AeroSense: Phase 7 Documentation

Phase Title: Integration & External Access
Objective: To integrate AeroSense with external IoT devices, APIs, and third-party applications for seamless data exchange, live updates, and external access.

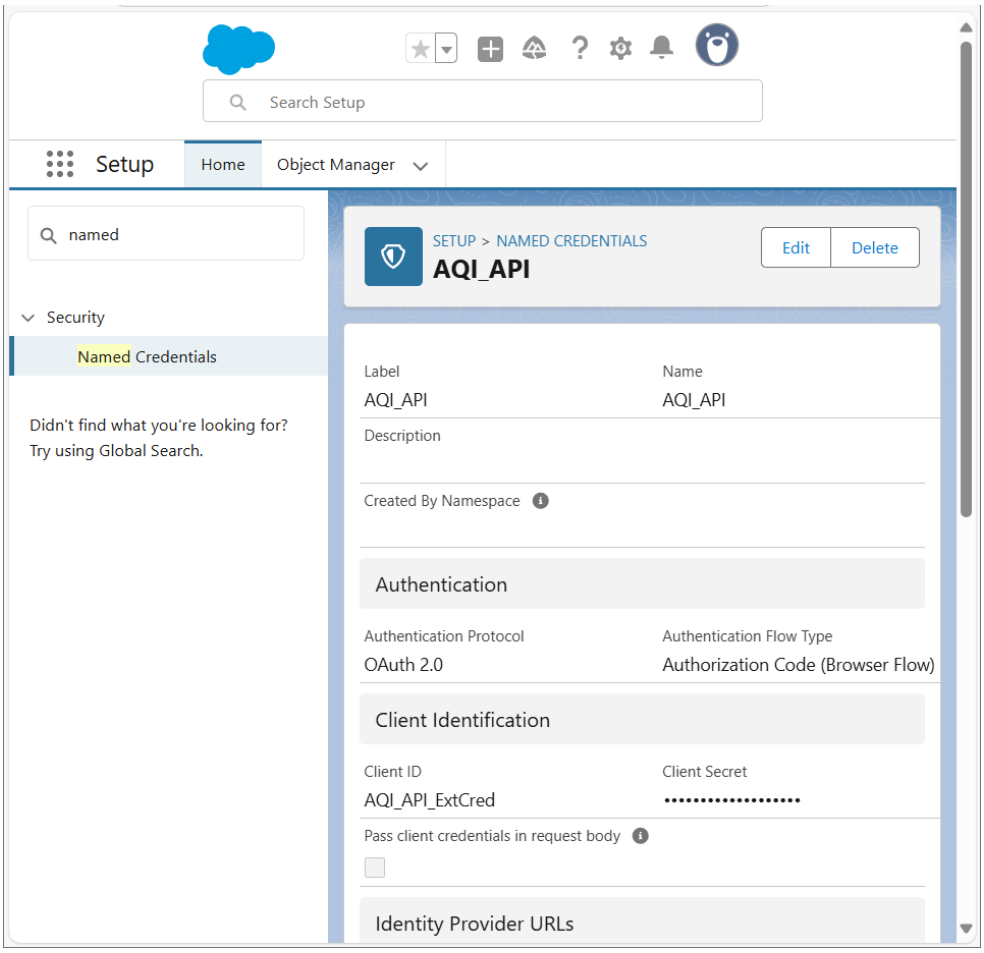
1. Named Credentials

- Path: **Setup → Named Credentials →External Auth Identity Providers→ New**
- Create a secure credential for external APIs (e.g., Government AQI API).
- Example:
    - **Label:** AQI_API
    - **URL:** https://api.openaq.org/v1/
    - Authentication: OAuth 2.0 (if required).
    - Client ID: AQI_API_ExtCred
    - Test Named Credential: Open **Developer Console → Execute Anonymous**.

```
HttpRequest req = new HttpRequest();
req.setEndpoint('callout:AQI_API/latest?city=Delhi');
req.setMethod('GET');

Http http = new Http();
HttpResponse res = http.send(req);

System.debug(res.getBody());
```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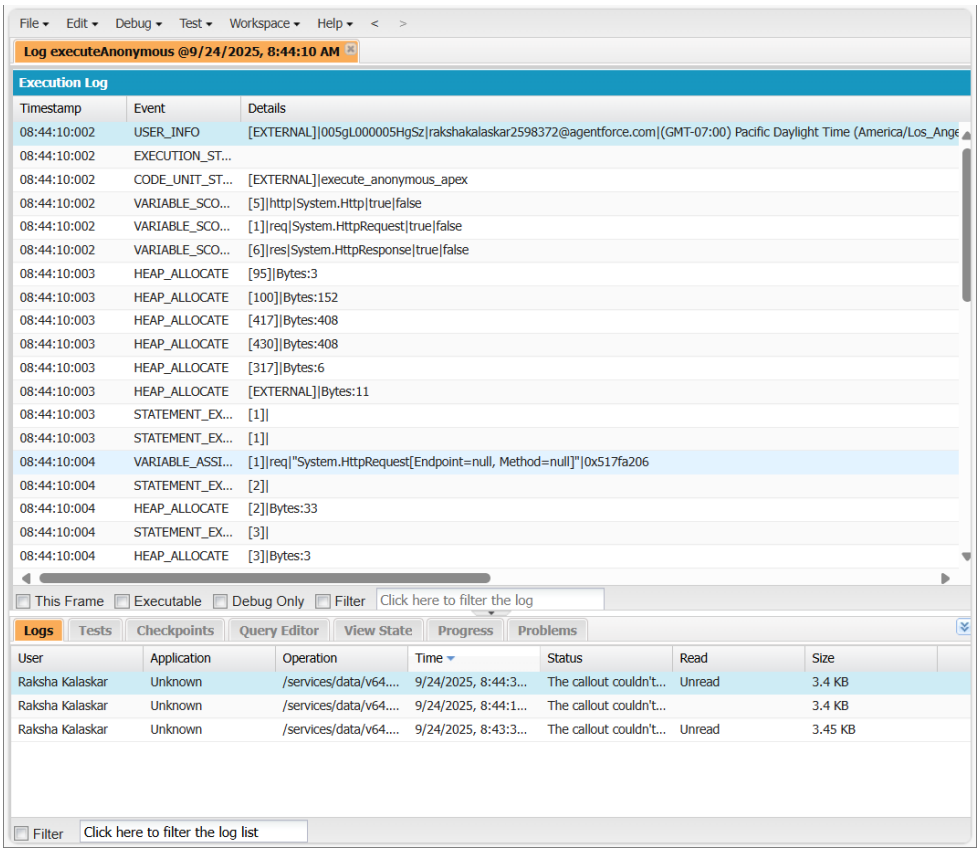
Pass client credentials in request body
Identity Provider URLs

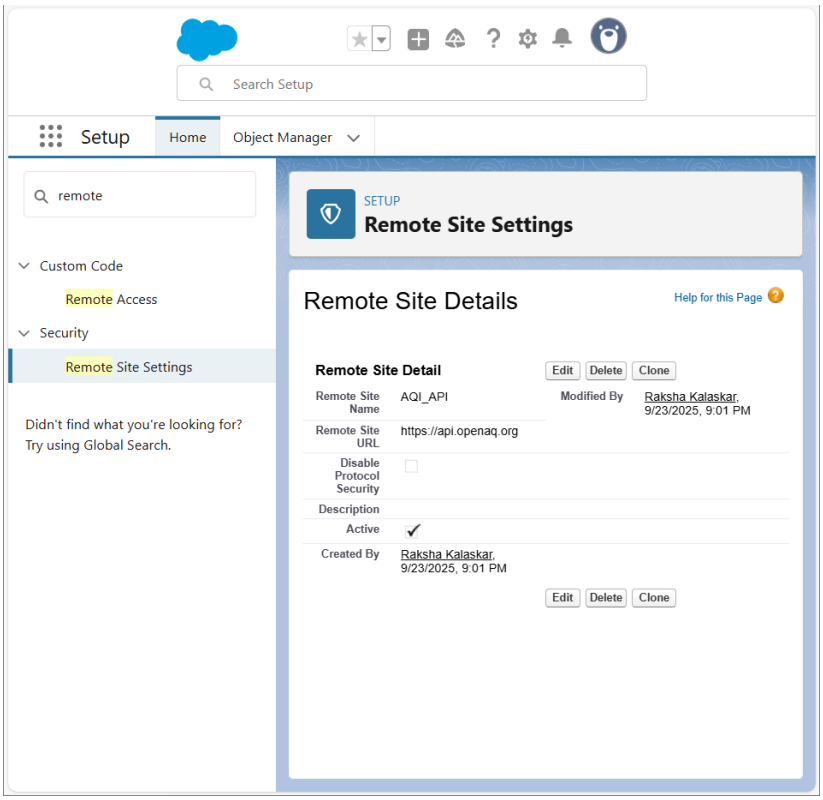


2. External Services (Schema Import)

- Use **External Services Wizard** to connect to REST APIs via Swagger/OpenAPI schema.
- Example: Import **Air Quality Index API schema** → Auto-generate Apex Actions.
- Benefit: No need to write manual callouts for simple integrations.

3. REST API Callouts (Apex)

- Whitelist the API Domain:
  New Remote Site.
  Remote Site Name: AQI_API
  Remote Site URL: https://api.openaq.org/v2
  Save.



- **Create the Apex Class:-**

In Developer Console or VS Code, create a new Apex class.

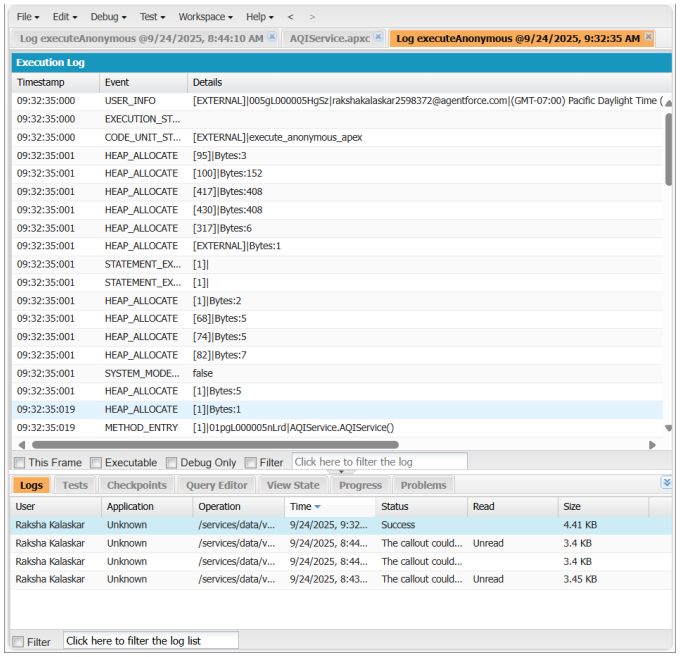
```
public with sharing class AQIService {

  @AuraEnabled
  public static String getExternalAQI(String city) {
    try {
      Http http = new Http();
      HttpRequest req = new HttpRequest();
      req.setEndpoint('https://api.openaq.org/v2/cities?country=' + city);
      req.setMethod('GET');
      req.setTimeout(2000);

      HttpResponse res = http.send(req);
      if (res.getStatusCode() == 200) {
        return res.getBody(); // raw JSON response
      } else {
        return 'Error: ' + res.getStatusCode() + ' - ' + res.getStatus();
      }
    } catch (Exception e) {
      return 'Exception: ' + e.getMessage();     }}}
```

- **Test in Anonymous Window**

Developer Console → Debug → Open Execute Anonymous Window.
Run:
System.debug(AQIService.getExternalAQI('IN')); // IN = India



4. SOAP API (Optional)

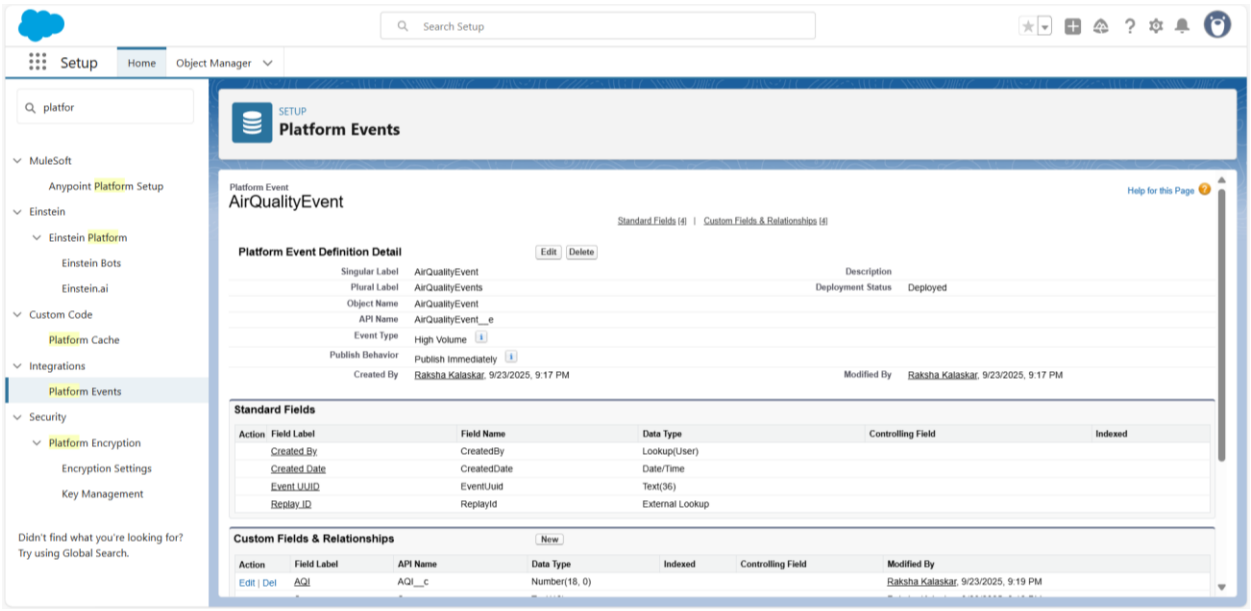
If external calibration systems only provide SOAP:

- Create **WSDL2Apex class** by importing WSDL.
- Use generated Apex class to call calibration services.

5. Platform Events

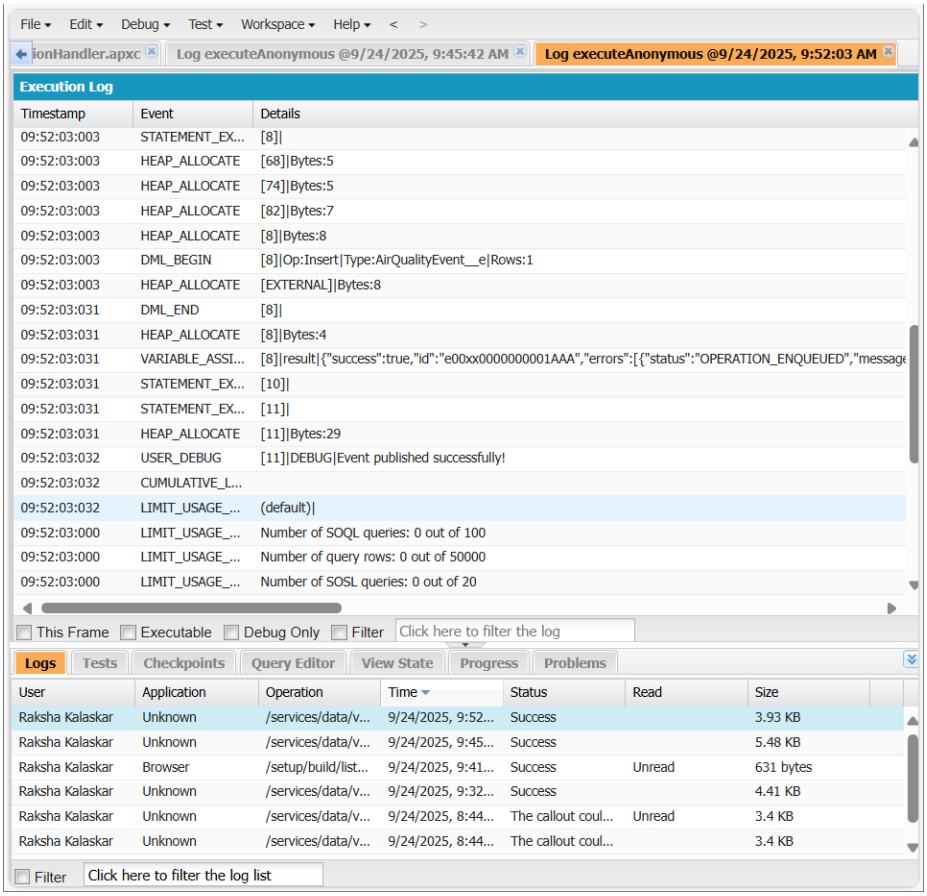
Used for **real-time communication**.

- **Object:** AirQualityEvent__e
    - Fields: Sensor__c, AQI__c, Severity__c, Timestamp__c

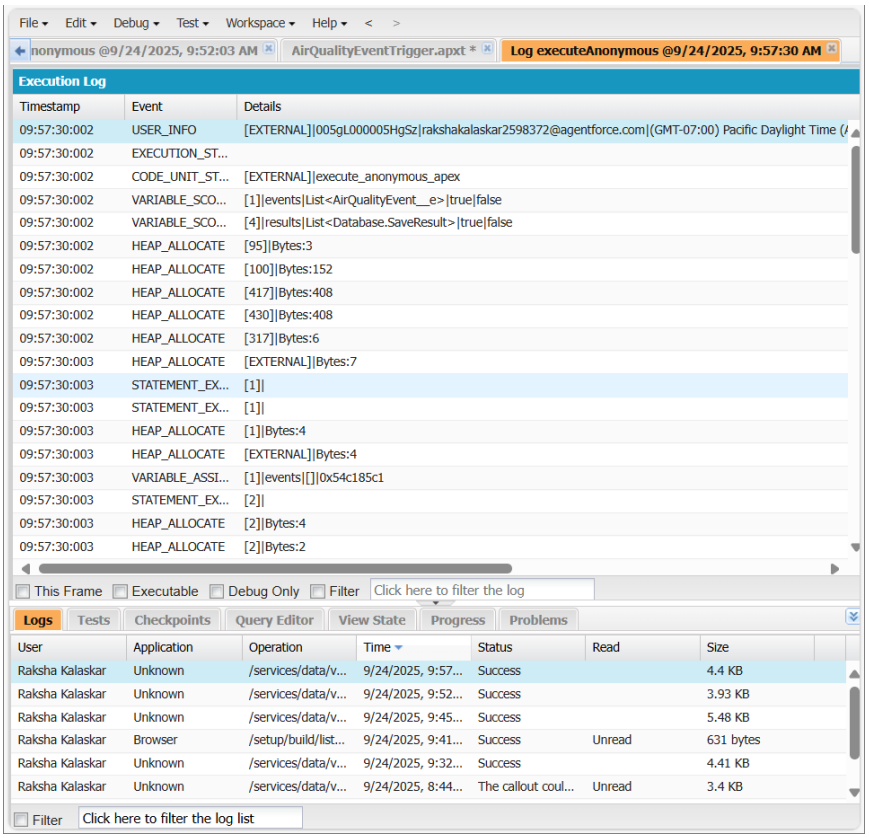


- **Publishing Event (Apex):**

```
AirQualityEvent__e eventMsg = new AirQualityEvent__e(
    Sensor__c = 'S1',
    AQI__c = 210,
    Severity__c = 'High',
    Timestamp__c = Datetime.now()
);
Database.SaveResult result = EventBus.publish(eventMsg);
```

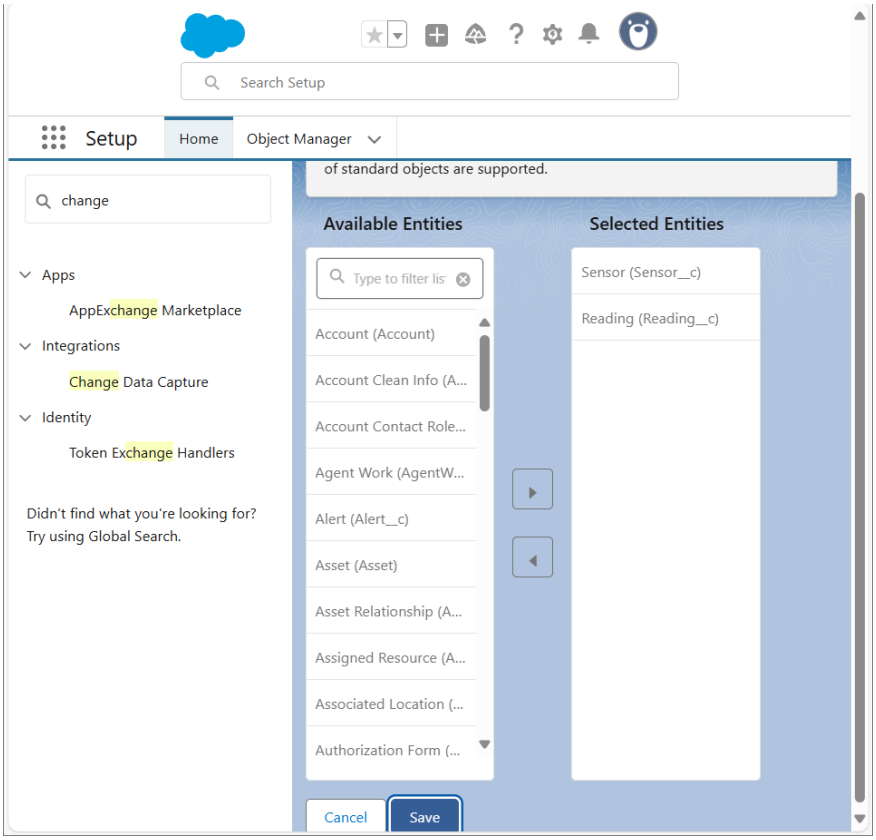


- **Subscribers:**
    - External IoT system (via CometD).
    - Another Salesforce org.
    - Slack/MS Teams integration (via middleware).



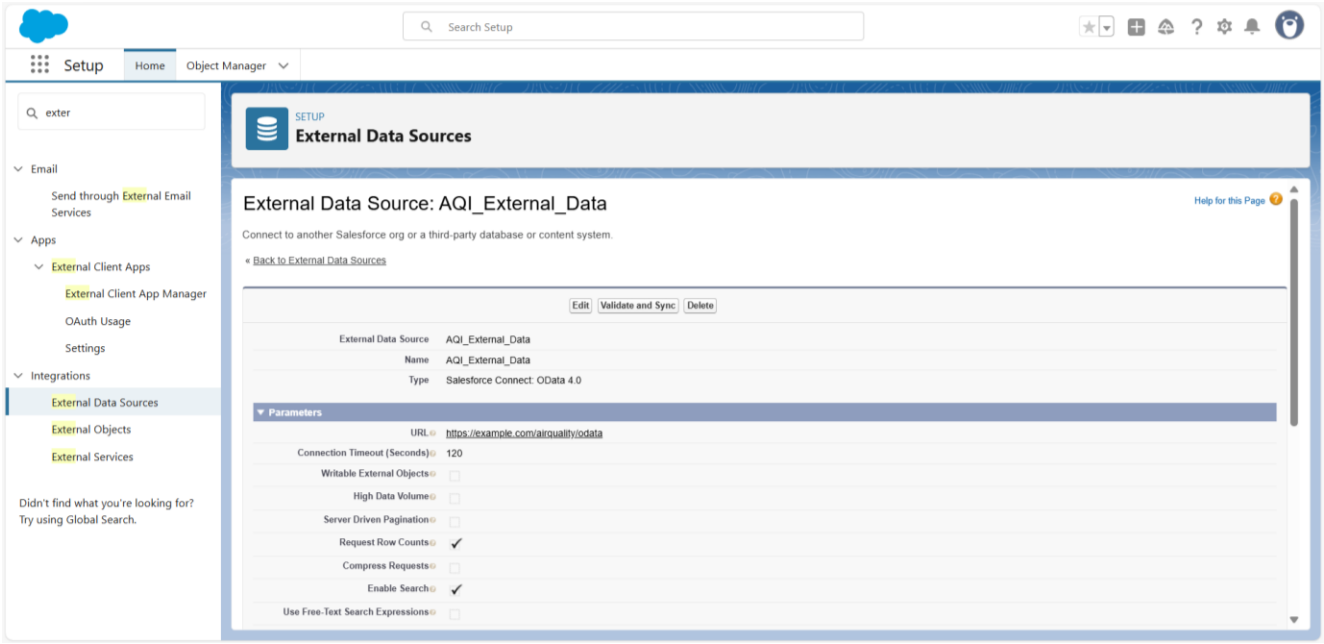
6. Change Data Capture (CDC)

- Enable CDC on **Sensor__c** and **Reading__c** objects.
- Use case: External dashboard auto-updates when new readings are inserted.



7. Salesforce Connect

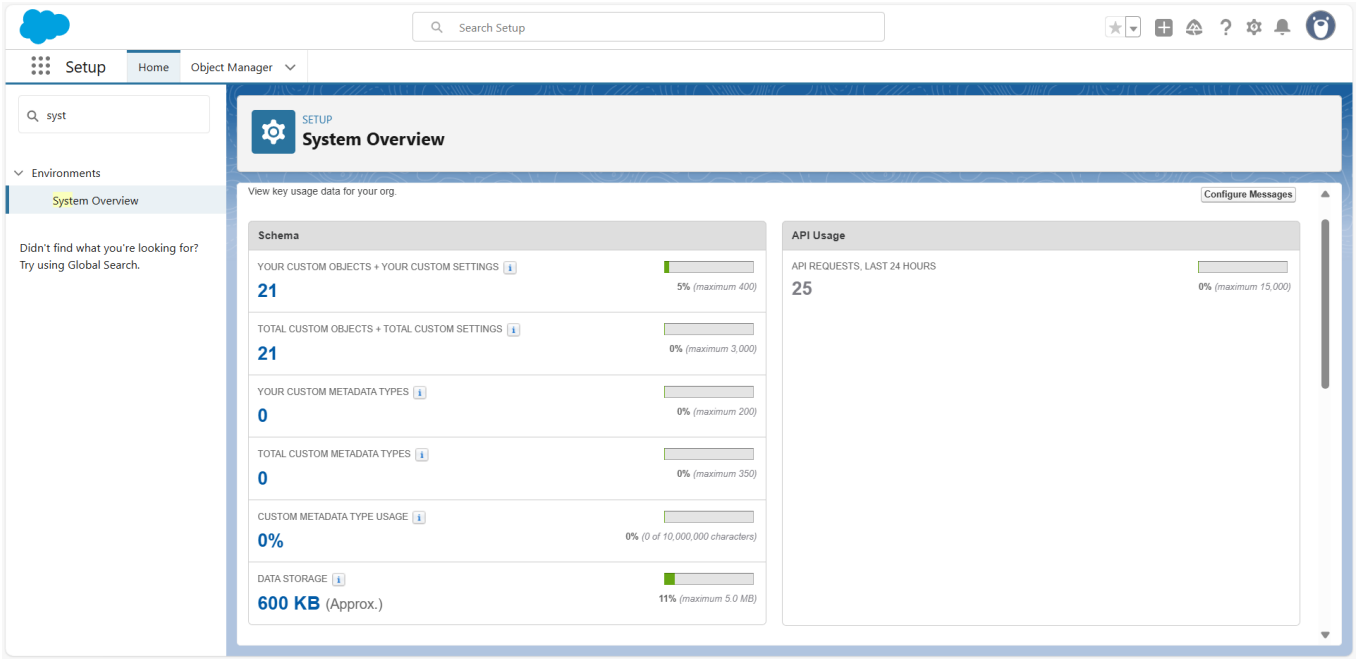
- Use **OData adapter** to integrate with large external AQI datasets without storing them inside Salesforce.
- Example: Connect to external **Air Quality Open Data** → show live reference data inside Salesforce tabs.



8. API Limits & Best Practices

- Salesforce daily API calls = 100,000 (Dev org = 15,000).
- Always use **Named Credentials** for security.
- Cache responses with @AuraEnabled(cacheable=true) for performance.
- **Apex using Named Credential**

```
public with sharing class ExternalClient {
    public static String fetchData() {
        HttpRequest req = new HttpRequest();
        req.setEndpoint('callout:My_Named_Cred/path/to/resource');
        req.setMethod('GET');
        HttpResponse res = new Http().send(req);
        return res.getBody();
    }
}
```

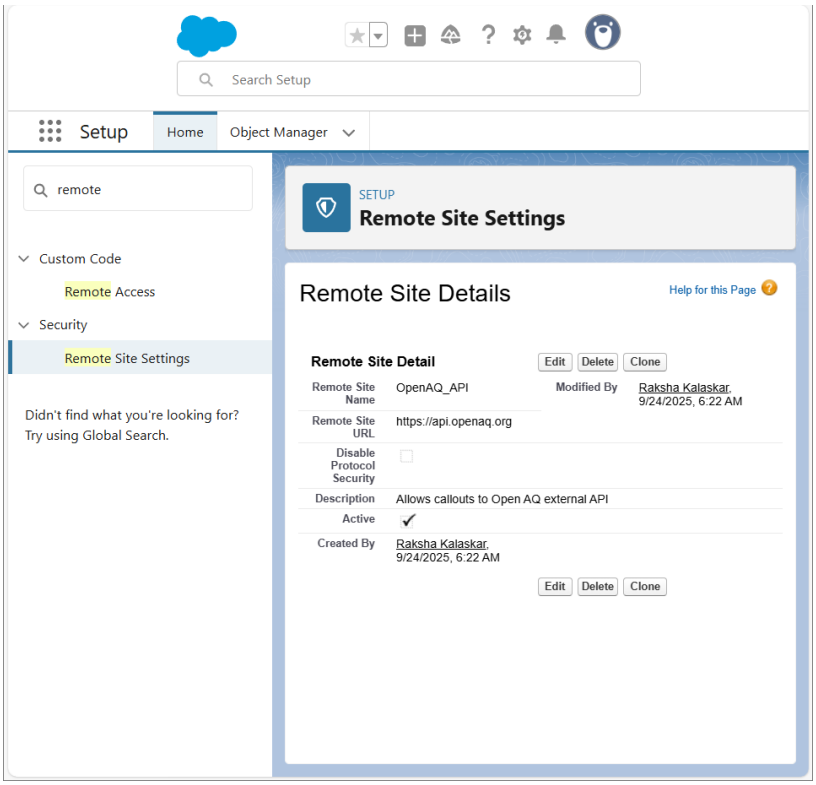


9. OAuth & Authentication

- Enable **OAuth** for third-party mobile apps accessing AeroSense.
- Example: A mobile app authenticates via OAuth and fetches alerts for nearby AQI sensors.

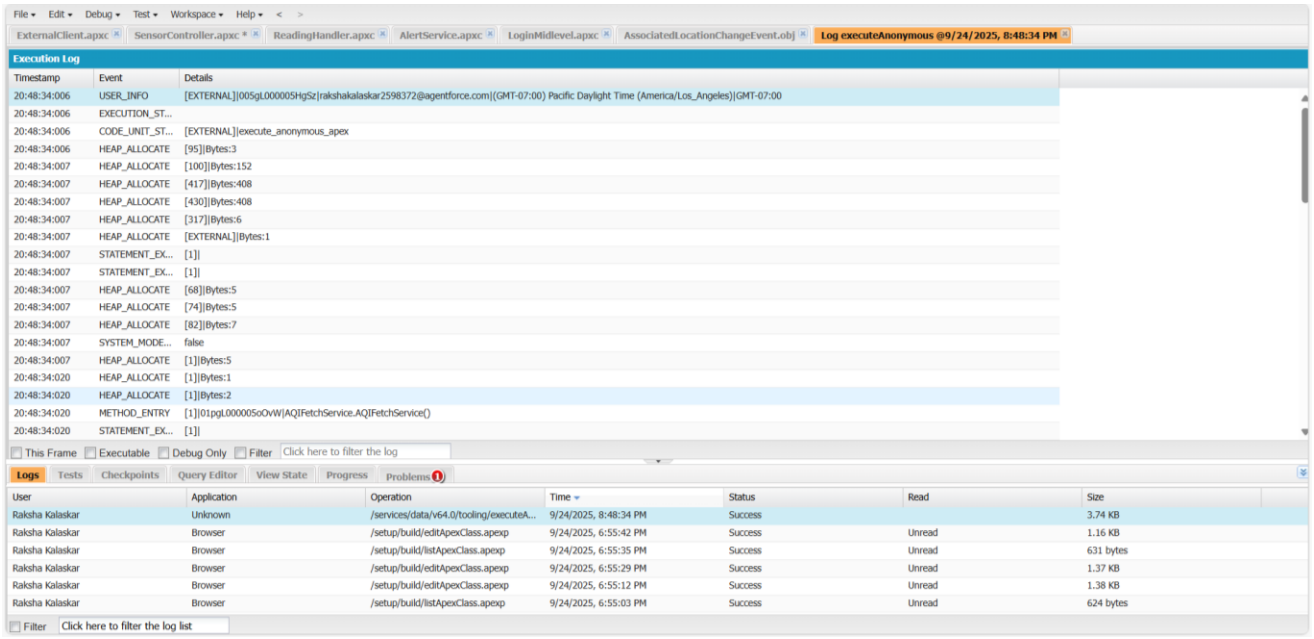
10. Remote Site Settings

- Before making callouts, add API domains under:
    - **Setup → Remote Site Settings → New**
    - Example: https://api.openaq.org



11. Example Use Case in Action

1. **IoT Sensor** pushes air quality data to external server.
2. Salesforce (via REST API callout) fetches new data every hour.
3. **Platform Event** broadcasts "Critical AQI Detected" to Slack.
4. **CDC** updates dashboards in near real time.
5. Executives see **external AQI comparison** (local vs government API) directly in Salesforce.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20:48:34:006 USER_INFO [EXTERNAL]|005gL000005HgSz|rakshakalaskar2598372@agentforce.com|(GMT-07:00) Pacific Daylight Time (America/Los_Angeles)|GMT-07:00
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20:48:34:006 CODE_UNIT_ST... [EXTERNAL]|execute_anonymous_apex
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20:48:34:007 HEAP_ALLOCATE [417]|Bytes:408
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20:48:34:007 STATEMENT_EX... [1]|
20:48:34:007 STATEMENT_EX... [1]|
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20:48:34:007 SYSTEM_MODE... false
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20:48:34:020 HEAP_ALLOCATE [1]|Bytes:2
20:48:34:020 METHOD_ENTRY [1]|01pgL000005oOvW|AQIFetchService.AQIFetchService()
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Logs Tests Checkpoints Query Editor View State Progress Problems
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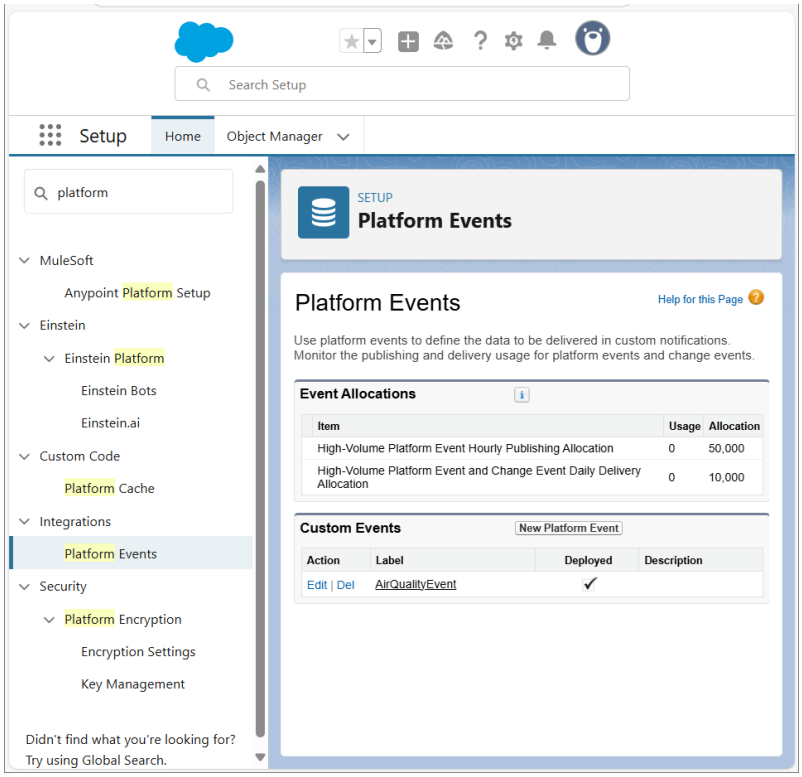
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Einstein Bots
Einstein.ai
Custom Code
Platform Cache
Integrations
Platform Events
Security
Platform Encryption
Encryption Settings
Key Management
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SETUP
Platform Events
Platform Events
Help for this Page
Use platform events to define the data to be delivered in custom notifications.
Monitor the publishing and delivery usage for platform events and change events.
Event Allocations
Item Usage Allocation
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High-Volume Platform Event and Change Event Daily Delivery Allocation 0 10,000
Custom Events
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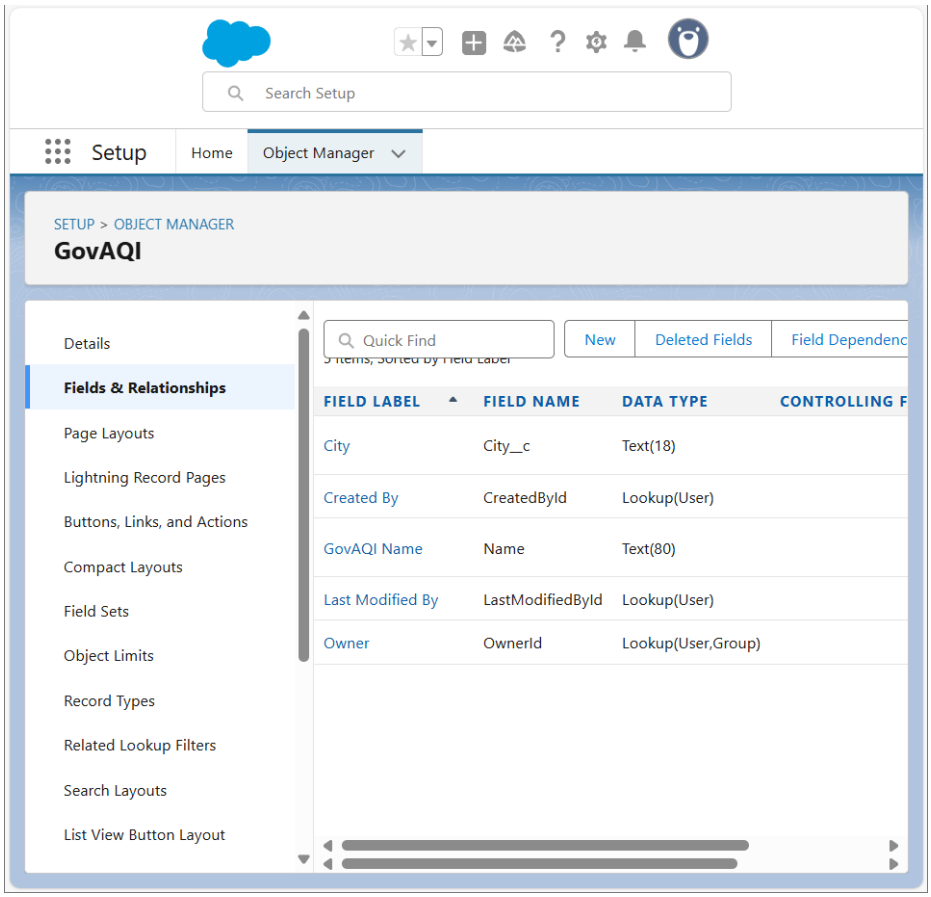
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