

# Salesforce.com – A Cloud Provider

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**Abstract** - In a current situation, IT industries are developing with the assistance of appropriate Utilization of available resources. The IT goliaths like Microsoft, Infosys, IBM, Oracle, and TCS are changing from their on premises IT setups to the cloud. Cloud computing is supplanting the traditional model in which software applications introduced on-preface hardware, from desktop PCs to server rooms, contingent upon the span of the business. The proposed work is about the cloud stage which will change all the customary perspectives of software, application, and product improvement Technologies. Salesforce.com is one of the best cloud providers available in the recent scenario. There are number of reasons why IT industries are switching to the cloud. Furthermore, there are quantities of reasons why industries need to think to adopt salesforce.com cloud. The proposed work is going to concentrate on essential and regular highlights of salsforce.com. These highlights are regular for any developer to learn and use in to software, application and product advancement in salesforce.com. The objective of this proposed work is to demonstrate the available resources in the salesforce.com which are still new for the developers. This a way to deal with makes individuals recognizable with the salesforce.com cloud provider.

**Key Words:** Cloud Computing, Salesforce.com, IaaS, PaaS, SaaS

## 1. CLOUD COMPUTING BASICS

Cloud computing is a model for empowering omnipresent, helpful, on request arrange access to a mutual pool of configurable computing resources (e.g., networks, servers, storage, applications and services) that can be quickly provisioned and released with insignificant administration effort or service provider interaction [1].



... Success on Demand

Cloud computing is defined as a type of computing that relies on sharing computing resources rather than having

local servers or personal devices to handle applications [1]. Cloud Computing refers to controlling, designing, and accessing to the applications on the web. It offers online data storage, framework and application [1]. The term Cloud refers to a Network or Internet. In other words, we can say that Cloud is something, which is present at remote location [1].

**Example:** E-mail, Web-Conferencing, Customer-relationship management [1].

Cloud computing has some models which are working on different tasks as they are scheduled. Each model of cloud computing is working as per the requirement of the cloud service provider and cloud service buyer. [1]

## A. Cloud Computing Visual Model

In cloud computing, two types of models are available. First is 'cloud service model' and second is 'cloud deployment model'.

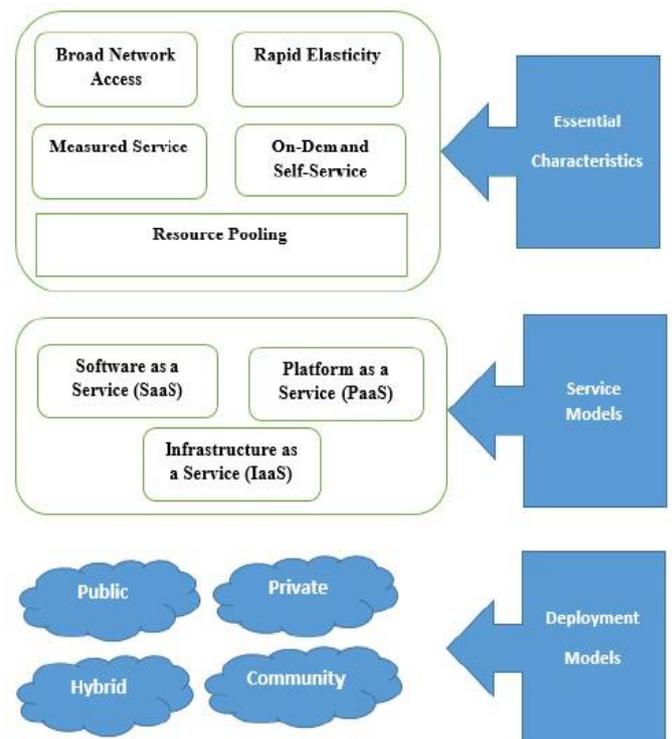


Fig 1: Cloud Computing Visual Model

There are three types of cloud service models i.e. SaaS (Software as a Service), PaaS (Platform as a Service), IaaS (Infrastructure as a Service). There are four types of Deployment models i.e. Public cloud, Private cloud, Hybrid cloud and Community cloud. All four are the Cloud Deployment Models. Above figure shows the different models in the cloud computing and also characteristics of cloud computing which involves Band Network access, Rapid Elasticity, On-demand service, Measured Service.

## B. Cloud Service Models

These are certain cloud service models have their own functionalities.

### 1) Infrastructure as a Service (IaaS)

Infrastructure as a Service (IaaS) is a form of cloud computing that provides virtualized computing resources over the Internet [6]. In IaaS model, a third party provider hosts hardware, software, servers, storage and other infrastructure components on behalf of its users. IaaS platforms offer highly scalable resources can be adjusted on-demand [6].

**Example:** Amazon Web Services (AWS), Windows Azure, Google Compute Engine, Rack space Open Cloud, and IBM Smart Cloud Enterprise [6].

### 2) Platform as a Service (PaaS)

The cloud has totally changed how business applications are built and run. Conveying a new application is currently as quick as opening your Internet browser [6]. Platform as a service (PaaS) is a model for running applications without the problem of maintaining on-premises hardware and software infrastructure at your company [6]. Endeavours of all sizes have embraced PaaS arrangements like salesforce.com for straightforwardness, adaptability, and unwavering quality. PaaS applications likewise have the most recent highlights without the torment of constant upgrades [6]. Dissimilar to traditional client/server models, for example, a Web server/Web page framework, Web services don't furnish the client with a GUI. The fundamental security issue is malignant client access of web services. This is the vital security issue each service provider confronting now. To avoid various security issues both providers and requesters' follows identity and trust policies.

**Example:** Force.com [6].

### 3) Software as a Service (SaaS)

In the Software as a Service (SaaS) model, clients access application software and databases. Cloud providers will deal with the foundation and a stage, which runs applications. SaaS is once in a while alluded to as "on-demand software" and is typically valued on a compensation

for every utilization premise like your electricity bill at home. In the SaaS model, cloud providers introduce and work application software in the cloud and cloud clients get to the product from cloud clients. Cloud clients don't deal with the cloud infrastructure and platform where the application runs. This takes out the need to introduce and run the application on the cloud client claim PCs, which improves upkeep and support. [6]

**Example:** Salesforce.com [6]

## C. Cloud Deployment Models

There are some cloud deployment models.

### 1) Public Cloud

The cloud framework is accessible to the overall public or a huge industry gathering and is possessed by an association offering cloud services [1].

### 2) Private Cloud

The cloud foundation is worked exclusively for a solitary association. It might be overseen by the association or a third party. It might exist on-premises or off-premises [1][6].

### 3) Community Cloud

The cloud foundation is shared by a few associations and supports a particular group that has shared concerns (Example: mission, security prerequisites, strategy, or compliance considerations). It might be overseen by the associations or a third party. It might exist on-premises or off-premises [1] [6].

### 4) Hybrid Cloud

The cloud framework is a synthesis of at least two or more clouds (private, community, or public) that stay special entities yet are bound together by standardized or proprietary technology that empowers data and application versatility (Example: cloud bursting for load balancing between clouds) [1] [6].

## 2. INTRODUCTION OF SALESFORCE.COM

Salesforce.com is a cloud service Provider Company from United States of America. Mark Benioff established salesforce.com for only Customer Relationship Management. Salesforce.com was providing Software as a Service but now a day, Salesforce.com is providing application development and cloud services [2]. Salesforce.com was started with the vision of making Customer Relationship Management (CRM) [2]. Salesforce.com changed the way as enterprise software that is delivered and used in industries now a day. All Salesforce.com products are running in the cloud so, it is not

expensive setup costs, no maintenance and all employees can work from any device, if they have an internet connection along with laptop, smart phone, or tablet [2].

Salesforce.com has made Customer Relationship Management, which is easy to use for small businesses and large business hubs. This approach will help to make Sales Cloud the world's number 1 CRM system [2]. Salesforce.com will have to go beyond the CRM, not only for Sales and Marketing. Salesforce.com platform enables users to manage all interactions with their customers, so the organisation can grow and succeed. Salesforce.com having numbers of features which are very useful to make applications and Software products with the lighting speed in compare of traditional on premise tools [2]. Salesforce.com provides a platform, which have numbers of benefits for developing software applications easily and faster. The proposed work is trying to focus on features of salesforce.com. These features are very new for salesforce.com developers. Use of salesforce.com will create new opportunities for software developers and beginners [2].

## A. Platforms used by Salesforce.com

Salesforce.com is providing different platforms. These platforms will be used for developing software, applications, websites and business tools.

### 1) Force.com

Force.com is a platform provided by salesforce.com. When salesforce.com was started, it was working for only software as a service, but now a day salesforce.com is also providing service of Platform as A Service. And this platform has numbers of features for utilization of salsforce.com facilities. Force.com is a Platform as A Service (PaaS) that allows developers to create multitenant (single instance of software runs on a server and serves multiple tenants) add-on applications integrate into the main Salesforce.com application [3]. Force.com applications are built using Apex. Apex is a proprietary programming language for Force.com, and Visual force. The syntax typically used to generate HTML code. The Force.com platform receives three complete releases a year. As the platform is provided as a service to its developers, every single development instance also receives all these updates.

### 2) Heroku

Heroku is a second useful platform provided in salesforce.com. Heroku is a cloud Platform which supports several programming languages and being used as a web application deployment model. At the initial stage, Heroku supported only the Ruby programming language, but now it supports Java, Node.js, Scala, Clojure, Python, PHP, and Go. Heroku is also an important platform to develop your application and products.

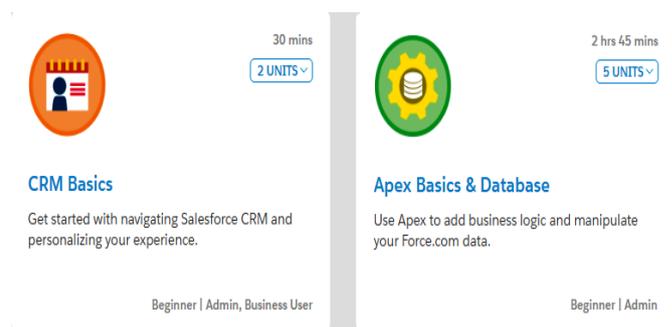
## B. Trailhead Modules

### Trailhead

It is an important functionality of salesforce.com. Where ever the user stuck with the logical problem. User can refer the trailhead module related to problem. Every possible solution is given into the trail heads of salesforce.com. The trailhead is best way to learn the salesforce.com functionalities and Apex programming.

**Example:** To learn about CRM, user can refer "CRM Basics" module. To learn about Apex classes, user can refer "Apex Basics" module.

Salesforce.com is providing Trailheads to learn the basic Application development concepts of salesforce.com platform. According to user requirements, Salesforce.com has number of trailhead modules. These modules are very useful for getting actual idea about our product development work flow. Each module of trailhead contains the enough information for understand the development process in salesforce.com.



**Fig 2: Trailhead Modules**

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### 1) Apex Basics

Apex is a programming language used in salesforce.com [14]. This is similar to Java script. There are certain features of apex makes salesforce.com very useful. Apex is strongly typed, object-oriented programming language that allows developers to execute flow and transaction control statements on the Force.com platform server in conjunction with calls to the Force.com API [12][14]. Apex empowers engineers to add business logic to most system events, including button clicks, related record updates, and

Visualforce pages. Apex code can be begun by Web service requests and from triggers on the objects [12] [14]. Apex is helpful for creating Web services. Create email services, perform complex approval over various objects[14]. Make complex business processes that are not bolstered by workflow. Make custom value-based (logic that occurs over the whole transaction, not simply with a single record or object)[12]. Append custom logic to another operation, for example, saving a record, with the goal that it happens at whatever point the operation is executed, paying little respect to whether it begins in the User Interface, a Visualforce page, or from SOAP API. Apex has certain features like listed below [12] [14].

- Integrated
- Easy to use
- Data Focused
- Hosted
- Multitenant aware
- Easy to test
- Versioned
- Object-Oriented

The features of apex are making development so easy in compare of other languages. If the beginner of salesforce.com wants to learn the apex language and the exact flow of salesforce.com, then salesforce.com provides different types of modules for each and every concept of the product development.

**Example:** If you want to integrate the salesforce.com developer account with the third party website than salesforce.com has a module for API Integration, which will include the REST API, SOAP API, Bulk API and much more[12].

### 2) CRM Basics

CRM remains for Customer Relationship Management [4]. The innovation enables client to oversee associations with clients and prospects and track information identified with all collaborations [4]. It likewise enables groups to team up, both inside and remotely, assemble bits of knowledge from social media, track vital metrics and impart through email, telephone, social, and different channels [4]. Salesforce CRM was started with five objects like Contacts, Campaign, Opportunity, Leads and Account [4]. These five objects are most important to understand when you are planning to work with the Salesforce CRM [4]. Account object will keep the track of your clients accounts details, Contact object will manage your contact lists and other details, Leads will helpful to manage your new leads and clients, Opportunity object will help you to make new contacts and generate leads. For example if you are using Salesforce CRM than all of your data will be stored and organized in salesforce.com cloud in the form of objects and records [4].

### 3) Application Lifecycle Management

Like Software Development Lifecycle in traditional software development process, Salesforce.com has the Application Life cycle Management process [5]. This contains steps for application development. Every salesforce.com user has to understand the exact flow of development process [5]. This will make user to track the exact development progress.

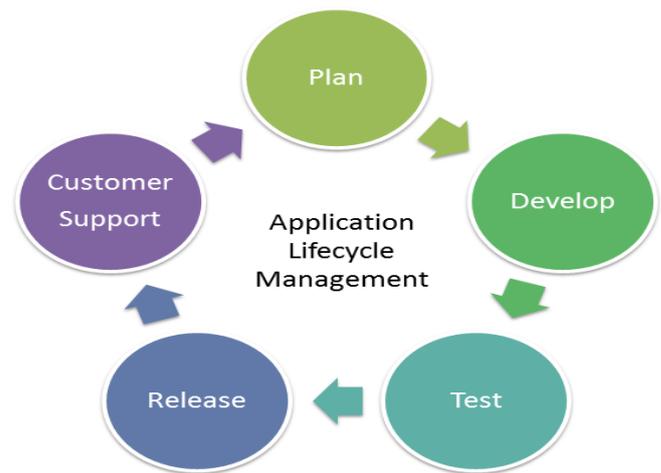


Fig 2: Application Lifecycle Management

#### Step 1: Plan

Each and every idea will be planned when anyone wants to make it possible. Here, an application will start with planning phase. This step includes requirements gathering and analysis as per the customer needed [5]. The product manager will discuss with the designing team and developer team and then creates design specifications and shares them with the relevant departments [5].

#### Step 2: Develop

Now, after the planning phase it is time for building the application. Administrators and software engineers write the application a per the design specifications [5]. The development is done on the Salesforce.com platform using tools available in the user interface and programmatic tools, such as Apex, Visualforce, and Lightning Components. These components have their own functionalities so it will take some more time to be understood. It is not necessary that you have to write code for each and every step [5]. Salesforce.com is providing a facility to go with drag and drop. In which you do not have to write whole code. So it will make quite faster to develop an application.

#### Step 3: Test

Now, after designing and building phase it is time to test that application. Before deployment phase the software testing team will test the application. They will filter each and every

single bug from the application [5]. All the bugs will be listed and send back to the developer team to resolve those bug. Here the quality assurance team performs unit and functional testing of application. The testing team will remove every possible side effect from the application [5]. The whole testing will be done in salesforce.com sandbox. Salesforce.com sandbox is a clone of your development org [5]. So, the changes will not directly affect the other parts of your complete application.

#### **Step 4: Release**

When testing is successfully completed and the quality benchmarks have been met, the application can be deployed to production department. The release manager manages releases to production. At the time of deployment the application's working demo will be organized for clients. Salesforce.com developer team will direct the client to use the application [5].

#### **Step 5: Customer Support**

Support and maintenance is the most overlooked part of the lifecycle after it has been released. Generally this was done well toward the end when the development team conveyed the completed item to the support team and afterward disavowing the framework until the next version was developed. With the move to coordinated advancement and continuous delivery, customer support is presently an essential piece of the procedure. Customer support is the feedback mechanism that aides the new client stories in the following run. So ALM suite either has a customer support capability, or in any event can coordinate with other help desk or customer support tools.

#### **4) Apex Integration Service**

There are numbers of business organizations which are running on the basis of current market position [7]. They are taking their important decisions after analysing the overall market flow. They cannot use certain tools to analyse the market flow. But by using salesforce Integration service they can get the limited resource of third party websites and data, which do help to know about the current rival of their company. They can make proper decisions against the rival company [7]. In this, service user will have to integrate the salesforce.com with third party website. To make this integration possible, Salesforce.com is providing APIs [7]. This APIs will be configured properly and at the successful configuration, salesforce.com user will get access to the third party limited resources. For example, if user wants to know the current trending topics on twitter, then user have to integrate his/her developer org to the twitter with the help of APIs. Than all the posts are available in user's salesforce.com account, So, this is an effective technique to know the rival company information and much more actually happening on twitter [7].

#### **5) Security Basics**

Salesforce.com has two types of security mechanisms. One is System level and second is Application level [8]. System level security does Manages your system level data. A System level security has an authentication technique to secure organizational system level data [8]. Authentication is required for getting access to your account. For this it is necessary that your account is safe and securely accessible. To setup system level security salesforce.com is providing a technique named "Two factor authentications" in which user having the known password and cell phone with the salesforce authenticator application installed in it [8]. This will provide an extra security of your data. If user will use salesforce.com authenticator application in mobile device than user can identify own self without writing any code. This will doubles user's authentication process [8]. By using this Technique salesforce.com user can authenticate by mobile application also [8]. In application level, "Permission set" option will be used. In permission user can give access to the user as per his role defined in organization. Suppose a user assign as a manager than he or she will have all the access and if user assign as a officer than he or she cannot access the managerial level data. The role base access will secure the unauthorised access of company data. The role base access is a part of segregation of duties. In which employees have access as per their roles.

#### **6) OAuth**

Open Authentication (OAuth) is a protocol provided by salesforce.com [9]. This will help for the authentication process. If salesforce.com user wants to integrate the account with third party website for getting limited resource access than OAuth will be very effective [9]. It will provide the limited access of third party data. When user is applying the OAuth technique than Secrete tokens and Access tokens will be needed. These tokens will available on third party website [9]. Saleforce.com user has to get those tokens and integrate his organization with third party. Each and every websites have own APIs. User must know the API concepts for getting integrate with other websites [9]. Third party user will not be affected during this Authentication process as well as the data fetching process. This is an advantage of OAuth in salesforce.com.

#### **7) Report and Dashboard**

Salesforce.com provides a unique technique to generate the report and dashboard. To generate the report, user has to drag and drop the fields which are required in report. The data will be arranged in the form of rows and columns. By clicking a run button, the report will be run. Now, Dashboard is a facility in which user can see the work progress in graphical format. To generate the dashboard, user will need report. At the time of dashboard creation user will have to

select the report as a source. By clicking on to the run button, dashboard will be seen.

### 3. BENEFITS OF SALESFORCE.COM

Salesforce.com is having numbers of benefits. The benefits are listed here. These are very useful to understand a value of Salesforce.com.

#### A. Cloud Based

The Salesforce.com is a cloud based technology. It can be possible to access the salesforce.com from anywhere anytime. The important thing is that you have an internet connection in your device from which you want to access. This will make possible for you to run your organization from anywhere [6].

#### B. On Demand

Salesforce.com is providing on demand service. Developer can demand for any type of support anytime. If a user stuck with the storage space problem, than user has to create one case for the same reason and send to the salesforce.com team. They will allocate appropriate space user's account on demand [6].

#### C. Inbuilt Facilities

Salesforce.com is providing numbers of inbuilt Facilities. It is not necessary that a salesforce.com user have to write code for everything. Salesforce.com is providing Drag and drop facilities. In which developer has to drag and drop the required object from the given list. But, Developer only can drag and drop the object if he or she knows the exact logic behind the object [10].

#### D. Availabilities

The salesforce.com is highly available if user has the internet connection in mobile device. As discussed before, It is totally based on internet so, if user have the internet connection than user can work on it every time [10].

#### E. Cost

As the salesforce.com is providing pay as you go facility, the annual cost of organization will be less. Any hardware setup is not required, so it will save the setup cost and maintenance cost too [10].

#### F. Speed

The salesforce.com is providing drag and drop facility. The user does not have to write code for everything. Such logics will be added by just drag and drop at the exact logical fields

to right place. So, it is obvious that the coding time will be saved and development process will be fast [10].

#### G. Security

The salesforce.com is providing system level and application level security. At the system level security, developer can set the permissions. Developer can generate the access levels as per the role of employees. So, as per role base access, only authorised users can get access to their own developer org. Violation of security access will be reduced [8].

#### H. GUI

The salesforce.com has a simple GUI. New user can easily understand the flow of application. For new users, salesforce.com is providing a beginner module in trail heads. From that user can easily work on the GUI related queries. User can learn from trailheads about the GUI.

### 4. CONCLUSION

Salesforce.com is an emerging cloud technology. This will be very helpful to the business organizations, Government agencies, healthcare industries and much more. The features of salesforce.com are complete package to solve the problems which are in traditional software development techniques. The proper utilization of salesforce.com will help to grow your business rapidly. This will save the annual cost of organizations. And one important benefit is that the development process will be faster because of less coding in the salesforce.com. It provides drag and drop technique for even logical queries.

### 5. FUTURE ENHANCEMENT

Salesforce.com is an efficient technology to develop a desired applications and websites. We are planning to use these modules in our next product development, which is based on the Integration. We are planning to develop a product which will integrate salesforce.com and social media site to fetch the social media data into the Salesforce developer account. From the collected social media data, the risk assessment will be done to reduce the level of impact in the situations like riots, protests and terrorist attack.

### 6. REFERENCES

- [1]<http://faculty.winthrop.edu/domanm/csci411/Hanouts/NIST.pdf>.
- [2] <https://www.salesforce.com/in/what-is-salesforce>
- [3][https://trailhead.salesforce.com/alm\\_deployment/aim\\_intro](https://trailhead.salesforce.com/alm_deployment/aim_intro)

[4][https://developer.salesforce.com/docs/atlas.enus.api.rest.meta/api\\_rest/](https://developer.salesforce.com/docs/atlas.enus.api.rest.meta/api_rest/)

[5] [https://trailhead.salesforce.com/alm\\_deployment](https://trailhead.salesforce.com/alm_deployment)

[6] Tadeballi Sarada Kiranmayee "A Survey on the Role of Cloud Computing in Social Networking Sites" International Journal of Computer Science and Information Technologies, Vol. 6 (2), 2015, 1509-1512.

[7][https://trailhead.salesforce.com/module/apex\\_integration\\_services](https://trailhead.salesforce.com/module/apex_integration_services)

[8] [https://trailhead.salesforce.com/module/security\\_basics](https://trailhead.salesforce.com/module/security_basics)

[9][https://trailhead.salesforce.com/identity\\_login/identity\\_login\\_2fa](https://trailhead.salesforce.com/identity_login/identity_login_2fa)

[10] <https://developer.salesforce.com/en/products>

[11] <https://developer.salesforce.com/en/Trailheads>

[12][https://trailhead.salesforce.com/en/module/apex\\_database](https://trailhead.salesforce.com/en/module/apex_database)

[13] Santos Asbe "On-Premise CRM to Salesforce Migration - Benefits, Challenges and Best Practices" White paper TCS.

[14] Louise Ann Lyon, Kieren Jameson "From Clicks to Code: Resources Women Use to Learn to Code in Apex" 2015 IEEE Symposium on Visual Languages and Human-Centric Computing (VLHCC)

[15] Sodam Baek, Kibae Kim and Jorn Altmann "Role of Platform Providers in Service Networks: The Case of Salesforce.com AppExchange" 2014 IEEE 16th Conference on Business Informatics