Cloud SaaS Applications for Business

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This IEEE Cloud Computing tutorial has been developed by Cloud Strategy Partners, LLC. Cloud Strategy Partners, LLC is an expert consultancy firm that specializes in Technology and Strategy relating to Cloud Computing.
In this tutorial, we will review business oriented Cloud SaaS applications including market trends, Agile Data Driven Enterprise (ADDE) and cloud based applications. Next we will review business application domains and application service providers followed by a discussion of cloud based Office applications including Google Apps for Work and Microsoft Office 365. Finally we will review Cloud Applications for Enterprise and Business Management with a look at providers and service models.
Outline
This lesson will cover:

- Business oriented Cloud SaaS applications
  - Market trends
  - Agile Data Driven Enterprise (ADDE) and cloud based applications
- Overview business application domains and application service providers
- Cloud based Office applications
  - Google Apps for Work
  - Microsoft Office 365
- Cloud Applications for Enterprise and Business Management
  - Providers and service models
- Summary and take away

SaaS Applications for Business
SaaS Applications for Business is a very important part of the Cloud Computing phenomena. For many companies, using SaaS delivered Cloud-based enterprise applications is the primary use case for how Enterprises leverage cloud.

SaaS delivered Cloud-based enterprise applications are consumed in the enterprise just like accessing web sites –one uses a browser, logs into the site, and will operate the web site as if it is an application (which it is), and utilize/add to their data, which is stored in the Cloud as well. As far as the enterprise user knows, their company may as well be the only user of the application –users from different companies are separated and isolated from each other. Enterprises have been striving to use application in this “as a service” mode for a long time.

Before the Cloud Computing advent in in 2008-2010, Pre-cloud SaaS solutions were simply defined as “software deployed as a hosted service and accessed over the Internet”, Back then, Pre-cloud SaaS didn’t have such distinctive features as on-demand provisioning, server virtualization, multi-tenancy –the applications we mostly the on-premise versions, simply hosted in a remote datacenter.

Today’s SaaS delivered Cloud-based enterprise applications include Federated access control, SOA based services composition, user profile and workflow management
Cloud SaaS and Cloud Apps for business
There are many types of Cloud SaaS and Cloud Apps for business. This slide characterizes them as follows:
General purpose SaaS applications and services such as Gmail, Hotmail, Yahoo mail, file sharing services Box, DropBox, iCloud
Business oriented applications such as Google Apps or collaborative software GoToMeeting, WebEx Enterprise and Business Management applications and platforms from all leading vendors as suites/architectures/portfolios: SAP, Oracle, HP, IBM, SalesForce, Other categories are explained on the slide

Enterprise Applications Evolution
One does not simply take an existing, classic on-premise software application and when it is moved to the cloud, it becomes an instant SaaS delivered Cloud-based enterprise applications –there is a ton of refactoring and new capabilities required.

The evolution of using applications up in the cloud often follows a similar path:

- 1st stage (initial) -Start with moving IT services and existing applications to IaaS cloud
- 2nd stage –Start developing business related applications and create an enterprise specific cloud PaaS platform for deploying and running own business applications
- 3rd stage –Create a pool and ecosystem of enterprise specific SaaS applications that run on enterprise cloud PaaS platform

SaaS applications can be deployed and run on the general cloud IaaS platform as packaged SaaS applications but they need to be designed for multi-tenancy

Market Trends in Cloud SaaS and Apps
Enterprises really like the Cloud based SaaS model for consuming applications.

The Business SaaS market growth has been estimated as showing 21% yearly growth in period of 2012-2017 with the potential to reach volume of USD 47 B. This is because an Enterprise spends typically up to 70% of its IT budget on system management and operations. SaaS applications save them this spending.
When considering business aspects of SaaS applications, the companies are looking not only at the Total Cost of Ownership (TCO) but also about business and IT infrastructure agility. Data Analytics and Business Intelligence services, available as a part of the cloud SaaS ecosystem, facilitate emergence of new type of companies defined as the Agile Data Driven Enterprises (ADDE).

The ADDE extensively use data collected in the course of their main business and combine them with other data collected about customer activity, behavior and sentiments.

**Agile Data Driven Enterprise (ADDE)**

As mentioned one of the main benefits of the Cloud based SaaS model for consuming applications is to increase business agility.

It is worth studying this aspect in detail. We use a model called the Agile Data Driven Enterprise (ADDE)

Four pillars of the Agile Data Driven Enterprise (ADDE)
- Enterprise technological agility/mobility
- Event driven analytics
- Location specific analysis and targeting
- Cloud as a general data management infrastructure

Steps/conditions to become ADDE
Curious thinking to explore new data use, including use of new data sources. Management must be receptive to the role of Big Data analytics and possible recommendations as outcome of new discovered factors and relations. Key/driving role of the Data Scientist. Data Scientist must be familiar with the scientific research methods and capable to create a cycle of curiosity and desire to experiment with data: Make hypothesis Challenge with A and B tests. Summarize observations, verify data, formalize results (relations, trends, prediction) Implement findings to achieve measurable result.

**SaaS Driving Factors**
SaaS is driven by new factors related to customer centric business model.

1) Changing customer focus: All industries have been driven to advance in the direction of customer centric decision making
2) Changing competition: smaller companies become more agile and outperform bigger companies
3) Changing context: convergence of the domain specific applications, cloud, mobile, social networks and Big Data analytics are changing a way how business is done and people interact

Example of SaaS is office applications that is currently offered by many cloud SaaS or application providers, usually on the subscription basis per user. Customization is available for the selected suite of software/applications, language, data usage policy, number of concurrent users, etc.

### Cloud SaaS Benefits for Business

Cloud SaaS brings the following benefits to companies and individual users

- Lower hardware cost, consequently lowered energy cost. Companies don’t need to build own data centers, just provide employees with laptops and typically also with smartphone or tablet computers to be completely integrated into the organizational business workflow.
- Lower expenses associated with software acquisition, also shifting capital expenses to operational expenses.
- No initial software setup and maintenance costs.
- Easy scalability: necessary storage and computing power are provided and scaled automatically on cloud platform.
- Decrease required IT staff efforts to manage company’s application and re-focus them on other priority tasks.
- Accessible from multiple devices, often using standard web browser (not like in case of packaged software installed on each device).
- Accessible from mobile devices using special mobile applications (in contrary to web browser or fat client on desktop or laptop).
- Customization possibility is often provided by the SaaS cloud service provider.
- SaaS can facilitate collaboration: Inside company between Line of Business (LoB) and IT departments and with external parties.

### Selecting Business Cloud Apps

Evaluating business aspects is a key in selecting Cloud SaaS services and provider. The following are important aspects to consider when moving to cloud based SaaS service/applications (typically offered on monthly subscription basis):

- Compare functionality of the packaged version of the product
- Look for ability to customise SaaS application for the company needs
- Ensure data security and check provider SLA and related certification/compliance
- Make sure that provider agreement states that you owns you
data Evaluate provider’s price/subscription policy (price or pricing policy may change and not only in decreasing direction); Evaluate other associated costs/benefits besides TCO such as business and company agility, easy integrating additional cloud based applications Evaluate full cost of both owned and cloud based software solutions for 10 years Look at the possibility to share your solutions with your cooperating partners to facilitate collaboration Risk factors related to disaster, data lost, data security breach, etc. We will look at examples of the first 4 categories in more detail.

Online Office applications Enterprise and business management Collaboration and enterprise social applications Marketing and campaigns management We will not discuss here the latter 3 however will mention where and how they are used by other applications.

Data analytics
File sharing and backup
Mobile cloud applications

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**SaaS/Apps Providers Overview**

This slide presents a table which is a SaaS/Apps Providers overview. Many of the largest software vendors are represented in the rows In the columns the applications they offer are detailed and compared One can see that all of the largest software titles are available now as SaaS form factor offerings, and therefore also by subscription

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**Popular Cloud Based Office Applications**

Let’s now look at a popular category, which is Office Applications.

We will contrast two of the main vendors, Google and Microsoft. While their designs come from very different legacies, they do ultimately compete for the same customers. Google Apps for Business (former Google Apps) provides a popular suite of online office applications and other business related Google products customizable for a domain name provided by the customer.

Microsoft Office 365 provides online office services similar to Microsoft Office 2013 but available via subscription with monthly fee per user depending on the selected plan for home and personal use and for business.
Google Apps for Business - History

Google applications were “born on the cloud”. At first the application offerings were quite simple. While they have been improved and extended over time, in general the applications have experienced few transformations. The slide describes the various editions of Google Apps for Business –they are not all free!

Google Apps for Work

Google Apps for Work provides a popular suite of online office applications and other Google products customizable for a domain name provided by the customer (which ownership must be verified) organized by groups.

There is special procedure verifying domain ownership -Minimum subscription 5 users Likewise, for Universities and colleges, Google Apps for Education provides the same services as for business but free of charge for K-12 schools, colleges and universities with up to 30,000 users. Free for qualified education organizations

Google Apps SaaS Platform

Google Apps runs on the Google Cloud of course. Therefore Google is able to offer access to all Google PaaS platform functions including cloud storage, databases, data analytics, logstore and Google search engine.

Google Apps run on the Google App Engine which is a Google PaaS platform with rich functionality.

• Companies can customize existing applications, develop their own applications and integrate them with existing Google Apps.

• Google offers a Google Apps reseller program and supports a partner and developer network.

Google Apps Security and Privacy

Now let us understand the situation with Google Apps Security and Privacy As with all cloud applications -Users own and control their data Google itself ensures data safety and availability Google Apps includes dozens of critical security features specifically designed to keep user data safe, secure and highly available Google data centers are designed and built for 99.9% uptime Everything is backed up Google security certification and compliance
**Microsoft Office 365**

Now to consider the other main SaaS office system—Microsoft Office 365. Microsoft Office 365 includes the core office products and other products providing rich collaborative environment for project teams and the whole organization. The slide details all the Microsoft offerings accessible through Microsoft Office 365.

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**Microsoft Office 365 Subscription Plans**

Despite (or because) of multiple plans, the pricing model is not clear and even confusing.

One the one hand there are many different plans for commercial entities

Enterprise, Small and Midsize businesses
Office for Home Personal use

Majority of plans include also desktop or tablet version

Government plans Office for Nonprofits

Education plan

While on the other hand Office Online is Free

Includes all basic components

Word, Excel, PowerPoint,

OneNote, Outlook, Calendar

Uses OneDrive as shared files and documents storage

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**Office 365 Security and Privacy**

Office 365 advanced security and privacy features include

- Data ownership
- Federated and Role Based Access Control
- Documents and data access
- Data Loss Prevention (DLP) control in SharePoint can be configured to protect sensitive information from mistakenly sending outside of the enterprise trusted environment.

Security of the whole Office 365 cloud platform is ensured by Microsoft’s professional design and technical support which is assured with multiple certifications and best practices.

Industry certification

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**Business Management Cloud Apps Providers**

We will look at services offered by SAP Business ByDesign, Oracle Cloud SaaS, Salesforce.com, NetSuite, Workday – companies that provide useful technical information about their solution and approaches. Many companies keep the “cloud curtain” on their internal solutions, including infrastructure and security issues.
SAP: From Legacy to Cloud Computing and Big Data
SAP provides a good example of cloud use for total business transformation
SAP defines four key strategic cloud themes: customer, money, people and supplier,
extending them with cross-domain integration solutions for SAP products and tools for social interaction and collaboration.
Recent SAP innovations and industry research are focused on the following technologies
HANA: In-memory Data Platform for Real Time Analytics and Applications,
Big Data to empower and transform business
Internet of Things and Mobility

SAP has a comprehensive strategy of empowering their main enterprise management products with the cloud benefits, positioning their cloud offering as an SaaS platform for enterprise customers. As a result of this strategy, since 2012, SAP have offered most of their products as cloud SaaS enterprise management suites

SAP HANA – Cloud based Real-Time Analytics
SAP HANA Powers all SAP enterprise applications and platforms
The slide provides an illustration of the architecture of SAP HANA

SAP Business ByDesign
SAP has a new set of philosophies and best practices and software offering which they call SAP Business ByDesign. SAP Business ByDesign is a complete, fully integrated enterprise resource planning and business management solution delivered on demand and accessed online via Web browser.

Primarily targets small and medium businesses, giving them access to the best industry solutions at affordable costs without requiring purchase of expensive software and maintenance costs. It is claimed to increase efficiency across organizations by enabling end-to-end processes through the integrated environment.

SAP Business ByDesign Software Suite
The slide contains an illustration of the Architecture of the SAP Business ByDesign Software Suite
**Oracle Cloud SaaS Solutions**
Oracle has a very comprehensive set of Cloud SaaS Solutions

Oracle cloud SaaS services include the whole suite of enterprise management software:
- Customer Relations Management (CRM)
- Human Resources (HR)
- Customer Experience (CX)
- Enterprise Resource Planning (ERP)
- Enterprise Performance Management (EPM)
- Supply Chain Management (SCM)
- Cloud Marketplace

Oracle CRM on-demand offers broad capabilities to manage sales, marketing, loyalty, and service effectiveness

**Oracle CRM On-Demand: Sales Force Automation**
Oracle CRM On-Demand: Sales Force Automation is a direct competitor to Salesforce.com.
It combines traditional capabilities (i.e. account, contact and opportunity management, calendar and task management) with new functionality such as sales coaching, closed loop lead management and embedded analytics.
It is based on long experience in creating sales models that reflect real world processes:
- Sales Process Coaching
- Quota management

Microsoft Outlook and mobile devices Workflow tools to support internal tasks planning and activities with customers Social CRM capabilities Partner Relationship Management (PRM), Marketing Development Funds (MDF)

**Salesforce.com (1)**
Salesforce.com Inc. is a global cloud computing company headquartered in San Francisco, California. Though best known for its customer relationship management (CRM) product, Salesforce.com has also expanded into commercial applications of social networking through acquisition.

Salesforce provides as good example of how cloud SaaS business services and tools can organized, interact and integrated with the social tools: Sales Cloud Service Cloud Salesforce Chatter Desk.com customer service ExactTarget Marketing Cloud
Salesforce.com (2)
Here is more detail about Salesforce.com’s various product offers (SaaS elements):

Work.com Social performance management platform for sales performance, customer service, marketing. Data.com Salesforce service and tool to deliver contacts and companies
Salesforce1 Platform Runs most of Salesforce services Has a special focus on mobile applications to increase sales force mobility.

Custom Cloud also known as Force.com. Salesforce.com’s Custom PaaS Cloud creating custom add-on applications that integrate into the main salesforce.com application. Uses Apex -a proprietary Java-like programming language and Visualforce. AppExchange Marketplace for cloud computing Web application built for the Salesforce.com community

Salesforce.com Layered Platform Architecture – Force.com PaaS Platform Based
The illustration in the Slide shows services and resources provided by the Salesforce cloud platform Force.com, PaaS layer resource and development tools, and social enterprise services layer called Chatter.

NetSuite
Netsuite is a company funded initially by Oracle, to deliver an integrated pure-play SaaS suite.

While they compete with Oracle they also compete with Salesforce.com. Their technology was “born on the cloud” and so some enterprises – especially mid-size – might find Netsuite to have a more modern/open product offering than Oracle. Ranked the #1 Cloud Business Software Suite including ERP, financials, CRM and ecommerce with more than 20,000 global organizations. NetSuite provides cloud SaaS based enterprise-wide integrated business applications, including CRM, finance management and accounting, inventory, and e-commerce software.

SuiteCloud Infrastructure featured for high availability, security and energy efficiency
SuiteApp.com marketplace of value-added integrated cloud solutions to power specific business processes
NetSuite Business Operating System
NS-BOS is a good example of SaaS development and hosting platform for SaaS applications. It is the underlying architecture for NetSuite. This diagram illustrates the common data models, and common functions (Operating System like) which NetSuite has used to build its applications suite.

SuiteCloud SaaS Development and Services Platform
NetSuite shows how the applications fit together into an interoperable Suite.

This is based on the common underlying object model and services illustrated in the previous slide. One can see from the “marketing” all the things one is able to do with this sort of architecture, which seems very compelling.

Workday
Workday is young and fast growing company and it follows the main trends in cloud SaaS business application, in particularly enriching them with Big Data and Data Analytics technologies. Workday targets the customers of Oracle or SAP by offering online services at significantly lower price.

But Workday does not cover the entire enterprise solutions portfolio; it concentrates on Human Capital Management, Payroll, and Financial Management (not complete ERP or CRM). It is an excellent complement to Salesforce.com and either Oracle or NetSuite ERP

Workday Technology Landscape
This slide contains an illustration which shows the Workday marketing architecture at a high level.

As with other cloud solutions, Workday Touts:
Delivered Value Immediately usable Built-in BI Less dependence on IT Configure not customize
Development Approach Rapid delivery of new functionality Single global instance Updates not upgrades
Deployment Model Speed of implementation Reduce operating costs Improved service levels
Workday Architecture Overview
This slide contains an illustration which shows the Workday technical architecture at a high level. One can see this is a classic “large application” cloud blueprint application,

Workday Development and Integration
Workday has an open, developer friendly environment which allows for independent software vendors to integrate and extend in specific areas. Please see the illustration in the slide which shows this.

Marketing, Travel, and Collaboration
Enterprises need applications for all sorts of activities beyond the basic CRM (selling and support), ERP (financials), and HCM (employee management). For example Marketing, Travel, and Collaboration are all also large categories well served by SaaS software.

As examples:
ConstantContact offers a set of cloud based tools to automate and manage marketing campaigns including planning events, sending emails, run promotion, collect donation, add Facebook fans, and prepare reports. Concur is a global provider of on-demand Employee Spend Management solutions. GotoMeeting offers meetings hosting services including built-in voice, HD video conferencing, and screen sharing. There are MANY alternatives to each of these.

Summary and Take Away
In this lesson We covered
Business oriented SaaS applications are taking stage and have a tendency to become a major volume of cloud offerings predicted to grow up to USD47 Bln by 2017
Majority of big vendors of the enterprise management solutions move their products to cloud platform and start offering online services for their main suites
Emergence of the new type of Agile Data Driven Enterprises (ADDE) is a result of wide use of Big Data technologies and a driving factor for new type of Cloud SaaS application powered by integrated Data Analytics tools
Online cloud based Office services has a large and growing market share
Almost any aspect of business automation can be brought as a cloud service: there is a wide possibility for innovation and new businesses
Social networks support becoming a common and mandatory feature of business SaaS applications and platforms
Mobile access and mobile applications are a strong driving factor for Cloud SaaS and again opportunity for innovation both for business and for social activity