

Phase 8: Data Management & Deployment

Effective data management and deployment strategies ensure that Salesforce data is clean, secure, and easy to move between environments (like sandbox and production).

1. Data Import Wizard

- **Purpose:** Easy-to-use tool for importing data (CSV files) directly into Salesforce.
- **Usage:** Available inside Salesforce Setup → Data Import Wizard.
- **Features:**
 - Import up to **50,000 records**.
 - Supports standard objects (Accounts, Contacts, Leads, Campaign Members) and custom objects.
 - Provides **field mapping** interface.
 - Can update existing records or insert new ones.
- **Best Use Case:** Small data loads by admins (no external tool needed).

The screenshot shows the Salesforce Data Import Wizard interface. At the top, there's a navigation bar with icons for Home, Object Manager, and a search bar labeled "Search Setup". Below the navigation bar, the main title is "Data Import Wizard" with a "Help for this page" link. A section titled "Recent Import Jobs" displays a table with one row of data:

Status	Object	Records Created	Records Updated	Records Failed	Start Date	Processing Time (ms)
Closed	City	4	0	0	09-25-2025 09:40	163

A large button labeled "Bulk Api Monitoring" is centered below the table. Below this, a section titled "Before you import your data..." contains three tips:

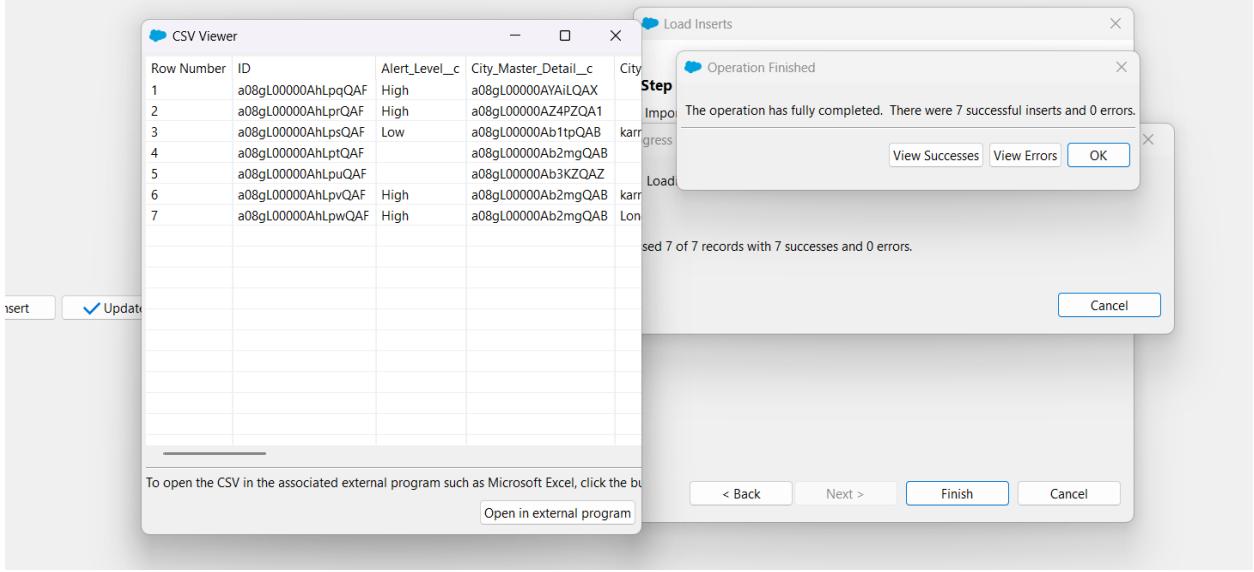
- Clean up your data import file**: You'll have fewer errors to resolve if your data file is clean and free of duplicates. [Watch video](#)
- Make sure your field names match Salesforce field names**: You'll be required to map your data fields to Salesforce data fields. Data in unmapped fields is not imported. [View a list of Salesforce data fields](#).
- Don't import too many records at once**: Using the Data Import Wizard, import up to 50,000 records at a time. Importing too many records can slow down your org for all users, especially during periods of peak usage.

At the bottom, a banner says "Import your data in 3 easy steps!"

2. Data Loader

- **Purpose:** Advanced client application for **bulk import/export** of data.
- **Features:**
 - Handles **millions of records**.
 - Supports Insert, Update, Upsert, Delete, Hard Delete, Export.

- Requires CSV files.
- Available as **UI** and **Command-line**.
- **Best Use Case:** Large data migrations, scheduled automated data jobs.



Row Number	ID	Alert_Level_c	City_Master_Detail_c	City_Name_c	City_c	CreatedById	CreatedDate	Humidity_c	Id	IsDeleted	LastActivityDate	LastModifiedById	LastModifiedDate
1	a08gL00000AhLpqQAF	High	a08gL00000AYAILOQAX		a08gL00000AYAVRQAS	005gL000004iIgfQAM	2025-09-22T10:28:41.000Z	60.0	a08gL00000AhLpqQAF	false		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
2	a08gL00000AhLprQAF	High	a08gL00000AZ4PZQA1		a08gL00000Ab1tpQAB	005gL000004iIgfQAM	2025-09-22T18:20:15.000Z		a08gL00000AhLprQAF	true		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
3	a08gL00000AhLpsQAF	Low	a08gL00000Ab1tpQAB	karnataka	a08gL00000Ab1tpQAB	005gL000004iIgfQAM	2025-09-23T10:53:54.000Z	70.0	a08gL00000AhLpsQAF	false		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
4	a08gL00000AhLptQAF		a08gL00000Ab2mgQAB		a08gL00000Ab2mgQAB	005gL000004iIgfQAM	2025-09-23T11:02:24.000Z	70.0	a08gL00000AhLptQAF	true		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
5	a08gL00000AhLpuQAF		a08gL00000Ab3KZQAZ		a08gL00000Ab3KZQAZ	005gL000004iIgfQAM	2025-09-23T11:13:38.000Z	70.0	a08gL00000AhLpuQAF	true		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
6	a08gL00000AhLpvQAF	High	a08gL00000Ab2mgQAB	karnataka	a08gL00000Ab2mgQAB	005gL000004iIgfQAM	2025-09-23T17:33:50.000Z	90.0	a08gL00000AhLpvQAF	false		005gL000004iIgfQAM	2025-09-23T11:00:00.000Z
7	a08gL00000AhLpwQAF	High	a08gL00000Ab2mgQAB	London	a08gL00000Ab3KZQAZ	005gL000004iIgfQAM	2025-09-24T17:54:53.000Z	54.0	a08gL00000AhLpwQAF	false		005gL000004iIgfQAM	2025-09-24T11:00:00.000Z

3. Duplicate Rules

- **Purpose:** Prevent or manage duplicate records in Salesforce.
- **Setup:** Setup → Duplicate Rules.
- **Features:**
 - Compare new/existing records to find duplicates.
 - Supports **blocking** or **allowing but alerting** duplicates.

- Works with **Matching Rules** (e.g., match by Email, Phone, Name).
- **Best Use Case:** Keep clean data in Leads, Accounts, Contacts.

The screenshot shows the Salesforce Setup interface. In the left sidebar, under the 'Data' section, 'Duplicate Rules' is selected. The main content area displays the 'Duplicate Rule Detail' for a rule named 'Weather Duplicate Rule'. The rule prevents duplicate Weather records based on Observation Time and City. It has an alert and report configured for both create and edit actions. The conditions for the rule are '(Weather: City EQUALS Mumbai) AND (Weather: City EQUALS karnataka)'. The rule was created by chanda.indraja on 9/25/2025 at 3:10 AM.

Duplicate Rule Detail			
Rule Name	Weather Duplicate Rule		
Description	Prevents duplicate Weather records based on Observation Time and City.		
Object	Weather		
Record-Level Security	Enforce sharing rules		
Action On Create	Allow	Operations On Create	<input checked="" type="checkbox"/> Alert <input checked="" type="checkbox"/> Report
Action On Edit	Allow	Operations On Edit	<input checked="" type="checkbox"/> Alert <input type="checkbox"/> Report
Alert Text	Use one of these records?		
Active	<input type="checkbox"/>		
Conditions	(Weather: City EQUALS Mumbai) AND (Weather: City EQUALS karnataka)		
Created By	chanda.indraja, 9/25/2025, 3:10 AM	Modified By	chanda.indraja, 9/25/2025, 3:10 AM

This screenshot shows the same Salesforce Setup interface as the previous one, but it includes a 'Matching Rule' section in the 'Duplicate Rule Detail' table. The matching rule is named 'Weather_Matching_Rule' and is marked as 'Mapped'. The matching criteria are '(Weather: City EXACT MatchBlank = FALSE) AND (Weather: Name EXACT MatchBlank = FALSE)'. The rest of the rule details are identical to the first screenshot.

Duplicate Rule Detail			
Rule Name	Weather Duplicate Rule		
Description	Prevents duplicate Weather records based on Observation Time and City.		
Object	Weather		
Record-Level Security	Enforce sharing rules		
Action On Create	Allow	Operations On Create	<input checked="" type="checkbox"/> Alert <input checked="" type="checkbox"/> Report
Action On Edit	Allow	Operations On Edit	<input checked="" type="checkbox"/> Alert <input type="checkbox"/> Report
Alert Text	Use one of these records?		
Active	<input checked="" type="checkbox"/>		
Conditions	(Weather: City EQUALS Mumbai) AND (Weather: City EQUALS karnataka)		
Created By	chanda.indraja, 9/25/2025, 3:10 AM	Modified By	chanda.indraja, 9/25/2025, 3:14 AM
Matching Rule	Weather_Matching_Rule <input checked="" type="checkbox"/> Mapped	Matching Criteria	(Weather: City EXACT MatchBlank = FALSE) AND (Weather: Name EXACT MatchBlank = FALSE)

4. Data Export & Backup

- **Purpose:** Protect against data loss by exporting Salesforce data.
- **Methods:**
 - **Data Export Wizard** → Manual or Scheduled CSV export of all objects.
 - **Data Loader Export** → Export selected objects or queries.
- **Features:**
 - Export can include **attachments, documents, images**.
 - Can schedule weekly or monthly backups.
- **Best Use Case:** Regular data backup for compliance & recovery.

5. Change Sets

- **Purpose:** Deploy metadata (configuration/customizations) between Salesforce orgs (Sandbox → Production).
- **Features:**
 - Supports objects, fields, workflows, flows, validation rules, etc.
 - Point-and-click interface (no coding).
 - Requires **connected sandbox/production orgs**.
- **Limitations:** Cannot deploy some metadata types (e.g., standard picklist values).
- **Best Use Case:** Admin-friendly deployments.

6. Unmanaged vs Managed Packages

- **Unmanaged Package:**
 - Source code is visible.
 - Used for sharing open-source or sample apps.
 - No upgrade support.
- **Managed Package:**
 - Code is hidden (IP protected).
 - Supports **version upgrades**.
 - Used by ISVs (Independent Software Vendors) for AppExchange apps.
- **Best Use Case:**
 - *Unmanaged:* Internal projects & learning.
 - *Managed:* Commercial apps on AppExchange.

The screenshot shows the Salesforce Package Manager interface. On the left, the navigation sidebar is open, showing 'Apps' expanded with 'Packaging' selected. Under 'Packaging', 'Installed Packages' is expanded, and 'Package Manager' is selected. Other sections like 'Object Manager' and 'Console Settings' are also visible. A search bar at the top left contains 'Q pac'. The main area is titled 'SETUP Package Manager' and shows a table of components. The table has columns for Action, Component Name, Parent Object, Type, Included By, and Owned By. Components listed include 'Alert Level' (Custom Field), 'All' (List View), 'City' (List View), 'City' (Tab), 'City' (Custom Object), 'City' (Weather Record), 'City/Master-Detail' (Weather Record), 'City Layout' (Page Layout), 'City Name' (Custom Field), 'CityTrigger' (Apex Trigger), 'Country' (Custom Field), 'Humidity' (Custom Field), 'Last Updated Weather' (Custom Field), 'Latitude' (Custom Field), and 'LogCall' (Action). The 'Included By' column shows various objects like 'Weather Record', 'City', 'Weather Record_City', etc.

This screenshot shows the details of a package named 'SkyCastWeatherPackage'. The navigation sidebar is identical to the first screenshot. The main area is titled 'SETUP Package Manager' and shows a 'Package Detail' section for 'SkyCastWeatherPackage'. It includes fields for Package Name (set to 'SkyCastWeatherPackage'), Language (English), Notify on Apex Error, Created By (chanda.indraja), and Description (Contains Weather__c, City__c, LWC, Apex classes for SkyCast project). Below this is a 'Components' tab, which displays a table of components similar to the one in the first screenshot, including 'Alert Level', 'All', 'City', 'City' (Custom Object), and various triggers and fields. The 'Included By' column shows objects like 'Weather Record', 'City', 'Weather Record_City', etc.

7. ANT Migration Tool

- Purpose:** Command-line utility for automating metadata deployment.
- Features:**
 - Based on **Apache ANT + ant-salesforce.jar**.
 - Supports scripted **retrieve & deploy**.
 - Uses `build.xml` + `package.xml` to define deployment.
- Best Use Case:** Automated deployments in CI/CD pipelines.
- Requirement:** Java & ANT installed locally.

8. VS Code & SFDX (Salesforce DX)

- **Purpose:** Modern development & deployment tool for Salesforce projects.
- **Features:**
 - Uses **Salesforce CLI (SFDX)** for source-driven development.
 - Supports Git-based version control.
 - Create & manage **scratch orgs** for testing.
 - Retrieve, deploy, and test metadata.
- **Best Use Case:** Developer-focused projects, CI/CD automation.
- **Setup:**
 1. Install **VS Code**.
 2. Install Salesforce **CLI (SFDX)**.
 3. Install Salesforce **Extension Pack** in VS Code.
 4. Authenticate org (`sfdx force:auth:web:login`).
 5. Retrieve/deploy metadata via commands.

The screenshot shows the VS Code interface with the following details:

- EXPLORER View:** Shows the project structure for "WEATHERFORCAST". It includes files like .husky, .sf, .sfdx, .vscode (with extensions.json, launch.json, settings.json), config, project-scratch-def.json, force-app\main\default (applications, aura, classes, contentassets, flexipages, layouts, lwc), and a lwc folder containing weatherApp (with __tests__, weatherApp.html, weatherApp.js, and weatherApp.js-meta). Other objects, permissionsets, staticresources, and tabs are also listed.
- Code Editor:** Displays the content of `weatherApp.html`. The code is an LWC component definition:<template>
 <!-- City input -->
 <lightning-input
 label="Enter City"
 value={city}
 onchange={handleChange}>
 </lightning-input>

 <!-- Button to fetch weather -->
 <lightning-button
 label="Get Weather"
 onclick={getWeather}>
 </lightning-button>

 <!-- Display weather info -->
 <template if:true={weather}>
 <p>City: {weather.city}</p>
 <p>Temperature: {weather.temperature} °C</p>
 <p>Humidity: {weather.humidity} %</p>
 </template>
</template>
- Bottom Navigation:** Includes tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is currently selected), and other UI elements.

Phase 9: Reporting, Dashboards & Security Review

This phase focuses on analyzing business data through **Reports & Dashboards**, and ensuring **data security and compliance** using Salesforce's built-in security features.

1. Reports(Tabular, Summary, Matrix, Joined)

Reports help users analyze Salesforce data in different formats.

Types of Reports:

- **Tabular Reports**
 - Simple, spreadsheet-like format.
 - Best for **lists** (e.g., "All Accounts in New York").
 - Cannot create groupings or dashboards.
- **Summary Reports**
 - Similar to Tabular, but supports **grouping rows**.
 - Allows subtotals and charts.
 - Example: "Opportunities grouped by Stage."
- **Matrix Reports**
 - Group records by both **rows and columns**.
 - Best for comparing related totals.
 - Example: "Revenue by Sales Rep and by Quarter."
- **Joined Reports**
 - Combine multiple report blocks (each with different report type).
 - Best for complex reporting needs.
 - Example: "Cases with related Opportunities and Activities."

The screenshot shows a Salesforce report interface. At the top, there's a navigation bar with icons for Home, Opportunities, Leads, Tasks, Files, Accounts, Contacts, Campaigns, Dashboards, Reports, Chatter, Groups, Calendar, More, and a search bar. Below the navigation is the report title: "Report: Cities with Weather Records" and "New Cities with Weather Records Report". The report displays a table with the following data:

Total Records	Total Humidity	Total Temperature	Total Pressure
4	274	100.00	2,175
<input type="checkbox"/> City: City Name + ↴ <input type="checkbox"/> Latitude + ↴ <input type="checkbox"/> Longitude + ↴ <input type="checkbox"/> Weather Record: Weather Record ID + ↴ <input type="checkbox"/> Humidity + ↴ <input type="checkbox"/> Temperature + ↴ <input type="checkbox"/> Status + ↴ <input type="checkbox"/> Pressure + ↴			
Mumbai (3)			
	19.076000 (3)	72.877700 (3)	
	WR005	70	25.00
	W003	90	25.00
	w006	54	25.00
		214	75.00
		214	75.00
		214	75.00
Subtotal			
Total (4)			
	274	100.00	2,175

At the bottom of the report, there are checkboxes for Row Counts, Detail Rows, Subtotals, and Grand Total. A "To Do List" button is also visible at the bottom left.

The screenshot shows the Salesforce interface for a 'City' object named 'Mumbai'. The 'Details' tab is selected, displaying fields such as City Name (Mumbai), Country (India), Latitude (19.07600), Longitude (72.877700), Population (200,000,000), and Last Updated Weather (WR005). The 'Owner' field shows 'chanda.indraja'. On the right, the 'Activity' section is visible, showing a feed with no upcoming or overdue activities.

2. Report Types

Standard Report Types

- Auto-generated by Salesforce when you create **standard or custom objects**.
- Provide access to most fields and relationships of the object.
- Examples:
 - Accounts with Contacts
 - Opportunities with Products
- **Limitations:**
 - Cannot always include **custom relationships**.
 - Fields may be restricted compared to Custom Report Types.

Custom Report Types (CRTs)

- Created manually by Admin when **standard report types don't meet requirements**.
- Benefits:
 - Control which objects and fields are available in the report.
 - Define **object relationships** (e.g., "With" or "Without" records).
 - Add custom labels, descriptions, and categories for easier use.
- Example Use Case:
 - "Weather Records with related Cities and without Forecasts."

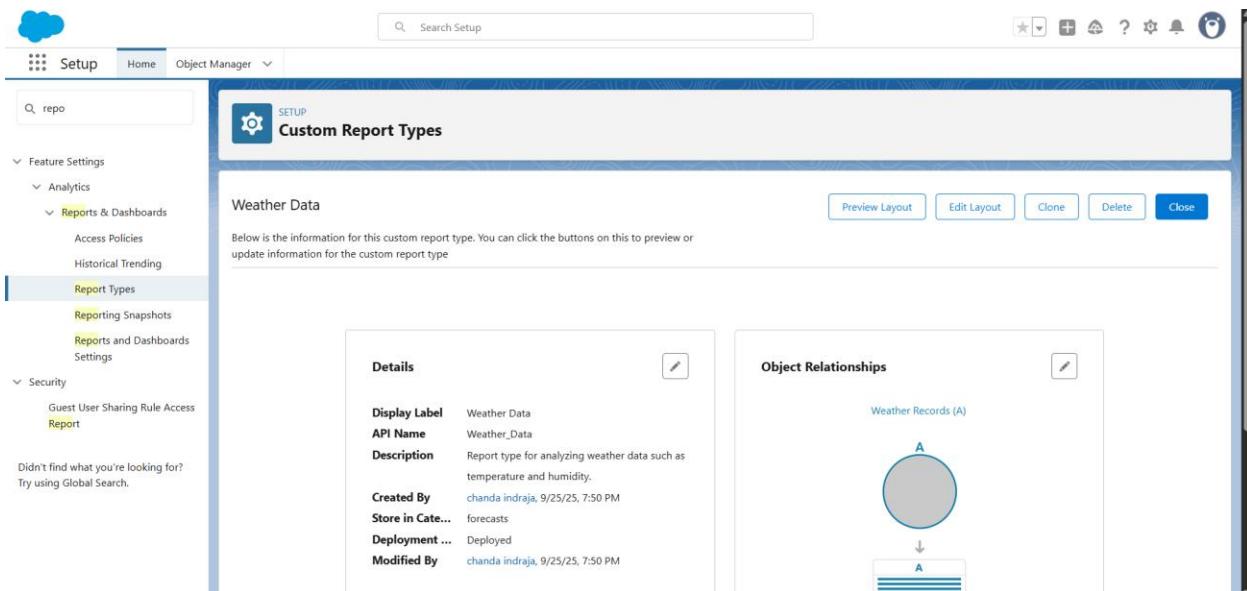
Primary Object

- The **main object** that the report focuses on.
- All records displayed will start from this object.
- Example:

- If **Weather__c** is the primary object → the report shows Weather data.

Related Objects

- Objects that are connected through **lookup or master-detail relationships**.
- Relationship types in CRTs:
 - **With** → Report includes related records.
 - **With or Without** → Includes both matching and non-matching records.
- Example:
 - **Weather__c** (Primary) → **City__c** (Related).

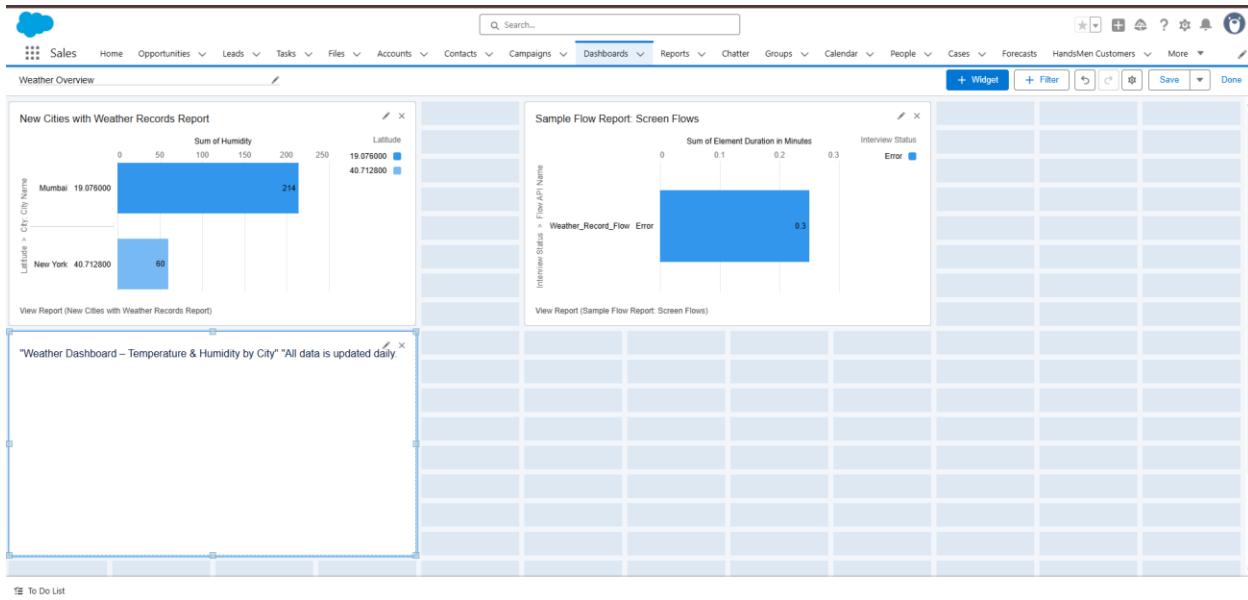


3. Dashboards

- **Purpose:** Visual representation of report data.
- **Components:** Charts, tables, metrics, gauges.
- **Source:** Each component is based on one underlying report.
- **Use Case:** "Executive Dashboard showing Sales Revenue, Pipeline, and Closed Deals."

Features:

- Interactive charts for quick insights.
- Supports multiple components on a single page.
- Can schedule dashboards to refresh automatically.



4. Dynamic Dashboards

- **Purpose:** Show data according to the **logged-in user's security and permissions**.
- **Benefits:**
 - No need to create multiple dashboards for different users.
 - Ensures users only see data they are authorized to view.
- **Best Use Case:** Sales Managers vs. Sales Reps viewing the same dashboard but with different data visibility.

5. Sharing Settings

- **Purpose:** Define how records are shared between users.
- **Options:**
 - **Private** → Only record owner & admins can access.
 - **Public Read Only** → Everyone can see but not edit.
 - **Public Read/Write** → Everyone can see & edit.
- **Tools:**
 - **Organization-Wide Defaults (OWD)** – baseline access.
 - **Role Hierarchy** – managers can access subordinates' data.
 - **Sharing Rules** – exceptions to open access.
 - **Manual Sharing** – record owner shares specific records.

The screenshot shows the Salesforce Sharing Settings page for the Weather Record object. The page title is "Sharing Settings". It includes a table for "Organization-Wide Defaults" and a section for "Other Settings" with checkboxes for "Secure guest user record access" and "Require permission to view record names in lookup fields". A message at the bottom states: "Organization-wide permissions affect all objects in the organization. Object permissions affect only the given object.".

6. Field-Level Security (FLS)

Purpose

- Control **who can see or edit** individual fields in Salesforce objects.
- Ensures **sensitive information** is protected while giving appropriate access to users.
- Works at the **Profile or Permission Set level**.

Options / Settings

- **Visible / Hidden**
 - Determines if a field is **shown or completely hidden** from users.
 - Hidden fields do not appear in **Page Layouts, Reports, or List Views**.
- **Read-Only**
 - Allows users to **view** the field but **cannot edit** it.
 - Useful for fields that should be **visible for reference** but protected from changes.
- **Editable**
 - Users can **view and update** the field.
 - Usually granted to trusted roles/profiles only.

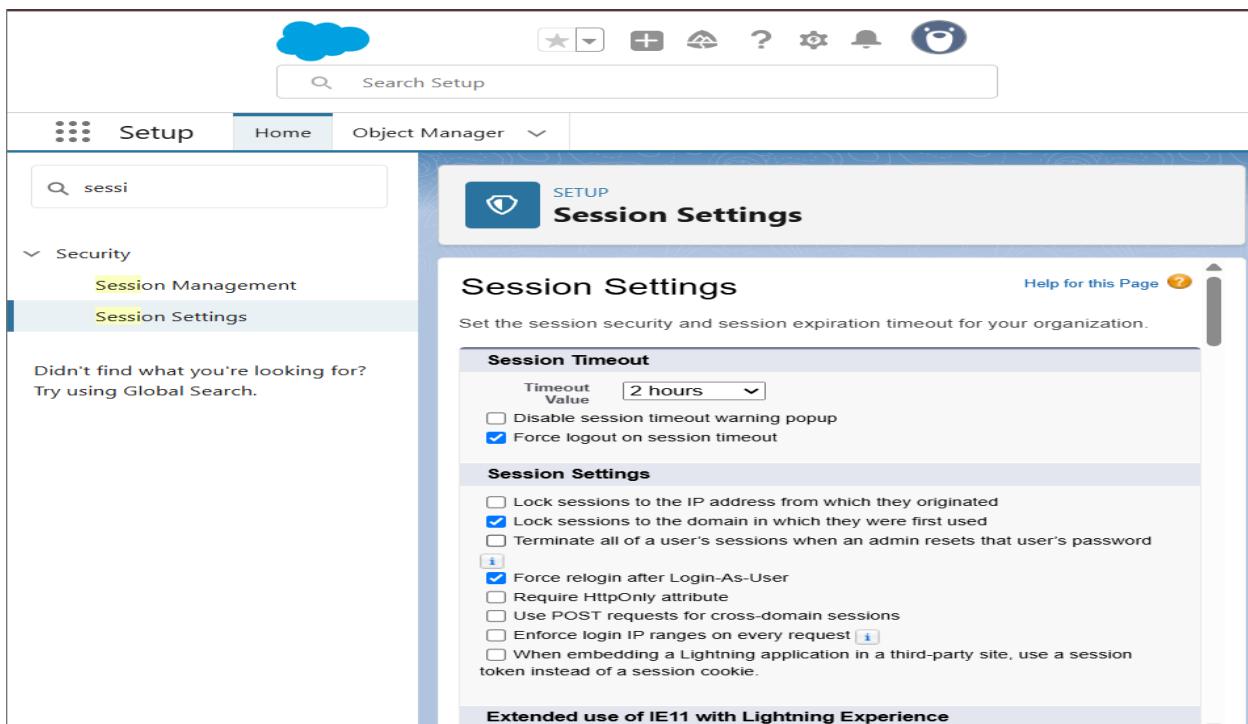
7. Session Settings

Purpose

- Define **security policies for user sessions** in Salesforce.
- Protect sensitive data and prevent unauthorized access.

Key Features / Options

- **Session Timeout**
 - Auto-logout users after a period of inactivity.
 - Example: 15, 30, 60 minutes depending on org security requirements.
- **Restrict Concurrent Logins**
 - Prevent multiple logins using the same user credentials simultaneously.
- **IP Restrictions on Sessions**
 - Limit login or session access to trusted IP addresses.
- **Enable Multi-Factor Authentication (MFA)**
 - Adds an extra security layer using a verification code or app.



8. Login IP Ranges

Purpose

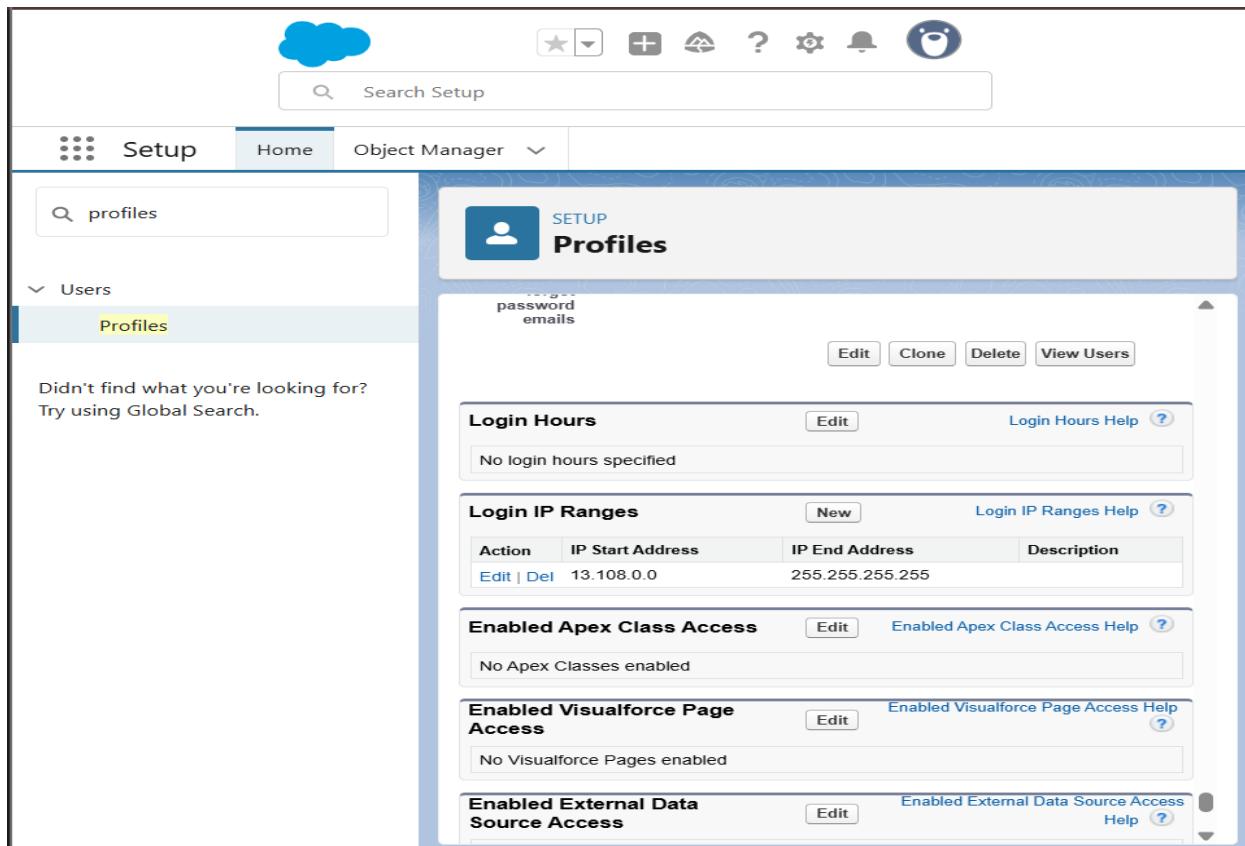
- Restrict access to Salesforce **based on trusted IP addresses**.
- Ensures that users can only log in from **approved networks**.

Setup

- Defined at the **Profile level** for each user type.
- Users outside the allowed IP range **cannot log in**.
- IP ranges can be set per profile, e.g., Sales team vs. Support team.

Best Use Cases

- Prevent unauthorized logins from **public networks**.
- Enforce **office network or VPN-only access**.
- Protect sensitive org data in multi-location environments.



9. Audit Trail

Purpose

- Track all **configuration changes** in Salesforce setup.
- Useful for **troubleshooting, compliance, and security audits**.

Key Features

- **Tracks Setup Changes**
 - Examples: fields, objects, workflows, validation rules, permissions.
- **History Availability**
 - Last 20 entries visible directly in Setup Audit Trail.
 - Full 180-day history downloadable as CSV for long-term auditing.
- **User Information Tracked**
 - Who made the change, what was changed, and when it occurred.

Best Practices

- Regularly **download audit trail data** for compliance reviews.
- Use in conjunction with **Field-Level Security and Sharing Rules** for complete visibility.
- Helps in **troubleshooting configuration issues** when errors occur.

Conclusion

The **SkyCast Weather Information System** provides a robust and scalable solution for managing, analyzing, and reporting weather-related data. By leveraging Salesforce features such as **custom objects, data import tools, reporting, dashboards, and security controls**, the system ensures accurate data capture, efficient processing, and secure access for authorized users. With integrated reporting and dashboards, stakeholders can monitor weather patterns in real-time, make informed decisions, and maintain compliance with organizational security standards. Overall, SkyCast delivers a comprehensive platform to transform raw weather data into actionable insights, enhancing operational efficiency and decision-making capabilities.