

# **“CLOUD BASED SOLUTION TO CRM (SALESFORCE)”**

*Project Report submitted in partial fulfillment of the requirements for  
the Degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

By

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**TABLE OF CONTENTS**

CAPTION	PAGE NO.
DECLARATION	i
ACKNOWLEDGEMENT	ii
LIST OF FIGURES	iii-iv
ABSTRACT	v-vi
<b>CHAPTER-1: INTRODUCTION</b>	<b>1-4</b>
<b>1.1 WHAT IS CLOUD?</b>	1-4
<b>1.1.1 TYPES OF CLOUD</b>	2
<b>1.1.2 BENEFITS OF CLOUD</b>	2
<b>1.1.3 MODELS OF CLOUD COMPUTING</b>	3
<b>CHAPTER-2: LITERATURE REVIEW</b>	<b>5-8</b>
<b>2.1 AN IMPORTANT DISCUSSION- RECORD TYPES VS PAGE LAYOUTS</b>	5
<b>2.2 AN IMPORTANT DISCUSSION- WORKFLOW VS PROCESS BUILDER</b>	7
<b>CHAPTER-3: SALESFORCE FRAMEWORK</b>	<b>8-14</b>
<b>3.1 WHAT IS SALESFORCE</b>	8
<b>3.2 SALESFORCE EDITIONS</b>	8

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<b>3.3 WHAT ARE SANDBOXES</b>	<b>10</b>
<b>3.4 SALESFORCE VERSIONS</b>	<b>11</b>
<b>CHAPTER-4: SALESFORCE BASICS</b>	<b>15-19</b>
<b>4.1 OBJECT TYPES IN SALESFORCE</b>	<b>16</b>
<b>4.2 SOME IMPORTANT TERMINOLOGIES</b>	<b>17</b>
<b>4.3 SALESFORCE LICENSES</b>	<b>18</b>
<b>CHAPTER-5: DATA SECURITY AND DATA MODELING IN SALESFORCE</b>	<b>20-24</b>
<b>5.1 DATA SECURITY</b>	<b>20-22</b>
<b>5.1.1 ORGANIZATION LEVEL ACCESS</b>	<b>20</b>
<b>5.1.2 OBJECT LEVEL ACCESS</b>	<b>21</b>
<b>5.1.3 FIELD LEVEL ACCESS</b>	<b>21</b>
<b>5.1.4 RECORD LEVEL ACCESS</b>	<b>22</b>
<b>5.2 DATA MODELING</b>	<b>23-24</b>
<b>5.2.1 RELATIONSHIPS AMONG OBJECTS</b>	<b>23</b>
<b>CHAPTER-6: SALESFORCE- A DEEP DIVE</b>	<b>25-52</b>
<b>6.1 SALESFORCE FORMULA FIELDS</b>	<b>25-28</b>
<b>6.1.1 EXAMPLES RELATED TO FORMULA FIELD</b>	<b>27</b>
<b>6.2 FIELD HISTORY TRACKING</b>	<b>29</b>
<b>6.3 SETUP AUDIT TRAILS</b>	<b>30</b>

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<b>6.4 ROLL-UP SUMMARY</b>	31
<b>6.5 PAGE LAYOUT AND RECORD TYPES</b>	32-34
<b>6.5.1 PAGE LAYOUTS</b>	32
<b>6.5.2 RECORD TYPES</b>	34
<b>6.6 PUBLIC GROUPS, QUEUES, TEAMS</b>	34-40
<b>6.6.1 PUBLIC GROUPS</b>	34
<b>6.6.2 QUEUES</b>	35
<b>6.6.3 TEAMS</b>	37
<b>6.7 WORKFLOW, PROCESS BUILDER</b>	41-46
<b>6.7.1 WORKFLOW RULES</b>	41
<b>6.7.2 PROCESS BUILDER</b>	42
<b>6.7.3 PROCESS BUILDER VS. WORKFLOW</b>	46
<b>6.8 REPORTS AND DASHBOARDS</b>	47-51
<b>6.8.1 REPORTS</b>	47
<b>6.8.2 DASHBOARDS</b>	50
<b>6.9 CASE AUTOMATION</b>	51-52
<b>6.9.1 WEB-TO-CASE</b>	52
<b>6.9.2 EMAIL-TO-CASE</b>	52
<b>CHAPTER-7: AUTOMATE BUSINESS PROCESSES FOR A RECRUITIN APP</b>	<b>53-64</b>
<b>7.1 BUILD A PROCESS FOR CREATING INTERVIEW PROCESS</b>	53
<b>7.2 GROUNDWORK FOR APPROVAL PROCESS</b>	55
<b>7.3 APPROVAL PROCESS CREATION</b>	56
<b>7.4 PROCESS FOR SUBMITTING APPROVAL POSITIONS</b>	59

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<b>7.5 CANDIDATE RATING FLOW</b>	<b>60</b>
<b>CHAPTER-8: PERFORMANCE ANALYSIS AND CONCLUSION</b>	<b>65-66</b>
<b>8.1 RESULT</b>	<b>65</b>
<b>8.2 CONCLUSION</b>	<b>66</b>
<b>REFERENCES</b>	<b>67</b>

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## DECLARATION

I hereby declare that the work reported in this report “**Cloud Based Solution to CRM (Salesforce)**” in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering submitted in the department of Computer Science and Engineering, Jaypee University of Information Technology, Waknaghat, is an authentic record of my own work carried out over a period from Feb 2020 to May 2020 under the supervision of Mr. Shibhu Kalidhasan (Principal Functional Analyst, Cognizant Technology Solution).

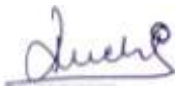
The matter embodied in the report has not been submitted for the award of any other degree or diploma.



Riya Singh

(161386)

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



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## ACKNOWLEDGEMENT

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Riya Singh

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# LIST OF FIGURES

Fig 1.1 Cloud Computing Framework	1
Fig 3.1 Classic Page	11
Fig 3.2 Lightning Experience Page	12
Fig 3.3 Switching from Classic to Lightning	13
Fig 3.4 Switching from Lightning to Classic	14
Fig 4.1 Objects and Records	16
Fig 5.1 Multiple Layers of Access	20
Fig 5.2 Pillars of Record Level Sharing	23
Fig 6.1 Formula Field return types	26
Fig 6.2 Example 1 Illustration	27
Fid 6.3 Example 2 Illustration	28
Fig 6.4 Example 3 Illustration	28
Fig 6.5 Cross Object Formula on Contact (Parent) and Restaurant (Child) Object	29
Fig 6.6 Roll-Up Summary	32
Fig 6.7 Page Layout	33
Fig 6.8 Public groups	34
Fig 6.9 Queues	35
Fig 6.10 Rule Entry in Queues	36
Fig 6.11 Account Teams	37
Fig 6.12 (a) Setup 1	37
Fig 6.12 (b) Setup 2	38
Fig 6.12 (c) Setup 3	38
Fig 6.13 (a) Default Account Team	38
Fig 6.13 (b) Adding members to Default Account Team	39



Fig 6.14 Case Team	39
Fig 6.15 Predefined Case Teams	39
Fig 6.16 Opportunity Team	39
Fig 6.17 Team Roles	40
Fig 6.18 Workflow Rule	40
Fig 6.19 Process Builder Representation	44
Fig 6.20 Add Object	45
Fig 6.21 Add Criteria	45
Fig 6.22 Add Actions	46
Fig 6.23 Process Builder vs. Workflow Rules	46
Fig 6.24 Folders	47
Fig 6.25 Creating New Report	48
Fig 6.26 Tabular Report	49
Fig 6.27 Summary Report	49
Fig 6.28 Dashboard	50
Fig 6.29 Dashboard Components	51
Fig 8.1 Action Criteria for process builder	65
Fig 8.2 Radio Buttons for New Review Window	65
Fig 8.3 Flow Process	66

## ABSTRACT

CRM system helps us to manage our customers' data. It supports Sales Management, delivers actionable insights, integrates with social media and facilitates team communication/collaborations. Cloud-based CRM systems offer complete mobility and access to all these and other amazing activities.

CRM is used by:

- Any business that includes sales, marketing, billing teams and also creates quotes or sends invoices.
- Any business that wants to increase efficiency and customer care.

CRM provides more methods for purchasers to speak and explain their needs to the organization through numerous contact points. Customers get increased satisfaction and a feeling of being important because of the increased personalization of services they get and customization of goods they are offered.

CRM is an important tool because it frequently takes into account the past customer data like marketing campaigns, purchases and service satisfaction. This software also aims to automate these processes so that they could create a better experience for both the businesses and their customers.

Salesforce is a popular and continuously growing cloud computing service as a software (SaaS) company that have specialty in customer relationship management (CRM).

Salesforce's services allow businesses to use cloud technology to better connect with customers, partners and potential customers.

Its proficiency in on-demand software that helps to reduce the value for company as it provides a common and standard networking, hardware and software platform. Customers can improve

sales and enhance communication through various products of Salesforce namely Salesforce Chatter, Sales Cloud, and repair Cloud applications. It offers everything needed to make our CR faster and easier to complete sales for a business.

# CHAPTER 1

## INTRODUCTION

### 1.1 WHAT IS THE CLOUD?

It is basically a place where we can access apps and services and also store data securely. Cloud is beneficial as it doesn't require any efforts on our part to maintain/manage it. Furthermore, it is infinitely sized so there is no issue of running out of storage. Also, cloud based apps and services can be accessed from anywhere, all you need is a device and internet connection. Cloud is a very good place to run business software like CRM.

With a cloud app, we just open a browser, log in, and start working on it. This simply means that we can get all the information from mobile device. Real time updation can be made easily at any time from any place. Cloud computing has eliminated many former office characteristics like Large servers; Dedicated in-house IT support; Data storage devices; Limited access geographically; Information loss etc.

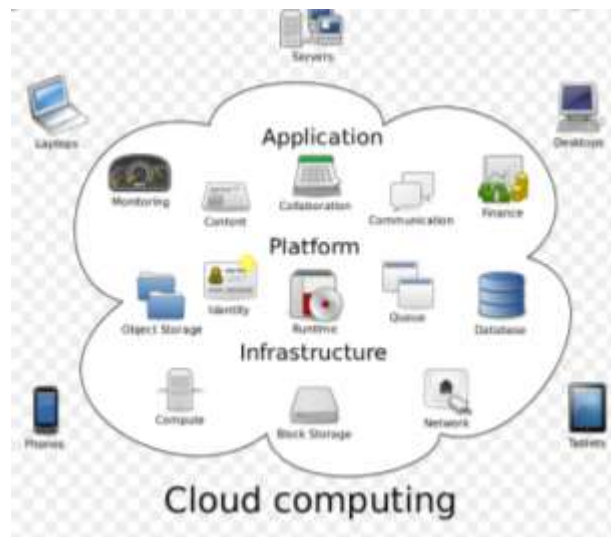


Fig 1.1 Cloud Computing Framework

### 1.1.1 CLOUD CAN BE OF FOLLOWING TYPES:

1. **Public Cloud:** It is the cloud available to the public, provided by some third party.
2. **Private Cloud:** It is owned by one organization which operates it. Any organization can create its infrastructure for such type of a cloud either at a remote location or on site.
3. **Hybrid Cloud:** It uses both public and private cloud for its computing needs. For instance, an organization might use its private cloud for internal critical functions while using a public cloud for some higher demand needs.
4. **Multi Cloud:** It is when a user or an organization uses two or more clouds from different third parties.

Potential cloud stakeholders are characterized into four general roles:

- End users: Consumer of the cloud application.
- Cloud Service Providers: Provider of cloud features.
- Cloud Tool Providers: Third party provider of cloud support and management tools.
- Cloud Application Vendors: Vendors of cloud services.

### 1.1.2 BENEFITS OF CLOUD

1. **Fast Implementation:** With the help of cloud we can cut down the complexity of implementing application and then getting it up and running after months or even years. With a cloud based application, all we need to do is just sign up and start using the application. Even the most wide range enterprise apps are up and running in some days or weeks.
2. **No up-front costs:** With cloud based applications the capital costs and expenditure is reduced dramatically and in some cases even eliminated completely. We instead pay a monthly fee just like a subscription.
3. **Maintenance free:** With cloud based applications, there is no necessity of maintenance like patching, testing applications and upgrading. That is because all this is handled in the cloud itself leaving the employees with more time to work on other projects.

4. **Access Anywhere:** We can access these applications from anywhere.
5. **Better security:** Data in cloud based applications is stored securely.
6. **Multitenant:** Cloud softwares provide opportunity to give personalized portals to a multiple number of customers.
7. **Adaptable:** Cloud computing allows adaptable applications and programs while the owner controls the core code.

### 1.1.3 MODELS OF CLOUD COMPUTING

1. **Software as a Service (SaaS):** It is the most common type of Cloud Computing, delivering complete, user ready applications over web. These do not usually have to be downloaded and installed on a user's computer hence saving lot of employee time. Maintenance is handled completely by the vendor. Software program perform certain specific functionalities. Some examples are: Salesforce's CRM tool; Microsoft Office 365 products; QuickBooks; Dropbox etc.  
Salesforce.com is a standard application that provides many services online. Sales cloud consists of objects like Campaign, Leads, Account, Contacts, Opportunity, Products, Pricebook, and Quotes. Service cloud consists of Cases, Solutions, Idea, A and A, Reports, Dashboard, Documents, and Tasks/Activities
2. **Infrastructure as a Service (IaaS):** It is the most open ended cloud service for organizations that deals with much of the customization on their own. It is a form of service where sharing of resources takes place virtually. The most beneficial fact about IaaS is its extra capacity, which can be accessed on demand for long as well short term requirements. It makes possible for businesses to rent enterprise grade IT infrastructure and resources without large capital investments.
3. **Platform as a Service (PaaS):** It provides building blocks for software creation, development tools, libraries of codes, servers, programming environments and other pre

configured application components and feature. The platform exists in the cloud. Force.com is a multi-tenant architecture. It is used by corporate app developers and independent software vendors. It provides a custom application platform which is based on relational database. PaaS services can be categorized into three types:

- Public PaaS: It is housed in the cloud and provider manages the infrastructure.
- Private PaaS: It is housed in onsite servers or simply private networks. It is maintained by users.
- Hybrid PaaS: it uses features from both private and public. It is capable in the execution of applications from multiple cloud infrastructures.

# CHAPTER 2

## LITERATURE REVIEW

### 2.1 AN IMPORTANT DISCUSSION- RECORD TYPES VS. PAGE LAYOUT

The article discusses about the differences between Record Types and Page Layouts and when to use which one out of these two with the help of certain use cases/scenarios.

There is a common confusion amongst the Salesforce users about when to go for a record type and when for page layout. The reason for this is that at junior levels, they work on a small sphere of use cases but the business requires us with more complex structures. Using the correct tool out of these two helps us in proving a better functionality to our system and hence, making the business process more smooth.

#### *Examples:*

1.

**A – Support users are being onboard onto Salesforce. They are required to view an extensive amount of information on Accounts around the customers technical solution. This information does not apply to any existing users. They have two Support profiles.**

With this example we have quite a straight forward use case. As support users are now being brought onto the system, they need to see different information than others. As we are only dealing with one additional view for a group of users, we can use one additional page layout and apply this to both support profiles.

2.

**B – Sales are now selling into Enterprise accounts and as such, have a different lead process that needs to be implemented. At this stage Sales only require different Lead statuses. They have two Sales profiles.**

As mentioned above, there are a few criteria to look at when evaluating whether to use a record type or not. As the requirement above mentions a lead process change, we will automatically need to use a record type. There is no mention of any field changes so we can easily apply a single record type to the two profiles.



3.

**C – Sales have yet another requirement \*Sigh\*..they would like to implement a different selling process on Opportunities for each of their 3 tiered levels of accounts (1-100, 101-500, 501+ employees). This involves different stages that the sale moves through, as well as capturing different information along the way. They only have one Sales profile.**

Here's a more exciting requirement. We can see that different processes are mentioned straight away, therefore record types are going to have to be used. The requirement also mentions that there is 3 different selling processes. As we can only assign one sales process to one record type, we will need to create 3! In addition to this, they also would like to capture different data for each sales process, this will require 3 page layouts in addition to be assigned to each record type.

4.

**D – The support team have a requirement to show different information on the page layout, depending which level the case has been escalated to (Tier 1, 2 or 3). The support agents have 3 different profiles which correspond to the escalation level.**

The requirement seems to be straight forward as they have directly mentioned the need for different page layouts, because of the three tiers we know we will need 3 page layouts. The fact that we actually have 3 different profiles conveniently setup, means we can just assign each page layout to each profile. However, if we only had one profile here, we would need record types in order to meet the requirement (With some automation to automatically change record type based on escalation!).

### ***Conclusion:***

Page layouts and record types are some of the most commonly used features which help us in Salesforce to work better with our business process and knowing when to use which one out of these helps us in making the systems fit for use.

## **2.2 AN IMPORTANT DISCUSSION- WORKFLOW RULES VS. PROCESS BUILDER**

The discussion involves the basic functionality of workflow rules and process builder, and when to use which one.

Workflow rules is a point and click feature/tool in Salesforce. It is a version of if/then statement having limited number of if statements which get accepted and limited number of then statements as actions. These rules apply on the record which triggers the statement. There are four different rule actions allowed in workflow rules: Create a Task, Send an Email Alert, Send an Outbound Message, and Update Record.

Process Builder is a simpler flow which allows multiple if/then statements which gets kicked off in multiple ways. Process Builders have many different actions which they perform: Call out to Apex Code, Create a record, Send Email Alerts, Call out to a Flow, Post to Chatter, Call out to another Process Builder, Do an action in Quip, Send a Custom Notification, Send a Survey Invitation, Submit for Approval, Update Records.

There are many options available in process builder than workflow rules. Process builder enables us to use one or more of these options together from one criteria node itself. Workflow rules on the other hand lack this functionality but they are still being used for sending outbound messages or when our logic is very simple and does not require much complex structure.

However, process builders are being promoted to use as they are more flexible and provides an easy lead in implementing our business process.

# CHAPTER 3

## SALESFORCE FRAMEWORK

### 3.1 WHAT IS SALESFORCE?

Salesforce is a cloud based customer success platform that is designed to help in selling, servicing, marketing, analyzing and connecting with the customers. It has everything that one needs to run a business from any place. With the help of standard products and features, one can manage connections with the prospects and customers, collaborate and engage with partners as well as employees, and store the data securely and safely in the cloud.

### 3.2 SALESFORCE EDITIONS

Salesforce Editions is a set of Salesforce features bundled together. Based on what type of business we have, we choose our Salesforce Edition. There are seven editions provided by Salesforce. They are namely; Personal Edition, Contact Manager, Group Edition, Professional Edition, Enterprise Edition, Unlimited Edition and Developer Edition. Some of these Editions are explained as follows:

- 1. Essentials:** Costs \$25 user/month billed annually. It offers simple set of default features to fulfill basic sales requirements like Lead management; Account, Contact and Opportunity management; Sales tasks and events; Sales reporting; Employee collaboration; Mobile access to Salesforce; Process automation with process builder. Essentials do not allow large and mid sized business.

It is best suitable for small companies with up to 10 CRM users as such companies do not have a need for advanced CRM functionality for CRM customization and third party integrations. If a sales team can manage its working with basic functionality and low level process automation, this edition is best suitable and enough for them.

- 2. Professional Edition:** Costs \$75 user/month billed annually. A sales team with more than 10 members requiring specific CRM functionality for managing their products, quotes, orders, contracts, pricebooks etc. must go for this edition. The default features of this edition includes features of Essentials plus some additional features like Rule based lead scoring, contract management, quote and order management, products and pricebooks, synchronization of contacts between a Microsoft Exchange connected device and Salesforce.

Like Essentials, they too lack the ability to customize solution with code and automate sales processes with code block. Integration of Salesforce with the third party systems is possible by the help of APIs. However, this requires additional charges of \$25 user/month, hence making it costly for mid and large sized business.

There is a possibility of creating two user profiles per org and 10 permission sets in this edition. Professional Editions is best suited for small and mid-sized businesses with 11-60 sales team members. This edition automates up to 5 sales processes; create 2 custom user profiles, 2 roles and 10 permission sets.

- 3. Enterprise Edition:** Costs \$150 user/month billed annually. It has Professional Edition features plus other features like; Workflow and approval automation, opportunity teams, opportunity splits, enterprise territory management, API's for Salesforce third party integration etc.

This edition provides unlimited number of user profiles and page layouts, roles and permissions, and record types per object. The edition best suits for large-scale organizations with multiple sales departments and more than 50 team members.

- 4. Unlimited Edition:** Costs \$300 user/month billed annually. It has immense capabilities for process automation, customization with the help of Apex Code, 24\*7 toll free supports, access to success resources, access to configuration services, developer support and access to one-on-one coaching sessions.

It has the ability to create 200+ custom objects, 200 record types, 500 validation rules, and up to 800 custom fields per objects. The edition is suitable for enterprise-level orgs with many sales departments and more than 250 sales team members.

### 3.3 WHAT ARE SANDBOXES?

Salesforce provides us opportunity for creating multiple copies of the org for a variety of purposes in separate environments like testing and training without compromising your Salesforce production org's data and applications. Such copies are called Sandboxes and are almost identical to production org for Salesforce.

There are four types of Sandboxes. They are namely; Developer Sandbox, Developer Pro Sandbox, Partial Copy Sandbox and Full Sandbox.

- 1. Developer Sandbox:** It is a special type of sandbox which is intended for testing and coding purposes. It has a 200 MB data limit along with 200MB file storage limit.
- 2. Developer Pro Sandbox:** It too is a special category of Sandbox which is designed for single developer coding and testing objectives. It has a space limit of 1GB and 1GB file storage limit. It is similar to Developer Sandbox but with more space.
- 3. Partial Copy Sandbox:** This Sandbox includes only production box schema and some data meaning it holds all objects, dashboards, reports, documents and attachments. It has a data limit of 5GB and 5GB file storage limit. A type of sandbox is intended for particular uses around subset of schema and data.
- 4. Full Sandbox:** It is an identical replica of all the data and schema in your development system or production environment. This has the same data or size limit as production box.

### 3.4 SALESFORCE VERSIONS

Salesforce provides us with two versions; Classic and Lightning Experience.

Salesforce Classic is the name given to the old UI. It is basically the standard stage which has been used in Salesforce for a long while. However, with the demand of continuous advancements and increasing customer expectations, it soon became difficult to use Classic as a means to fulfill all these growing demands. Hence, Lightning Experience came into picture which provided all the updated features for better interactions with the users, hereby, increasing the demand of Salesforce.

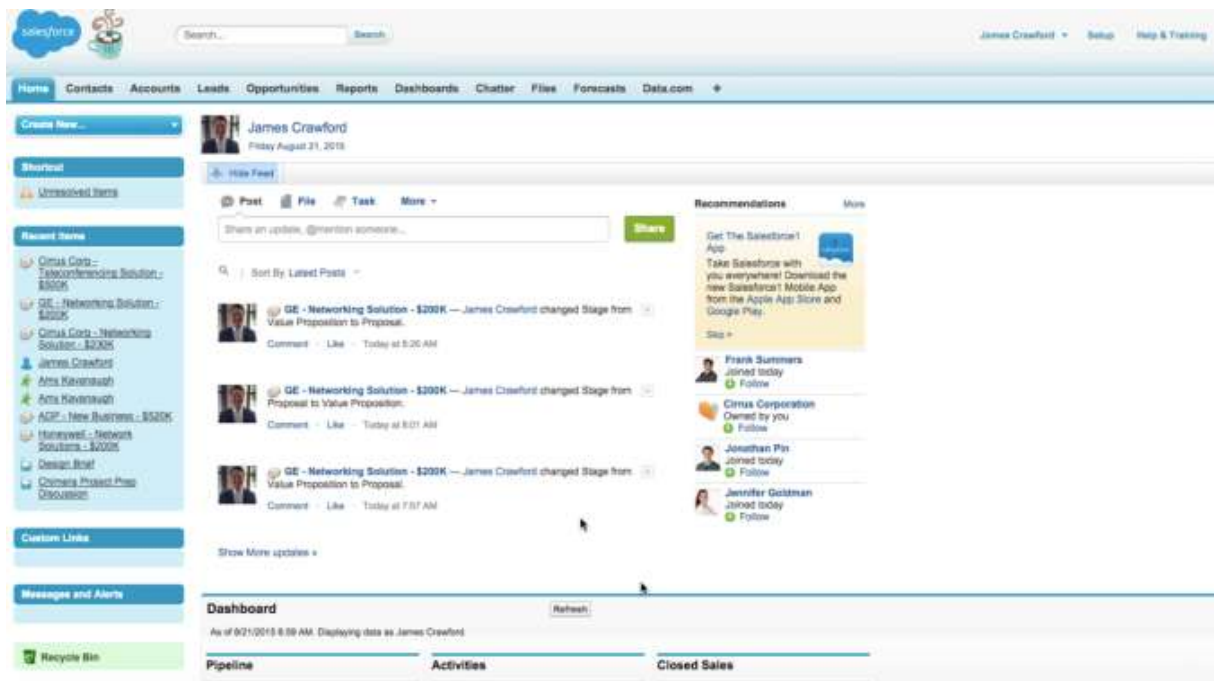


Fig 3.1 Classic Page

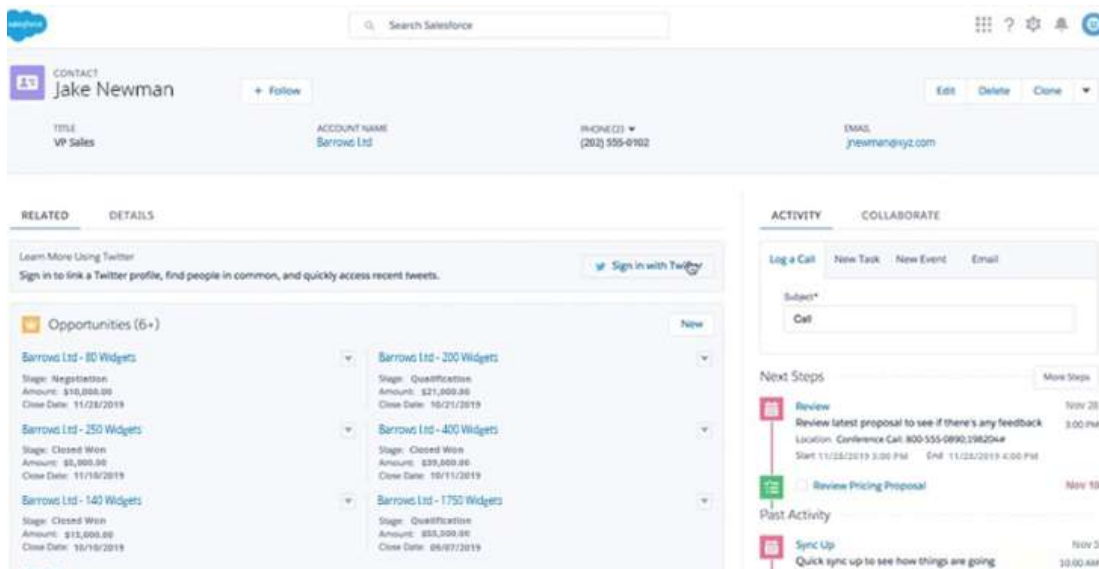


Fig 3.2 Lightning Experience Page

Salesforce Lightning Experience was released in 2016 as an alternative to Salesforce Classic. Lightning experience for Salesforce is the recent user interface. It is a massive improvement from Salesforce Classic point of view, providing the Salesforce platform with modern and new look as well as usability. Despite having similar access to objects like Accounts, contacts, Leads, Opportunity, Cases etc; Custom objects; Chatter feeds, groups and people; and Salesforce files, the lightning experience provides extra features like Performance charts, Assistants, Accounts insights on Home along with Enhanced calendar. Some of the Lightning features are as follows;

1. **Lightning Experience:** A GUI which is speed optimized.
2. **Lightning App Builder:** It provides drag and drop abilities so as to facilitate app formation and customization.
3. **Lightning Component Framework:** It includes tools and extensions that allow reusable components and standalone apps to be developed and Salesforce Mobile App to be customized.
4. **AppExchange for Components:** It allows app builder to be available with over 50 partner components.

5. **Design System:** It offers style guides and UX (User Experience) app development best practices.

Recent stats reveal that shifting to the new Salesforce Lightning UI caused an increase in sales and marketing teams, improvement in collaboration, higher lead conversion rate and various other benefits also.

The key benefits of Lightning Experience are;

1. More convenient and enhanced UI which is easier to navigate.
2. New components like Activity Timeline, Path Component and Notes Component have helped in improving sales process.
3. Enhanced reporting due to the Lightning Report Builder Tool which gives an opportunity for implementing better report charts using filters at row level and other interactive filters while viewing reports.
4. Better in security areas.
5. Supports Essentials, Professional, Enterprise, Unlimited, Group and Developer Editions.
6. Provides an access to Einstein (Wave) Analytics which is not a feature available in Classic.

One can always switch from Classic to Lightning Experience and vice versa very easily.



Fig 3.3 Switching from Classic to Lightning



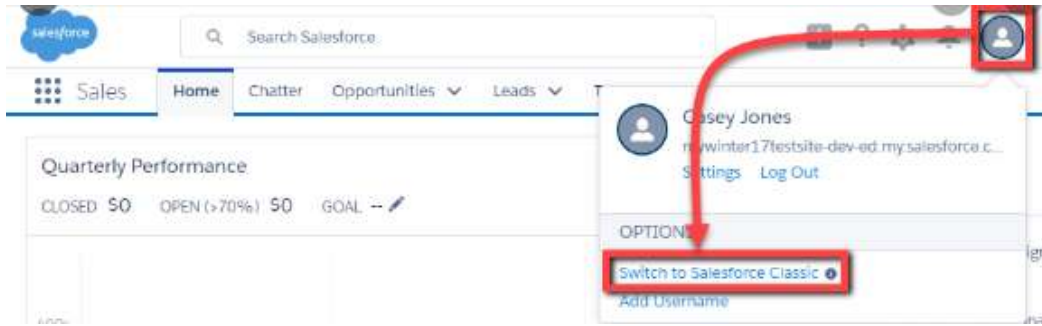


Fig 3.4 Switching from Lightning to Classic

# CHAPTER 4

## SALESFORCE BASICS

If our data is stored in spreadsheets, mails/messages, or pinned to our bulletin board in the form of notes, it's hard to get the full view of forthcoming client. Also, we can surely not access data from anywhere, at any point of time, nor can our manager or executives see the progress on the deals without calling us to show the status. In Salesforce, one can:

- Manage all contacts.
- Work with forthcoming and existing clients.
- Organize tasks.
- Focus on appropriate deals.
- Collaborate and engage with teams.

Access determines one's ability to open and deal with data stored in Salesforce. Based on what settings the admin maintains, one can create, edit, view, and delete the data. This access can either be simple or can be multilayered based on the complexity of the need of the company. Salesforce also includes a platform for easy collaboration. One can create groups, follow people as well as topics, ask questions, post polls, share files and links, and also mention colleagues with whom we want to interact/connect.

Salesforce organizes the data in the form of objects and records. Objects can be considered as tabs on a spreadsheet, and record like a row of data.

1. **Record:** It is any item that we are having a track of in the database. It can be considered as any row in a spreadsheet.
2. **Field:** It is a place where we store a value, like name, place, address etc. It can be considered as a column on spreadsheet.
3. **Object:** It is a table in the database.

4. **Organization:** Simply known as “org”, it is a place where all our data, configuration, and customization reside. To access all this data we log into our org.
5. **App:** It is a set of fields, objects, permissions, and functionality bundled up together to support a business process.

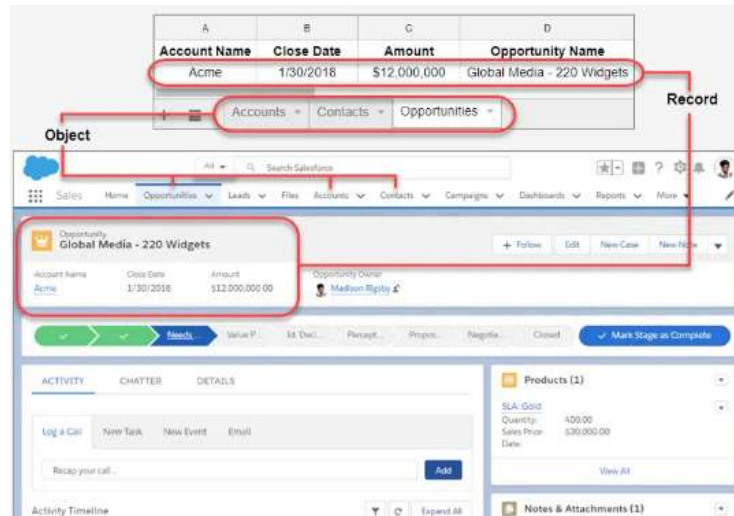


Fig 4.1 Objects and Records

## 4.1 OBJECT TYPES IN SALESFORCE

Salesforce makes use of two types of objects: Standard and Custom Objects. While Standard objects are some default objects which are pre defined, Custom objects on the other hand are the ones that a user creates. Some Standard objects are as follows:

1. **Account:** Accounts are the companies with whom we are doing business with. Account can be of a whole company or an individual. The individual account is known as Person Account.
2. **Contacts:** These are the people who work at the company or simply ones who are associated with an Account.
3. **Leads:** They are potential prospects for our business. They haven't been qualified yet whether they will buy the product or not but they can eventually turn up as a potential customer.

- 4. Opportunities:** They are qualified Leads that we have converted. When we convert a Lead an Account and Contact along with Opportunity is created for that Lead.
- 5. Case:** It represents a case which can be a customer issue/problem.

When standard objects are unable to meet up our business requirement, we make use of custom objects and design it in our own way so that it readily meets up our demands. The information regarding the objects can be stored in four types of fields. These are;

- 1. Identity:** Also known as ID, it is generated automatically for each record and is considered as an individual identifier which is unique for every record and hereby helps in differentiating one record from another. It is 15-18 characters long.
- 2. System:** This field is a Read-Only field. It provides information like the owner of the record and the one who made any changes in the record.
- 3. Name:** It is the mandatory field for custom objects and can be filled by either text or auto number.
- 4. Custom:** Any field apart from ID, System and Name fields is called Custom Domain. It has a custom data type i.e. user defines its data type according to his/her requirement.

## 4.2 SOME IMPORTANT TERMINOLOGIES

Some important terminologies and aspects in Salesforce are as follows:

- 1. User:** It simply represents anyone who logs in the org. It is used to collect information about users and modify the information regarding them. Users are simply employees at your company.
- 2. Username:** The username must be formatted like an email and must be unique across the org. However, a username cannot be a user's email id.
- 3. User licenses:** They determine what features a user can access in Salesforce.

4. **Profile:** They are basically what a user can do in Salesforce. Profile comes with a set of permissions which grant access to particular objects. Profile gives us access like Create, Read, Edit, and Delete.
5. **Roles:** They simply define what a user can see based on where it is located in the hierarchy. Users at the top can see all the data owned by the users below them.
6. **Alias:** Short name to identify a user.
7. **App:** It is a group of tabs that works as a unit to provide application functionality.
8. **Console App:** It is designed to boost productivity for users.

### 4.3 SALESFORCE LICENSES

Salesforce provide access to various user licenses. Some of them are described as follows:

1. **Salesforce:** Provides a complete access to Force.com AppExchange apps and CRM.
2. **Salesforce Platform:** It provides access to custom apps but not to CRM functionality.
3. **Force.com-One App:** This license is now available to the fresh customers. It is basically designed to provide users access to one custom app but not standard CRM functionality.
4. **Force.com App Subscription:** It provides an access to a Force.com Light App or Force.com Enterprise App. Both of them exclude CRM functionality.
5. **Knowledge Only User:** This license provides user an access solely to Salesforce Knowledge App.
6. **Identity:** It provides access to Identity features. These features may include App launcher, included with all paid licenses in Enterprise, Performance and Limited Editions.
7. **Chatter Free:** It provides access to standard Chatter profiles, people, groups and files without any additional cost.
8. **ChatterExternal:** It allows the clients access to chatter groups at no additional cost.

- 9. Chatter Only:** It is primarily designed for Performance, Unlimited, Enterprise, and Professional Edition users who don't have Salesforce licenses but still need access to some Salesforce objects along with Chatter.
- 10. Work.com Only User:** It is available in Enterprise, Unlimited and Professional Editions. It is crafted for the users who don't need Salesforce license but need an access to Work.com.
- 11. Company Community:** It is available in Enterprise, Developer, and Unlimited Editions. It helps give access to Force.com Light application custom objects, Chatter, custom tabs, and aCommunity.

# CHAPTER-5

## DATA SECURITY AND DATA MODELING IN SALESFORCE

### 5.1 DATA SECURITY

Data security helps us in securing the data by restricting the access of records accordingly as per the requirement. Access can be many layered: Organization Access; Object Access; Record Access; and Field Access. Each of them is explained below.

#### 5.1.1 ORGANIZATION LEVEL ACCESS

The organizational level access enables us to decide when and from where can the users access the system. It does so by providing IP restrictions and Login access.

One can set IP ranges for users. Users with IP range outside the specified range are sent an activation code. However, if the IP ranges are set at profile level, then no user whose IP range falls outside the specified range can access the data at any cost.

We can also set login hours for the users i.e. limit up to how many hours can one log in depending on their profile.



Fig 5.1 Multiple Layers of Access

## 5.1.2 OBJECT LEVEL ACCESS

This access grants users permissions to see and do actions on the object. This can be achieved by Profiles and Permission Sets.

1. **Profile:** Profile determines the object level security to a particular user. Profile controls and manages objects that a user can see and what all actions can they perform on these objects. These settings are Create, Read, Edit and Delete collectively called as CRED.

Some of the profiles can be defined as follows.

- System Administration: The user with this profile can View and modify all data.
- Standard User: The Standard User Profile can perform CRED settings,
- Solution Manager: This profile has all the Standard User features accompanied with the management of published solutions.
- Marketing User: Standard User plus import leads.
- Control Manager: Standard User plus manage contracts.
- Read Only: Only view records they have access to.

2. **Permission Sets:** These are basically used to provide extra or special permissions to the users who have been assigned with a profile already.

## 5.1.3 FIELD LEVEL ACCESS

The field level access or security cannot grant access but it can only restrict it. For example, if a profile user has Read access on any object and we grant Read and Edit access to any field of that object. The user can only Read that field and not Edit it. On the other hand if we have defined a permission of Read and Edit on the object but Read Only field permission on a field, then user can only have Read access to that field.



#### 5.1.4 RECORD LEVEL ACCESS

There are four aspects of controlling record level access; Organization-Wide Sharing Defaults, Role Hierarchy, Sharing Rules, Manual Sharing. Each of these opens up access as we move further.

1. **Organization-Wide Sharing Defaults:** Anyone who creates a record has full access to it. To have an access of the record which are not owned by us, we make use of org-wide sharing defaults. Any record can have the following type of access permission.
2. **Role Hierarchy:** The users can access data of all the users which are directly below them in hierarchy. Users at any specified role can View, Edit and Report on all data which is owned or shared with any user lying below them in role hierarchy. If we have disabled “Grant Access Using Hierarchies” option for an object, only the owner of record and the users who are granted access by org-wide defaults can have access to that object’s records. Role hierarchy provides vertical access to records of the objects.
3. **Sharing Rules:** Sharing Rules open up horizontal access by extending the sharing access to users in public groups/roles. We can establish sharing rules for any parallel roles in the role hierarchy, hereby, opening gate for easy access of records at the same level in hierarchy.
4. **Manual Sharing:** It is the most flexible sharing access. It is majorly used to handle certain exceptional cases where a specific user needs to be granted with access to a particular record.

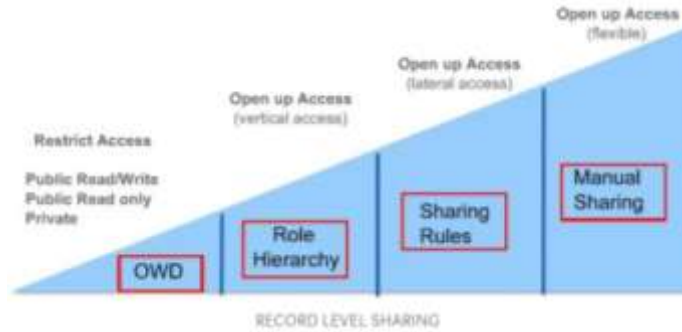


Fig 5.2 Pillars of Record Level Sharing

## 5.2 DATA MODELING

Data Modeling is a mechanism for representing tables in the database in such a manner that it is easily understood by any person. Tables help us give a better insight of relationships among different objects.

### 5.2.1 RELATIONSHIPS AMONG OBJECTS

Relationship among objects simply means how the objects are related to each other. We can define relationship between objects by defining custom object relation filed. There are two types of major relationships that Salesforce supports.

1. **Look-Up Relationship:** If two objects have a look up relationship with each other, then it simply means that one object can have access to the fields of the other object. A lookup relationship can be implemented in two ways which are; One-To-One and One-To-Many.
2. **Master-Detail Relationship:** Two objects sharing master detail relationship are tightly bounded where one object is the master and other acts as detail. In other words, they are like parent-child relationship. A child object is checked up on by the parent object. A child must always mention its parent before storing in database. Also, a child

automatically ceases to exist if its parent object is deleted. One object can have up to two master detail relationships.

Junction object is another concept in master detail. It is a custom object which connects two objects through master detail relationship

Master detail and Look up relationships are different from each other. Some of the key differences are mentioned below;

1. Look up relationship is loosely coupled while Master Detail is not.
2. Look up relationship permits orphaned records while they are strictly prohibited in Master detail relationship.
3. Roll up summary fields cannot be established in Look up relationships while they can be easily established in Master detail relationship.
4. Cascade record level security prevails in Master Detail relationship which means we can view a child if we can view the parent. On the other hand it is not necessary that we can view a child too if we are viewing parent.

## **CHAPTER 6**

### **SALESFORCE - A DEEP DIVE**

#### **6.1 SALESFORCE FORMULA FIELDS**

Formula Field is a Read Only field, the value of which is evaluated from the expression or formula which we define. We can define formula field on both standard and custom objects. Any changes in the formula will update the value of formula field automatically.

Formula field is defined for 8 types:

1. Number.
2. Currency.
3. Date.
4. Date/Time.
5. Text.
6. Checkbox.
7. Time.
8. Percent.

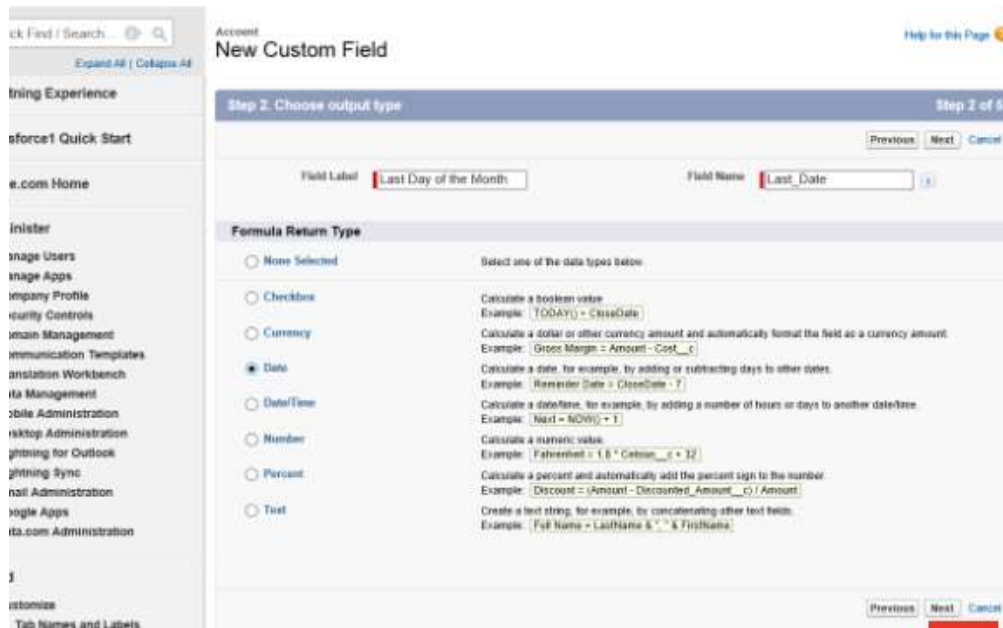


Fig 6.1 Formula Field return types

**To make a formula field, we follow the given steps:**

Step 1: Click on the Object Manager and open the object page for which you want to create a formula field.

Step 2: Create New Field.

Step 3: Select Formula and click Next.

Step 4: In Field Label, type in the label you want to give to your Formula Field. The Field Name gets auto-populated.

Step 5: Select the return type for the field.

Step 6: Click Next.

Step 7: The formula editor page will open. Type your formula. The page comes with many functions which can be used according to our requirement.

Step 8: Click Next, select Field Level Security and save it. After saving, we can view this formula field in the list.

### 6.1.1 EXAMPLES RELATED TO FORMULA FIELD

**EXAMPLE 1-** Defining a Formula Field on Opportunity Object which displays the text “Target Not Met”, “Target Met” and “Above Target” according to the Amount Field in Opportunity.

**Formula:-**

```
IF( Amount < 99999, "Target Not Met",  
IF( Amount < 12999, "Target Met", "Above Target"))
```



Fig 6.2 Example 1 Illustration

**EXAMPLE 2-** Flat Rate Commission Calculation calculates a commission according to Amount and Percentage fields in Opportunity Object. Commission is a flat 8% of Opportunity Amount for any Closed Won Opportunity.

**Formula:-**

```
IF(  
  
ISPICKVAL( StageName , 'Closed Won'),  
  
ROUND( Amount * 0.08, 2) , 0)
```

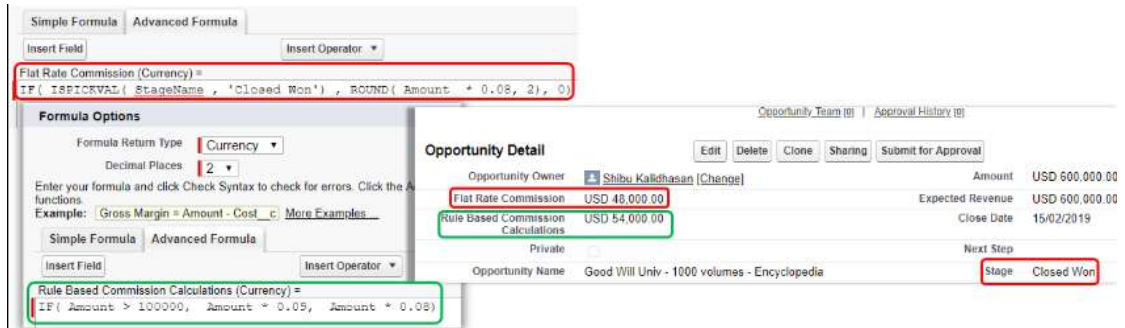


Fig 6.3 Example 2 Illustration

**EXAMPLE 3-** The “Never Contact” checkbox on the Contact Page will be checked only if all three checkboxes namely “Do Not Call”, “Do Not Email” and “Do Not Fax” are selected. If any one of them remains unchecked, the “Never Contact” will also remain unchecked.

**Formula:-**

AND(DoNotCall, HasOptedOutOfEmail, HasOptedOutOfFax)

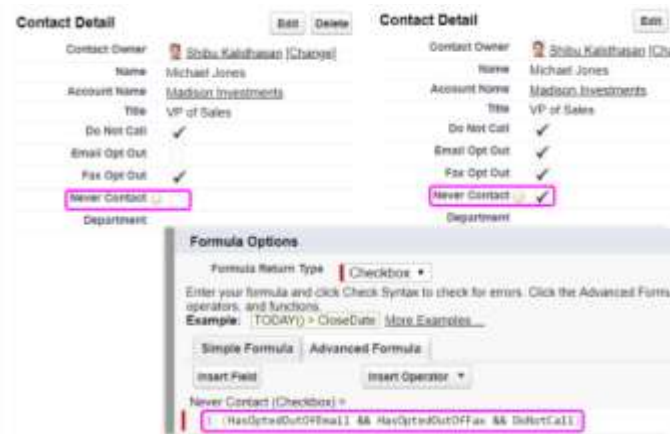


Fig 6.4 Example 3 Illustration

Cross Object Formula Fields are the ones with which we can construct a formula over any related objects. Such a formula is a type of reference field on other object. We can reference fields from objects that are up to ten relationships away.

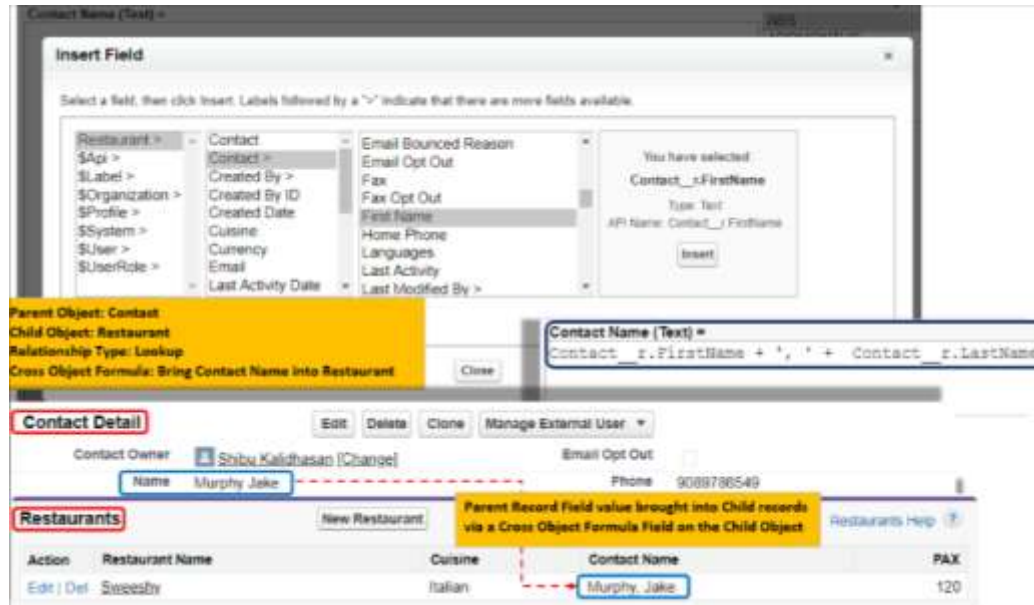


Fig 6.5 Cross Object Formula on Contact (Parent) and Restaurant (Child) Object

## 6.2 FIELD HISTORY TRACKING

In Salesforce we can select certain fields in order to track them and display their history in the History related list of an object. The Field History is retained through the org for up to 18 months and up to 24 months through API.

Any modification in the field whose field history is enabled is added as an entry in the History Related List. The entries include date, time, and type/nature of change made and by whom the change was made. Field History tracking can be done for custom and standard objects.

We follow the given steps to enable Field History Tracking.

Step 1: Go to the object for which you want to enable Field History Tracking.



Step 2: Click on the Edit button. Go to the Optional Features and select Track Field History checkbox.

Step 3: Click Save.

Step 4: Now, we go to the Fields and Relationship option and then click Set History Tracking button.

Step 5: Select the fields and click Save.

Step 6: Now, to view it as a Related List on the Page Layout, we go to the Page Layout option and from there drag the History from the palette and drop to the related list. Click save.

However, Field History Tracking has some limitations too.

1. A maximum of 20 standard and custom fields per object can be tracked by default.
2. We cannot track original and new value for Picklist (Multi-Select), Text Area (Rich), and Text Area (Long) type of fields.
3. We cannot track some standard objects like Quote, User, Campaign, Task, and Event.
4. We cannot track all fields like Created By, Last Modified By, Expected Revenue, Formula, Roll-Up Summary, Auto-Number fields.

## **6.3 SETUP AUDIT TRAIL**

Audit Trail helps us in tracking the recent Setup changed that have been made to the org. only the System Administrators and the users with View Setup Audit Trail Configuration permission can use this feature. The View Setup Audit Trail tracks all the metadata changes. The feature records all the changes regarding the administration, security, sharing, development, data management, and customization etc.

This feature is beneficial in multiple administrator environments. It enables us to see any changes made in the past 6 months including information such as what changes were made, when were they made, and by whom were they made.

In order to access Audit Trail, we follow the given steps.

Step 1: Navigate to Setup > Administer > Security Controls > View Setup Audit Trail.

Step 2: We can now see the information about the changes that were made. We can also download the data of the last 6 months from “Download setup audit trail for last six months” option. The file gets downloaded as .csv format.

The difference between Audit Trail and Field History is that Audit Trail is at the organizational level while Field History is on the object level. Setup Audit Trail tracks the configuration and metadata modifications made recently while Field History tracks the changes made in the field values in the record for an object recently.

## **6.4 ROLL-UP SUMMARY**

A roll-up summary field is used to calculate value from records which are related to each other. We can also create roll-up summary field so as to display value of a master based on the detail’s value in Master-Detail Relationship. Many actions/calculations can be performed with the help of roll-up summary field. We can perform Sum, Min, Max and Count.

We define roll-up summary on the object which is on the master side in a M-D Relationship. If there is no Master-Detail Relationship then we first create one.

Roll-up Summary is created by following steps.

Step 1: Create a custom field of roll-up type. To do so, click on the object, select Fields and Relationships and click on New. From the list, choose roll-up summary as the type of field. Click Next.

Step 2: Enter the Label and other attributes as per required. Click Next.

Step 3: Select the detail object.

Step 4: Select summary type. It can be Sum, Min, Max or Count.

Step 5: Enter the filter criteria. Click Next and select Field Level Security.

Step 6: Click Save.

The screenshot shows the 'Select Object to Summarize' configuration page. The 'Master Object' is set to 'Opportunity' and the 'Summarized Object' is 'Opportunity Product'. Under 'Select Roll-Up Type', the 'SUM' radio button is selected. The 'Field to Aggregate' dropdown menu is open, showing options: '--None--', 'Discount', 'List Price', 'Quantity', 'Sales Price', and 'Total Price'. Under 'Filter Criteria', the radio button for 'All records should be included in the calculation' is selected.

Fig 6.6 Roll-Up Summary

## 6.5 PAGE LAYOUT AND RECORD TYPES

### 6.5.1 PAGE LAYOUTS

Page layout is that one thing which controls the layout of buttons, custom links, related lists, field displays etc on an object record page. They also help us to tell which fields are/should be visible, read only, and required. By using page layout, we customize the content for the user in the record pages. Page layouts help us customize the sections of a page. We can apply page

layouts to group of users to show them relevant data accordingly. By default, there is minimum one page layout for every object. Multiple page layouts can be created for an object. We can create a page layout in some simple steps.

Set Up > Customize > \*Object for which we want to customize the page\* > Page Layout > New > Fill in the mandatory details > Drag and Drop whatever you want to display on the page > Save.

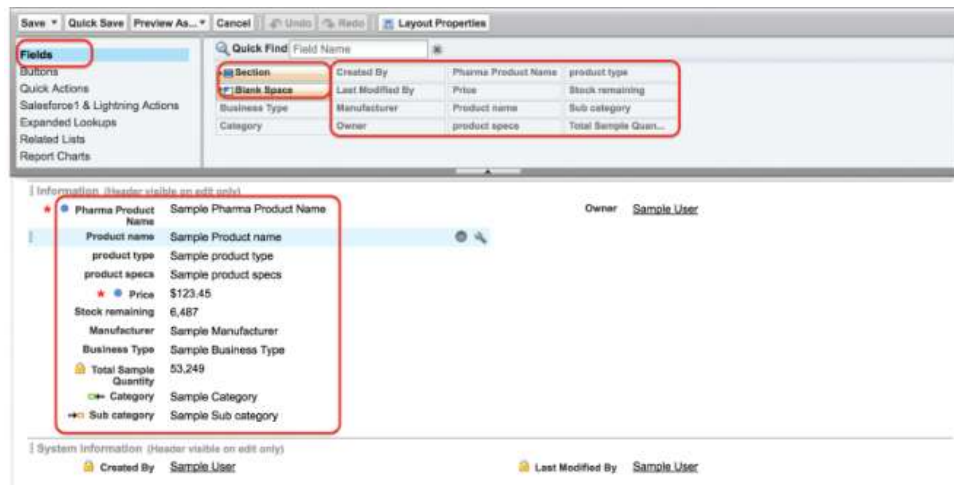


Fig 6.7 Page Layout

Page layout assignment to profiles:

Step 1: Click Page Layout Assignment button on the Page Layout.

Step 2: From here, we will be displayed all the profiles and the page layout assigned to them. We can select which page layout we want to assign them. A profile can have only one Page Layout.

Step 3: Click Save button when done with assigning the pages.

## 6.5.2 RECORD TYPES

Record Types helps you to have differentiated business processes, Page Layouts and Picklist values to different users according to their profiles. Record types help us to display different page layouts for a particular object depending upon the criteria. It also helps in selecting which layout to show based on values of a Picklist field.

## 6.6 PUBLIC GROUPS, QUEUES, TEAMS

### 6.6.1 PUBLIC GROUPS

A public group in Salesforce is a set of users that can be used to provide an access to folders and used in sharing rules as well. Public groups can be a combination of: Users; Roles; Roles and Subordinates; and Public Groups itself.

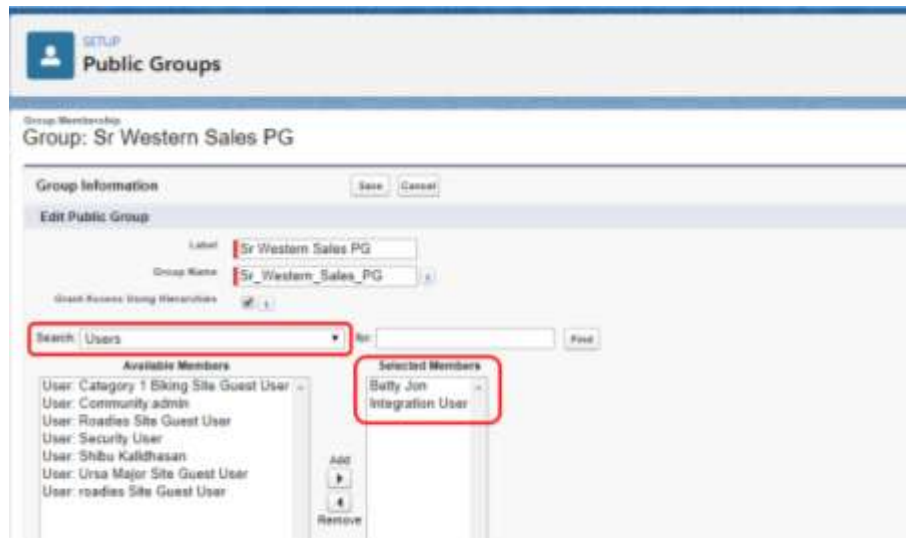
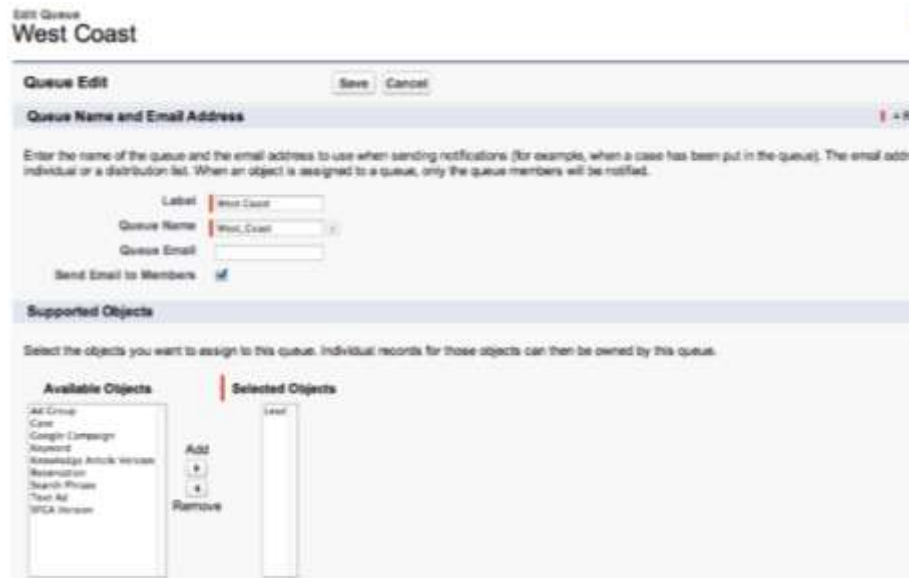


Fig 6.8 Public groups

## 6.6.2 QUEUES

Queues are an efficient way to manage cases, services, contracts, leads, knowledge articles, and custom objects. Once a record is placed in the queue manually or through any automation rule, the record remains there till it is assigned to any other user or used up by any of the queue member.



The screenshot shows the 'Edit Queue' interface for a queue named 'West Coast'. The interface is divided into several sections:

- Queue Edit:** Contains 'Save' and 'Cancel' buttons.
- Queue Name and Email Address:** Includes a text area for instructions: 'Enter the name of the queue and the email address to use when sending notifications (for example, when a case has been put in the queue). The email address can be an individual or a distribution list. When an object is assigned to a queue, only the queue members will be notified.' Below this are input fields for 'Label' (set to 'West Coast'), 'Queue Name' (set to 'West Coast'), and 'Queue Email'. There is also a checkbox for 'Send Email to Members' which is checked.
- Supported Objects:** Includes instructions: 'Select the objects you want to assign to this queue. Individual records for those objects can then be owned by this queue.' Below this are two columns: 'Available Objects' and 'Selected Objects'. The 'Available Objects' list includes: 'Account', 'Case', 'Contract', 'Lead', 'Knowledge Article Version', 'Reservation', 'Search History', 'Team', and 'User'. The 'Selected Objects' list is currently empty. Between the columns are 'Add', 'Remove', and 'Reset' buttons.

Fig 6.9 Queues

Queue members or users who are higher in the role hierarchy can have the record ownership in a queue. Some of the queue types are explained below:

**Lead Queues:** Lead Queues help us in managing the distribution of the obtained leads. We can assign leads to different queues manually or with the help of any lead assignment rule

**Case queues:** Case Queues help us in differentiating cases based on support levels. Queues help us in ensuring that the cases are resolved as quickly as possible even if the assigned user is not able to work on that case. Cases get automatically prioritized by creating different support level queues. Here too, cases can be assigned to queues manually or through case assignment rules.

**Custom Object Queues:** These queues help us in managing the custom object record distribution.

Steps for creating Queues:

Step 1: From Setup, go to Queues and click on New.

Step 2: Give the label to the newly created Queue.

Step 3: Choose the member who should be notified when any new record is being added in the queue.

Step 4: Add objects to the queue.

Step 5: Add queue members.

Step 6: Save the queue. We can also assign entry criteria for the Queues.

Rule Entry Edit  
Lead Territories

Enter the rule entry [Save] [Cancel]

Step 1: Set the order in which this rule entry will be processed [x] \* Flag

Sort Order [ ]

Step 2: Select the criteria for this rule entry

Run this rule if the following criteria are met [x]

Field	Operator	Value
1. Lead State/Province	equals	California
2. Lead State/Province	equals	Oregon
3. Lead State/Province	equals	Washington
4. Lead State/Province	equals	Alaska
5. Lead State/Province	equals	Hawaii
6. Lead State/Province	equals	CA
7. Lead State/Province	equals	OR
8. Lead State/Province	equals	WA
9. Lead State/Province	equals	AK
10. Lead State/Province	equals	HI

Add Row Remove Row

Clear Filter Logic

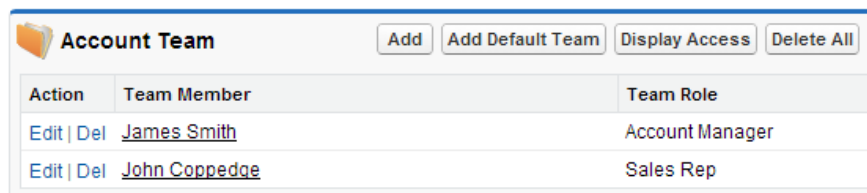
Filter Logic: 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 [Type]

Fig 6.10 Rule Entry in Queues

### 6.6.3 TEAMS

The primary objective of having teams is to see how users team up and collaborate with each other on Accounts, Cases and Opportunity.

**Account teams:** It is the team which manages the accounts by collaborating together. By using account team, we can easily track the involvement on accounts. Managing account teams depends on the user access. Account record owners and the users who are higher in the hierarchy can edit, add, and delete account team members. The admin can also have the same privilege.



Action	Team Member	Team Role
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">James Smith</a>	Account Manager
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">John Coppedge</a>	Sales Rep

Fig 6.11 Account Teams

Account team Setup:

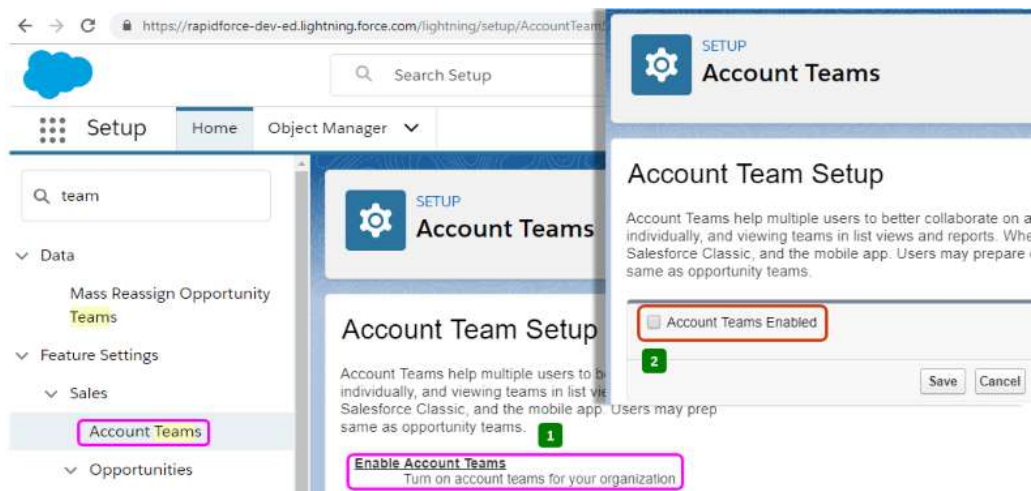


Fig 6.12 (a) Setup 1



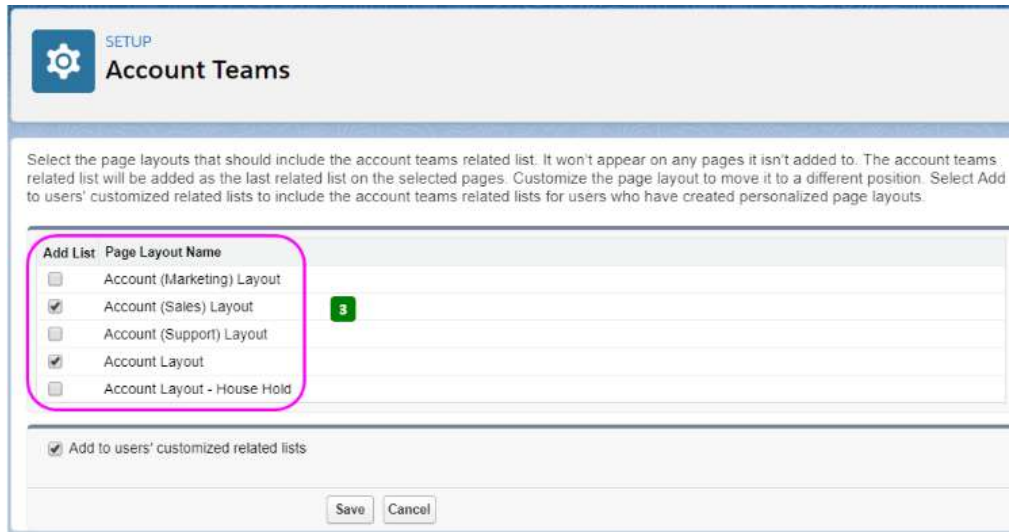


Fig 6.12 (b) Setup 2

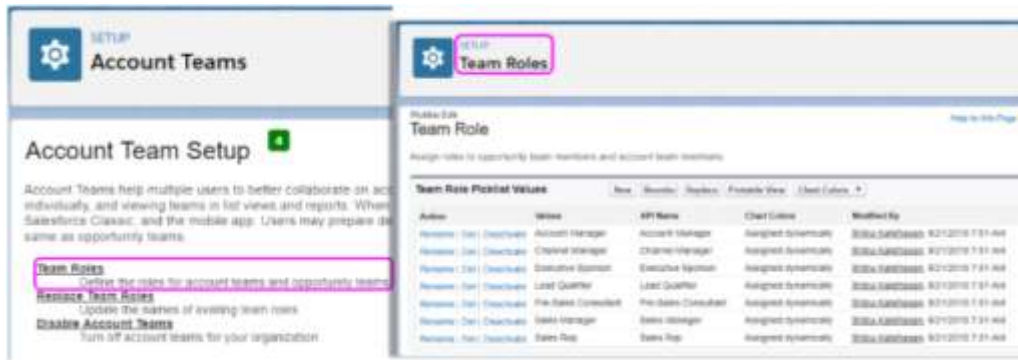


Fig 6.12 (c) Setup 3

Any user can define default account teams and this default team gets automatically added to existing or new accounts which a user owns.

Default Account Team					
					Default Account Team Help ?
<b>Action</b>	<b>User</b>	<b>Account Access</b>	<b>Opportunity Access</b>	<b>Case Access</b>	<b>Team Role</b>
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">James Smith</a>	Read/Write	Read/Write	Private	Account Manager

Fig 6.13 (a) Default Account Team

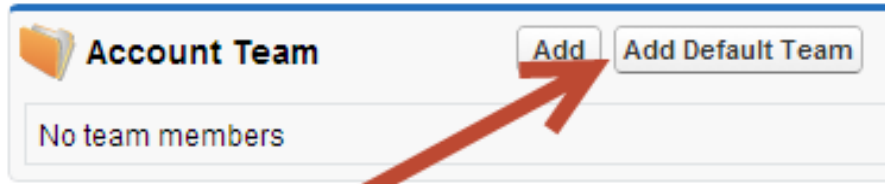


Fig 6.13 (b) Adding members to Default Account Team

**Case teams:** A team of users who work on a case together can be termed a Case Team. We have to choose a role for the member of the case team while selecting the team so as to indicate what the job of that person is on a case. The role here also tells what type of access that member has. A role can grant read only access to some members while read/write to others. The administrator can also create predefined case teams. Such case teams allow users to add members to a case fast.

Case Team					
Action	Team Member	Member Role	Case Access	Visible In Customer Portal	Modified By
<a href="#">Remove</a>	<a href="#">User: James Smith</a>	<a href="#">Technical Advisor</a>	Read/Write	<input type="checkbox"/>	<a href="#">John Coppedge</a> , 1/16/2013 3:56 PM

Fig 6.14 Case Team

Add Predefined Case Team [Help for this Page](#)

Predefined Case Team Edit [Save](#) [Cancel](#)

Team Name:

Description:

Team Members + Required Information

Action	Team Member	Member Role	Case Access	Visible in Customer Portal
<a href="#">Remove</a>	User <input type="text" value="Gautam Vasudeva"/> <input type="text"/>	<input type="text" value="Product Expert"/>	Read/Write	<input type="checkbox"/>
<a href="#">Remove</a>	User <input type="text" value="Michael Ramsey"/> <input type="text"/>	<input type="text" value="Support Manager"/>	Read/Write	<input type="checkbox"/>
<a href="#">Remove</a>	User <input type="text"/> <input type="text"/>	<input type="text" value="-- Select --"/>		
<a href="#">Remove</a>	User <input type="text"/> <input type="text"/>	<input type="text" value="-- Select --"/>		
<a href="#">Remove</a>	User <input type="text"/> <input type="text"/>	<input type="text" value="-- Select --"/>		

[Add 1 Row](#)

[Save](#) [Cancel](#)

Fig 6.15 Predefined Case Teams

**Opportunity teams:** A group of team members working together on sales opportunity is termed as Opportunity Team. We can provide team members privileged access to opportunity and its records which makes it easier for everyone to work smoothly as a team.

Action	Team Member	Member Role
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">Candace Martin</a>	Sales Manager
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">Marshall Lee</a>	Sales Rep
<a href="#">Edit</a>   <a href="#">Del</a>	<a href="#">Erin Tidwell</a>	Account Manager

Fig 6.16 Opportunity Team

We specify the role of each member present in the team. One can also form a default team on opportunity or can add account team on any related account to an opportunity. Admin has the power to set up Private org-wide defaults for Account and Opportunity. In such case, if a user has an access to a particular opportunity, it can have a read only access to accounts on that particular opportunity. Alternatively, if a user is removed access from an account, it is automatically removed from opportunity teams which are related to the account.

Action	Values	Chart Colors	Modified By
<a href="#">Rename</a>   <a href="#">Del</a>	Account Manager	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Channel Manager	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Executive Sponsor	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Lead Qualifier	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Pre-Sales Consultant	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Sales Manager	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM
<a href="#">Rename</a>   <a href="#">Del</a>	Sales Rep	Assigned dynamically	<a href="#">Erin Tidwell</a> 6/2/2015 9:02 AM

Fig 6.17 Team Roles

## **6.7 WORKFLOW, PROCESS BUILDER**

### **6.7.1 WORKFLOW RULES**

Workflows are a method to automate some business processes. By creating a rule and criteria, we can perform number of tasks in Salesforce such as updating a field in a record, sending automated email or notifications, creating tasks etc. The actions that a workflow rule performs can either take place immediately when a criterion is met by the record or can take place on a specified date.

A workflow can do the following things.

1. Create and assign a fresh task to user, record owner or role.
2. Send email alerts to the specified recipients.
3. Can update the field value of a record.
4. Can send secured API message to the specified receiver. Such messages can be called Outbound Messages.

There are two main components in order to create workflow rules.

1. Evaluation Criteria: It tells us to which record will the workflow be applied to.
2. Criteria: What causes the rule to run.
3. Actions: The actions that occur when criteria is met

The rule is evaluated when;

1. A record is “created”- It checks if the rule applies when a new record is created.
2. A record is “created, and every time it is edited”- The rule criteria if met, the rule will run at any cost. This simply means even if the rule criteria is already met and any updation is performed, the rule will run in that case too.
3. A record is “created, and every time it is edited to subsequently meet criteria”- If a new record is created which meets the criteria, or in other case if updation is made on an

existing record which meets the criteria now (which it was not meeting before updation), the rule will run.

The rule criteria are set by choosing Field, Operator and its Value. We can also use add filter logic if required.

The screenshot shows the 'Edit Rule' configuration page for a workflow rule named 'Act-On Lead Score Email Alert'. The page is titled 'Edit Rule Act-On Lead Score Email Alert' and includes a 'Help for this Page' link. Below the title, there is a brief instruction: 'Enter the name, description, and criteria to trigger your workflow rule. In the next step, associate workflow actions with this workflow rule.' There are 'Save' and 'Cancel' buttons at the top.

The 'Edit Rule' section includes:

- Object:** Lead
- Rule Name:** Act-On Lead Score Em
- Description:** Send an email alert when a lead's Act-On lead score reaches a certain number.

The 'Evaluation Criteria' section has three radio button options for 'Evaluate the rule when a record is:':

- created
- created, and every time it's edited
- created, and any time it's edited to subsequently meet criteria

A link 'How do I choose?' is provided below these options.

The 'Rule Criteria' section is titled 'Run this rule if the following criteria are met'. It contains a table with columns for 'Field', 'Operator', and 'Value'. The first row is populated with 'Lead: Act-On Lead Score', 'greater or equal', and '50'. The other four rows are empty, each starting with a dropdown menu set to '--None--'. To the right of each row is an 'AND' connector. Below the table is an 'Add Filter Logic...' link.

'Save' and 'Cancel' buttons are located at the bottom of the form.

Fig 6.18 Workflow Rule

## 6.7.2 PROCESS BUILDER

Salesforce provides us with an automated tool that allows us to control the order of actions that can be performed or to evaluate the criteria for any record. It helps us in automating our business process without the need of writing any code as it simply uses a visual representation to make it an easy thing to work on.

Some of the benefits of process builder are:

1. It is easy to use as it gives us a visual representation to do our work.
2. It is a tool which helps in quick development.
3. Multiple workflows can be combined into a single process, with the benefit of having if-then statements (i.e. a chain of criteria).
4. Process builder can update child records.
5. With the help of process builders, we can have Chatter groups as well as Email alerts notifications.
6. Each criterion can have multiple actions.

Process builder can perform the following actions:

1. It helps us to create fresh record and add field values.
2. We can update multiple records which are related to the record which started the process.
3. It allows us to post on Chatter the information which we want.
4. Enables us to submit the records automatically for approvals.
5. Helps us to invoke another process.
6. Can make use of Quick Actions in the record.
7. Helps in launching the flow from the process to automate processes,
8. We can invoke any Apex code which has already been written in Salesforce.

The process builder supports three types of processes that can be automated.

1. Change in record starts when a record is created or updated.
2. Event process starts when an event message is received.
3. Invocable process starts when another process is requesting it

Steps to create process builder;

Step 1: Navigate to setup and search for process builder.

Step 2: Click on New to create a new process builder.

Step 3: Give it a Process Name. You can also add description.

Step 4: We will now be displayed a visual representation of the process.

Step 5: Click Add Object option and add the object for which you want to have your process build. Select the appropriate option from Select the Process and save it.

Step 6: Add criteria by clicking on Add Criteria option and fill in the necessary criteria. Save it

Step 7: Click on Add Action to add in the necessary actions. Save it. You can also add multiple actions.

Step 8: Once done, Activate the process.



Fig 6.19 Process Builder Representation

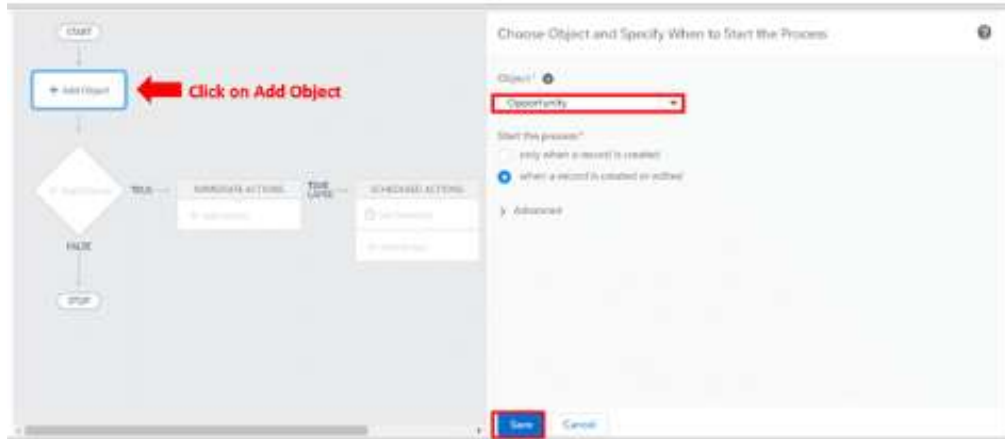


Fig 6.20 Add Object

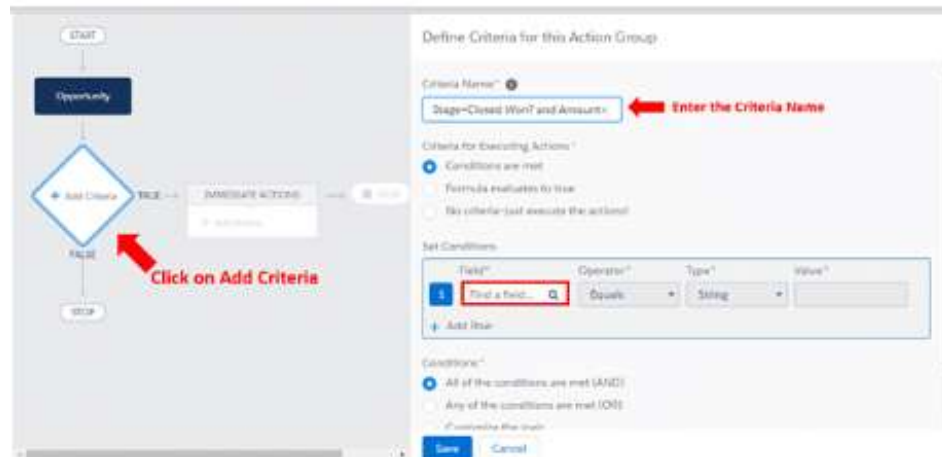


Fig 6.21 Add Criteria



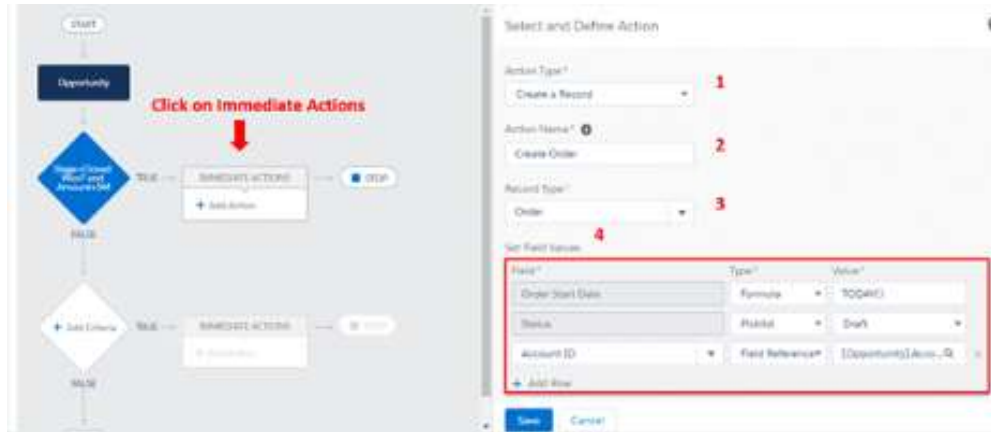


Fig 6.22 Add Actions

### 6.7.3 PROCESS BUILDER VS. WORKFLOW

Issue	Process Builder in Salesforce	Workflow Rules in Salesforce
Development Time	It takes 0.5–2 days	Depending on backlog, it takes 1–2 weeks
Testing Process	Testing is done with simulated users in a sandbox environment by an <b>administrator</b>	Testing is done with simulated users in a sandbox environment by a <b>developer</b>
Workflow Design	Since Process Builder uses the visual design engine, it is user-friendly	It is more difficult to understand and refine workflow rules
Skills Required	Business Analyst skills with an administrator's help	Requires more advanced developer resources
Deployment	It takes one-click provisioning to production	It takes a significant level of effort to deploy
Process Monitoring	Visual monitoring of the status	No visual interface required for monitoring

Fig 6.23 Process Builder vs. Workflow Rules

## 6.8 REPORTS AND DASHBOARDS

### 6.8.1 REPORTS

A report is collective list or summaries of records which meets certain specified criteria hence, helping us to aggregate as well as analyze the data. Reports are displayed in the form of rows and columns which can be filtered, grouped, or even displayed in the form of graphical charts.

Each report gets stored in folders which can be public, hidden, or shared. The access to all the contents of folder is decided based on roles, permissions, license types and public groups. We can also make a folder private so that only the owner can view it.

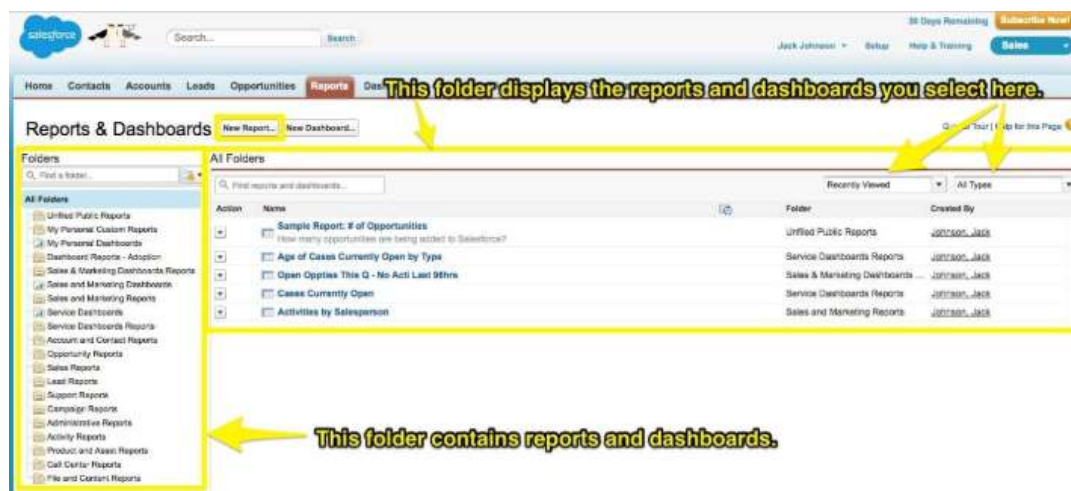


Fig 6.24 Folders

Report type is nothing but a template which makes reporting much easier. It is what defines which records and fields are available in report creation.

There are two types of report types: Standard Report Type and Custom Report Type.

**Standard report types:** It is created whenever; an object is created, and whenever a relationship between objects is created.

**Custom report types:** They are created by Admin or the users. It gives us an opportunity to construct a framework for our report. We can link up to four objects in a report type.

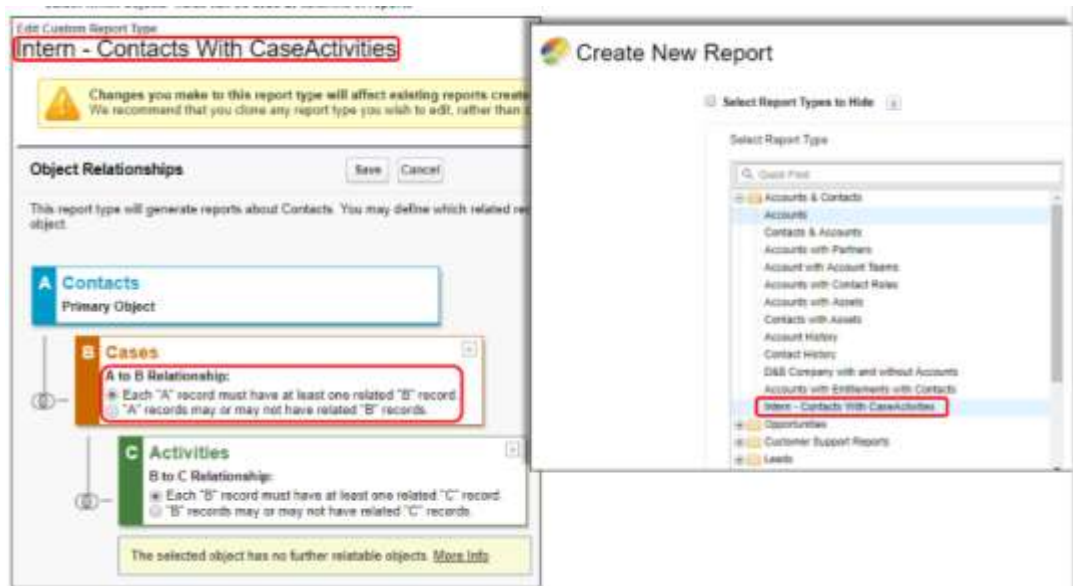


Fig 6.25 Creating New Report

We have four types of reports in Salesforce.

1. **Tabular Report:** It is the most simplest or basic type of report which displays row of records in a tabular form.
2. **Summary Report:** It is a commonly used type of report. It gives us an option to allow grouping the rows of data. It supports displaying subtotals and sorting.
3. **Matrix Report:** One of the most complex report types, matrix report helps us in summarizing the information in a grid like format. We can group records by both rows and columns.
4. **Joined Report:** This type of report helps you to create different views of data from different (multiple) report types. The data in joined report is organized in the form of blocks, where each block acts like a sub report, having its own fields, sorting, filtering and fields. One can also add a chart to this report.

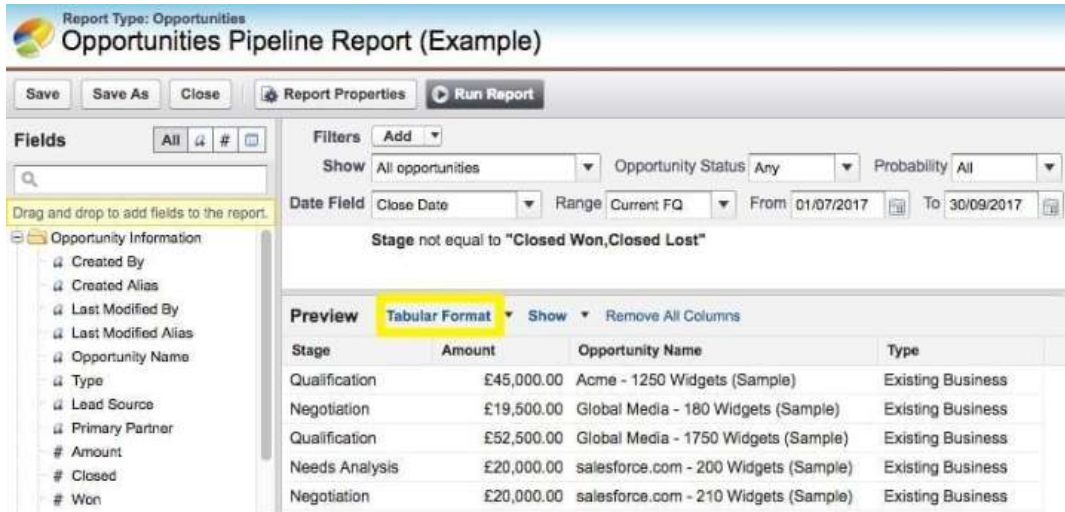


Fig 6.26 Tabular Report

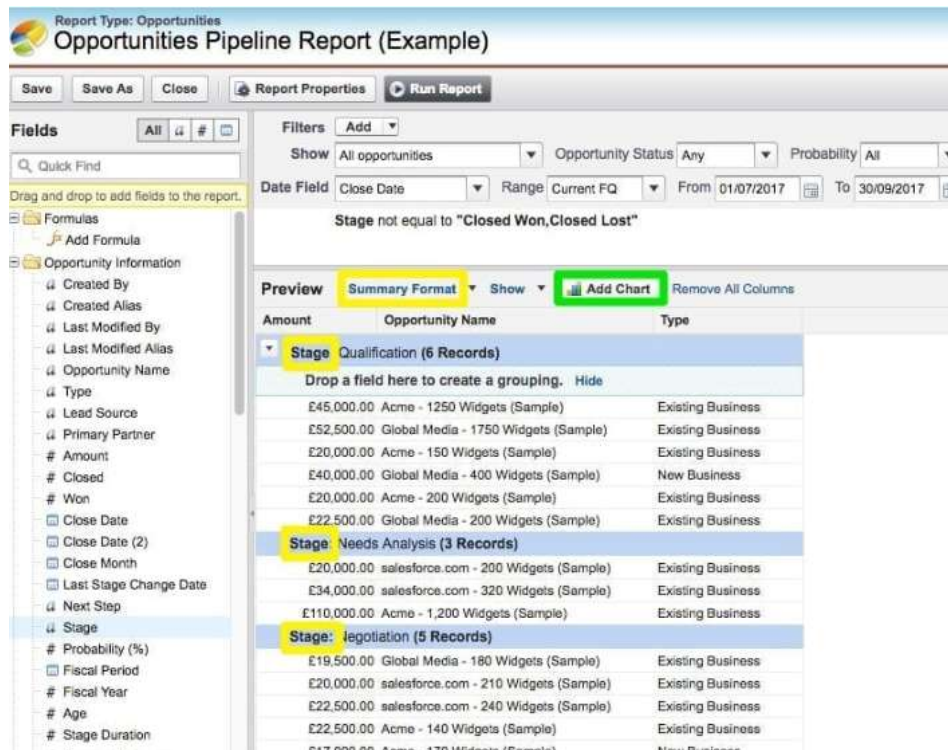


Fig 6.27 Summary Report

## 6.8.2 DASHBOARDS

A Dashboard in Salesforce is a visualized representation of key attributes and trends for any record in your org. for each dashboard components, there is a single report; however that single report can be used in multiple dashboard components on one dashboard. Dashboard components are nothing but the charts like pie chart, vertical bars etc. all these components can be shown in a single report enabling the users with a powerful and deep display of multiple reports having some common themes.

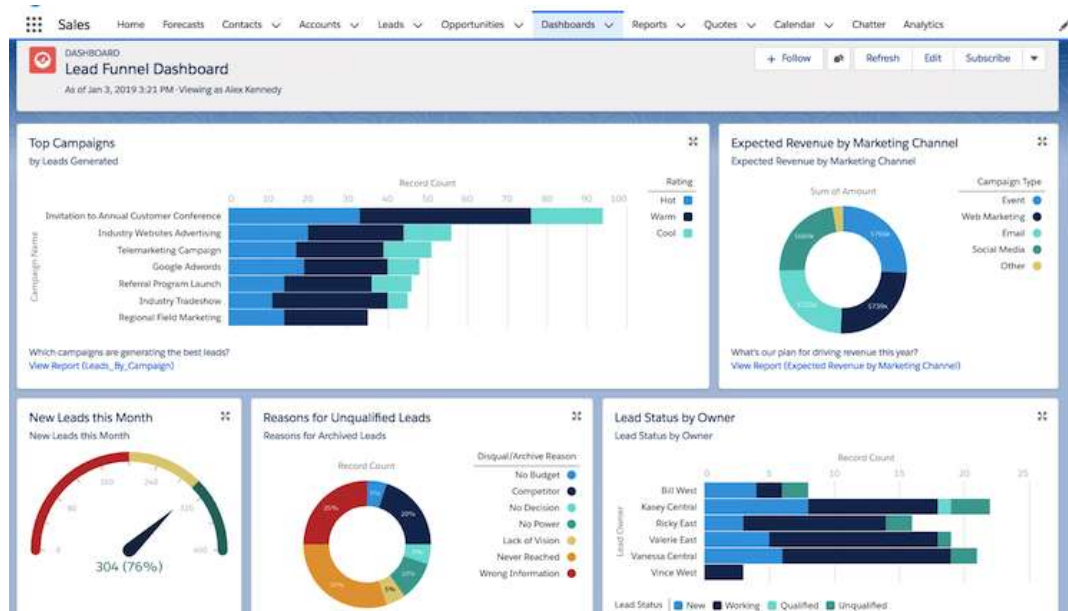


Fig 6.28 Dashboard

Dashboards too, like reports, are stored in folders which determine the access to the data inside. However, in order for you to view the dashboard components, one needs to have an access to the underlying reports too. Also, we can follow dashboard in Chatter so as to get all the updates about the dashboard which is posted in our feed.

Dashboard components:

1. Chart: It is used when you want to show your data in a graphical manner. We can choose any chart out of a variety of charts that dashboard offers.

2. Gauge: It is used when we have only a single value which you want to show within a range that you want.
3. Metric: It is used when we have one key value for displaying.
4. Table: It is used to show a set of report data in the form of columns.
5. Visualforce Page: A Visualforce Page is used when we want to show information which is not available in another component type or to create custom component.
6. Custom S-Control: They contain any type of browser content.

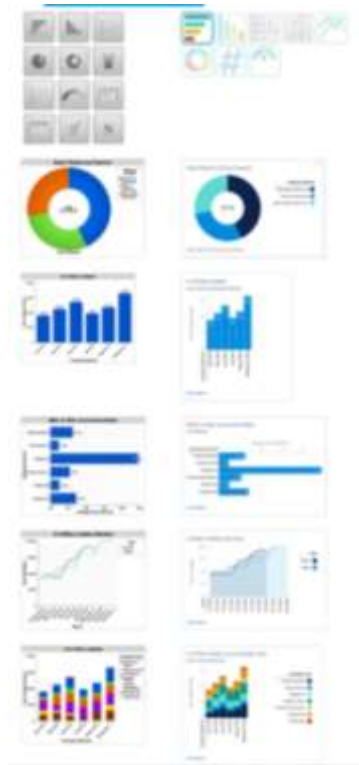


Fig 6.29 Dashboard Components

## 6.9 CASE AUTOMATION

With the help of case automation, cases are automatically assigned to the support team so that they are easily and quickly resolved without any issue even if anyone who handles the case is not available. There are few tools in case automation. These tools are used so that the cases are assigned at a faster pace.

1. Queues: With the help of queues, we can automatically prioritize the work load of support team by creating list views with the help of which specific agents can easily jump into solving certain types of cases.
2. Assignment Rules: Assignment Rules automatically enable us to assign incoming cases to the specific agents so that right people work on right cases.
3. Auto Response Rules: With the help of these, we can automatically send personalized email response to customers based on the details of the case.
4. Escalation Rules: In order to escalate cases automatically, we make use of escalation rules which escalates the cases to the right people when cases are not solved by a certain amount of time.
5. Marcos: They help in completing repetitive tasks on cases automatically so that agents can spend right amount of time on other important things

### **6.9.1 WEB-TO-CASE**

The company specifies a form with case fields on their website that the customers fills out and submit to the agents. Up to 500 new cases can be generated daily with this. We decide which fields we want to display on the HTML based form.

### **6.9.2 EMAIL-TO-CASE**

In this the cases are sent by the customers to the service agents via email. There are two types of email-to-case.

1. Email-to-case: Keeps all the email traffic within network firewall. Accepts email attachments >25 MB. Requires downloading and installing the email-to-case agent in the network.
2. On demand Email-to-case: Sends all the traffic outside the network firewall. Accepts email attachments <25 MB. Does not require downloading any agent.

# CHAPTER 7

## AUTOMATE BUSINESS PROCESSES FOR A RECRUITING APP

### (PROJECT)

In this project scenario, we will be building a process on Salesforce Lightning for an HR recruiting app for a hypothetical company “AW Computing”. The processes streamline the workflow for creating records for interview and approving new positions.

#### 7.1 BUILD A PROCESS FOR CREATING INTERVIEW RECORDS

- *Setup a Process with Process Builder*

We start by creating a process with instant action.

- ✓ From Setup, search for Process builder and open it.
- ✓ Click New to build a new process. Name: “Create Interviewer Record”; Process starts when: A record changes. Click Save.
- ✓ We will be displayed our process builder. Click +Add Object and “Position” from the Picklist. Under Start the process, we need to select: Only when record is created. Save it.
- ✓ Click +Add criteria. Name: “Hiring Manager Not Blank”. Under criteria select: Conditions are met. The conditions are set as
  - Position: Hiring\_Manager\_\_c (Field)
  - Does not equal (Operator)
  - Global Constant (Type)
  - \$GlobalConstant.Null(Value)
- ✓ Click Save.



- ✓ Click +Add Action and fill the detail as follows:
  - Create a Record (Action Type)
  - Create Interviewer Record (Action Name)
  - Interviewer (Record Type)
- ✓ Set field value as: Employee (Field), Field Reference (Type), Hiring\_Manager\_\_c (Value)
- ✓ Now we need to relate the interviewer record to the position record. For this, click +Add Row and fill the details as: Position (Field), Field Reference (Type), Record ID (Value).
- ✓ Click Save. Activate the process.

- ***Test the process***

- ✓ From setup, go to users and create a new user with following details:
  - First Name- Kathy
  - Last Name- Cooper
  - Nickname- kcoop
  - Email- \*own email id\*
  - Username- [kcooper@APyellow.com](mailto:kcooper@APyellow.com)
  - Title- Customer Support Manager
  - Role- Customer Support. North America
  - Profile- Standard Platform User
  - License- Salesforce Platform
- ✓ Click Save.
- ✓ Click App Launcher and click Recruiting. Click Positions and make a new by clicking New. Fill in the following details.
  - Status- New
  - Title- Super Support Supervisor
  - Department- Support

Location- US

Hiring Manager- Kathy Cooper

Pay Grade- S-200

- ✓ Click Save. Click Related Tab. Now from the Interviewers related list, click on Interviewer number and note down the values for Position fields and Employee.

## **7.2 GROUNDWORK FOR APPROVAL PROCESS**

- ***Creating a Folder and Email Templates***

- ✓ Select “Classical Email Templates” by searching so in setup.
- ✓ Click on Create New Folder and type the information as  
Position Request Responses in Email Template Folder Label  
Read/Write as Public Folder Access
- ✓ Click Save.
- ✓ Click New Template and fill the details as  
Folder- Position Request Responses  
Email Template Name- Position Approved  
Subject- Your position request was rejected.  
Add the email body also and save when done.

- ***Create fields***

- ✓ Click on object manager and select Position object.
- ✓ From fields and relationships option, click New to make a new field.
- ✓ Choose data type as Lookup Relationship. Click next.
- ✓ From the Related To Picklist select User and click Next.
- ✓ Enter the Field Label as Approver 1. Click Next, Next and then Save and new.
- ✓ Create 2 more fields with the label Approver 2 and Approver 3 by following the above steps. Save when done with all the 3 fields.

- ✓ Go to Page Layout and click edit next to the Position Layout in order to edit it.
- ✓ Drag Section from the palette to create a new section. Make it fall under the Experience and Education section.
- ✓ Enter the Section Name as Approver.
- ✓ Drag the 3 newly created fields to the Approvers Section from Information Section.
- ✓ Save it.

## 7.3 APPROVAL PROCESS CREATION

- *Create fields*

- ✓ Go to Approval Process by selecting it from Quick Find.
- ✓ From the Manage Approval Processes select Position.
- ✓ Create a new approval process and name it “New Position Approval”. Click next.
- ✓ Select criteria are met. Click next.
- ✓ Select Manager from Next Automated Approver Determined By.
- ✓ Select Use Approver Field Of Position Owner and Admin or... options
- ✓ Click next and next.
- ✓ Select the giver fields from available fields:
  - Department
  - Location
  - Education
  - Job Description
  - Skills Required
  - Salary Range
  - Pay Grade

- ✓ Select “Display approval history...” and “Allow approver...(Recommended)”.  
Click next.
- ✓ Select Owner as the submitter.
- ✓ Select “Allow submitters to....” Click Save.
- ✓ Click Go!

- ***Create approval steps***

- ✓ Click Add New under the Initial Submission Action list. Select Field Update.
- ✓ Name it “Approval Status to Pending”.
- ✓ Select Approval Status from Field to Update.
- ✓ Select “A specific field option”.
- ✓ Click Save.
- ✓ Click New Approval Step and name it Manager of position owner. Click Next.
- ✓ Select “All records should enter this step”.
- ✓ Click Next.
- ✓ Select “Automatically assign...(Manager)”.
- ✓ Click Save.
- ✓ Click Go!
- ✓ Click New Approval Step and name is “Position Approver 1”. Click Next.
- ✓ Select “All records should enter the step”. Click next.
- ✓ Select “Automatically assign users”.
- ✓ Select related user and then select Approver 1.
- ✓ For the next option select “Approve or reject...FIRST response”.
- ✓ Select “Perform all rejection....(Final Rejection)”.
- ✓ Click Save.
- ✓ Click Go!
- ✓ Click new approval step and name it “Position Approver 2”..
- ✓ Repeat the above steps. Select Approver 2 instead of Approver 1 in this case.

- ✓ Click New Approval Step and name it “Position Approver 3”. Click next
- ✓ Select “Enter this step if criteria are met”. The criteria is:
  - Position: Salary Range (Field)
  - Equals (Operator)
  - 90k-120k, 120k+ (Value)
- Click next
- ✓ Select Automatically Assign. And from related user select Approver 3. Click Save. Go!

- ***Create final actions***

- ✓ From final approval actions related list, click Add New. Select Field Update.
- ✓ Name it- Approval Status to Approved.
- ✓ Select Approval Status as Field to Update. Select A Specific Value and choose Approved.
- ✓ Click save and new.
- ✓ Name- Status to Open.
- ✓ Field to update- Status.
- ✓ A specific value- Open.
- ✓ Click Save.
- ✓ Add new and select Email Alert.
- ✓ Description- Email position owner about approval.
- ✓ Email template- Position Approved.
- ✓ Recipient- Owner.
- ✓ Save.
- ✓ Add new and select field update.
- ✓ Name- Approval Status to Rejected.
- ✓ Field to update- Approval Status.
- ✓ A Specific Value- Not Approved.

- ✓ Save and new.
- ✓ Name- Status to Closed.
- ✓ Field to update- Status.
- ✓ A specific value- Closed.
- ✓ Save.
- ✓ Add new final rejection action and select Email Alert.
- ✓ Description- Email position owner about rejection.
- ✓ Email template- Position Rejected.
- ✓ Recipient- Owner.
- ✓ Select Position Owner from the list.
- ✓ Click Save.
- ✓ Add new recall actions and select field update.
- ✓ Name- Approval status to Recalled.
- ✓ Field to update- Approval Status.
- ✓ A specific value- Recalled.
- ✓ Save.
- ✓ Activate and click OK.

## **7.4 PROCESS FOR SUBMITTING APPROVAL POSITIONS**

- ✓ Go to process builder.
- ✓ Click new. Name- Submit New Positions for Approval.
- ✓ Select A record changes. Save.
- ✓ +Add object and select Position.
- ✓ Select when a record is created or edited option.
- ✓ Click Save. Click +Add criteria. Name- Position Ready for Approval.
- ✓ Select conditions are met.
- ✓ Click +Add Row for four times and set following conditions  
     Status=Equals-Picklist-New

Job Description-Does not equal-Global Constant\$GlobalConstant.Null

Education-Does not equal-Global Constant\$GlobalConstant.Null

Hiring\_Manager\_\_c-Does not equal-Global Constant\$GlobalConstant.Null

Department-Does not equal-Global Constant\$GlobalConstant.Null

- ✓ Click Save.
- ✓ Add Action and fill the details as:
  - Action Type-Submit for Approval
  - Action Name- Submit position for Approval
  - Object- Position\_\_c
  - Approval Process- Specific approval process: New Position Approval-New\_Position\_Approval
- ✓ Save, Activate and Confirm.

## 7.5 CANDIDATE RATING FLOW

- ***Create radio buttons for Experience, Leadership Skills and Core Competencies***

- ✓ Click flows from quick find. New Flow->Screen Flows->Create.
- ✓ Drag Screen from palette on the flow window.
- ✓ Label- New Review.
- ✓ Click radio buttons. Label-Experience. Data Type-Number.
- ✓ +New resource and Choice as Resource Type. Fill the details as:
  - API Name- Excellent
  - Choice Label- Excellent
  - Data Type-Number
  - Choice Value-5
- Click Done.
- ✓ Go back and select Excellent from Choices options.
- ✓ +Add Choice for four times. Click 2<sup>nd</sup> Choice field and select +New Resource.
- ✓ Resource Type- Choice

API Name- VeryGood  
Choice Label- Very Good  
Data Type-Number  
Choice Value-4

- ✓ Done
- ✓ Go back to 2<sup>nd</sup> choice filed. Select VeryGood from choices option.
- ✓ For 3<sup>rd</sup> choice select +New Resources.
- ✓ Select choice and fill the details as:

API Name- Average  
Choice Label- Average  
Data Type-Number  
Choice Value-3

Click Done.

- ✓ Go back and for third choice fill the details as

API Name- Average  
Choice Label- Average  
Data Type-Number  
Choice Value-3

Done.

- ✓ +New Resource and for fourth one fill:

API Name- BelowAverage  
Choice Label- Below Average  
Data Type-Number  
Choice Value-2

Done.

- ✓ For fifth choice, fill details as

API Name- Poor  
Choice Label- Poor



Data Type-Number

Choice Value-1

Done.

- ✓ Click text from the input section. Label- Experience Comments.
- ✓ Similarly add radio buttons for Leadership skills also. Label-Leadership Skills.  
Data type- Core competencies. Choice field-#Excellent.
- ✓ +Add choices four times. Add values: Very good, Average, Below Average and Poor.
- ✓ Click Text from palette. Label- Leadership Skills Comments.
- ✓ Click Radio Button. Label- Core Competencies. Data type- Number. Choice field-#Excellent.
- ✓ +Add choice (four times). Values-Very Good, Average, Below Average and Poor.
- ✓ Enter Text from palette. Label- Core Competencies Comments.

- ***Add screen elements***

- ✓ Click Checkbox from input section. Label- Recommend for Hire.
- ✓ Click Text from input section. Label- Reason Recommended.
- ✓ Done.
- ✓ To start, drag Create Records element. Label-CreateReview.
- ✓ Number of records-1
- ✓ Select Use separate variables...
- ✓ Object-Review
- ✓ Select field Job\_Application\_\_c.
- ✓ +New Resource and fill values:
  - Resource type- Variable
  - Data Type- Text
  - Available for Input- Select

Available for Output- Select

Done.

- ✓ For the newly created field, click +Add fields 8 times and fill the fields as below:

Edit Create Records

---

Set Field Values for the Review

Field	Value
Core_Competencies_Comments__c	{!Core_Competencies_Comments}
Core_Competencies__c	{!Core_Competencies}
Experience_Comments__c	{!Experience_Comments}
Experience__c	{!Experience}
Job_Application__c	{!varJobAppId}
Leadership_Skills_Comments__c	{!Leadership_Skills_Comments}
Leadership_Skills__c	{!Leadership_Skills}
Reason_Recommended__c	{!Reason_Recommend}
Recommend_for_Hire__c	{!Recommend_for_Hire}

+ Add Field

- ✓ Done.
- ✓ Drag screen. Label-Record Created.
- ✓ Done.
- ✓ Connect createReview to it.
- ✓ Drag screen.
- ✓ Label- Display Faults.
- ✓ Connect createReview element to it.
- ✓ Save. Label- New Review.
- ✓ Activate.

- ✓ To deploy the flow, go to object manager and select Job Application.
- ✓ Go to buttons, links and actions and create new button or link with label-New Review.
- ✓ Select Detail Page Button.
- ✓ Paste the link your link. Save and ok.
- ✓ Go to Page layout and drag the button you created. Click Save.

# CHAPTER 8

## PERFORMANCE ANALYSIS AND CONCLUSION

### 8.1 RESULT

Define Criteria for this Action Group

Criteria Name \* ?

Hiring Manager Not Blank

Criteria for Executing Actions \*

Conditions are met

Formula evaluates to true

No criteria—just execute the actions!

Set Conditions

Field *	Operator *	Type *	Value *
1 [Position__c]...	Does not equal	Global Constan	\$GlobalConstant.N

+ Add Row

Fig 8.1 Action Criteria for process builder

**New Review**

Experience

Excellent

Very Good

Average

Below Average

Poor

Experience Comments

Leadership Skills

Excellent

Very Good

Average

Below Average

Poor

Leadership Skills Comments

Core Competencies

Excellent

Very Good

Average

Below Average

Poor

Core Competencies Comments

Recommend for Hire

Reason Recommended

Fig 8.2 Radio Buttons for New Review Window

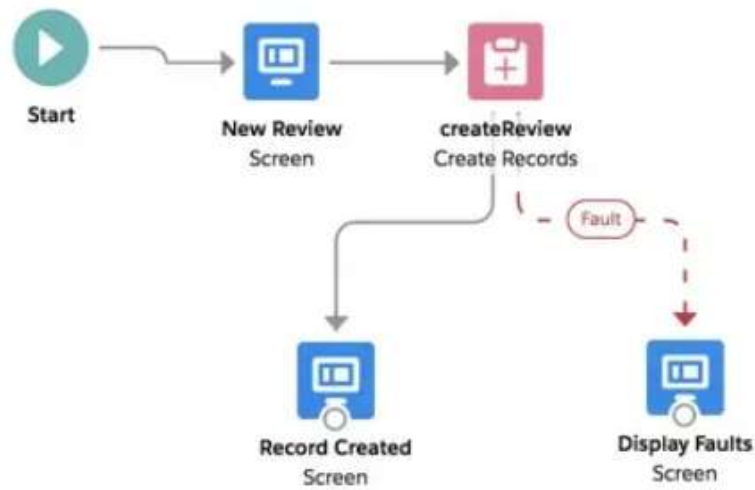


Fig 8.3 Flow Process

## 8.2 CONCLUSION

1. We were able to create an automated process for interviewer record creation.
2. After an automated process, we created a system that enables us to approve positions before any posting. Approvals are passed through Manager and two other approvers who will approve the positions. Based on rejection and approvals, the emails are sent whether the position got approved or not.
3. Automated tasks for submission or new positions for approvals are set using process builder.
4. Interviewer is provided with radio buttons in order to rate the candidates.
5. The hiring manager manually enter a number with which they want to rate the candidate. Flows automate this business process by the execution of logic and interacting with the database.

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- [https://help.salesforce.com/articleView?id=creating\\_assignment\\_rules.htm&type=5](https://help.salesforce.com/articleView?id=creating_assignment_rules.htm&type=5)
- <https://blog.hubspot.com/blog/tabid/6307/bid/28889/6-steps-to-implementing-an-effective-lead-management-process.aspx>
- <https://www.salesforcetraining.com/salesforce-com-leads-accounts-contacts-opportunities-how-does-it-all-work/>
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## Project Report Undertaking

I Mr. /Ms. \_\_\_\_\_ Riya Singh \_\_\_\_\_ -Roll  
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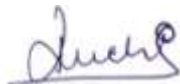
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