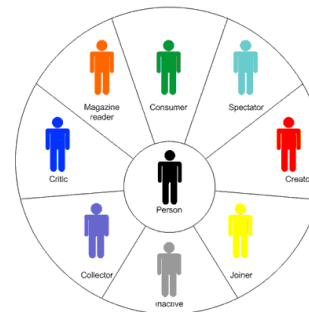
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Strategy- Abide by Least Privileges

- Tighter Controls



- Realms of Responsibility



- Limitation of privileges





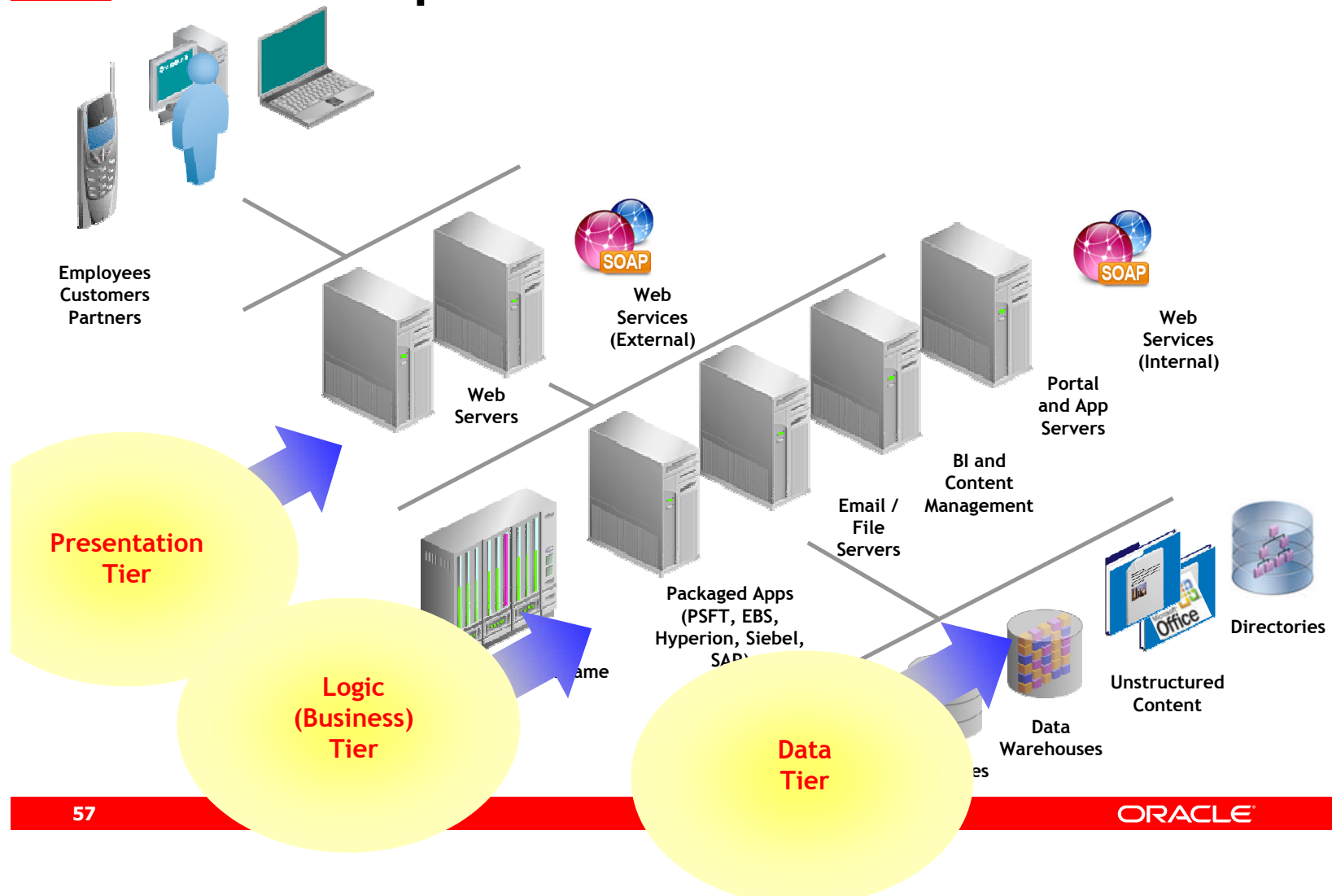
Security Tenets

- Be proactive



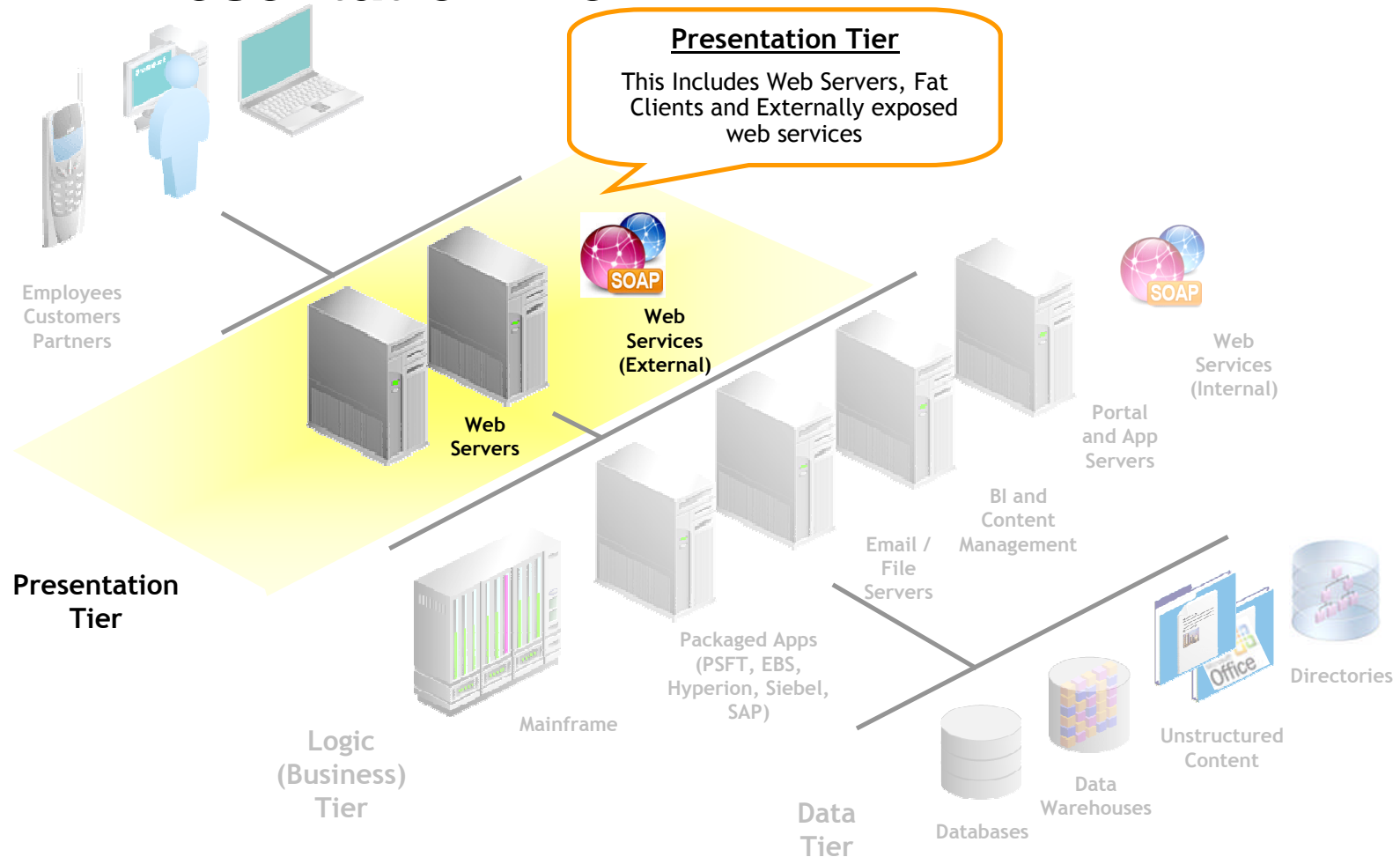


IT Landscape

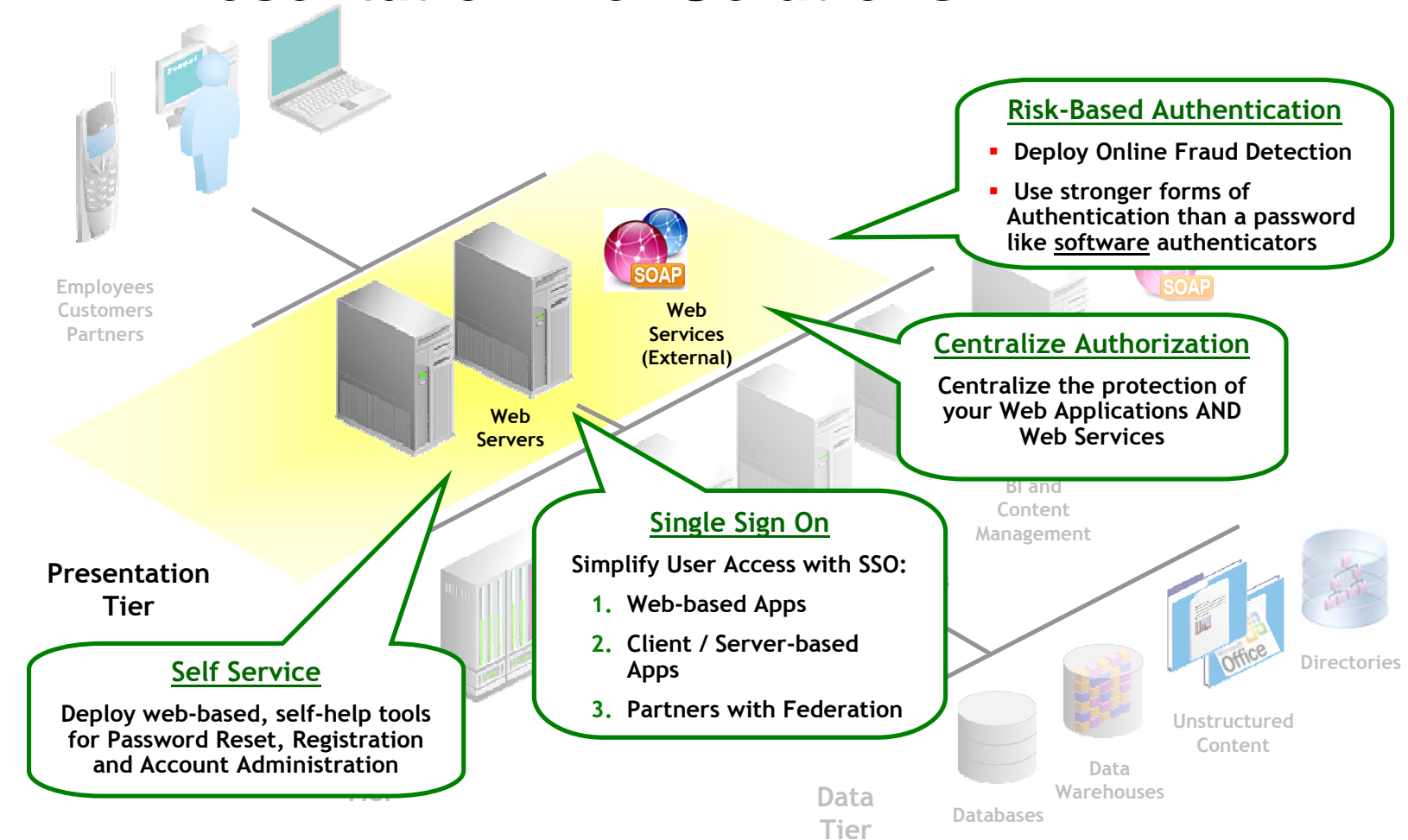




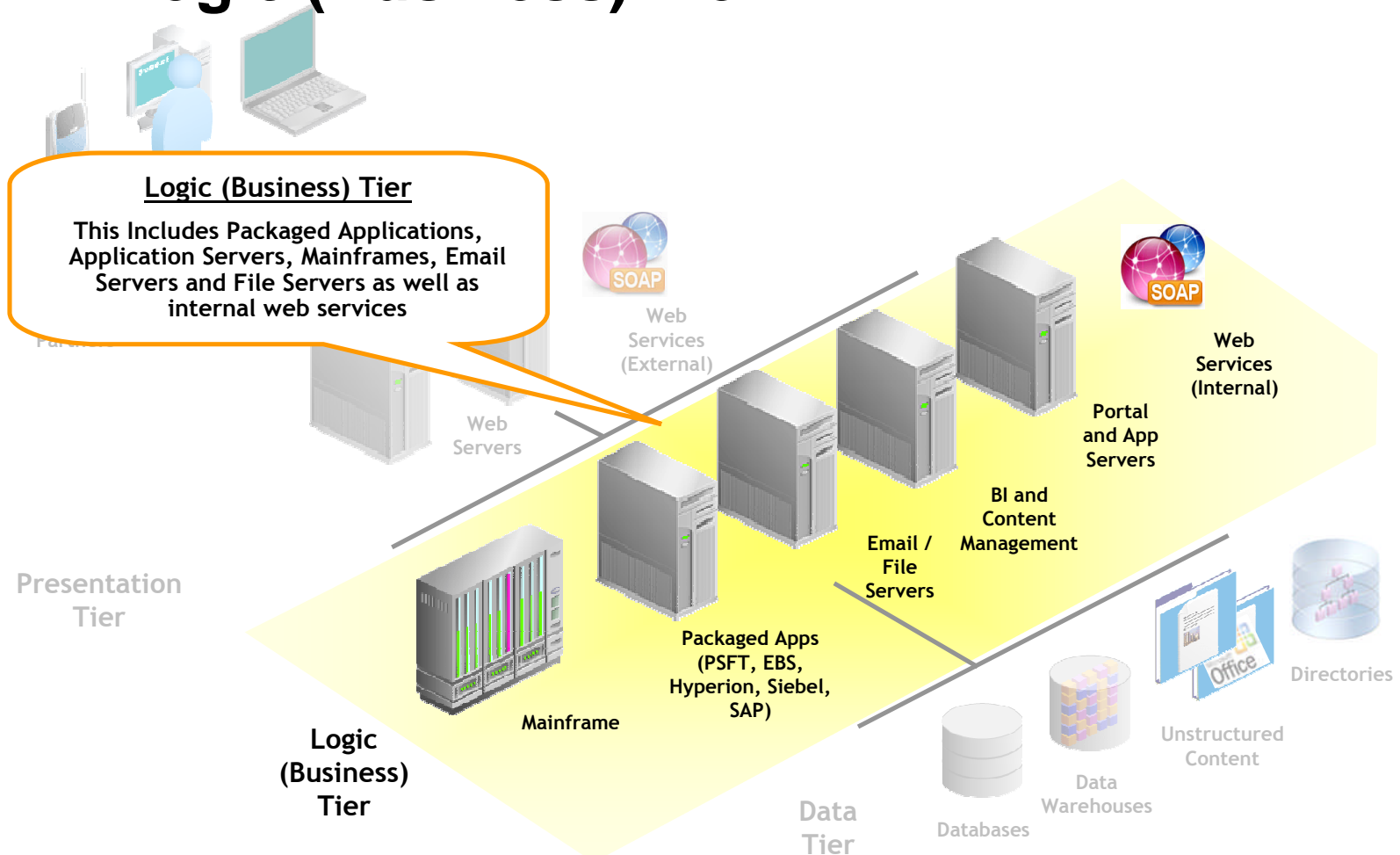
Presentation Tier



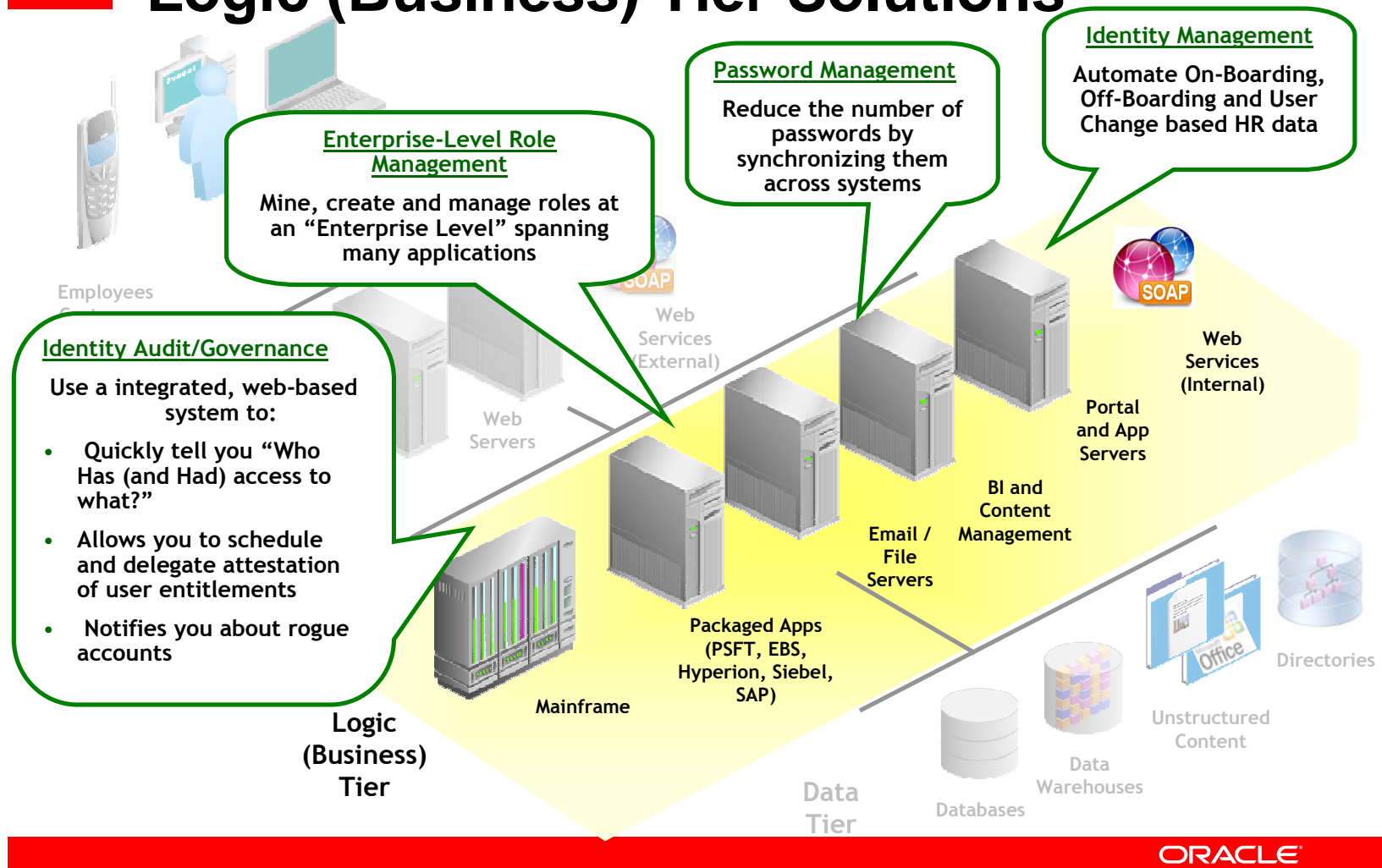
Presentation Tier Solutions



Logic (Business) Tier

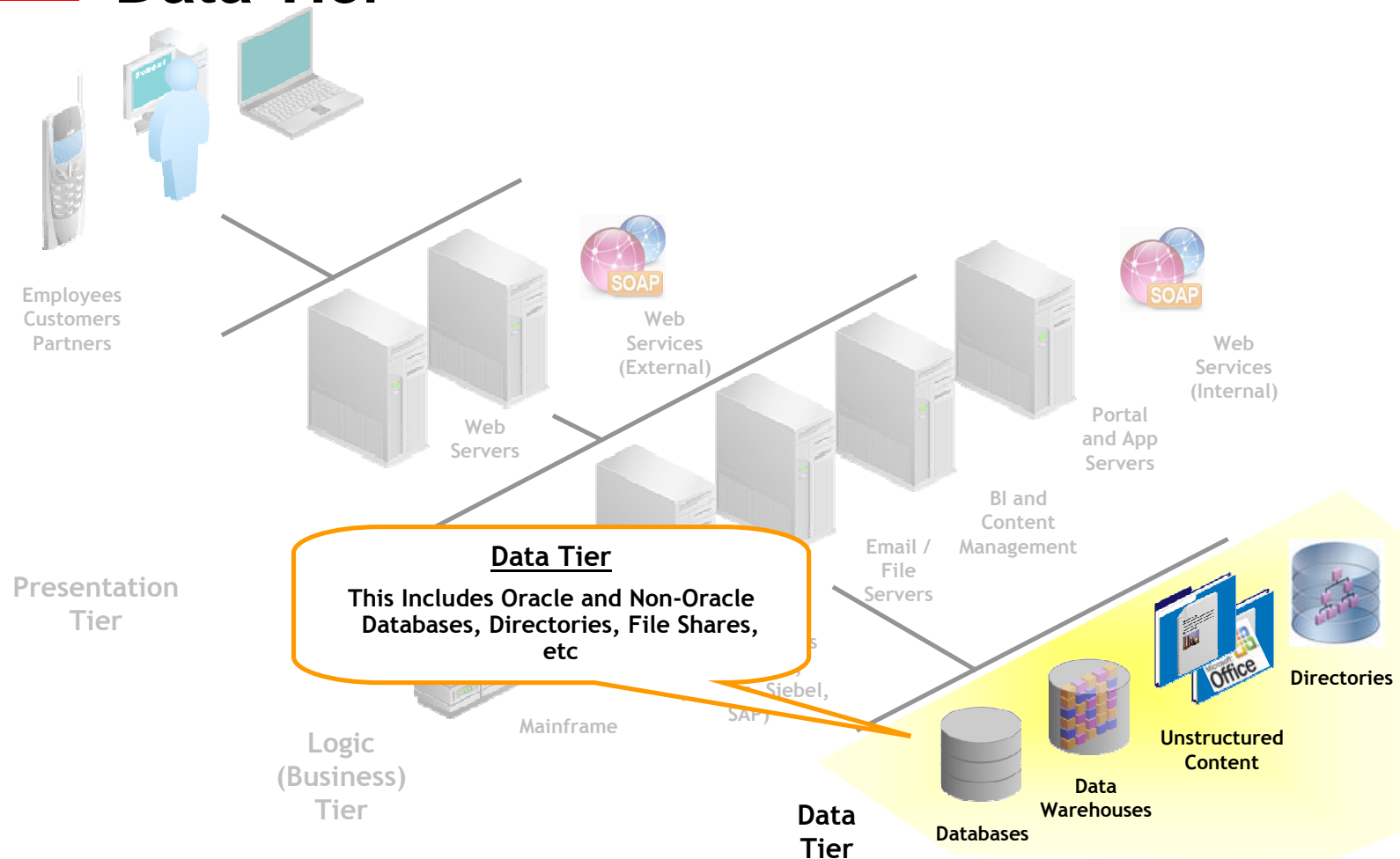


Logic (Business) Tier Solutions

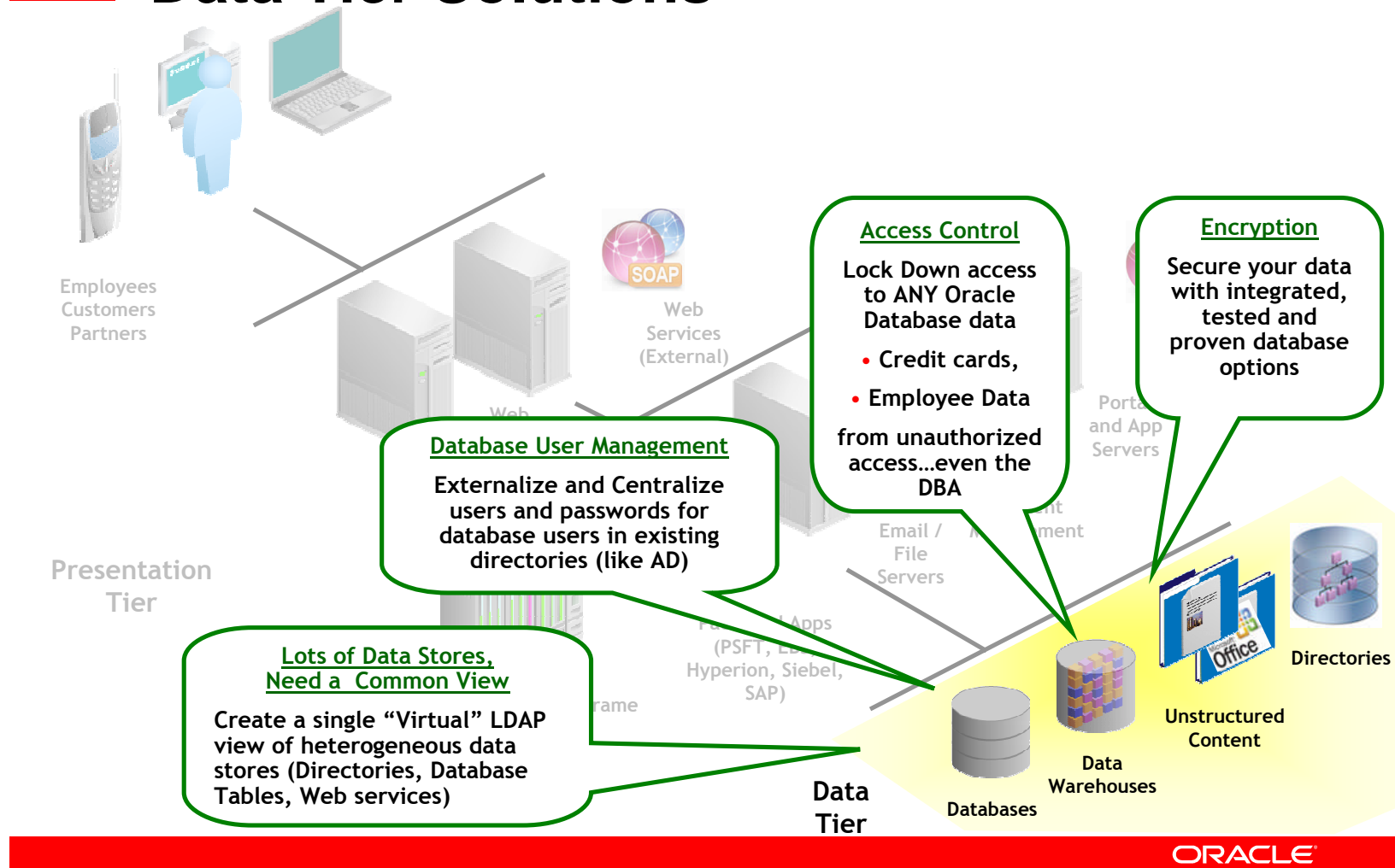




Data Tier



Data Tier Solutions



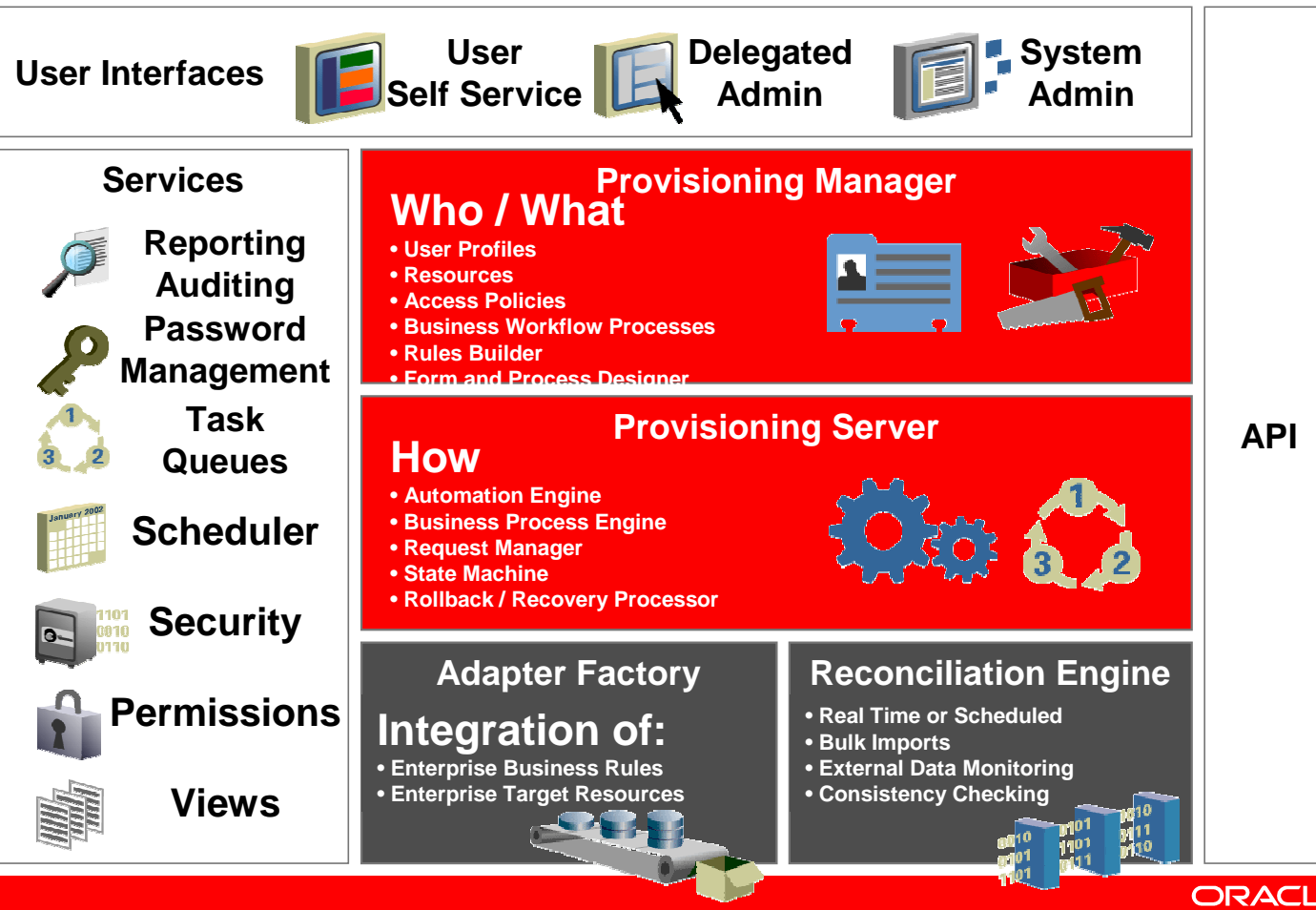


What's Hot



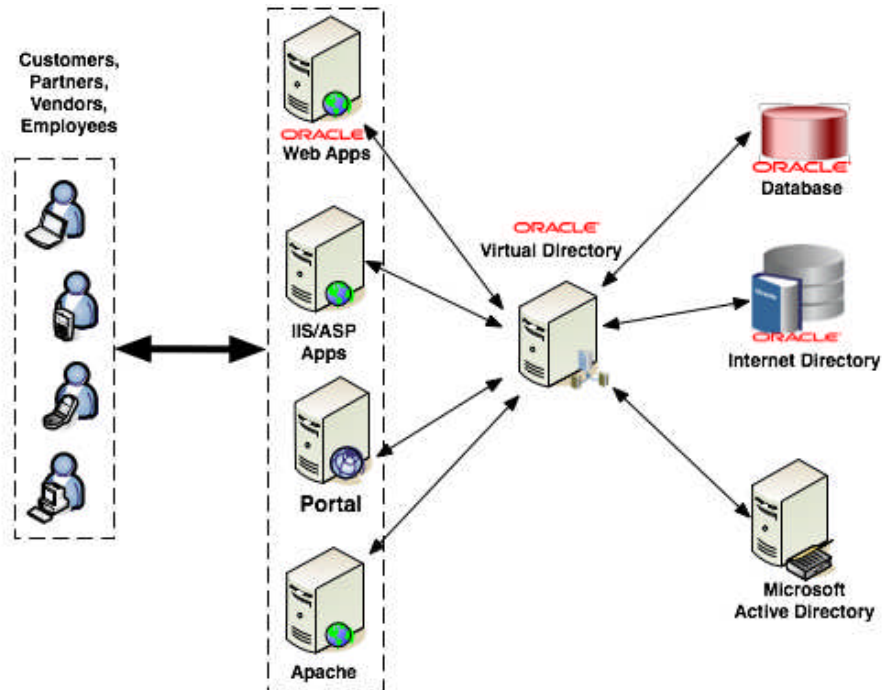


Oracle Identity Manager



Oracle Virtual Directory

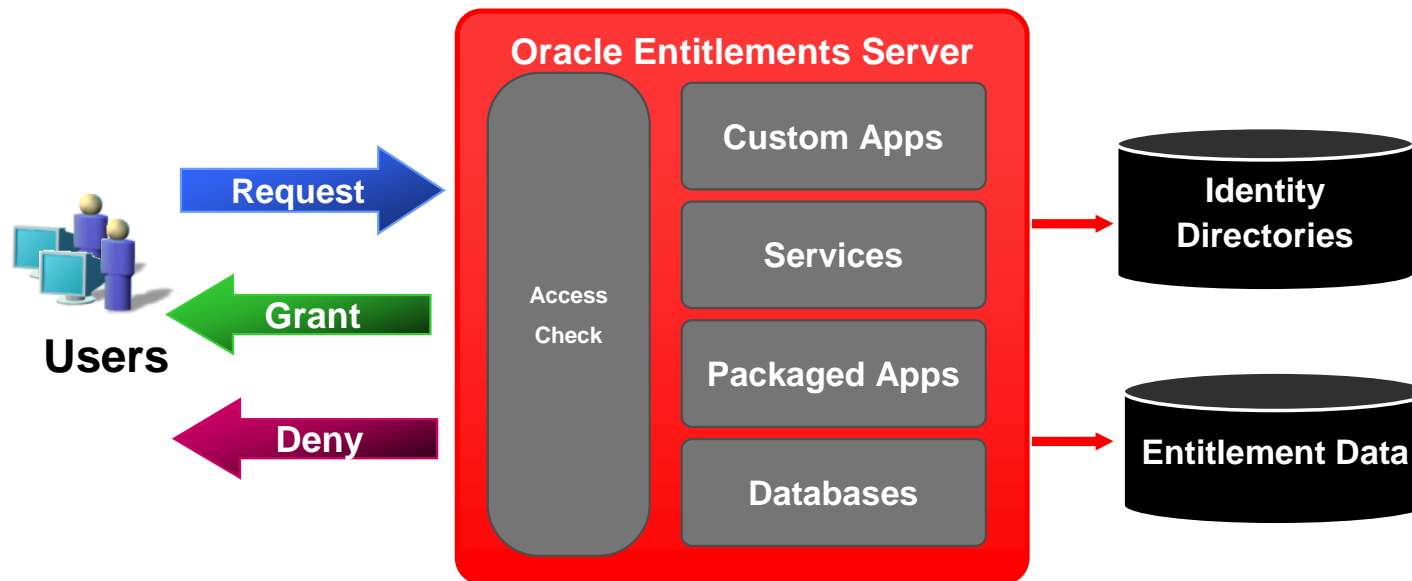
- LDAP interface to non-directory data including databases and Web Services
- Abstraction layer to scattered data





Oracle Entitlements Server

Oracle Entitlements Server (OES) is a Fine-Grained Entitlements Management Solution that provides *centralized policy management* and *distributed, runtime policy enforcement* for applications and SOA





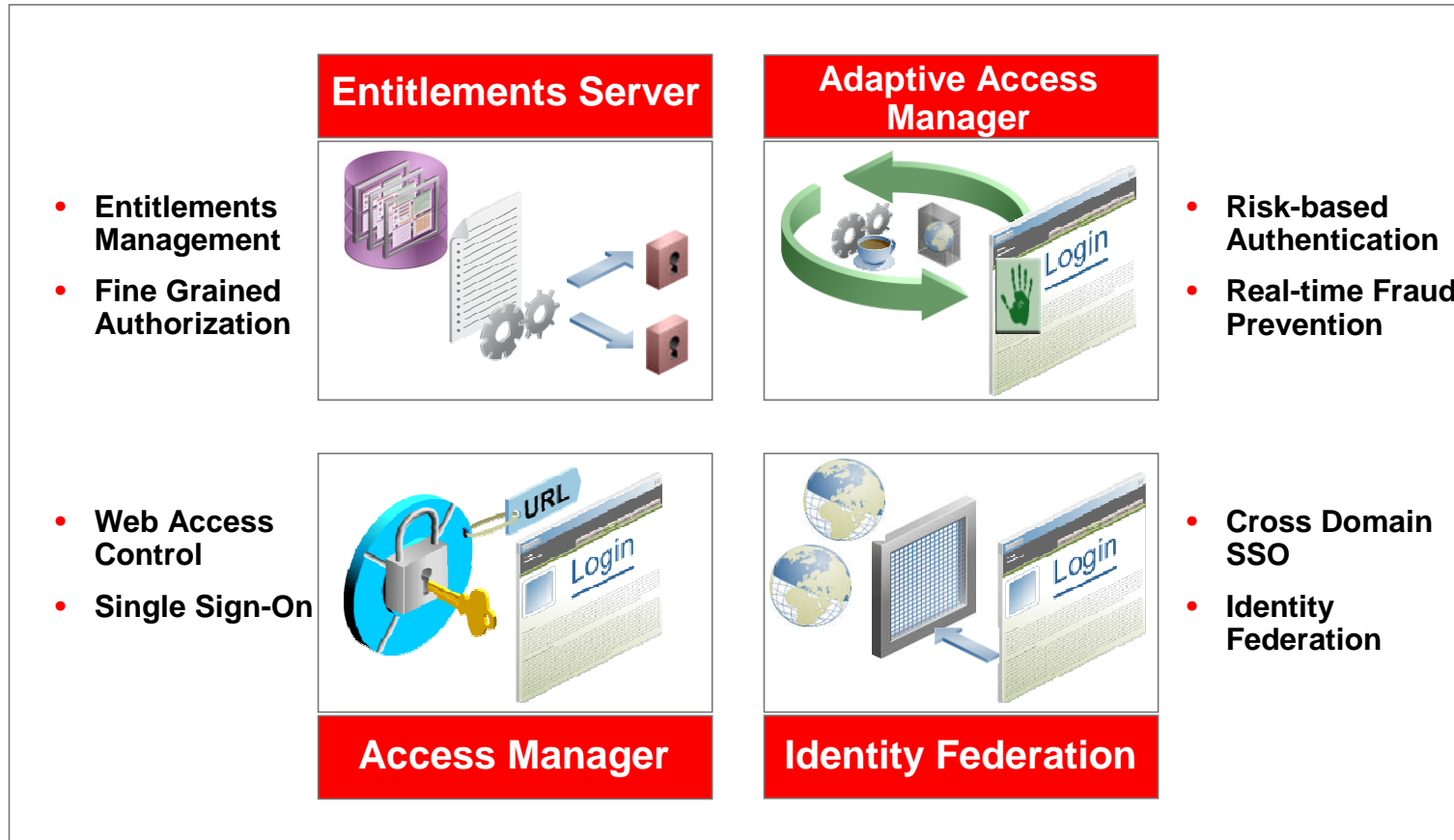
OAAM Authenticator

Key Capabilities

- Mutual authentication via personalized images
- Virtual authenticator
 - Protect passwords
 - PINs
 - Challenge questions
- Control & randomize placement of authenticators in the browser

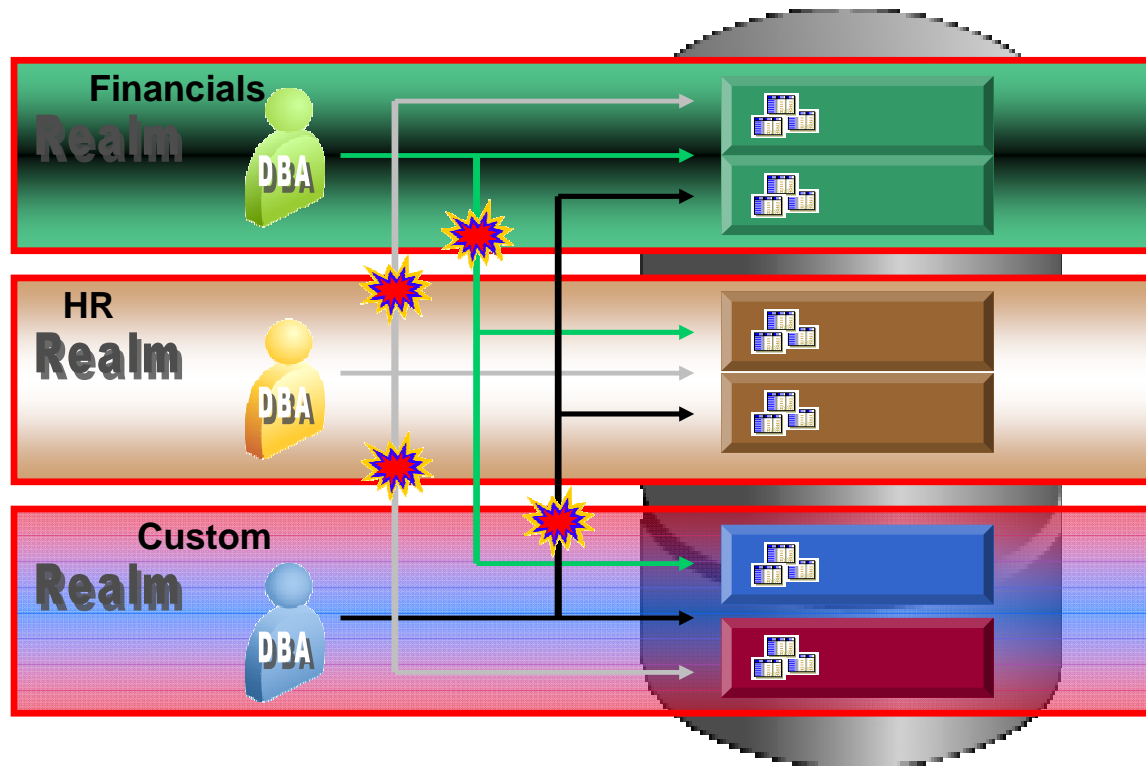


Oracle Access Management Suite 10g

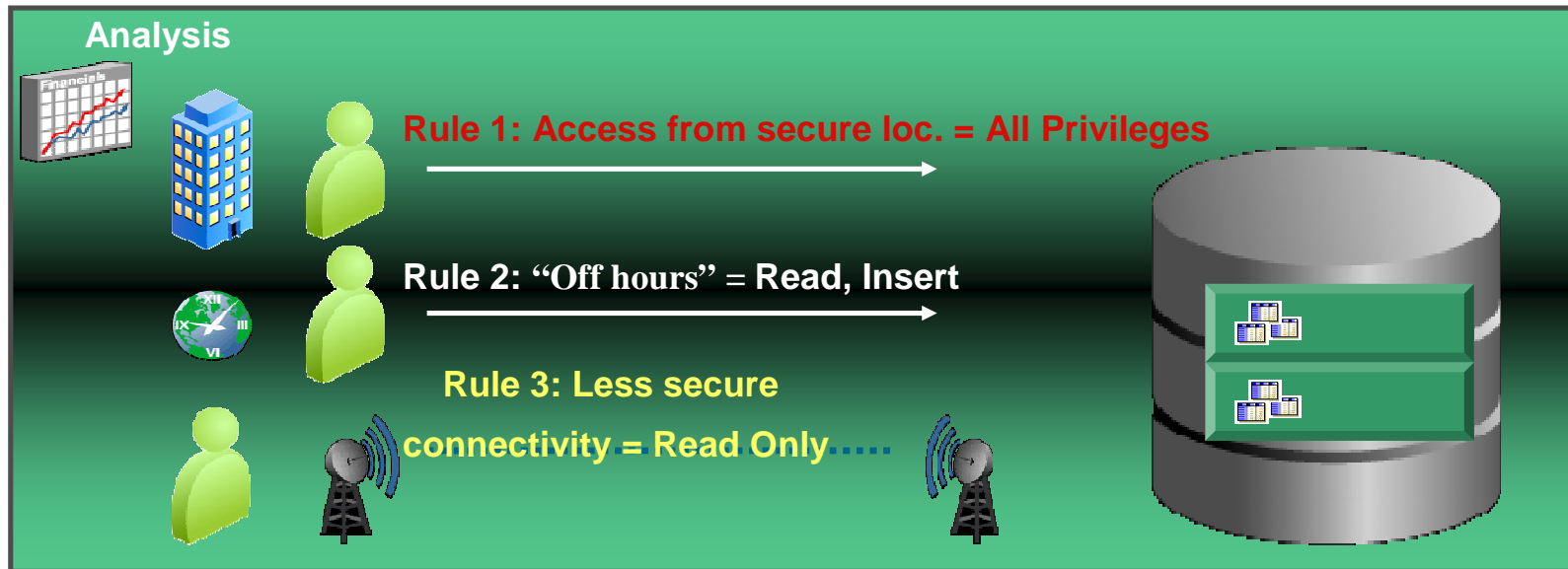




Database Vault



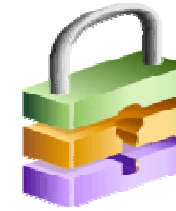
Adaptive Security: Rules & Factors



- Rules enforce access based on factors
- Factors can be anything
- Rules validate all factors before allowing access

Oracle Database Vault

Built-In Factors Overview



- **User Factors**
 - Name
 - Authentication type
 - Session User
 - Proxy Identity
- **Database Factors**
 - Database IP
 - Database Instance
 - Database Hostname
 - Database SID
- **Network Factors**
 - Machine name
 - Client IP
 - Network Protocols
- **Runtime Factors**
 - Language
 - Date
 - Time
- **Extensible**
 - Define custom factors



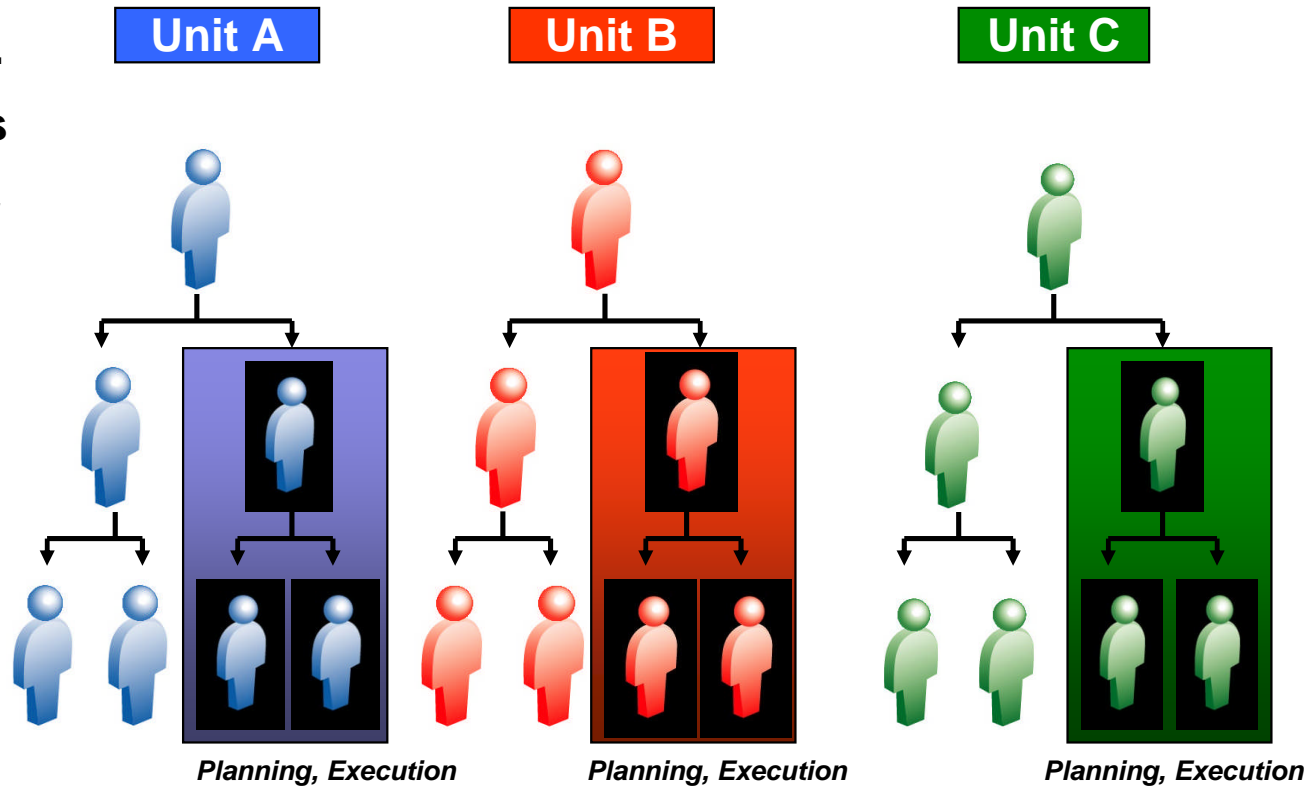
Oracle Label Security

Levels
+ Comp.
+ Groups

Vice President

Director

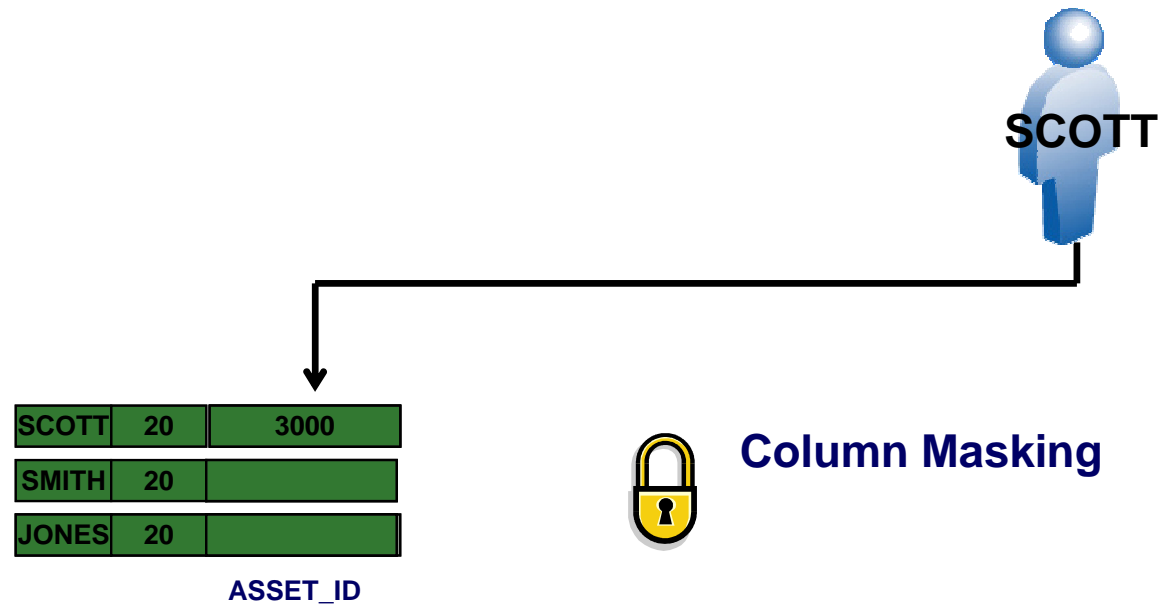
User





Column Security

Policy on ASSET_ID Column: Name = User



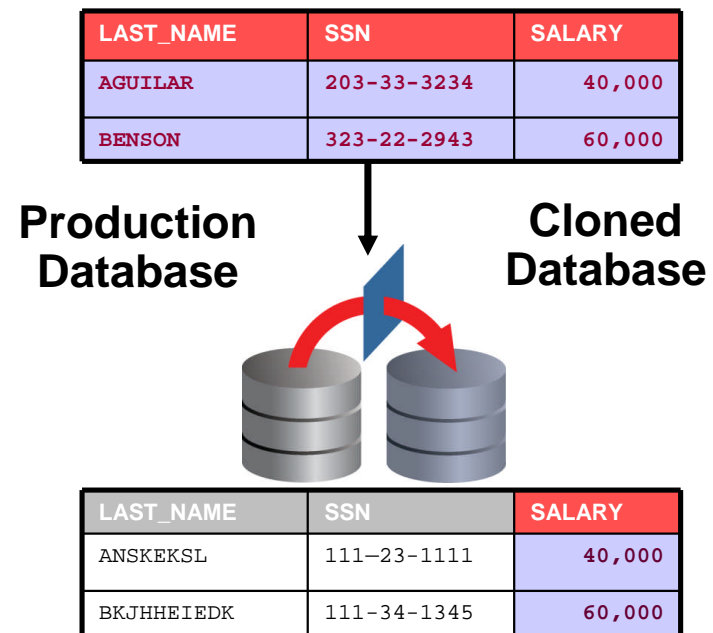
When Column is queried, security policy fires and strips sensitive column data for affected rows

Data Masking

Oracle Enterprise Manager

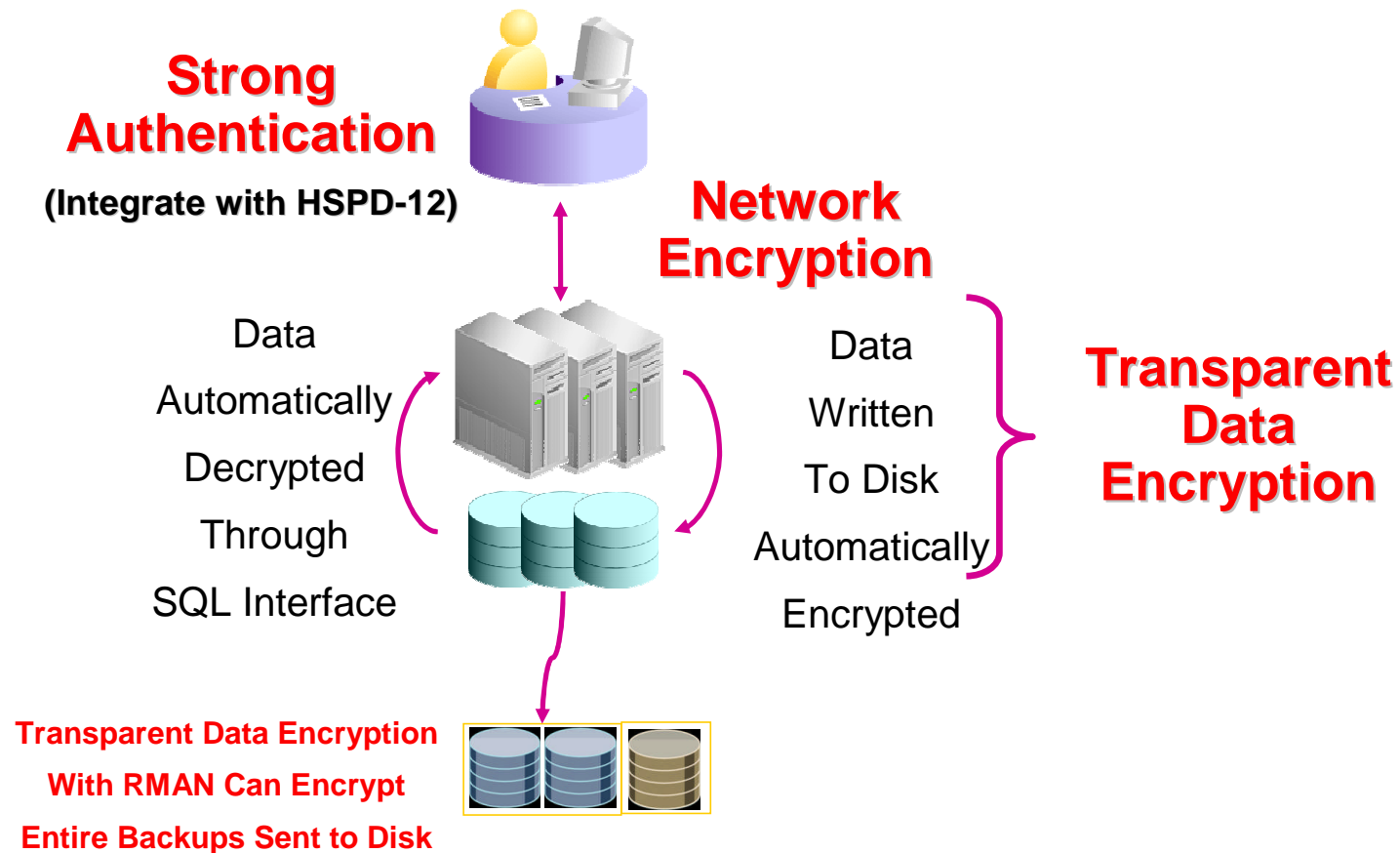


- Automates production data masking
 - Easily mask existing application data
 - No impact on production database
- Built-in data relationship discovery
 - Use foreign key definitions
 - Define custom data relationships



Oracle Advanced Security

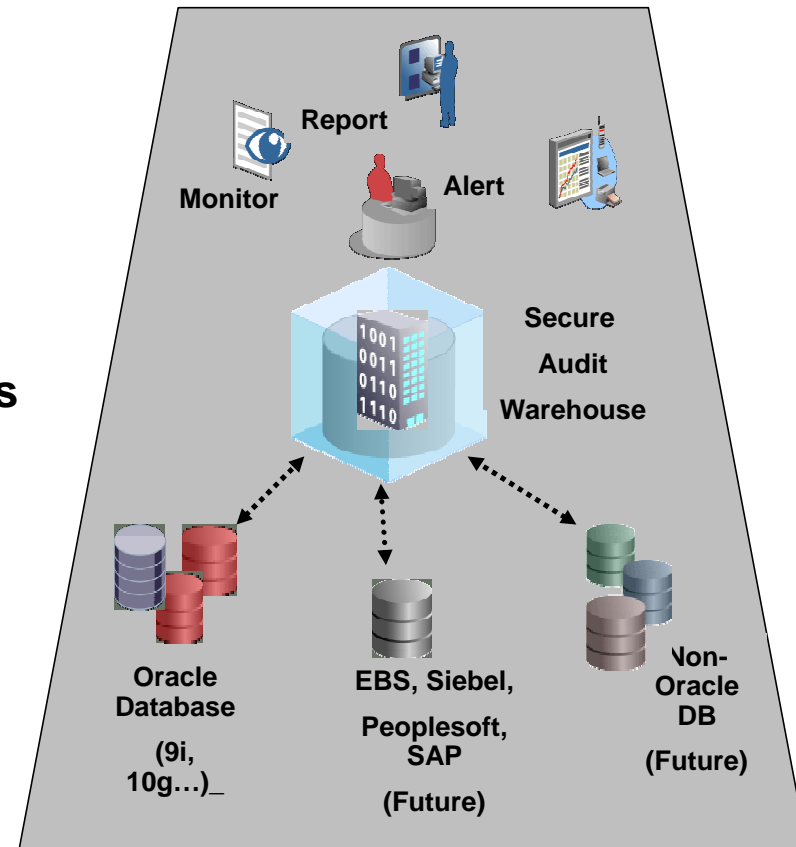
Encryption and Strong Authentication Services



Oracle Audit Vault

*Database-wide auditing solution for compliance
& insider threat*

- **Compliance Auditing**
 - Built-in reports
 - Published data warehouse
 - Configurable Alerts
 - Manage audit settings
- **Detect and Prevent Insider Threats**
 - Detect suspicious activity early
 - Escalate auditing as needed
- **Protect and Secure valuable audit data**
 - Consolidate and eliminate audit silos
 - Investigations and remediation (Breach notification laws)





Way Ahead





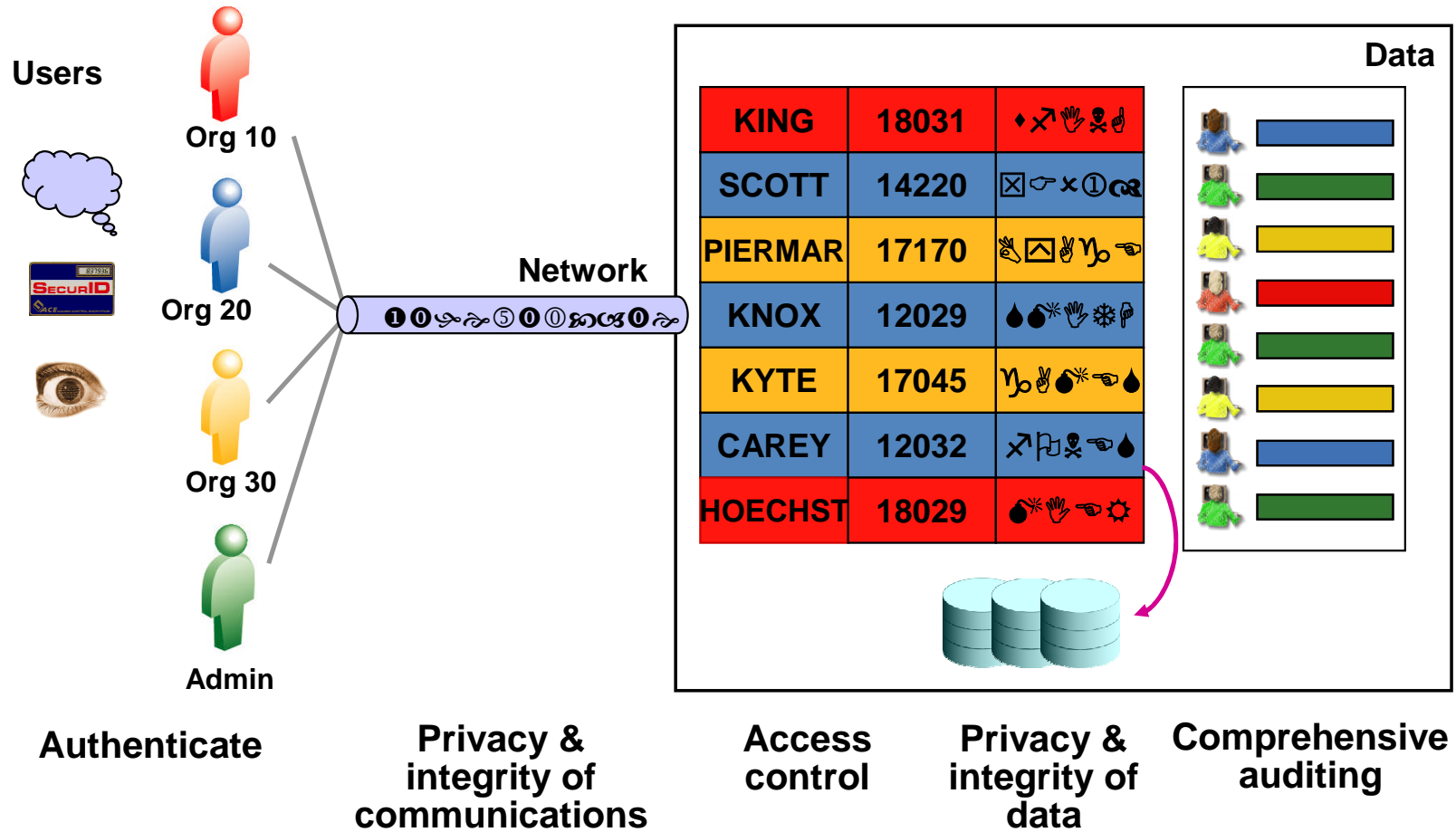
Enterprise Security

Core Requirements

- Security must provide
 - End to end security
 - Contextual and adaptive access controls
 - Manageability within enterprise IT infrastructure
 - Simplified, yet robust protection



Defense in Depth



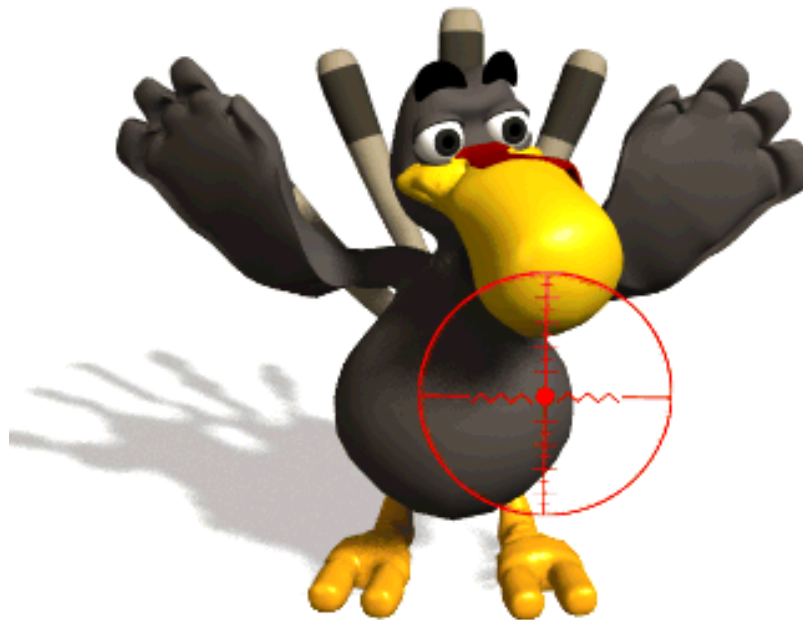


The Plan

- Secure Information at its source
 - Protect from Administrators/Super-users abuse
- Create a Security Infrastructure
 - Identity Management
 - Access Management
 - Provisioning
- Extend security to new business models
- Share data and collaborate securely
- Link it all together
 - Databases, E-Business Applications, Custom Applications
- Audit and Report



Questions & Answers?





The preceding is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions.

The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.



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Closing Thoughts



Security



Identity
Management

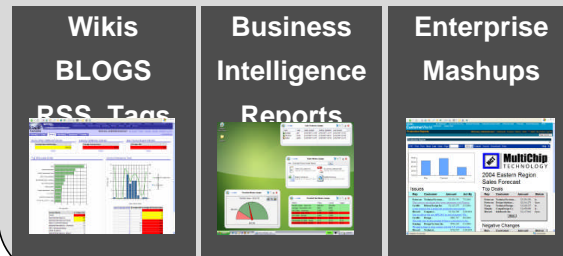
Audit
Vault

Database
Vault

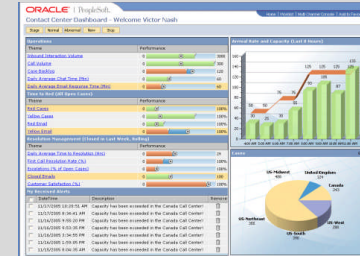
Label
Security

Encryption

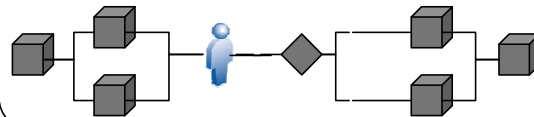
Web Center Portal



Business Activity Monitoring



BPM & BPEL



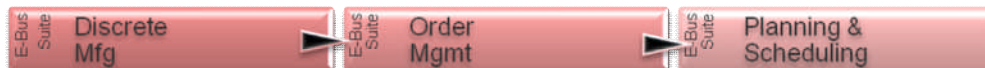
Custom
Web
Services

Legacy/
Reuse



Applications Integration Architecture

COTS Web Services

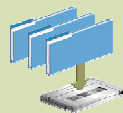


Data Management

Oracle Data Integrator (ETL)



Content Mgmt



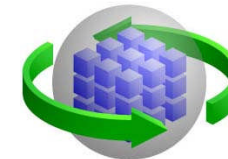
Data Warehouse



OLAP



SOA Governance



Web Services
Security

SOA
Registry

SOA
Repository



Auditor “Low Hanging Fruit” in IT

- Orphaned Accounts
- Separation of duties
- Integrity of audit data
- Role-based access control

So...some common threads for ORCL

- Centralize user and access mgt.
- Privileges controls
- Least-privilege
- Audit integrity and reporting



Q4 Call to Action

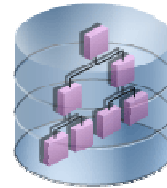
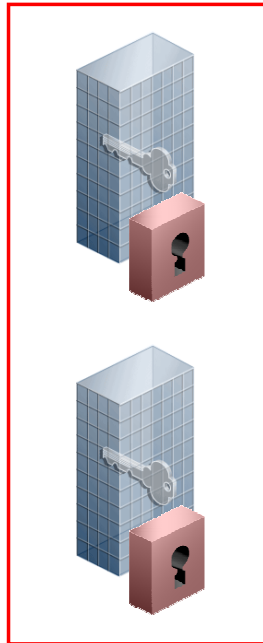
Leveraging Oracle

- Add End-2-End Security to every ECM discussion
 - “Protect Your Assets, Brand, Customers”
 - Cross-sell and Up-sell
- When you hear issues, bring in the experts
 - Regional SC's for initial discovery
 - Security Pillar SC's for deeper dives



Enterprise Security Trends

Externalize Security From Business Applications



Identities
Attributes



Authentication

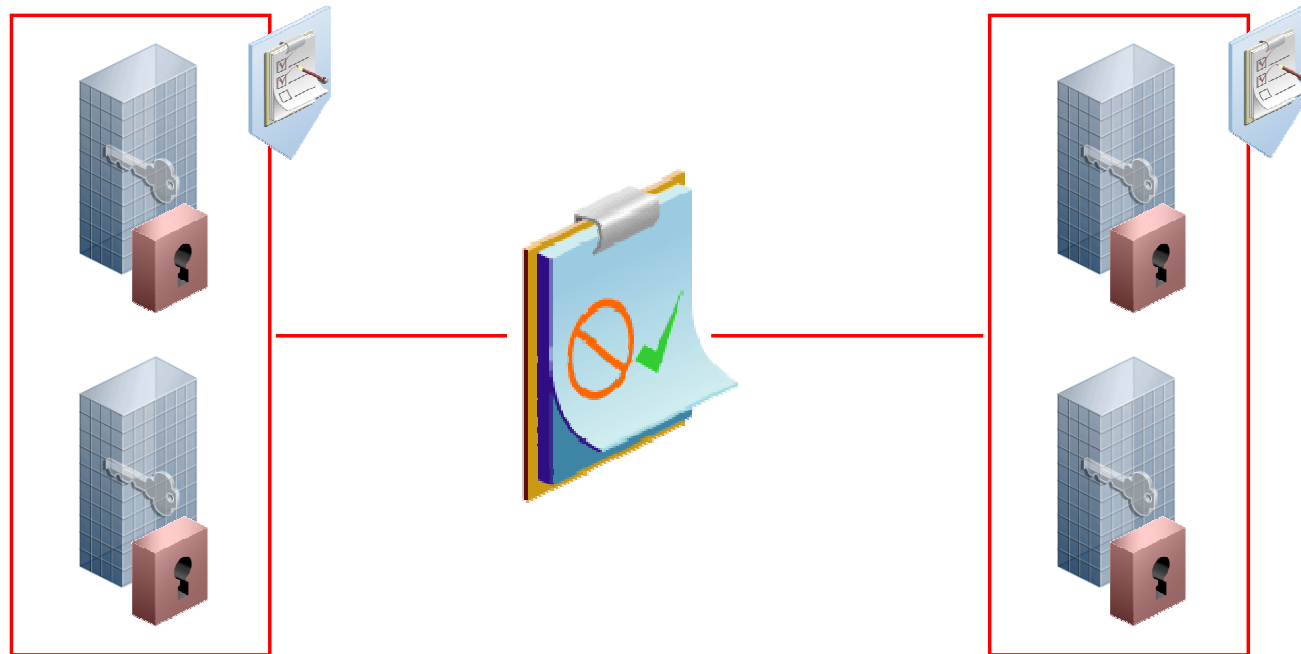


Entitlements
Authorizations



Enterprise Security Trends

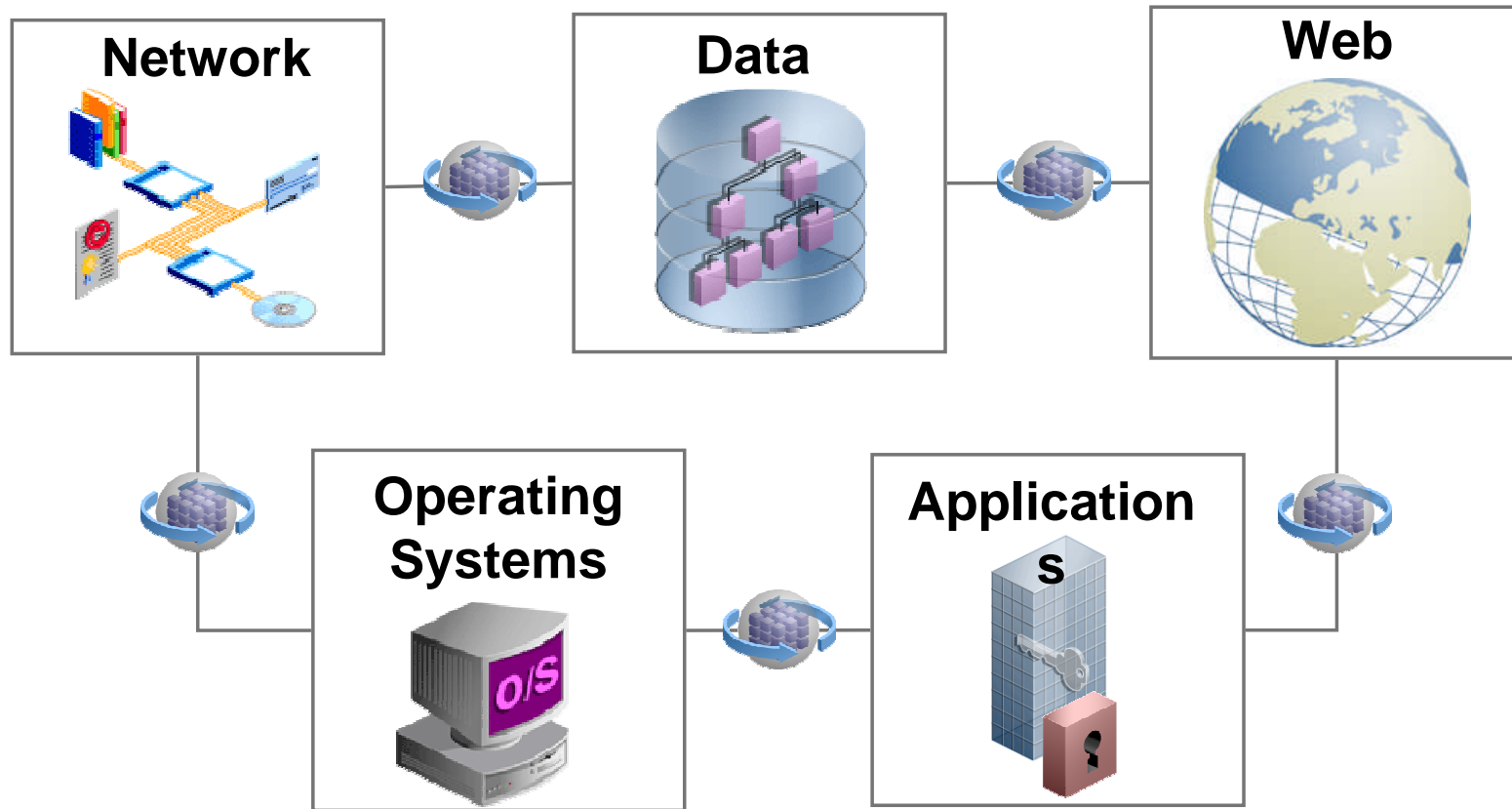
Centralize Business & Security Policies





Enterprise Security Trends

Evolve to Multi-tier, Multi-domain Deployments

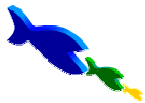




Enterprise Security Trends

Protect Against Continued Global Threats

External



Phishing



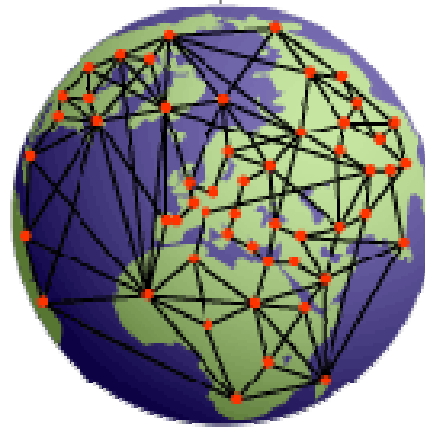
Malware



Trojans



Botnets

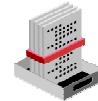


Internal

Misuse



Rogue code



Weak policy



Perimeter

