



COLLABORATE 19
TECHNOLOGY AND APPLICATIONS FORUM
FOR THE ORACLE COMMUNITY

What Oracle EBS Users Need to Know About the Cloud:

Exploring Cloud Offerings and Smart Strategies

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Session ID:
11109

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CC 3RD FL 301A

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Preface

- This presentation has been developed over the past 3 years and morphed as new cloud concepts, offerings, and hype has emerged.
- Initially there was a significant amount of detail on the origin of cloud as well as definitions and descriptions of the common terminology and acronyms.
- It is all still in this presentation. Thus... the 98 slides
- The index below will help in you navigate depending upon what your focus is

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Overview / Agenda

- Introductions and audience survey
- Back in the old days...
- Fundamentals of the Data Center
- Potential Benefits of the Cloud
- Cloud challenges and potential pitfalls
- Cloud Alphabet soup
- Oracle and “The Cloud”
- What you should do if you’re running a viable on premise platform



Speaker Intro

- Art Dowd, Consulting Director, O2Works
 - Former VP of IT for Hospitality Company
 - Extensive business background
 - Implemented / Upgraded Oracle eBusiness Suite
 - 20 years with Oracle Applications
 - Experience with Oracle Consulting and two well regarded Oracle Applications consulting firms
 - Board Member of OAUG Upgrade SIG

Audience Survey

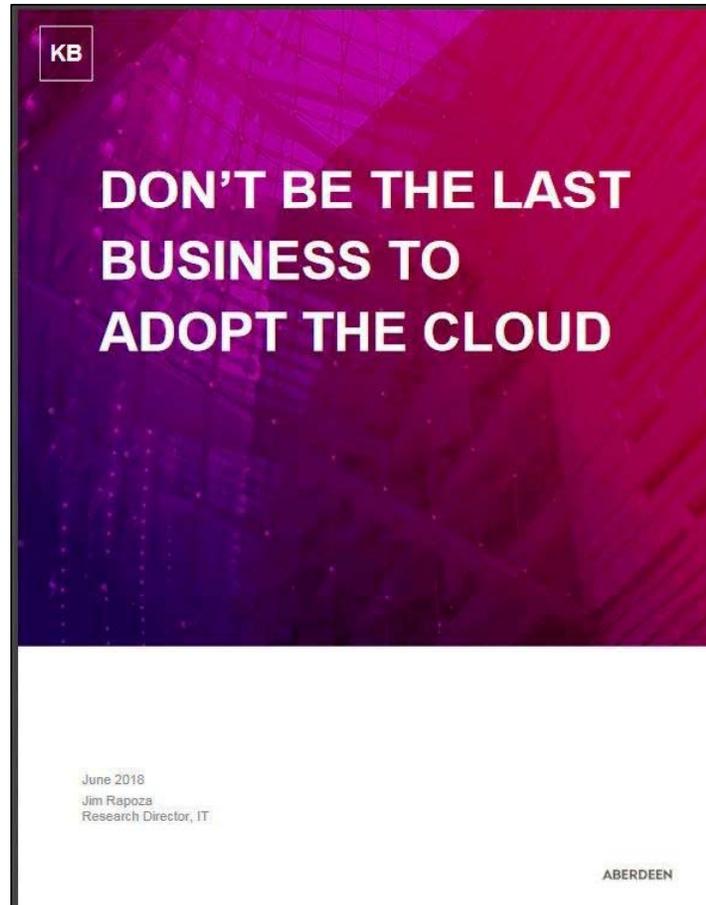
Role

- Tech – DBA
- Tech - Network
- Tech – Developer
- Project Manager
- Business Process Owner
- End user
- Accountant
- Management

Temperature

- Excited about Cloud
- Wary of the claims
- Tired of hearing about it
- Confused
- On the Cloud
- Have had good experience
- Have had bad experience

Don't you hate this stuff???



Truth



- Cloud = Great technology
- Transformative for Business & IT
- Not going away

BUT.....

- The Sales hype = BS
- It's going to be a hybrid world
- Leave your EBS alone



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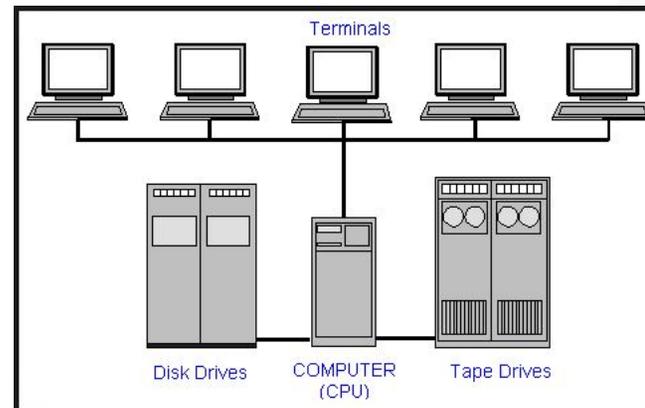


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Back in the old days

The Dark Ages

- Mainframes
 - On premise
 - Computer rooms
 - Data centers
 - Or hosted by providers
 - EDS, IBM, HP, ACS, CSC
 - Dumb terminals connected to CPU and spinning Disk and Tape drives
 - Applications were green screen. This was before the Graphical User Interface (GUI) came into being.
 - Business and scientific applications only



```
Connected to TELERACK port 224
It is 9:50 am on Tuesday, May 17, 2011 in Mountain View, California, USA.
There are 112 local users. There are 24139 hosts on the network.

Type ? for a command list.
Type HELP for a more detailed command listing.
Type control-C to interrupt any command.

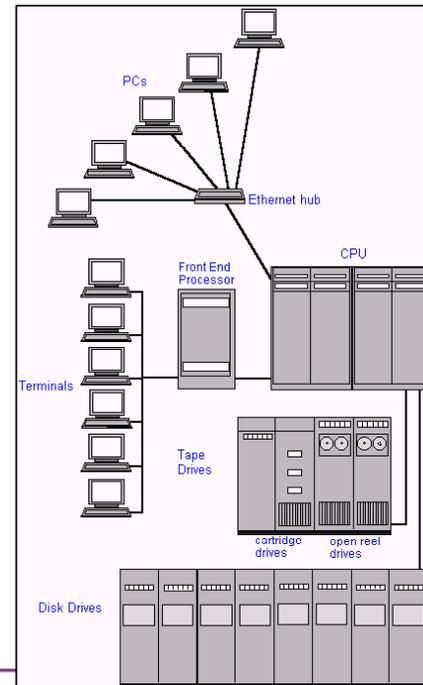
May the command line live forever.

* Telehack documentation: TYPE telehack.txt
* Type BASIC then DIR to see all .bas programs
* Type ZRUN for a list of all adventure games
* Type RELAY to chat
* New! /help in relay has new commands

Command, one of the following:
ac      basic   calc    dir      finger  help
hosts  ipaddr  joke    login   netstat newuser
ping    starwars telnet  traceroute type    usenet
users  stun
```

And then came...

- The IBM Personal Computer (IBM model number 5150) was introduced on August 12, 1981.
 - No Hard Drive. It ran off diskettes!
 - Memory: 16 kB – 256 kB
- Lotus 1-2-3 spreadsheet's initial release was January, 1983.
- Compaq "Portable" first shipped in March 1983. It was the size of a portable sewing machine.
- Led to an environment of dumb terminals and Personal Computers (PC's)



Also arriving...

- Internet Protocol

- The internet was developed as a network between government research laboratories and participating departments of universities. The US Department of Defense awarded contracts as early as the 1960s, including for the development of the ARPANET project.
- The first message was sent over the ARPANET in 1969 from UCLA to the second network node at Stanford Research Institute.
- Packet switching networks like ARPANET were developed in the late 1960s and early 1970s using a variety of communications protocols.
- The Internet protocol suite (**TCP/IP**) was developed in the 1970s and became the standard networking protocol on the ARPANET.
- The ARPANET project led to the development of protocols for internetworking, in which multiple separate networks could be joined into a network of networks.

Also arriving...

- World Wide Web

- World Wide Web development was begun in 1989 by Tim Berners-Lee and colleagues at CERN, Geneva, Switzerland.
- They created **HyperText Transfer Protocol (HTTP)**, which standardized communication between servers and clients.
- Their text-based Web browser was made available for general release in Jan, 1992.
- The World Wide Web gained rapid acceptance with the creation of a **Web browser** called Mosaic
 - Developed by Marc Andreessen and others at the National Center for Supercomputing Applications at the University of Illinois
 - Released in September 1993. Allowed people to use the same “point-and-click” graphical function that had been available in personal computers for years.
 - In April 1994, Andreessen cofounded Netscape. Netscape Navigator became the dominant Web browser after its release in December 1994. By the mid-1990s, the World Wide Web had millions of active users.

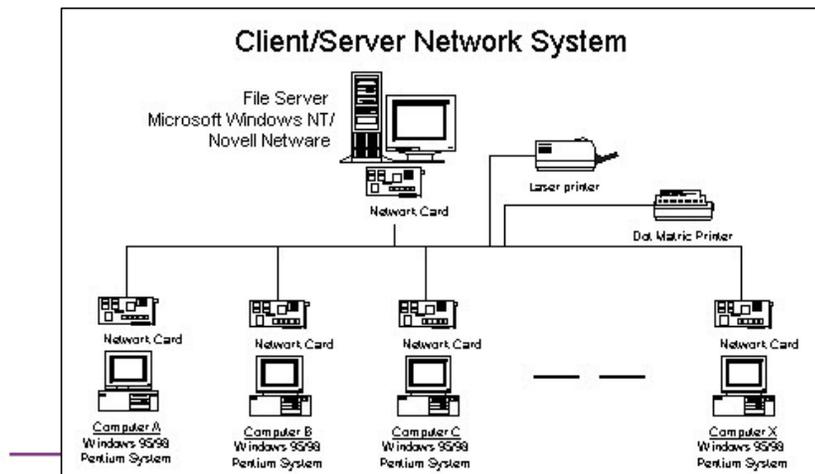
That led to...

- Rapid expansion of wide area networks using TCP/IP communication protocol
- **Internet Service Providers (ISP)**
 - By the late 1980s, a process was set in place towards public, commercial use of the Internet.
 - In 1989, the first ISPs were established in Australia and in Brookline, Massachusetts.
 - **The World became the first commercial ISP in the US. Its first customer was served in November 1989.**
 - Internet Service Providers were classified as: Access providers, Mailbox Providers, Hosting ISP's, Transit ISP's, Virtual ISP's, Free ISP's, and Wireless ISP's
 - One of the premier Access Providers was **AOL**. Remember that dial up?
 - Hosting ISP's provided email, web-hosting, and/or online storage services. Other services include virtual server, cloud services, or physical server operation.
 - They are the predecessors to Cloud Data Centers



Meanwhile, back at the Corporate Data Center...

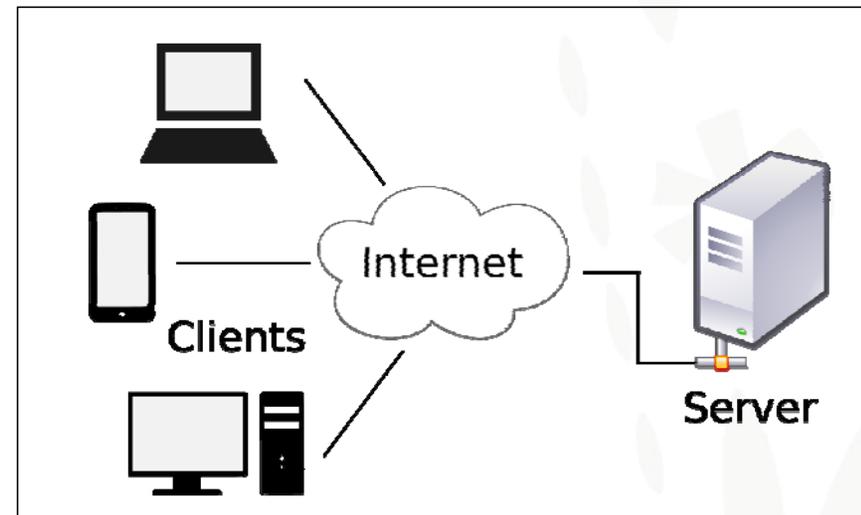
- System users are starting to use computers outside of work
- Internet growth is accelerating
- Personal computer sales are exploding
- Client / Server becomes the new thing
 - Allowed for more individual flexibility and productivity using “fat client” PC’s
 - Connected via LAN or WAN to Servers for heavier processing



In this configuration, the Servers are on the high speed Local Area Network (LAN) and there is no connection to the internet or Internet Service Providers

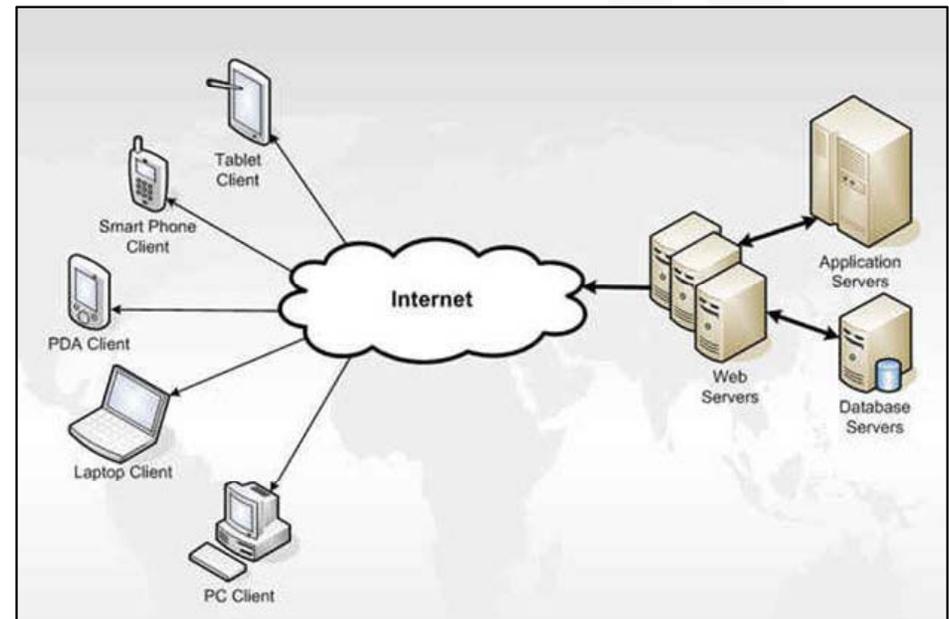
Meanwhile, back at the Corporate Data Center...

- Another variation of this model would include access to servers via the internet.
- In addition to the Local Area Network (LAN) speed, the network bandwidth from the local facility to the internet has a serious impact on performance.
- **Client Server was hurt** by:
 - The effort required to standardize and maintain the client PC's.
 - Difficulty to update software distributed on the Client PC's
 - Application integration performance between the client and server



Client Server computing gave way to...

- Thin client, **browser based applications**.
- Access to the application servers was via common internet browser.
- The application was housed, maintained, and updated on **application server**.
- Resulted in improved management efficiency.
- Servers could be on premise, remote, or hosted by another party.
- Applications were re-architected to maximize performance.
- An **efficient high speed network throughout the platform is critical**.

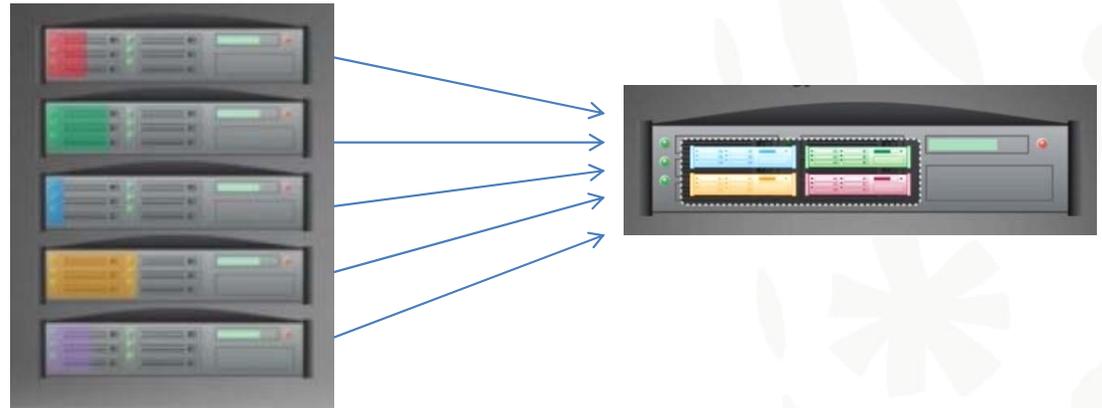


The next big thing : Virtualization (VM's) - 2

Why this is an advantage...

Instead of each server housing its own application, you can build multiple VM's on one hardware server

- Improves hardware utilization
- Less maintenance cost
- Allows for easy transfer of applications to other servers
- Creating / cloning instances is simplified



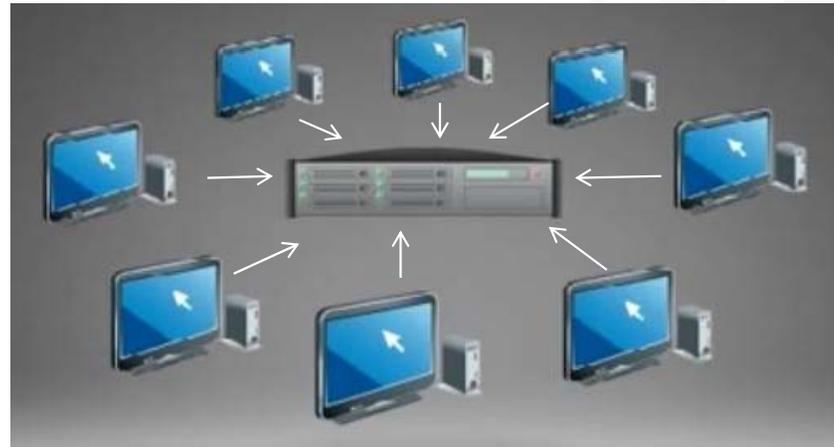
Cautions / potential downsides:

- *Requires more hardware CPU and RAM*
- *Can have problem with performance due to “noisy neighbors”*

Another Virtualization variation - Desktops

Thin client advantages:

- No PC maintenance
- No individual software updates
- Reduces costs
- Uses less energy
- Minimizes security risks due to:
 - Centralized management
 - Easy restore of servers / desktops



Cautions / potential downsides:

- Performance
- Flexibility

The next big thing : Virtualization (VM's) - 1

- In a traditional server set up physical computing software (operating systems, applications, enterprise applications sit directly on the underlying computer hardware (processor, memory, storage, certain chipsets, O/S driver versions, etc.)
- Virtual Machines **employ hypervisors or virtual machine manager** (VMM).
 - Creates an abstraction layer between the software and the underlying hardware.
 - With a hypervisor, software relies upon virtual representations of the computing components such as virtual processors (vCPUs) rather than physical processors.
- Two examples = VMware VSphere (ESXi) and Microsoft's (Hyper-V)





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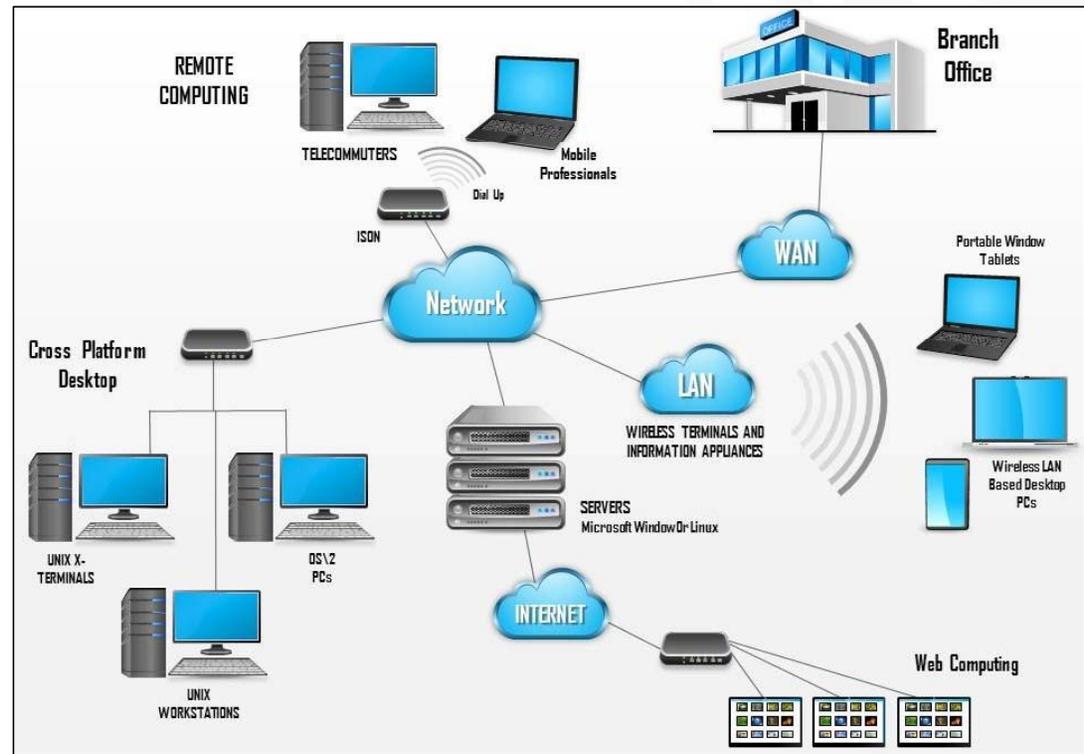


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Corporate Data Center basics

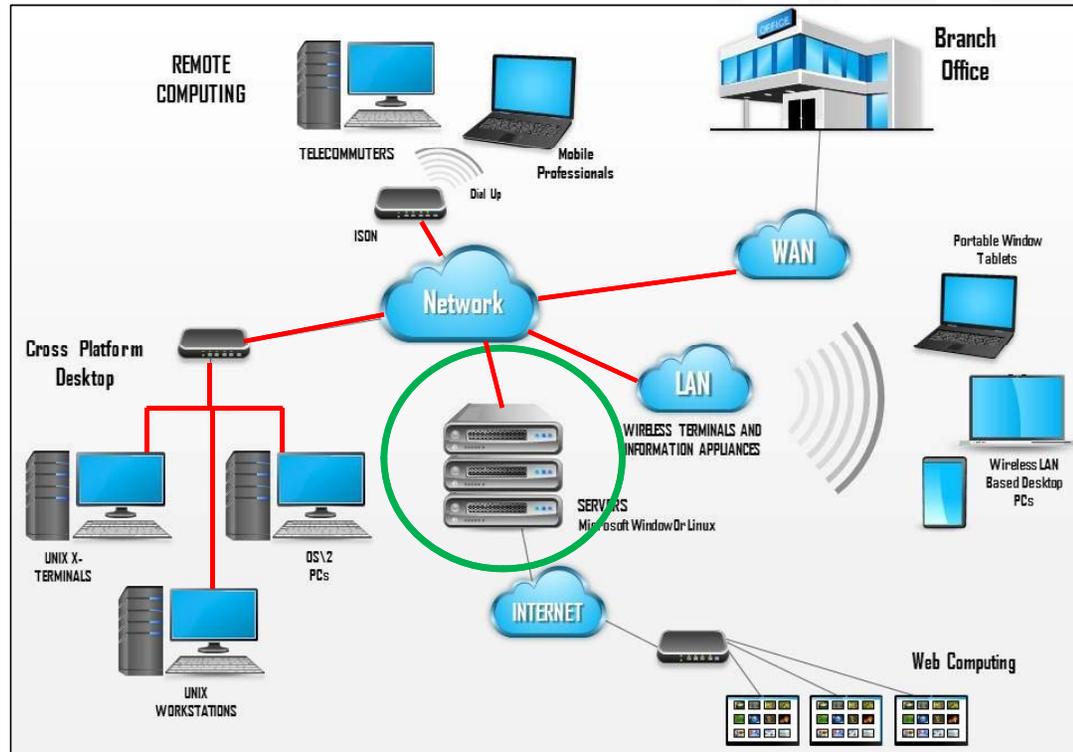
Corporate Data Center Basic concepts - 1

- For the most part, this diagram has all of the basic elements of a “typical” on premise data center for an SMB entity.
- It is comprised of single purpose servers (Bare metal) and does not incorporate any Virtual Machines (VM’s). Because it does not employ any virtualization, it is not technically considered a “Private Cloud” but many are still loose with the phrase.



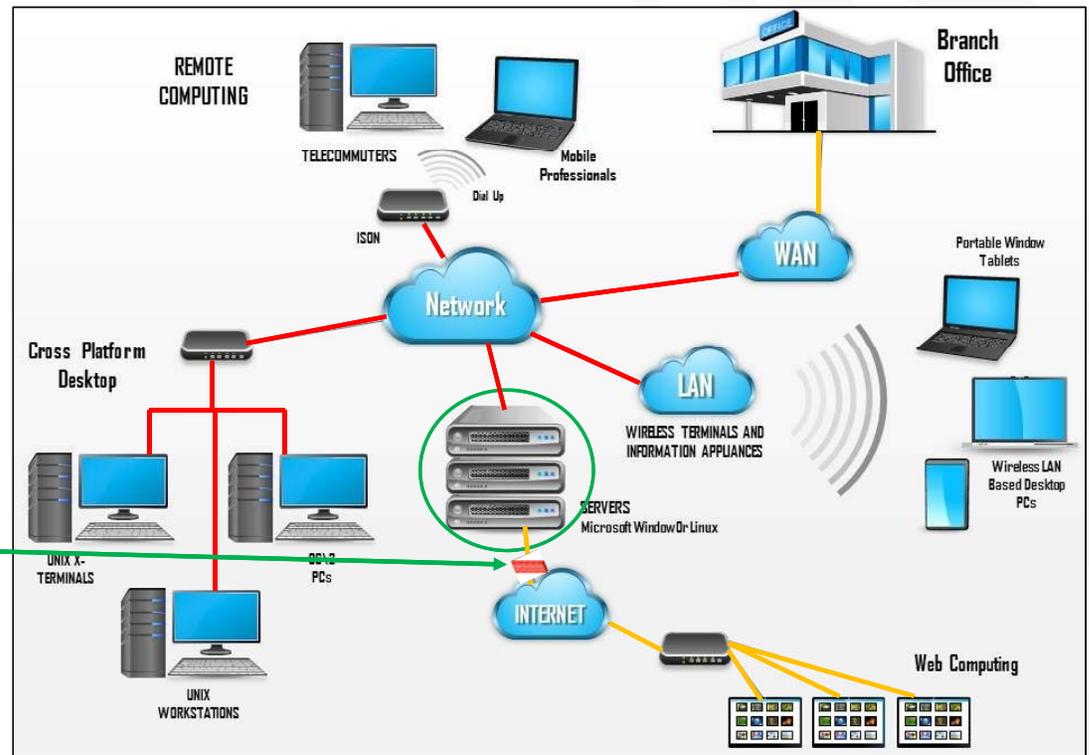
Corporate Data Center Basic concepts - 2

- From an application standpoint (think Oracle EBS) the servers (circled in **Green**) are tightly clustered and situated on a high speed interconnect.
- The Local Area Network (LAN) is assumed to be 1Gb Ethernet & is shown in **Red**.
 - **NOTE:** Average internet speed is 18.7 megabits per second (Mbps) according to Akamai Technologies. 1Gb Ethernet speed likely tops out at 125Mbps but it is 6.7x faster than average speed.



Corporate Data Center Basic concepts - 3

- Outside of the high speed Corporate LAN (in Red), the connections to the internet and the Wide Area Network (WAN) have to be provisioned with a network provider and will be slower than the 1Gb Ethernet. Those connections are shown in Orange.
- From a security standpoint, there should be a firewall between the LAN and internet.
- **Key point:** Network speeds and application performance will be faster on the Local Area Network



Corporate IT Gatekeeper role

- In the corporate data center model, IT functions as a gatekeeper and cost controller.
- New software purchases need to be justified before procurement occurs. This includes the software, hardware to run it on, and services to get it running.
- Justification and approval happen in advance of procurement.
- The process is typically slow and cumbersome (partially by design).
- Spinning up services on the cloud is quick and fairly easy
- Costs are not paid in advance
- Usage is variable and paid for after the fact.
- IT's ability to exert traditional Gatekeeper cost control is significantly diminished

What is the Cloud and why does it matter?

- The cloud is software and services that run on the internet rather than your computer or in your on premise data center.
- Cloud services are accessed through an internet web browser or an app. You must connect to the internet.
- Cloud computing is here to stay. It provides great benefits in some situations.
- Cloud Data Centers are massively scaled operations that take advantage of their size and the efficiency of streamlined application operational approach
- Cloud blowhards are obfuscating “all things cloud” and pushing the notion that all organizations will move their information technology to the cloud and if you haven’t started your move, you are behind.





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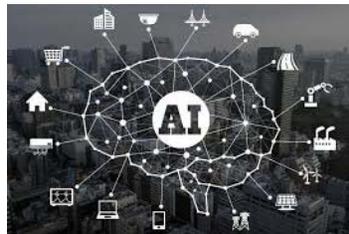


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Benefits of the Cloud

Benefits of the Cloud

- Big Picture...Businesses today are looking to increase profitability through innovation.
- Innovation requires taking advantage of technology
- Cloud allows access to easily accessible, scale-able computing power that allows companies to take advantage of the cool innovative trends...



Benefits of the Cloud

- Cloud providers reduce the time to market to launch strategic applications and provide resource capacity
- For start-ups, use of the Cloud eliminates the need to invest in, staff, and maintain a data center
- Cloud data centers, as a result of their scale and focus on similar applications, are more efficient than corporate data centers
- Security, once a concern, is more comprehensive and effective in the cloud than in most corporate data centers.
- Disaster Recovery is far less expensive on a cloud configuration
- New applications will be able to take advantage of cloud services and “cloud native” attributes. These include:
 - Microservices architecture
 - Linux containers to enhance application portability
 - Container management solutions such as Kubernetes that orchestrate container-based services



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Cloud challenges and potential pitfalls

Downsides / Pitfalls of the Cloud

- Contrary to the early assertions, it does not save money
 - There are no real savings until you shut down your data center and eliminate costs for safety and backup systems, staffing, energy systems, security, etc.
 - Ease of access for users spawns more instances, usage, and cost
 - IT Department's ability to operate as the gatekeeper is diminished
 - Swapping Capital expenditure decreases for Operating expense increases is not a positive for CFO's who are judged on EBITDA
 - Renting is more expensive than owning in the long run (beyond 7 years)
- For companies who have operated in an on-premise environment with a high speed network, cloud performance can be problematic
 - Sub-second to multi-second response times
 - Internet "pipe" has to be sized and optimized (more \$\$\$)
 - For ERP users, VPN or tunneling is necessary vs. traversing the public internet
- Trouble-shooting a problem with multiple vendors is hell, especially without adequate enterprise management applications

Secondary Pitfalls of the Cloud

- There is no Total Cost of Ownership (TCO) to measure because you don't own anything anymore. Your cloud service is leased.
- With no ownership (assets), you can't capitalize IT project costs. They will all hit the Profit and Loss statement directly and have high visibility.
- Your purchased equipment in your data center has asset value and accounting lives. If you are moving to the cloud and shutting down your servers before their depreciable lives expire, you will need to write them off.
- For mature IT shops, the argument that you can just "shut down the data center" is folly. Most organizations run highly customized applications that are critical to their operations and they are not easily migrated to the cloud.
- As long as you have one application running in your data center and you can't shut it down, you are not saving money.

More on Cost

- Three or four years ago, the number one driver for going to public cloud was the perception that it would help rein in costs...
- A recent study by IDG found that **38% of enterprises have moved workloads from the public cloud back to their on-premise data centers** — with costs being among the biggest concerns.
- One of the primary causes is the inability to control costs upfront due to reduced IT gatekeeper role.
- Ease of adding users makes it difficult to control costs
- It's easy to underestimate the amount of unmet demand that exists throughout the organization until you sign up for cloud services.

<https://www.forbes.com/forbes-insights/our-work/avoid-sticker-shock/>



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Cloud Alphabet Soup

Cloud Alphabet Soup

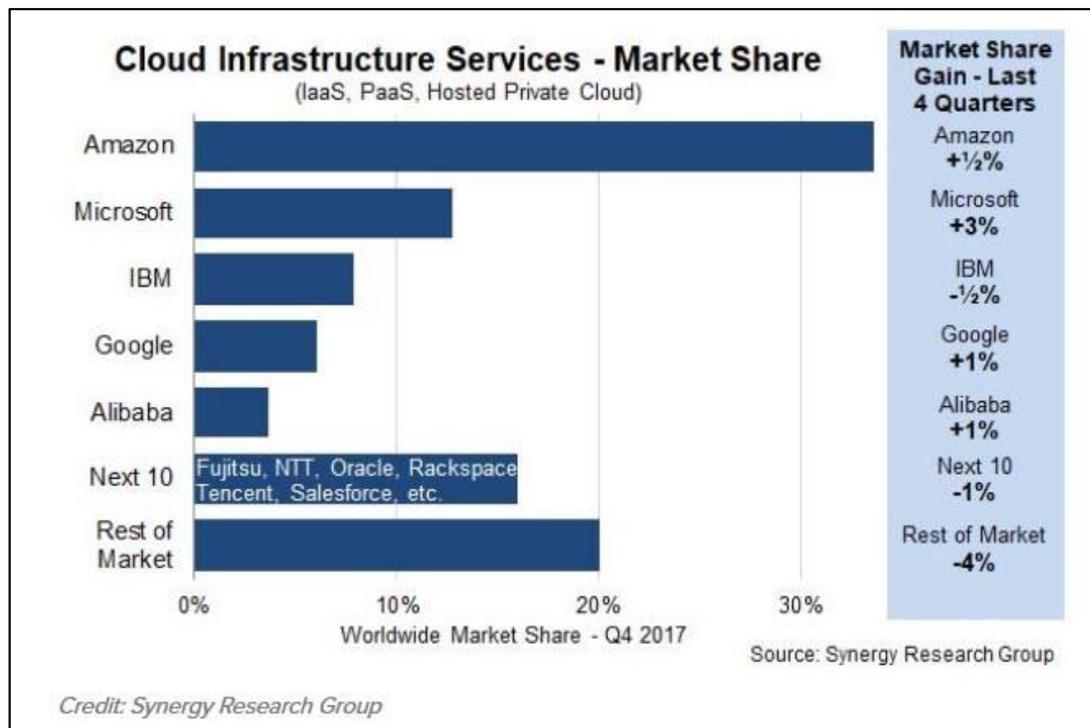
- IaaS - Infrastructure as a Service
- PaaS - Platform as a Service
- SaaS - Software as a Service
- FaaS - Function as a Service
- iPaaS - Integration Platform as a Service
- IDaaS - Identity as a Service
- DBaaS - Database as a Service
- DRaaS - Disaster Recovery as a Service
- DaaS - Desktop as a Service
- Private Cloud
- Hybrid Cloud
- Multi tenant Cloud
- Bare-metal Cloud
- Workload

Infrastructure as a Service (IaaS)

- IaaS public cloud providers offer:
 - Storage and compute services on a pay-per-use basis
 - Full array of services offered by all major public cloud providers includes:
 - highly scalable databases
 - virtual private networks
 - big data analytics
 - developer tools
 - machine learning
 - application monitoring
 - Amazon Web Services - first IaaS provider and remains the leader
 - Followed by Microsoft Azure, IBM, Google, and Alibaba

Infrastructure as a Service (IaaS) - 2

- The chart below provides the market share for Cloud Infrastructure Services for Q4 2017. That would include Internet as a Service (IaaS) as well as Platform as a Service (PaaS).



Platform as a Service (PaaS)

- PaaS provides sets of services and workflows that specifically target developers
 - They include shared tools, processes, and Application Programming Interfaces (API's)
 - The objective is to accelerate the development, test, and deployment of applications.
- Providers include:
 - Salesforce's Heroku and Force.com in the public cloud PaaS offerings;
 - Pivotal's Cloud Foundry and Red Hat's OpenShift can be deployed on premises or accessed through the major public clouds.
- For enterprises, PaaS can ensure that developers have ready access to resources, follow certain processes, and use only a specific array of services, while operators maintain the underlying infrastructure.
- In the Oracle EBS world, if you have customizations and want to move them to the Oracle SaaS cloud, you would also need to subscribe to the PaaS offering and re-write your customizations in PaaS as you do not have access to the SaaS data tables.



Software as a Service (SaaS)

- Delivers applications over the internet through the browser.
- The most popular SaaS applications for business are Google's G Suite and Microsoft's Office 365.
- In the enterprise applications, Salesforce leads the pack.
- Virtually all enterprise applications, including ERP suites from Oracle and SAP, have adopted the SaaS model.
- Typically, SaaS applications offer configuration options as well as development environments (PaaS subscription) that enable customers to code their own modifications.
- In Oracle SaaS (the Fusion applications) you subscribe to the service. You do not license the software, and you do not have access to the back end database tables. So... for example, if you are used to writing SQL queries to grab some information, you will need to find another way to do it.

Software as a Service (SaaS) -2

- There are a variety of SaaS offerings. The chart below shows the Enterprise SaaS Growth and Market Leaders for Q2 2018.



Private Cloud

- This is a commonly misused term. It refers to a private data center that has been architected with Virtualized Machines (VM's), not single use servers. As such, **not every private data center is a private cloud because it was not constructed with cloud characteristics.**
- The private cloud downsizes the technologies used to run IaaS public clouds into software that can be deployed and operated in a customer's data center.
- Similar to a public cloud, internal customers can provision their own virtual resources in order to build, test, and run applications, with metering to charge back departments for resource consumption.
- For administrators, the private cloud amounts to the ultimate in data center automation, minimizing manual provisioning and management.
- VMware's Software Defined Data Center stack is the most popular commercial private cloud software, while OpenStack is the open source leader.

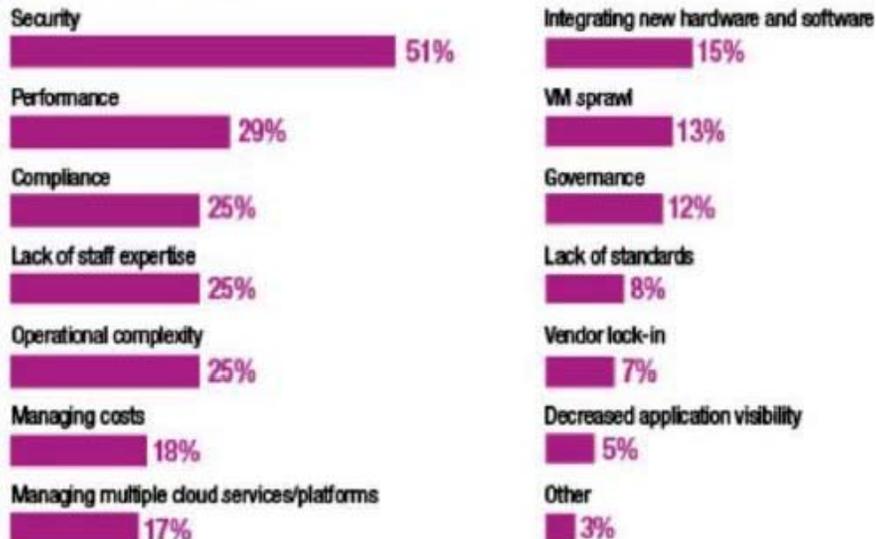
Hybrid Cloud

- A hybrid cloud is the integration of a private cloud or a private data center with a public cloud.
- At its most developed state, where the hybrid cloud involves a true private and public cloud, it entails creating parallel environments in which applications can move easily between private and public clouds.
- In other instances, databases may stay in the customer data center and integrate with public cloud applications or virtualized data center workloads may be replicated to the cloud during times of peak demand.
- The types of integrations between private and public cloud vary widely, but they must be extensive to earn a hybrid cloud designation.
- In a looser, more realistic definition, if you have pieces of your IT platform on premise and other pieces in the public cloud, you have a hybrid cloud.
- **Salesforce cloud and Oracle EBS on premise is one example. Another would be if you had Oracle EBS on premise and you spun up a DEV instance in the Oracle or Amazon cloud.**

Private or Hybrid Cloud Challenges

Private or Hybrid Cloud Challenges

What are the biggest challenges your organization has encountered in utilizing private/hybrid cloud?



Note: Maximum of three responses allowed

Base: 180 respondents who have implemented a private cloud or support a hybrid cloud infrastructure

Data: UBM State of Cloud Computing Survey of 307 technology professionals at organizations that utilize or plan to use cloud computing, October 2016

The chart to the left highlights the top challenges faced by organizations using private or hybrid clouds. It is based on the survey of 180 respondents who have implemented a private cloud or support a hybrid cloud infrastructure. It should be noted that **Security is the top concern for the Public cloud also.**

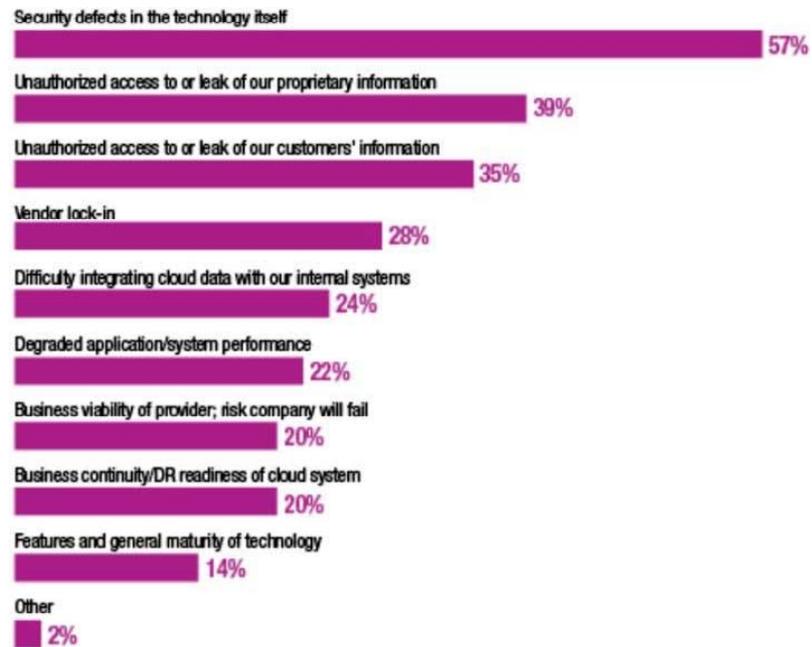


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Cloud Computing Risks

Cloud Computing Risks

When thinking about risks related to cloud computing, what are your top three concerns?



Note: Maximum of three responses allowed
Data: UBM State of Cloud Computing Survey of 307 technology professionals at organizations that utilize or plan to use cloud computing, October 2018

Survey respondents were asked to provide their **top three concerns** related to Cloud Computing. All 3 **relate to security in some fashion**. Another security complication is the integration of security policy and identity management between customers and public cloud providers. Also under the heading of security, in some cases, government regulation may forbid customers from allowing sensitive data off premises. While this can be addressed with “Cloud at Customer”, it adds to the security issues.

Function as a Service (FaaS)

- FaaS is the cloud concept of serverless computing
 - It adds another layer of abstraction to PaaS, so that developers are completely insulated from everything in the stack below their code.
 - As a result they will not have to deal with virtual servers, containers, and application runtimes.
 - Instead they upload narrowly functional blocks of code, and set them to be triggered by a certain event (e.g. a form submission or uploaded file).
- All the major clouds offer FaaS on top of IaaS: AWS Lambda, Azure Functions, Google Cloud Functions, and IBM OpenWhisk.
- A special benefit of FaaS applications is that they consume no IaaS resources until an event occurs, reducing pay-per-use fees.

Integration Platform as a Service (iPaaS)

- Data integration is an important issue for companies that adopt SaaS at scale.
- iPaaS providers typically offer prebuilt connectors for sharing data among popular SaaS applications and on-premises enterprise applications, though providers may focus more or less on B-to-B and ecommerce integrations, cloud integrations, or traditional SOA-style integrations.
- iPaaS offerings in the cloud from such providers as Dell Boomi, Informatica, MuleSoft, and SnapLogic also enable users to implement data mapping, transformations, and workflows as part of the integration-building process.
- As organizations add and attempt to manage multiple cloud offerings iPaaS becomes more critical.
- There are many organizations who have shifted their strategy from “Best of Breed” applications to “Best of Cloud”. This heightens the importance of iPaaS.

Identity as a Service (IDaaS)

- The most difficult security issue related to cloud computing is the management of user identity and its associated rights and permissions across private data centers and public cloud sites.
- IDaaS providers maintain cloud-based user profiles that authenticate users and enable access to resources or applications based on security policies, user groups, and individual privileges.
- The ability to integrate with various directory services (Active Directory, LDAP, etc.) and provide is essential.
- Okta is the clear leader in cloud-based IDaaS; CA, Centrify, IBM, Microsoft, Oracle, and Ping provide both on-premises and cloud solutions.



Database as a Service (DBaaS)

- DBaaS is a cloud computing service model that provides users with some form of access to a database without the need for setting up physical hardware, installing software or configuring for performance.
- All of the administrative tasks and maintenance are taken care of by the service provider so that all the user or application owner needs to do is use the database.
- If the customer opts for more control over the database, this option is available and may vary depending on the provider.
- DBaaS consists of a database manager component, which controls all underlying database instances via an API.
 - This API is accessible to the user via a management console (usually a web application) which the user may use to manage and configure the database and even provision or de-provision database instances.

Disaster Recovery as a Service (DRaaS)

- DRaaS is the replication and hosting of physical or virtual servers by a third party to provide failover in the event of a man-made or natural catastrophe.
- Typically, DRaaS requirements and expectations are documented in a service-level agreement (SLA) and the third-party vendor provides failover to a cloud computing environment, either through a contract or on a pay-per-use basis.
- In the event of an actual disaster, an off-site vendor is less likely than the enterprise itself to suffer the direct and immediate effects, which allows the provider to implement the disaster recovery plan even in the event of the worst-case scenario: a total or near-total shutdown of the affected enterprise.
- There are numerous critical questions that need to be addressed by the vendor. As an example, of PC Magazines Top 5 Best Disaster Recovery-as-a-Service (DRaaS) Solutions of 2017, only 2 work with Oracle.

<https://www.pcmag.com/article2/0,2817,2499967,00.asp>



Desktop as a Service (DaaS)

- Desktop as a service (DaaS) is a cloud computing offering in which a third party hosts the back end of a virtual desktop infrastructure (VDI) deployment.
- As with on-premises VDI, a DaaS provider streams virtual desktops over a network to a customer's endpoint devices, where end users may access them through client software or a web browser
- **Major DaaS providers**
 - Citrix
 - VMware
 - Amazon Web Services - WorkSpaces

Multi Tenant Cloud

- A multi-tenant cloud is a cloud computing architecture that allows customers to share computing resources in a public or private cloud.
- It entails using Virtual Machine set ups on a server
- Each tenant's data is isolated and remains invisible to other tenants.
- In a public cloud, the customers are often entirely different organizations.
- Most public cloud providers use the multi-tenancy model.
- It allows them to run one server instance, which is less expensive and makes it easier to deploy updates to a large number of customers.
- A **downside to the multi tenant cloud** is the potential for performance problems known as the “**noisy neighbor**” for a tenant who is commanding an inordinate amount of resources.

Bare-metal cloud

- Bare-metal cloud is a public cloud service in which the customer rents dedicated, non-virtualized hardware resources from a remote service provider.
- Businesses can customize a bare-metal cloud based to meet their unique requirements and troubleshoot applications without having to worry about neighboring virtual machines (VMs).
- Public cloud environments are multi-tenant and VMs share the physical server which can result in VMs fighting for resources. Because a bare metal cloud is made up of dedicated servers, this problem is avoided.
- The bare metal-cloud works well for big data applications or high-transaction workloads that do not tolerate latency.
- Initially, IBM (SoftLayer) and Oracle were the only vendors that offered a bare-metal option. Other competitors are in the process of developing their competing offerings.

Workload

- The amount of processing that the computer has been given to do at a given time.
- Consists of some amount of application programming running in the computer and usually some number of users connected to and interacting with the computer's applications.
- Can be specified as a benchmark when evaluating a computer system in terms of performance
 - how easily the computer handles the workload
 - divided into:
 - response time
 - throughput



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The Oracle Cloud

Oracle Cloud Overview

Lift and Shift

IaaS Cloud

Infrastructure
as
a
Service

Used for:

- Hardware hosting
- Addit. computing power
- Storage
- Back-up / restore
- Disaster Recovery

PaaS Cloud

Platform
as
a
Service

Used by:

- Developers
- DBA's

For:

- Integration
- App development

SaaS Cloud

Software
as
a
Service

This is:

- **Fusion applications**
- Vanilla implementation
- No customizations
(customizations require PaaS)
- Monthly subscription



Lift & Shift is NOT the Oracle SaaS Cloud

Know the difference between:

- **Lift and Shift** – this is moving your EBS platform (12.1.3, 12.2.x) to Oracle Cloud Infrastructure for to Oracle run and maintain your current EBS platform. This is **NOT** Oracle SaaS Cloud. This is HOSTING. Amazon, Rackspace, Velocity, Data Intensity, IBM, and many others do it with better SLA's. When Oracle says you can run your EBS on their hardware, they are talking about “Lift and Shift”
- **Oracle SaaS Cloud** – this Software as a Service offering is the Oracle Fusion Applications (imbedded Business Intelligence, Social, etc.) that Oracle runs on their Cloud. You must go through a LARGE, re-implementation project to “migrate” from on-premise EBS to Oracle SaaS Cloud.

Infrastructure as a Service (IaaS) Offerings

8 Offerings / 20 Services

Compute	Storage	Security
Bare Metal Compute	Block Volume	Cloud Access Security Broker (CASB)
GPU-based VM & Bare Metal	File Storage	Security
Virtual Machines	Object Storage	Key Management Service (KMS)
Containers	Archive Storage	Edge Services
Registry	Networking	Domain Name System (DNS)
Containers	Load Balancing	Edge Services
Container Engine - Kubernetes	Networking	Email
Ravello Service		FastConnect

<https://www.oracle.com/cloud/infrastructure.html>



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Platform as a Service (PaaS) Offerings

7 Offerings / 47 Services

Data Management	Application Development	Integration	Business Analytics
Autonomous Data Warehouse	API Catalog	API Platform	Analytics
Autonomous Transaction Processing	Application Container	Apiary	Big Data Discovery
Big Data	Blockchain Platform	Data Integration Platform	Big Data Preparation
Big Data Cloud	Developer	Data Integrator	Business Intelligence
Big Data SQL	Developer (Traditional)	Integration	Data Science
Data Hub	Digital Assistant	GoldenGate	Data Visualization
Database	Java	Managed File Transfer	Internet of Things
Database Backup	Java - SaaS Extension	Process	Content and Experience
Database Schema	Mobile Hub	Self-Service Integration	Content and Experience
Event Hub	Mobile	SOA	WebCenter Portal
Exadata	Visual Builder	Security	Management
Exadata Express		CASB	Management
MySQL Database		Identity	
NoSQL Database			

<https://docs.oracle.com/en/cloud/paas/index.html>

Software as a Service (SaaS) – Clouds and Applications

7 Clouds / 55 Applications

Enterprise Resource Planning	Supply Chain Management	Enterprise Performance Management	Customer Experience
Financials	Inventory Management	Account Reconciliation	Marketing
Accounting Hub	Logistics	Enterprise Data Management	Commerce
Project Financial Management	Maintenance	Enterprise Performance Reporting	Engagement (Sales and Service)
Project Management	Manufacturing	Enterprise Planning	Service
Procurement	Order Management	Financial Consolidation and Close	Configure, Price, and Quote (CPQ)
Risk Management	Procurement	Planning and Budgeting	Subscription Management
ERP Analytics	Product Lifecycle Management	Profitability and Cost Management	Loyalty
Human Capital Management	Product Master Data Management	Tax Reporting	Social
Global Human Resources	Service Logistics	Internet of Things Applications	Data
Talent Management	Supply Chain Collaboration and Visibility	IoT Asset Monitoring	CRM Analytics
Workforce Rewards	Supply Chain Planning	IoT Production Monitoring	CX Industry
Workforce Management	In-Memory Cost Management Cloud	IoT Fleet Monitoring	CX Platform
Work Life Solutions	SCM Analytics	IoT Connected Worker	Adaptive Intelligent Apps
HCM Analytics		Service Monitoring for Connected Assets	Adaptive Intelligent Apps
			Adaptive Intelligent Apps for CX
			Adaptive Intelligent Apps for ERP
			Adaptive Intelligent Apps for Manufacturing

https://cloud.oracle.com/en_US/saas

Why Oracle wants to be a “Cloud” company

- “Cloud” companies command a higher Price Earning (PE) ratio and higher stock valuations
- Oracle wants to still be viewed as a “growth” company and not “Old Tech”.
- Oracle’s incentive stock shares issued in 2018 trigger at \$80 / share and a host of aggressive Cloud metrics
- Applications are easier to run, maintain, and update in Cloud offering due to the control over the application.
- **Per Mark Hurd, Oracle makes 3X the revenue from customers when they are able to convert them from on-premise apps to the Oracle SaaS offering.**

Some Oracle Sales claims

The push to the cloud leads to:

- Obfuscation: Everything is "cloud" even though "Lift and Shift" is not SaaS
- "Everyone is on the cloud." If you're not there, you're the last one. Reality = Very few organizations are moving their on-prem EBS apps to the SaaS cloud.
- EBS is being sun-downed . Reality = New releases are coming out and Support Commitment through at least 2030.
- Latest "program": You can easily "Upgrade to the Cloud" with Oracle Soar... not exactly.



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The Oracle SaaS (Fusion Apps) Cloud

Oracle SaaS – 7 separate clouds

- Slide 57 shows the current inventory of Oracle SaaS clouds and offerings.
- If you are an EBS customer with a moderate footprint, you likely would require applications from:
 1. **Enterprise Resource Planning Cloud** – Financials, Projects, core Procurement
 2. **Supply Chain Management Cloud** – Logistics, Inventory, Manufacturing
- And maybe...
 3. **Human Capital Management Cloud** – Human Resource and Learning apps
 4. **Enterprise Performance Management Cloud** – Reporting, Planning, Budgeting
- Some new stuff you can integrate to without moving your EBS...
 5. **Adaptive Intelligence Application Cloud (AI)**
 6. **Internet of Things Cloud (IoT)**
 7. **Customer Experience Cloud (CSX)**

Oracle SaaS concerns - Product

- **Customizations** - You lose the ability to customize / that is why you bought Oracle
 - Must subscribe to PaaS in order to handle any customizations
 - You can extend but have limited ability to personalize and customize
 - Recommended – Follow the vanilla “Best Practices” provided. That means re-engineering your processes
- **Some modules not ready for prime time**
 - Base Financial applications are farther along in development
 - Applications that Oracle uses get more attention
 - Manufacturing applications (in particular OPM) are still weak

Oracle SaaS concerns - Product

- **Data Access**

- In SaaS subscription you don't have the same access to your data that resides in the cloud.
- There is no direct back end access to the data tables.
- You can't create custom objects
- While you can write queries against the database, you can't save them
- Shift in mindset: you have to run an extract, get report, have it sent / downloaded for you to run
- Many companies use their data warehouse as a data output target

- **Cultural change**

- SaaS forces cultural change – there is a redefinition of roles and a shift to support end-user empowerment
- Technology group's tools are different. They need to re-learn Cloud tools.

Oracle SaaS concerns - Product

Training / Re-training

- Training is one of the key Critical Success Factors for moving to the Cloud
- Cloud applications and navigation are completely different from on-premise EBS application
- There is a lot more training content available for Oracle SaaS cloud than there was for EBS
- SaaS application basics are more intuitive, but mastering the advanced tools requires training and work
- For advanced tools, you need to have someone show you how to use them in order to get maximum value

Oracle SaaS concerns – Product / performance

- **Instance sizing is critical and generally understated**
 - Companies generally undersize their instance requirements to save money and it hurts performance on TEST and PROD instance performance.
 - Take the initial sizing template seriously & provide all information
- **SaaS performance is problem everywhere, not just Oracle**
 - Organizations who have operated with high speed LAN connections to their on-premise data centers will likely suffer performance problems due to under-sizing of their Internet pipe.
 - In general, staging of distributed static content across multiple sites in a distributed computing platform does not work for SaaS applications because it is dynamic data.
 - There are only few Network providers who have the scale to provide high performance VPN's to handle adequate SaaS performance . \$\$\$

Oracle SaaS concerns - Product

- Reporting is entirely different with the SaaS applications
- You're either going to use Oracle's cloud reporting tools completely or you're going to extract the data to your Data warehouse or another tool and do reporting on your own.
- If you are using Tableau, Click view, Click, or other visualizations tools you will need to pull out the data (it's not as easy as writing a view in EBS)
- You need to learn to use the output capabilities that are part of the cloud
- Integration with 3rd party reporting products that sit on top of the database will have to be overhauled.

Oracle SaaS concerns: Re-implementation project

- When you can't customize the application to mirror your long standing business practice, your only choice is change your process. **This is a RE-ENGINEERING**
- **Change Management** will be the key to a successful Re-implementation project moving from On-Prem EBS to the Oracle SaaS cloud.
- Business processes need to re-engineered to match the Best Practice processes provided.
- Most organization underestimate and downplay the Change Management effort required.
- Review and change your business processes early in the Planning phase of the project with a thorough Map and Gap
- Get familiar with the cloud functionality and tools
- Take inventory of customizations and understand the functionality
- Plan for an extensive process review upfront. It won't be enough time.

Oracle SaaS concerns: Re-implementation project

- **Training and Testing** are two critical components of the cloud re-implementation.
 - There is a significant amount of training that needs to take place up front or productivity will suffer after go-live.
- Testing should be performed on newly input data to confirm the processes.
 - Even though the cloud automates processes, Public companies can expect auditors to be as picky and overbearing as they had been.
- Refresh Cycle – In an on-premise project, you can ask for a refresh Friday and probably have it on Monday
 - In cloud, expect 3 weeks for a refresh and plan accordingly.
 - The process itself takes ~ 24 hours even though they tell you 48.

Oracle SaaS concerns: Re-implementation project

- Loading of data into the Cloud from the EBS instance will be a slow, painful process.
- Most companies want to keep all of their data.
- The Oracle recommendation is to keep as little as possible GL data (4 years) and offload the rest to a Data Warehouse. What they don't tell you is where the Data Warehouse is.
- Typical data load process requires validation and verification over an internet connection and it is slow.
- There aren't any "Temp" tables to use to stage / clean data anymore
- Presently, web services lack the ability to sequence the load in the correct order



Oracle SaaS concerns: Upgrades

- Most companies upgrade their Oracle EBS applications every 5 years or so and maybe patch current once per year due to resource constraints (i.e. testers).
- Oracle SaaS subscribers are upgraded 4 times per year. There is no ability to “opt out” of upgrades.
 - You are allowed to lobby for a date in the quarterly “window” or Oracle will select one for you.
 - You receive a TEST upgrade Friday and you have 2 weeks to test or throw a "bug" flag.
 - PROD upgrade will take place 2 weeks later on a Friday night
 - Your system will be down through the weekend

Oracle SaaS concerns: Upgrades

- You are notified in advance of Release Bug fixes and Enhancements
- Upgrades go to your TEST environment and you have a certain amount of time to test it
- Any application new functionality (i.e. reports, infolets, features) is now disabled by default in the patch. You can opt in (or not) to turn it on.
- On major releases: Release Content Documents come out usually 6 months before the release
- In the old on-premise days, if there was a bug you could typically work around it with a customization while waiting for the SR to be worked. That is not possible in the SaaS cloud so you need to test early and throw the “bug flag” as soon as possible.

Oracle SaaS concerns: Upgrades

- One of the things Oracle claims is that “they do all of the work” on the SaaS upgrades so you don’t have to worry about them.
- That is only true for the DBA. You still have to test.
- There are audit requirements for public companies
 - Many expected less testing and documentation would be because it was cloud... they found out they were wrong. Audit firms want all of the changes documented.
- Getting functional resources to test is a long standing, recurring conflict. This will exacerbate the problem 4 times per year.

Upgrade effort

Oracle Applications Upgrade Summary

EBS ENVIRONMENT		CLIENT INVOLVEMENT				FREQUENCY
		Technical		Functional		
TYPE	WHERE	DBA	Developer	Testing	Training*	
On-premise	Your data center	Yes	Yes	Yes	Yes	once every 3 - 5 yrs.
Cloud	Hosted, but self managed (co-lo, hosting Co.)	Yes	Yes	Yes	Yes	once every 3 - 5 yrs.
Cloud	Hosted, and managed by outside provider	No	Yes	Yes	Yes	once every 3 - 5 yrs.
Cloud	Oracle SaaS cloud	No	Less**	Yes	Yes	4 times per year

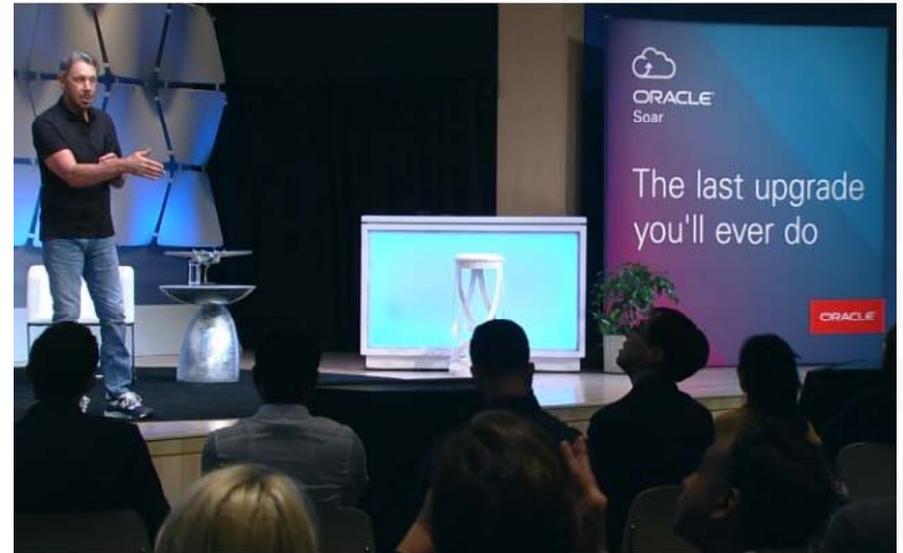
* if needed

** fewer customizations allowed in the Oracle SaaS cloud



Oracle Soar – “Upgrade” to the Cloud

- Launched in June, 2018
- Claims to be fully automated
- Project = as little as 20 weeks but slide shows 24 weeks.
- When you migrate to Fusion in the Cloud you can drop a lot of your customizations because they are standard features and ...**Re-engineer!!**
- Customization allowance - Oracle Consulting Service will provide up to 30 integrations and 30 custom reports.

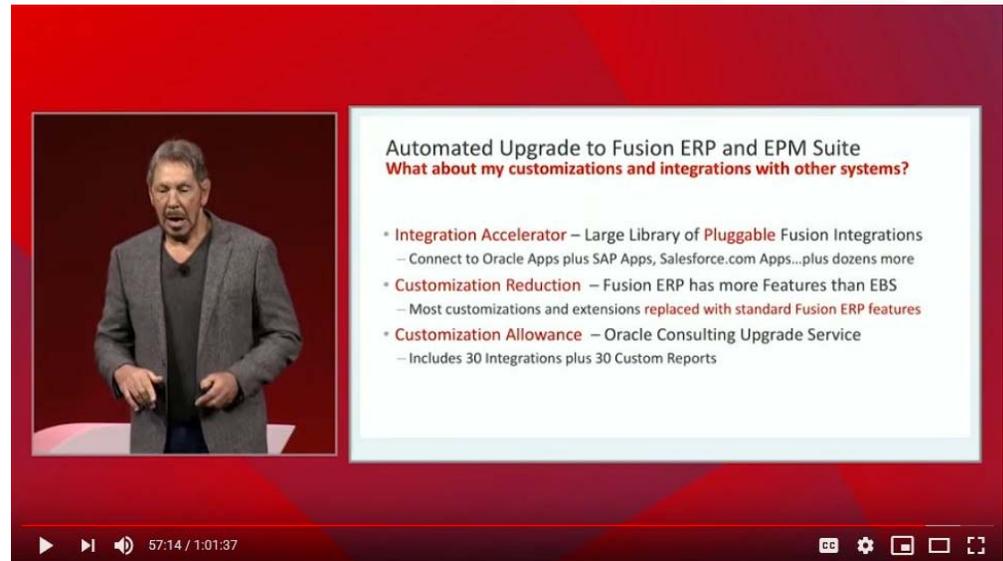


Oracle Soar considerations

- With customizations restricted, your only other option is to Re-engineer your processes. That's much more time consuming and painful than customizing.
- You're allowed up to 30 integrations and 30 custom reports as part of the OCS offering. Small O2 customers where we have performed customization analyses typically have more than 150 customizations.
- They don't say, but I would expect that staffing would equal 24 weeks for a resource covering 1 module. So... how big is your foot print?
- Reality = moving from on-premise EBS to the Oracle SaaS cloud is a large, ugly re-implementation project

Oracle Soar – OpenWorld Update

- OOW – October 24, 2018
- Larry Ellison’s 2nd keynote address video
- Minute 57:18 of 1:01:37
- *“Our consulting team will give you a bid for how long it will take, usually something like 18 months, how much it will cost, very aggressive pricing”*



Automated Upgrade to Fusion ERP and EPM Suite
What about my customizations and integrations with other systems?

- **Integration Accelerator** – Large Library of **Pluggable** Fusion Integrations
 - Connect to Oracle Apps plus SAP Apps, Salesforce.com Apps...plus dozens more
- **Customization Reduction** – Fusion ERP has more Features than EBS
 - Most customizations and extensions replaced with standard Fusion ERP features
- **Customization Allowance** – Oracle Consulting Upgrade Service
 - Includes 30 Integrations plus 30 Custom Reports

57:14 / 1:01:37

https://www.youtube.com/watch?v=YwN_q5g9HKE

Oracle SaaS Cloud Challenges - Implementation

- The data load process is slow and cumbersome.
- Integration tools are improving everyday but it will be a trying process to Load / Test / Reconcile / Repeat monthly financial data.
- As is the case on all re-implementation projects, the primary driver for time and effort will be the amount of data that will be loaded. If you're a long time EBS customer, that's a lot of data. Verify the load timings ahead of time and do the math.
 - Most people want to keep it all
 - Oracle recommends 4 years
- Run the numbers early, do the math, and plan accordingly

Cloud Challenges : Integration

- If you run a Hybrid configuration or employ multiple clouds, you will experience the complication of trying to **troubleshoot two clouds**. Dropped connections between two clouds (and likely two vendors) and latency issues are extremely difficult to solve. It's bad enough when the problem involving two vendors in your data center (where you have some control), but when it is on two different clouds, the problem magnifies.
- Cloud Management software is lacking and that exacerbates trouble-shooting debacles. As organizations move from best of breed to best of cloud, the ability to secure and manage multiple clouds becomes more critical. There are numerous big name technology vendors working on Hyper-converged infrastructure products but at this point there does not seem to be a leader.
- If you choose to maintain your Oracle EBS core applications in your on premise data center and implement an application in the Oracle SaaS cloud, you should consider the data refresh frequency and its impact. Many hybrid customers handle their data refreshes one time per day (at night). Depending upon the cloud application (i.e. HCM) they may not be a problem. On the other hand, if it is a time critical application that requires the real time data that ERP was built for, you might want to reconsider your approach.



Oracle and the Cloud

- Starting on June 1, 2016 Oracle overhauled their Sales program to focus solely on “selling Cloud”. Oracle Sales Reps were no longer compensated for any sales related to on premise application licenses. Any queries on license applications were redirected to the Direct Sales team. Unfortunately that information was not disseminated effectively and it left long term license customers unsettled.
- In 2017, Cliff Godwin, Senior Vice President of Applications Development announced that the Oracle EBS on premise applications will supported through at least 2030. This was due to rumors attributed to Oracle Cloud Sales Reps that Oracle EBS was being de-supported.
- On October 18, 2019 Oracle announced they were moving to a Continuous Innovation support model for Oracle E-Business Suite 12.2
- **Support date: Oracle will not discontinue offering Oracle Premier Support on the Continuous Innovation releases prior to 2030.**

Reality = It's a hybrid world

- Contrary to the Oracle sales push to move everyone from on-premise EBS to the Oracle SaaS cloud, most others recognize it is hybrid world.
- On 2/12/19, Ginny Rometty, IBM CEO, in an interview on CNBC talked about IBM's strategy to run applications like Watson on-premise as well as in the cloud.
 - She stated that Hybrid cloud is “the way it's going”
 - A viable cloud integration platform is important
 - Getting data out of the cloud is critical
 - IBM studies point to 40% staying in a private cloud and 60% in a public cloud
 - For regulated organizations, it will be 60% staying in a private cloud and 40% in a public cloud

Oracle and the Cloud - 2

- Oracle's Cloud strategy has continued to evolve. They have addressed the obstacle they had with companies where government regulation may forbid customers from allowing sensitive data off premises with their "Cloud at Customer" offering
- New applications and features for Platform as a Service (PaaS) integration are being developed and enhanced rapidly and they support a Hybrid approach.
- The hope is that Oracle will recognize the value of allowing customers to maintain their on-premise platforms and not alienate them by forcing them to restrictive Oracle SaaS cloud.
- Oracle has shown the ability to be flexible in the past with strategic shifts like:
 - Lifetime Support for acquired products such as PeopleSoft, JD Edwards, Siebel, and many others
 - The continued support extensions for 11.5.10 and 12.1.3



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**What you should do
if you're running a
viable On-premise
EBS platform**

What you should do if you're running a viable On-premise EBS platform

- If you are on 11.5.10 or 12.0.6 – Upgrade
- If you are on 12.1.3 – You have until support runs out in 2020.
- Upgrade if you see there is **compelling functionality**, otherwise, you have time to evaluate.
- On October 18, 2019 Oracle announced they were moving to a Continuous Innovation support model for Oracle E-Business Suite 12.2.X. There will be no 12.3 release.
- Oracle will not discontinue offering Oracle Premier Support on the Continuous Innovation releases (R12.2.X) prior to 2030. Beginning in 2019 Oracle will annually review whether or not to extend the Premier Support offering for an additional year.
- There are new enhancements coming out for EBS including:
 - Mobile Apps
 - Oracle Enterprise Command Centers
 - More HTML pages
 - Human Capital Management features and functionality

What if you're running a viable on premise EBS platform?

- As for the future of on premise EBS, I agree with the recent [ciodive.com](#) article “*Oracle wants to take down IaaS leaders, but its success will always be SaaS-y*”. It says that most of the Oracle cloud ERP customer are “new logos” and the **company's leadership said more than 20,000 Oracle ERP customers are still on-prem and could eventually convert** to cloud-based capabilities.
- Your former Oracle Sales Rep, who used to handle your on premise inquiries is only compensated for Cloud sales, so he will not likely be very interested unless there is a potential Cloud project.
- If you need help with your on premise Oracle EBS applications and want to expand your footprint or add licenses, e-mail inquiries to: LICENSESALES-NAA_US@ORACLE.COM or contact:

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Cloud Starter project suggestions

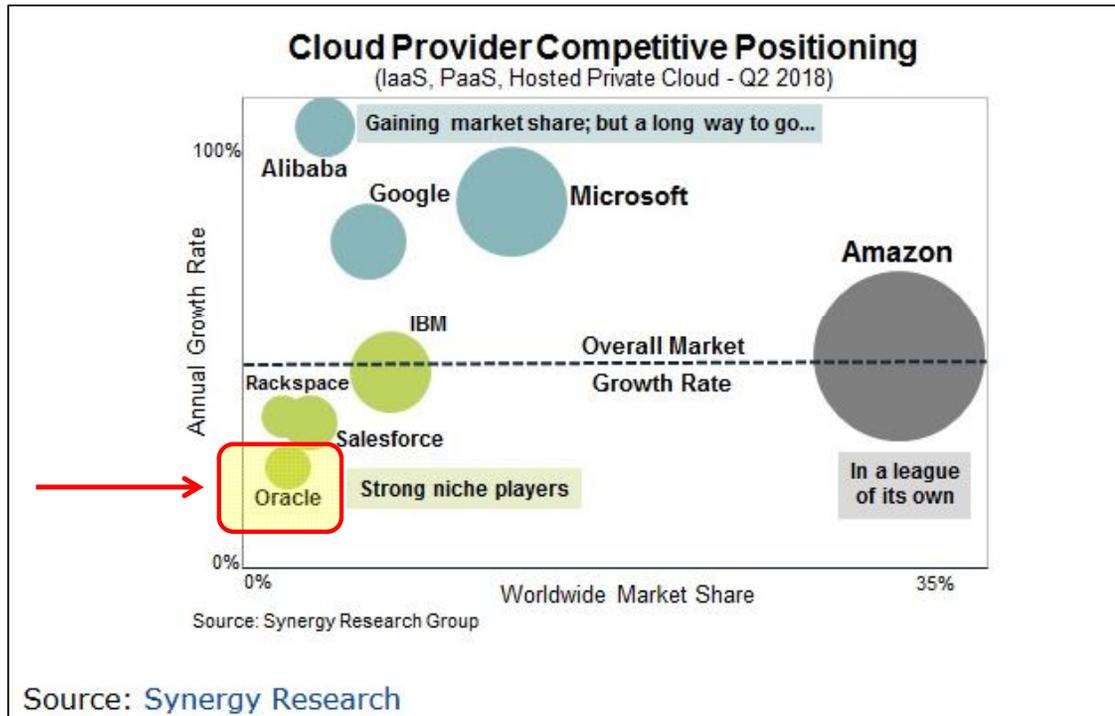
- If you feel the need to get into the cloud (you're worn down from fighting it) I would look at exploring a "starter project". Examples include:
 - Spinning up a Development instance for your developers the next time they need server resources.
 - Using cloud infrastructure services for an archive server
 - Cloud infrastructure for Disaster Recovery
 - Check into Adaptive Artificial Intelligence (AI) cloud applications for Manufacturing, ERP, CX
 - Business Analytics Cloud offerings on Platform as a Service (start small)
- Have a disciplined approach:
 - Gather the information
 - Assess your options (Oracle, Amazon, Google, MSFT Azure)
 - Plan and thoroughly document the project
 - Evaluate the experience, service, platform, etc.
 - By going through a small test project, you'll get feel for the offering as well as SLA's and the performance.
- Beyond that....next phase: Look at your Oracle Edge systems (i.e. Demantra, OTM, Hyperion) that likely required a separate instance.

What about Oracle SaaS (Fusion) applications

If you are considering the Oracle SaaS applications (Fusion)...

- Make sure the specific Cloud applications are viable. Oracle does better with the ones they use.
- Be sure to ask the provider for customer references and check them out.
- If Oracle wants you to be a reference account... Run like hell!
- Don't believe anyone who is trying to sell you "Cloud" unless it is a trusted advisor who knows you and can provide a viable business case as to why it beneficial to you. Do your homework.
- Don't jump in to the cloud just to do it. Have a plan, understand the enterprise architecture, and how cloud will affect it. Pay attention to the integration & what it takes to manage multiple clouds.
- **MAP and GAP** – spend time understanding the SaaS limitations and SLA's up front in the planning process.

Where Oracle stands today



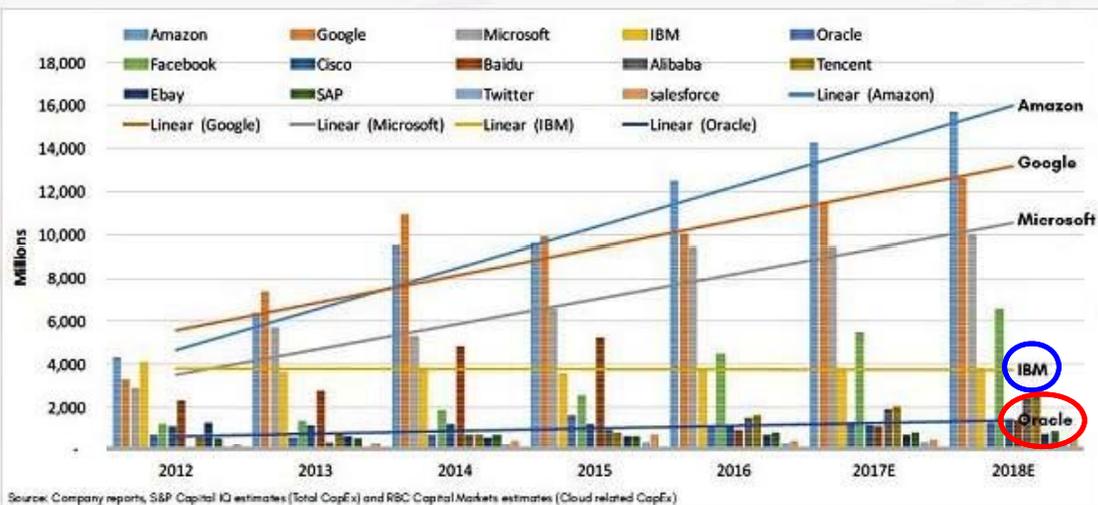
- When Oracle finally recognized the Cloud and decided to go “all in” they declared they would become the biggest and baddest of the Cloud providers.

It ain't happening.

Why Oracle is lagging (and will lag) in the IaaS space

- You have to question how serious Oracle is about their quest to become the biggest and baddest of the Enterprise Cloud providers based on the chart below. In order to grow into the ranks of the top 3 (Amazon, Google, Microsoft), Oracle would need to invest in Data Centers and accelerate their IaaS and PaaS offerings. The chart shows flat expenditures for 5th place Oracle.

Total Cloud-Related CapEx Trends by Major Cloud Companies



JLL

37

Source: JLL - Allen Tucker (S&P Capital IQ & RBC Capital Markets)

You could speculate that Oracle, with their growing fully autonomous offerings, and IBM, with their Watson Artificial Intelligence cloud, expect to rely on product innovation to the close the gap.

That is a bad bet for two reasons:

- The IaaS business is a low margin, grind-it-out operation that requires breadth of distribution (data centers).
- Cloud is a service, not a product. The product does not make the service.

If you want to be a major Cloud player, you have to have data centers.



Oracle: 5 Commercial
2 Government
7 Total



Amazon – 13
Microsoft Azure - 27

Something to consider....

Based on all of the hype that you have heard and seen about the cloud and the insinuation that if you are not “on the cloud”, you are behind, what do you think the % of Enterprise Workloads running in the public cloud is....

- A. 5% or below
- B. 6% to 24%
- C. 25% to 49%
- D. 50% or above

Something to consider....

Based on all of the hype that you have heard and seen about the cloud and the insinuation that if you are not “on the cloud”, you are behind, what do you think the % of Enterprise Workloads running in the public cloud is....

- A. 5% or below
- B. 6% to 24%
- C. 25% to 49%
- D. 50% or above

In March 2018, the answer, according to Oracle quoting Gartner is:

less than 5%.



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And one more thing....

[Oracle Q3 2018 Earnings Conference Call - March 19, 2018](#)

Mark Hurd in his initial comments:

“Less than 15% our apps customers have started to move their core apps to the cloud.”

And one more thing....

[Oracle Q3 2018 Earnings Conference Call - March 19, 2018](#)

Mark Hurd in his initial comments:

“Less than 15% our apps customers have started to move their core apps to the cloud.”

Mark Hurd in response to a question about customers moving to the cloud: *“There’s a lot wrapped into that quote that I put out there. And so let me try to unpack it a little bit. So in terms if you looked at core, meaning I have core e-business suite solutions and I replaced it with a cloud financials SaaS application. **That percent of our user base has moved is below single digits.** The less than 15% number we put out is the percent of our user base that has some cloud applications that they are now using.”*

Take Aways

1. Don't believe the sales hype; you are not behind and most EBS customers are not currently planning to re-implement on to the Oracle SaaS Cloud at this time.
2. Cloud is good for many things. Understand what is good for you.
3. Hybrid Cloud is the way to go, but cost savings are elusive..
4. Investigate the tools that will enable you to manage a hybrid "Best of Cloud" environment.
5. If you are "going cloud", start with a small project (i.e. a Development instance) to work through the details and understand the costs and SLA's.
6. If you are thinking of Oracle SaaS Cloud, be sure to get references for actual customers with a similar footprint and check them thoroughly.
7. If Oracle wants you to "be the reference"... run like hell.
8. Beware of poor performance. Plan to upgrade your Wide Area Network

Q & A / Contact Information

• Questions?

Contact Information

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