

Application Control Framework Native App Deployment Guide

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Revision Summary

Date	Revision History	Comments
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Prerequisites

- The Application Control Framework (ACF) must be installed.
 - See the **Application Control Framework - Deployment Guide** document for more information.
- At least one event account has been created and configured.
 - See the **Application Control Framework - Deployment Guide** document for more information.
- The user that will build and deploy the native app must be granted the `P_<APP_CODE>_ACF_ADMIN` role.
- For testing purposes, a test consumer account should be created in the same organization as the provider's account.

NOTE: `<APP_CODE>` = an abbreviated representation for the name of the app (e.g. `SDE` for Sample Data Enrichment)

Provider vs. Consumer

The native apps Framework term “provider” refers to `<CUSTOMER>`, as the app’s owner. The native apps Framework term “consumer” refers to `<CUSTOMER>` clients that install the app.

Disclaimer

Any screenshots included in this guide are examples. Please refer to the text in the steps below when installing this app.

Key Native App Components

Environments

The ACF supports having application code/objects in separate dev and prod environments. This allows the provider the ability to work on the various components of the native app (application logic, Streamlit UIs, templates, etc.) separately in the dev environment, without impacting any of the production application packages. Once changes in the dev environment pass testing, they can be promoted to the prod environment.

For example, if the provider wants to make a change to only the production native app's Streamlit UI, the provider can make changes to the Streamlit code in the dev environment. Once ready to test, the provider will create a test application package and version, referencing the updated Streamlit code in the dev environment. The provider will reference the application logic and template files already in production, since those components are not affected.

Dev to Prod Process Flow

1. Create a Test application package for the dev environment code/objects.
2. Create/Patch a version for the Test application package
3. Create a private test Marketplace listing
4. In a QA/Test consumer account, install the application from the private Marketplace listing.
5. In a QA/Test consumer account, Test the application package version
6. Iterate until the app successfully passes testing.
7. Promote the application package's code/objects to prod
8. Create a Production application package
9. Create/Patch a version for the Production application package
10. Create a public Marketplace listing (unless the version of the app should be privately listed (i.e. enterprise)). See [Multiple Native App Modes](#) for more information.

This document will provide step-by-step instructions for promoting code/objects from dev to prod.

Application Logic

Application logic is the critical component of the native app. It provides the intended functionality the consumer executes in their Snowflake account. Application logic is deployed in the form of one or more stored procedures. Apps built by the ACF can support multiple

functionality/procedures and allows the provider the ability to control which consumers get access to what functionality.

Multiple Native App Modes

The framework comes with the ability to build a native app with custom functionality, depending on the version of the app. For example, the consumer can evaluate the “free” version of the app from the Snowflake Marketplace, without interaction from the provider. Once the consumer is interested in the one or more paid versions of the app, they can be granted access to the desired version.

By default, the ACF supports three app modes:

- **FREE:** a free version of the app that is publicly available in the Snowflake Marketplace. This version offers limited functionality, meant to entice the consumer to convert to a paid version of the app. Each consumer of this app version has the same entitlements/limits (i.e. five requests).
- **PAID:** a paid version of the app that is publicly available in the Snowflake Marketplace. This version offers more or complete app functionality. Each consumer of this app has the same entitlements/limits (if any) enforced (i.e. process 1MM records every 30 days).
- **ENTERPRISE:** a version of the app where unique entitlements/limits can be set for each consumer. The entitlements/limits are managed via the ACF's App Control Manager. This is ideal for providers that want to create custom deals with consumers where the default entitlements/limits of the other app versions are not ideal for the consumer. Enterprise versions of the app should be listed privately and only made available to a single consumer.

Setup Script

The setup script contains SQL statements, including application logic DDL, that are executed when the consumer installs or upgrades an application or when a provider installs or upgrades an application for testing. Every application must contain a setup script. The setup script defines the objects that are created when an application is installed or upgraded. For more information, visit <https://docs.snowflake.com/en/developer-guide/native-apps/creating-setup-script>.

The ACF includes a setup script template that is used to construct each app version/patch's setup script. The ACF's App Control Manager UI automatically generates the setup script, based on the selected table/view, functions, and procedures required for each version/patch.

Manifest File

The Snowflake native app Framework requires that every application package contains a manifest file. This file defines properties required by the application package, including the location of the setup script and version definitions.

- The manifest file has the following requirements:
 - The name of the manifest file must be manifest.yml.
 - The manifest file must be uploaded to a named stage so that it is accessible when creating an application package or Snowflake native app.
 - The manifest file must exist at the root of the directory on the named stage.
 - For more information, visit <https://docs.snowflake.com/en/developer-guide/native-apps/creating-manifest>.

The ACF includes a manifest template that is used to construct each app version/patch's setup script. The ACF's App Control Manager UI automatically generates the manifest file.

Readme

A readme file is included when the consumer installs the corresponding version. Each readme is slightly different due to setup steps required for each app version.

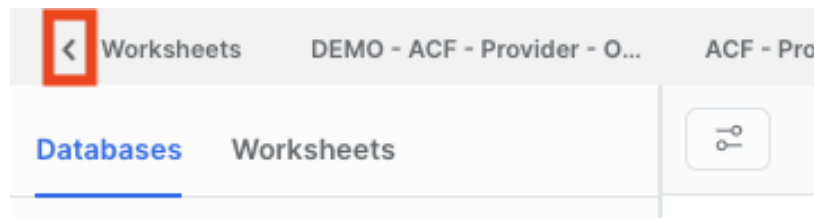
App Control Manager

The ACF includes the App Control Manager, a Streamlit UI available in the provider account. The App Control Manager allows the provider to easily build and manage an app built on the ACF, manage consumers, and remove the ACF if/when desired.

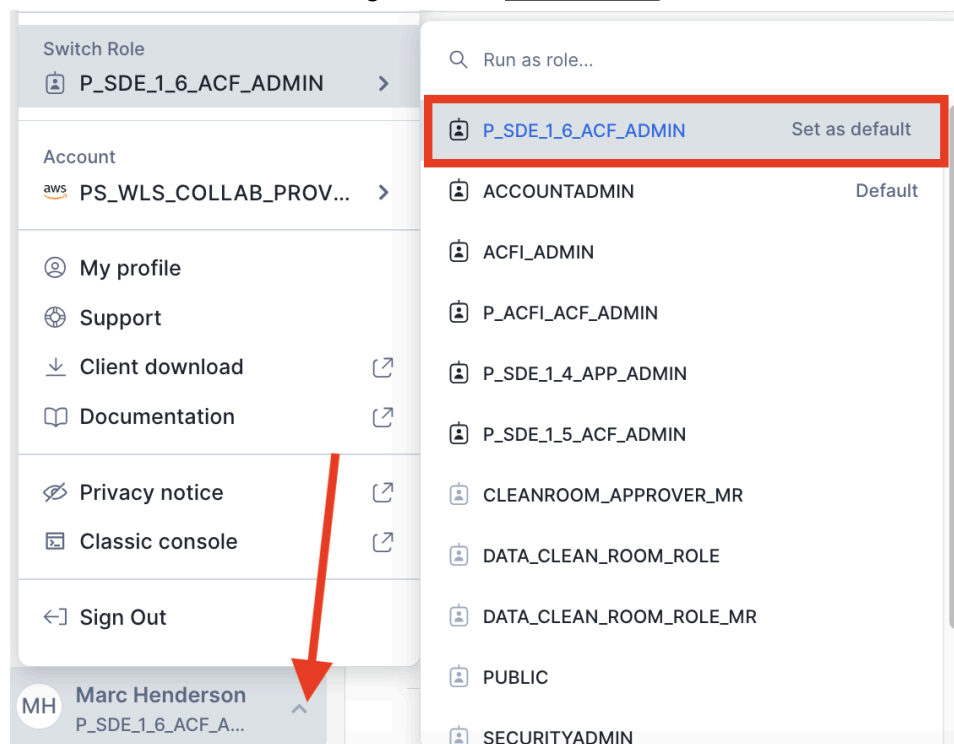
The App Control Manager can be accessed via the following steps:

Step 1: Log into **Snowsight**.

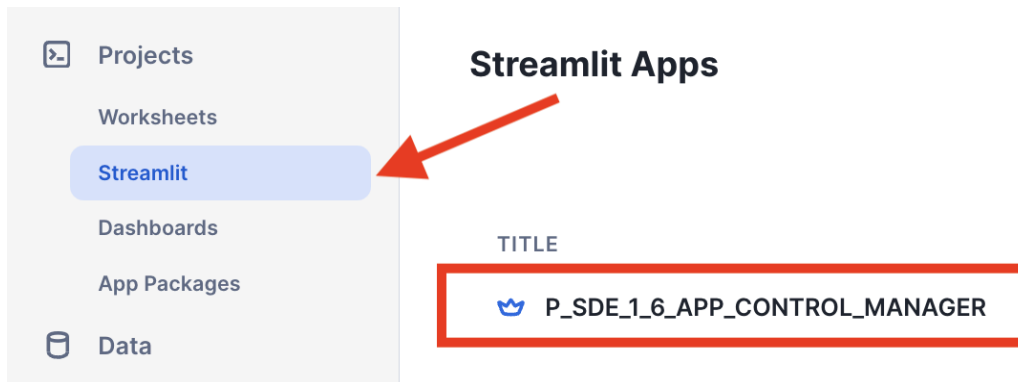
Step 2: Once logged in, if not at the Snowsight home screen, click the **Back** button, in the top left area of the UI, to open the left navigation menu.



Step 3: Switch to the **P_<APP_CODE>_ACF_ADMIN** role, by clicking the drop-down in the bottom left area of the UI, then hovering over the Switch Role menu item.



Step 4: Click **Projects >> Streamlit**, then **P_<APP_CODE>_APP_CONTROL_MANAGER**.



Use the following options below to **Manage** or **Remove** an App built on the **App Control Framework**, along with the ability to **Manage App Consumers**.

Manage App



Click the button below to manage an existing Native app built on the App Control Framework.

Manage App

Consumers



Click the button below to manage existing consumers of a Native App.

Manage Consumers

Remove ACF



Click the button below to remove all objects created by the Application Control Framework.

Remove ACF

⚠ NOTE: The ACCOUNTADMIN role must be granted to the user in order to remove the ACF.

(App Control Manager Home)

Build and Deploy Native App

Step 1: Create Application Logic

The ACF includes a dedicated dev environment, where the application logic can be created and tested. Application logic includes stored procedures and/or functions required for the native app to successfully execute the intended behavior.

Functions used by the native app are to be created in the `P_<APP_CODE>_SOURCE_DB_DEV.FUNCS_APP` schema.

Stored procedures used by the native app are to be created in the `P_<APP_CODE>_SOURCE_DB_DEV.PROCS_APP` schema.

Custom Logging/Metrics

The application logic will likely need to collect additional logs/metrics. The ACF's `APP_LOGGER` stored procedure is used to log specific app events and collect stats about each request. `APP_LOGGER` is available to the provider to use to log relevant events and/or stats.

NOTE: the value passed to the `message` parameter is a JSON payload containing details of the metrics being collected. This can be any value, but if the value is a string, it must be enclosed in double quotes.

APP_LOGGER Signature

Parameter	Type	Description
account_locator	VARCHAR	The consumer's Snowflake Account Locator
consumer_name	VARCHAR	The consumer's name
app_key	VARCHAR	The consumer's app key for the installation.
app_mode	VARCHAR	The app's mode (i.e. FREE, PAID, or ENTERPRISE)
entry_type	VARCHAR	The type of entry (i.e. LOG or METRIC)
event_type	VARCHAR	The type of event being logged
event_attributes	VARCHAR	Any applicable attributes associated with the event type (can be NULL). NOTE: if the message is a string, it should be enclosed in double quotes (i.e. <code>"this is a test event"</code>).

timestamp	TIMESTAMP_NTZ	The UTC timestamp for the event
status	VARCHAR	The status of the event (i.e. PROCESSING, COMPLETE, or ERROR)
message	VARCHAR	The message to log. NOTE: if the message is a string, it should be enclosed in double quotes (i.e. "this is my message").

APP_LOGGER can be called directly from the application logic stored procedure(s):

Example APP_LOGGER Call - Log Event:

```
CALL UTIL_APP.APP_LOGGER (
    '<CONSUMER_ACCOUNT_LOCATOR>'
    , '<CONSUMER_NAME>'
    , '9224FFD050BE936E27DBE'
    , 'enterprise'
    , 'log'
    , 'install'
    , ''
    , SYSDATE()
    , 'COMPLETE'
    , "install successful. app key generated: 9224FFD050BE936E27DBE"
);
```

Example Log Event JSON Payload:

```
{
  "account": "<CONSUMER_ACCOUNT_LOCATOR>",
  "app_key": "9224FFD050BE936E27DBE",
  "app_mode": "enterprise",
  "consumer_name": "<CONSUMER_NAME>",
  "entry_type": "log",
  "event_attributes": "",
  "event_type": "install",
  "message": "install successful. app key generated: 9224FFD050BE936E27DBE",
  "status": "COMPLETE",
  "timestamp": "2023-05-03 15:51:58.748"
}
```

Example APP_LOGGER Call - Metrics:

```
CALL UTIL_APP.APP_LOGGER (
    '<CONSUMER_ACCOUNT_LOCATOR>'
    , '<CONSUMER_NAME>'
    , '9224FFD050BE936E27DBE'
```

```
, 'enterprise'
, 'metric'
, 'request'
, '[{"request_id": "afadsf-3431232"}, {"proc_name": "enrich"},
{"proc_parameters": "<APP_CODE>, C_<APP_CODE>_HELPER_DB.SOURCE.ENRICH_CRM_V, EMAIL
,<APP_CODE>.RESULTS_APP.ENRICH_CRM_RESULTS"}]'
, SYSDATE()
, 'PROCESSING'
, '{
    "metric_type": "request_summary",
    "metrics": {

"input_table_name": "C_<APP_CODE>_HELPER_DB.SOURCE.ENRICH_CRM_V",
        "input_record_count": 5000000,
        "results_table_name": "",
        "results_record_count": 0,
        "results_record_count_distinct": 0,
        "comments": "",
        "submitted_ts": "' || SYSDATE() || '",
        "completed_ts": ""

    }
}'
);
```

NOTE: `request_summary` is the type of metric being collected. As many metric types as required can be collected.

Example Metric Event JSON Payload:

```
{
  "account": "<CONSUMER_ACCOUNT_LOCATOR>",
  "app_key": "9224FFD050BE936E27DBE",
  "app_mode": "enterprise"
  "consumer_name": "<CONSUMER_NAME>",
  "entry_type": "metric"
  "event_attributes": [
    {
      "request_id": "afadsf-3431232"
    },
    {
      "proc_name": "enrich"
    },
    {
      "proc_parameters":
"<APP_CODE>, C_<APP_CODE>_HELPER_DB.SOURCE.ENRICH_CRM_V, EMAIL, <APP_NAME>.RESULTS
_APP.ENRICH_CRM_RESULTS"
    }
  ]
}
```

```
}
],
"event_type": "request",
"message": {
  "metric_type": "request_summary",
  "metrics": {
    "comments": "",
    "completed_ts": "",
    "input_record_count": 5000000,
    "input_table_name": "C_<APP_CODE>_HELPER_DB.SOURCE.ENRICH_CRM_V",
    "results_record_count": 0,
    "results_record_count_distinct": 0,
    "results_table_name": "",
    "submitted_ts": "2023-05-03 15:55:39.846"
  }
},
"status": "PROCESSING",
"timestamp": "2023-05-03 15:55:40.141"
}
```

Step 2: Modify/Add Controls (optional)

The ACF has built-in preset controls with default values, defined in the METADATA_DICTIONARY table. The control default values can be updated, as required. Additional controls can be added, as required, by the application logic. Additional controls can be used to track additional consumer metrics, enforce custom rules, etc. The controls and their default values are set for each onboarded consumer (unless overridden - which is covered later in this document). Controls can be modified/added via the ACF's App Control Manager.

NOTE: existing controls should **NOT** be removed. This will result in app failure.

Step 1: In the App Control Manager, click **Manage App >> Controls**.

Step 2: Modify/Add controls as needed.

- **Field Definitions:**
 - **control_name** - the name of the control.
 - **control_type** - type of control (preventive, detective, deterrent, or corrective); optional.
 - **condition** - operand in relation to the default_value (=, >, >=, <, <=, etc.)
 - **default_value** - the control's default value, if applicable.

- **consumer_control** - flag indicating whether the control is consumer-related. Some controls may not be consumer-related, but provider-related (i.e. the provider_secret control that stores the key used to encrypt logs/metrics).
- **set_via_onboard** - flag indicating whether the control can be overridden when a consumer is onboarded. Not all controls should be available to be overridden (i.e. controls used to track certain types of events, such as installs, requests, etc.).
- **consumer_visible** - flag indicating whether the control is visible to the consumer, when they install the app. The provider may want to hide some controls from the consumer.
- **description** - the description of the control

Step 3: Click **Update**.

Manage App Controls

Modify default controls and/or add any custom controls.

Add/Modify Controls as needed. ⚠ NOTE: Deleting controls WILL cause the Native App not to function properly.

	CONTROL_NAME	CONTROL_TYPE	CONDITION	DEFAULT_VALUE	CONSUMER_CONTROL	SET_VIA
	app_mode	detective	=	enterprise	<input checked="" type="checkbox"/>	
	allowed_procs	preventive	=	enrich	<input checked="" type="checkbox"/>	
	allowed_funcs	preventive	=		<input checked="" type="checkbox"/>	
	record_cost	detective	=	0.05	<input checked="" type="checkbox"/>	
	custom_billing	detective	=	N	<input checked="" type="checkbox"/>	
	limit	preventive	<=	5000000	<input checked="" type="checkbox"/>	
	limit_type	preventive	=	records	<input checked="" type="checkbox"/>	
	limit_interval	preventive	=	30 day	<input checked="" type="checkbox"/>	
	limit_enforced	preventive	=	Y	<input checked="" type="checkbox"/>	
	custom_rules	preventive	=		<input checked="" type="checkbox"/>	

Update

NOTE: If the custom control that is added is a metric based on the consumer's usage of the app, the ACF's PROCESS_CONSUMER_EVENTS stored procedure may need to be updated to process events to update the control accordingly. Please refer to the **Application Control Framework - Detailed Design** document for more details.

Step 3: Create Custom Rules (optional)

By default, the ACF regulates consumers' usage of the native app based on either the number of records processed or requests within a predefined interval (defined either in the METADATA_DICTIONARY or overridden when the consumer is onboarded).

The provider can add additional custom rules, if applicable, to regulate usage of the native app, based on either controls defined in the METADATA_DICTIONARY or custom fields/conditions. The custom rules are created in the style of an if-statement and can be as complex as required, with multiple conditions joined together either by AND/OR within a single group, or each condition can be its own group. Each custom rule can be assigned to consumers, as required.

NOTE: the consumer can only be assigned one custom rule.

Custom roles can be created/updated via the ACF's App Control Manager:

Step 1: In the App Control Manager, click **Manage App >> Rules**.

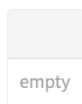
Step 2: If updating an existing rule, modify the rule(s), as applicable, in the Current Rules section, then click **Update** (the **Update** button is only enabled when there is an existing rule).

Manage App Rules

Create custom rules, based on custom controls, that can further control Consumer access to the app.

Current Rules:

Existing rules can modified here.



Step 3: If creating a new rule, click **+ Rule**.

NOTE: multiple rules can be added/removed as required. Rules can be removed by clicking **- Rule**.

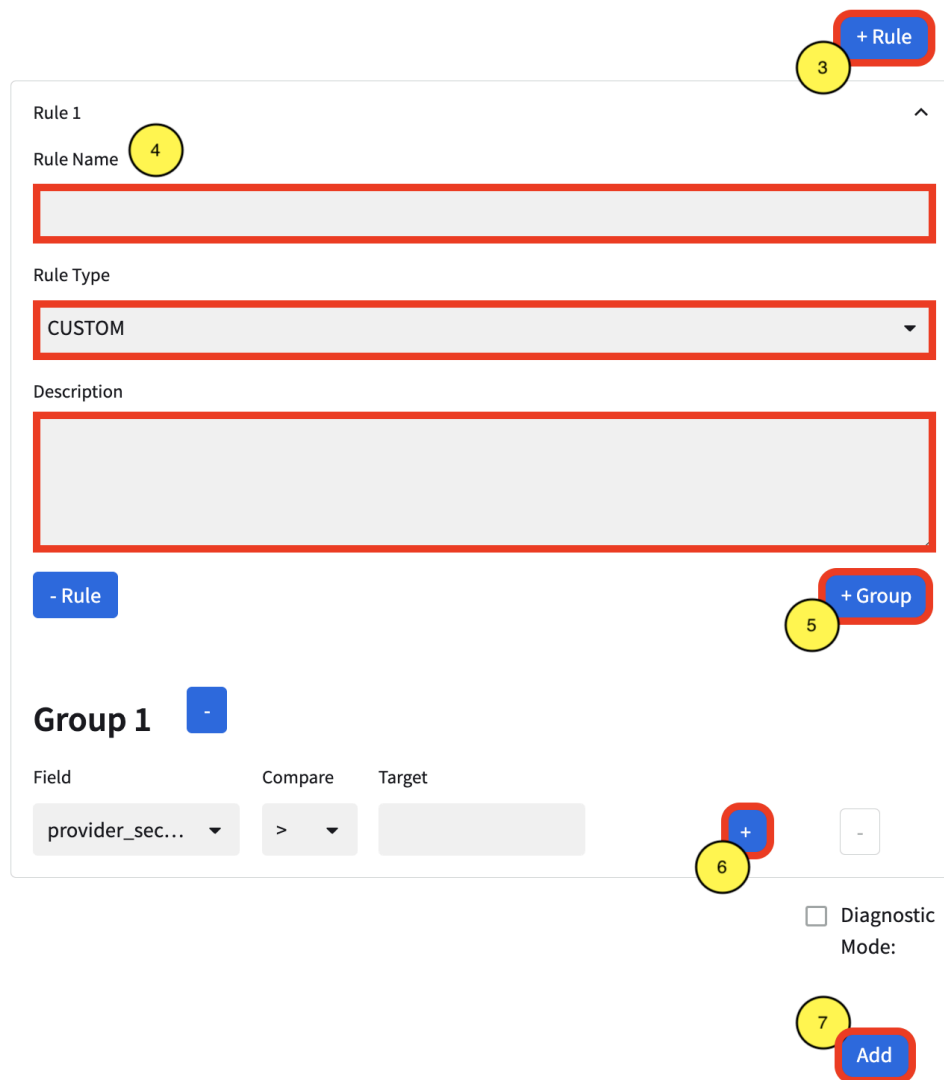
Step 4: Add a Rule Name, and Description (currently the only Rule Type is **CUSTOM**).

Step 5: In Group 1, select the Field, the Compare operand, and the Target value for the first condition. Click the (+) button to repeat for additional conditions. Conditions can also be removed by clicking the - button, next to each condition.

Step 6: If Group 1 should be compared to another group, click **+ Group** and repeat Step 5. Groups can also be removed by clicking the (-) button next to each group name.

Step 7: Once the rule groups/conditions are set, click **Add**.

Add New Rules:



The screenshot shows the 'Add New Rules' interface with several numbered callouts:

- 3:** Points to the '+ Rule' button in the top right corner.
- 4:** Points to the 'Rule Name' text input field.
- 5:** Points to the '+ Group' button located below the description field.
- 6:** Points to the '+' button used to add new conditions within a group.
- 7:** Points to the 'Add' button at the bottom right of the interface.

The interface includes the following elements:

- Rule 1** header with an expand/collapse arrow.
- Rule Name:** A text input field.
- Rule Type:** A dropdown menu currently set to 'CUSTOM'.
- Description:** A large text area.
- Rule** button to remove the rule.
- Group 1** section with a minus button to remove the group.
- Field:** A dropdown menu currently showing 'provider_sec...'.
- Compare:** A dropdown menu currently showing '>'.
- Target:** An empty text input field.
- + Group** button to add a new group.
- + / -** buttons to add or remove conditions within the group.
- Diagnostic Mode:** A checkbox labeled 'Diagnostic Mode:'.
- Add** button to save the rule.

Step 4: Enable Trust Center Security Enforcement (optional)

The ACF allows providers to leverage the Snowflake Trust Center to allow consumer access to their native app, if certain security measures are enabled in the consumer's Snowflake account. The provider can use the ACF's App Control Manager to select which Trust Center security measures, or scanners, to enforce. By default, this functionality is disabled, but can be enabled via the App Control Manager.

For more information on Snowflake's Trust Center, visit:
<https://docs.snowflake.com/en/user-guide/trust-center/overview>.

Step 1: In the App Control Manager, click **Manage App >> Trust Center**.

Step 2: Choose **Y** or **N** from the Use Trust Center to control access to the native app dropdown.

Step 2a: If **Y**, select the applicable Trust Center scanners that map to the security measures you want to enforce. **NOTE:** if scanners were previously selected, they will be automatically appear as selected.

Trust Center Enforcement

Use Trust Center to control access to the native app

Y

Please select one or more Trust Center Scanners to enforce to control access to the native app.

NOTE: Please do not edit the details below

	Select	Name	ID	Description (Short)
0	<input checked="" type="checkbox"/>	1.1	CIS_BENCHMARKS_CIS1_1	Ensure single sign-on (SSO) i
1	<input checked="" type="checkbox"/>	1.10	CIS_BENCHMARKS_CIS1_10	Limit the number of users with
2	<input type="checkbox"/>	1.11	CIS_BENCHMARKS_CIS1_11	Ensure that all users granted
3	<input type="checkbox"/>	1.12	CIS_BENCHMARKS_CIS1_12	Ensure that no users have AC
4	<input checked="" type="checkbox"/>	1.13	CIS_BENCHMARKS_CIS1_13	Ensure that the ACCOUNTAC
5	<input checked="" type="checkbox"/>	1.14	CIS_BENCHMARKS_CIS1_14	Ensure that Snowflake tasks e

Step 3: Click **Update**.

Step 5: Test the Application Logic

The ACF also includes scripts to build the provider's dev environment. This environment includes the source data, functions, and/or procedures that will be included in the provider's native app. Please refer to the **Application Control Framework - Detailed Design** document for a description of the objects created in this database.

Rather than building the application each time to test, the provider can test functions/procedures, as they will function in the native app, directly in their dev environment. The provider can call the functions/procedures directly from the dev environment.

Example:

```
--testing ENRICH stored procedure
USE ROLE P_<APP_CODE>_ACF_ADMIN;
USE WAREHOUSE P_<APP_CODE>_ACF_WH;

CALL P_<APP_CODE>_SOURCE_DB_DEV.PROCS_APP.ENRICH('<APP_CODE>'
,P_<APP_CODE>_SOURCE_DB_DEV.SOURCE_SCHEMA.SOURCE_TABLE,EMAIL,
,'P_<APP_CODE>_SOURCE_DB_DEV.RESULTS_APP.RESULTS_TABLE');
```

For the provider's convenience, the dev environment is created in the **P_<APP_CODE>_SOURCE_DB_DEV** database. Once each function/procedure passes testing, the objects are ready to be included in the native app. The ACF's App Control Manager streamlines the native app build and release process. The subsequent sections will outline the App Control Manager, and how to build and release a native app.

Step 6: Build the Native App

Once the ACF's Controls and Rules have been confirmed/updated, Trust Center enforcement has been configured, and the application functions and/or procedures have been successfully tested, the provider can build the native app. The ACF's App Control Manager can be used to build the native app. The following sections outline how to use the App Control Manager to build the native app.

Part 1: Create Test Application Package

The native app's application package consists of views of the native app's source data, along with views of the required ACF tables used to enforce the rules defined in the ACF and collect logs/metrics. Each native app listed in the Marketplace can have only one application package.

The ACF's App Control Manager allows the provider to create an application package by choosing the source data object(s) required for the native app, manage its versions and releases, and drop the application package.

The following steps detail how to create an application package via the App Control Framework:

Step 1: In the App Control Manager, click **Manage App >> App Package >> Create**.

Create Application Package Manage Application Versions



Click the button below to create a new Application Package

Create



Click the button below to create, patch, or drop a version

Versions

Promote Application Package



Click the button below to promote an application package to the PROD environment.

Promote

Drop Application Package



Click the button below to drop an application package.

Drop

NOTE: the Marketplace listing created from the application package must be first unpublished and deleted.

Step 2: Provide a name for the application package.

NOTE: This name will be prefixed by: **P_<APP_CODE>_APP_PKG_**. When creating the test application package, it is recommended to include a term that describes that this is a testing application package (i.e. 'TEST' or 'QA')

Step 3: If the P_<APP_CODE>_ACF_ADMIN role created the source data, select the P_<APP_CODE>_SOURCE_DB_DEV database. If the role does not own the source data, skip to **Step 6**, then see the [Source Data Ownership](#) section.

Step 4: Select the **DATA** schema from the Select Schema drop-down

Step 5: Select the applicable tables/views.

Step 6: Click **Create**.

Application Package Name *

SDE_DEMO

2

Please select source table(s)/view(s).

△ NOTE: The source table(s)/view(s) should be granted to the app admin role, prior to creating the application package.

Select Database:

P_SDE_1_6_SOURCE_DB_DEV

3

Select Schema:

DATA

4

Select Table/Views(s):

P_SDE_1_6_SO... x

5

☐ Diagnostic Mode:

Selected Source Data:

P_SDE_1_6_SOURCE_DB_DEV.DATA.CUSTOMER

Remove

Home

Back

6
Create

Source Data Ownership

A common occurrence when building native apps with the ACF is that the source data may not be owned by the **P_<APP_CODE>_ACF_ADMIN** role. When this occurs, the **P_<APP_CODE>_ACF_ADMIN** role must grant the data owner role privileges to the application package(s) and a stored procedure, **APP_PKG_SOURCE_VIEWS**, that manages the grants. This stored procedure can either **grant** or **revoke** privileges to source data. Once the **P_<APP_CODE>_ACF_ADMIN** role has granted privileges to the data owner role, the data owner must then create views of the source data and grant the views to the application package.

NOTE: The data owner role should also create a test copy of the source data in the **P_<APP_CODE>_SOURCE_DB_DEV.DATA** schema. This copy should consist of data that the **P_<APP_CODE>_ACF_ADMIN** can access and successfully works with the application logic.

Example (Data Owner gets privileges to app packages):

```
USE ROLE P_<APP_CODE>_ACF_ADMIN;
USE WAREHOUSE P_<APP_CODE>_ACF_WH;
CALL P_<APP_CODE>_ACF_DB.UTIL.GRANTS_TO_DATA_OWNER(TO_ARRAY('<PKG_LIST>'),
'<DATA_OWNER_ROLE>');
```

Example (Data Owner creates source data views and grants to app packages):

```
USE ROLE <DATA_OWNER_ROLE>;
USE WAREHOUSE <DATA_OWNER_WH>;
CALL P_<APP_CODE>_ACF_DB.UTIL.APP_PKG_SOURCE_VIEWS(TO_ARRAY('<TABLE_LIST>'),
TO_ARRAY('<PKG_LIST>'), '<ACTION>');
```

NOTES:

<APP_CODE> = the app's app code

<PKG_LIST> = the comma-separated list of application packages (i.e. 'pkg1,pkg2,pkg3')

<DATA_OWNER_ROLE> = the role that owns the source data

<TABLE_LIST> = the comma-separated list of source tables

<ACTION> = the action to take when calling the **APP_PKG_SOURCE_VIEWS** procedure. The only actions accepted are **GRANT** and **REVOKE**

Part 2: Create/Patch a Version for the Application Package

Once the application package is created, the application functions/procedures are tied to the application package by creating a version and a patch. When creating a new version, its initial patch number is 0. Each version can have up to 130 patches. Each patch has a setup script that contains the objects to be created in the consumer account, along with a manifest file that defines the privileges the app needs in the consumer account. For each version, a stage is created to store the setup script and the manifest files. When new versions or patches are created, the consumer upgrades the installed native app to get access.

The App Control Manager streamlines version management by allowing the provider to create, patch, or drop a version for each application package. When creating/patching a version, the provider can select the previously-tested functions/procedures directly from the dev environment. The function/procedure's DDL are dynamically added to the setup script, allowing them to be created in the consumer's account, during installation. An application package can only have 2 active versions at any given time.

The following steps detail how to create, patch, or drop a version and promote an application package to prod:

Step 1: In the App Control Manager, click **Manage App >> App Package >> Versions**.

Create Application Package



Click the button below to create a new Application Package

Create

Manage Application Versions



Click the button below to create, patch, or drop a version

Versions

Promote Application Package



Click the button below to promote an application package to the PROD environment.

Promote

Drop Application Package



Click the button below to drop an application package.

Drop

NOTE: the Marketplace listing created from the application package must be first unpublished and deleted.

Step 2: Select the **Application Package** from the Select Application Package drop-down.

Step 3: Select **CREATE** or **PATCH** from the Create, Patch, or Drop Version drop-down, depending on desired action.

Step 4: If **CREATE**, specify a Version Name. If **PATCH**, select the existing version.

Select Application Package

P_SDE_3_APP_PKG_ENRICHMENT

2

Create, Patch, or Drop Version

CREATE

3

Version Name

v1_0_0

4

Press Enter to apply

It is recommended to use major/minor versioning i.e.: [v1_0_0](#). This will also be the name of the stage that stores the setup scripts for this app version

Step 5: Select **FREE**, **PAID**, or **ENTERPRISE**, from the Select App Mode drop-down, depending on desired app version.

Step 6: Select **Y** or **N** from the Enforce Limits drop-down. By default, limits should be enforced, but this can be set to N if limit enforcement should be turned off (i.e. during testing).

Select App Mode

FREE

5

Enforce Limits

Y

6



Step 6: Select the environment to pull the **Streamlit** and **template** files from.

Please select environment containing the Streamlit artifacts.

⚠ **NOTE:** If the Streamlit artifacts have not changed since the latest release, choose **PROD**.

Environment:

DEV

▼

Please select environment containing the template files.

⚠ **NOTE:** If the template files have not changed since the latest release, choose **PROD**.

Environment:

DEV

▼

Step 7: Select the **Database** and **Schema**, then the source **Functions** required by the native app from the drop-down menus.

If any of the functions have been updated or yet to have been promoted to prod, the functions should be located in the **P_<APP_CODE>_SOURCE_DB_DEV.FUNCS_APP** schema. If there aren't any changes to the functions since being promoted to prod, reference the prod versions, in the **P_<APP_CODE>_SOURCE_DB_PROD.FUNCS_APP** schema.

NOTE: If these functions are to be made available to the consumer, select the **Accessible** checkbox next to the function under Selected Functions.

Please select source function(s).

△ NOTE 1: The source functions should be created by/granted to the app admin role, prior to creating the application package.

△ NOTE 2: If **NONE** of the source functions have changed since the latest release, choose **P_SDE_1_6_SOURCE_DB_PROD**, otherwise choose **P_SDE_1_6_SOURCE_DB_DEV**

Select Database:

P_SDE_1_6_SOURCE_DB_DEV

Select Schema:

FUNCS_APP

Select Function(s):

P_SDE_1_6_SO... ×

☐ Diagnostic
Mode:

Selected Functions:

☒ Accessible

P_SDE_1_6_SOURCE_DB_DEV.FUNCS_APP.JS_FACTORIAL(FLOAT)

Remove

Step 8: Select the **Database** and **Schema**, then the source **Procedures** required by the native app from the drop-down menus.

If any of the procedures have been updated or yet to have been promoted to prod, the procedures should be located in the **P_<APP_CODE>_SOURCE_DB_DEV.PROCS_APP** schema. If there aren't any changes to the procedures since being promoted to prod, reference the prod versions, in the **P_<APP_CODE>_SOURCE_DB_PROD.PROCS_APP** schema.

NOTE: If these procedures require an input table as a parameter, select the **Input Table** checkbox next to the function under Selected Procedures:

Please select source procedure(s).

△ NOTE 1: The source procedures should be created by/granted to the app admin role, prior to creating the application package.

△ NOTE 2: If **NONE** of the source procedures have changed since the latest release, choose **P_SDE_1_6_SOURCE_DB_PROD**, otherwise choose **P_SDE_1_6_SOURCE_DB_DEV**

Select Database:

P_SDE_1_6_SOURCE_DB_DEV

Select Schema:

PROCS_APP

Select Procedures(s):

P_SDE_1_6_SO... x

☐ Diagnostic
Mode:

Selected Procedures:

Input Table	Procedure
<input checked="" type="checkbox"/>	P_SDE_1_6_SOURCE_DB_DEV.PROCS_APP.ENRICH(VARCHAR, VARCHAR, VARCHAR, VARCHAR)

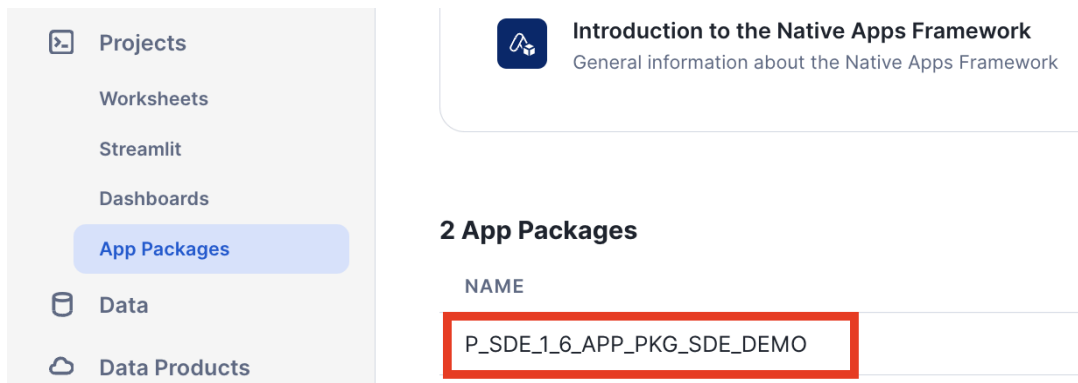
Remove

Step 9: Click the **CREATE** or **PATCH** button, depending on desired action to take.

Part 3: Release Patch

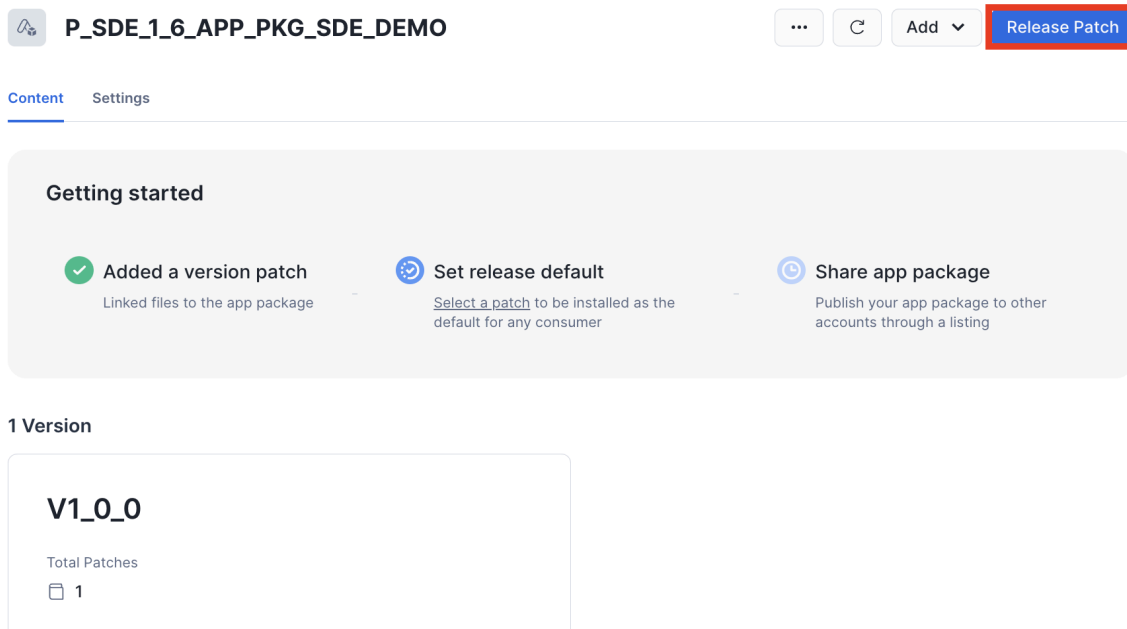
In order to grant consumers access to the latest version/patch, the provider must create a release for the application package. The following steps detail how to set/unset a Release Directive:

Step 1: In Snowsight, click **Apps >> Packages**. Select the application package created in [Part 2](#).



The screenshot shows the Snowflake Snowsight interface. On the left, a sidebar contains navigation options: Projects, Worksheets, Streamlit, Dashboards, App Packages (highlighted), Data, and Data Products. The main content area is titled 'Introduction to the Native Apps Framework' and '2 App Packages'. Below this, a table lists the packages. The first package, 'P_SDE_1_6_APP_PKG_SDE_DEMO', is highlighted with a red box.

Step 2: Click **Release Patch**.



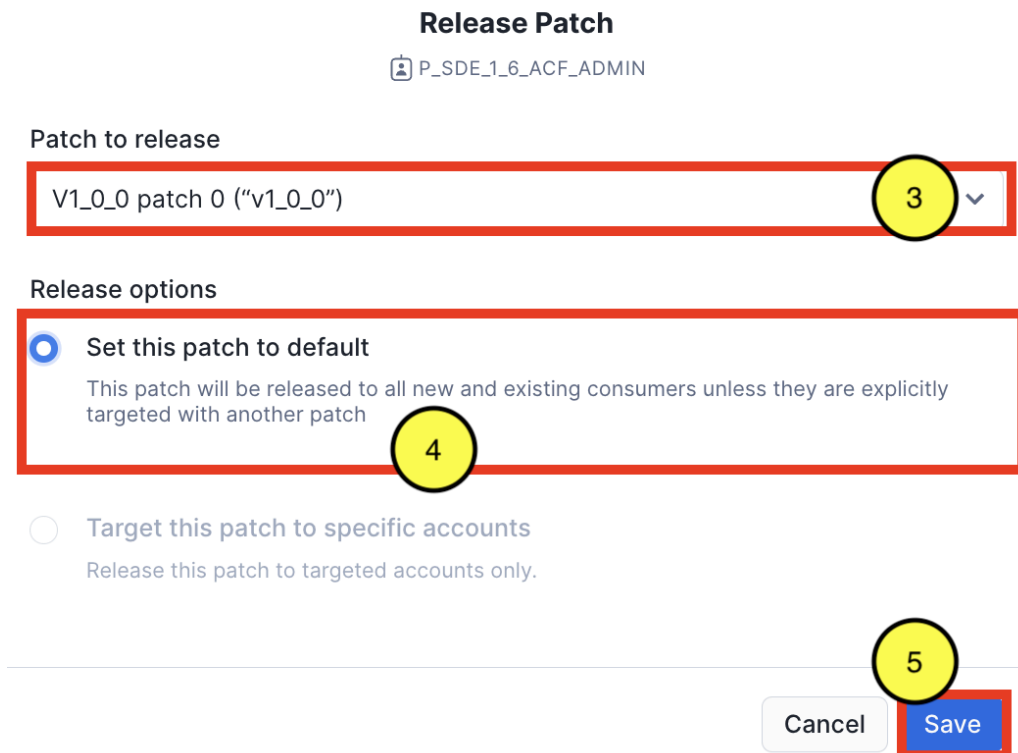
The screenshot shows the Snowflake Snowsight interface for the 'P_SDE_1_6_APP_PKG_SDE_DEMO' package. The 'Release Patch' button is highlighted with a red box. Below the button, there are three steps: 'Added a version patch', 'Set release default', and 'Share app package'. At the bottom, there is a section for '1 Version' showing 'V1_0_0' with 'Total Patches: 1'.

Step 3: Select the appropriate patch from the Patch to release drop-down.

Step 4: Choose either **Set this patch to default** (which allows all new and existing customers to get the update) or **Target this patch to specific consumers**.

- If **Target this patch to specific consumers** is selected:
 - Either create or select a targeted release group
 - Add account(s) to the group using the <organization_name>.<account_name> format.

Step 5: Click **Save**.



Release Patch

P_SDE_1_6_ACF_ADMIN

Patch to release

V1_0_0 patch 0 ("v1_0_0")

Release options

☒ **Set this patch to default**

This patch will be released to all new and existing consumers unless they are explicitly targeted with another patch

☐ Target this patch to specific accounts

Release this patch to targeted accounts only.

Cancel Save

Step 7: Create Test Application Listing

Once the application package has a released version and patch, the native app is ready to be privately listed. For instructions on how to create a Private Listing for the native app and add a test consumer account, visit the **Create a Listing for Your Application** section:

<https://docs.snowflake.com/en/developer-guide/native-apps/tutorials/getting-started-tutorial#publish-and-install-your-application>.

Step 8: Onboard Consumer (ENTERPRISE only)

Prior to installation, a consumer of the **ENTERPRISE** version of the app must first be onboarded to use the native app. This can be done via the App Control Manager.

When a consumer is onboarded, metadata is generated for the consumer, which regulates how they can use the app and tracks key metrics, such as number of installs, requests, etc. Default values are applied for each consumer, as defined in the METADATA_DICTIONARY table. However, certain default values can be overridden, if desired.

The following steps detail how to onboard a consumer:

Step 1: In the App Control Manager, click **Manage Consumers >> Onboard**.

Step 2: Click **+ Consumer**

Step 3: Enter the **Consumer Account** (Snowflake Account Locator), **Consumer Name**, and if desired, **Select Controls to Override Defaults**. If overriding defaults, enter the New Value for each control.

Step 4: If adding multiple consumers, click **+ Consumer** to add as many consumers as desired, repeating Step 3 for each. To remove a consumer from being onboarded, click **- Consumer**.

Step 5: Click **Onboard**.

NOTES:

- Consumers of the FREE and PAID version of the app are automatically onboarded, when the consumer shares events with the provider.
- Once the consumer is onboarded and events are received, they're automatically able to use the app.

Onboard a new Consumer, specifying the Consumer's Snowflake Account, Name, and any control default values to override.

+ Consumer

2

Consumer 1

Consumer Account:

SFPSCOGS

Consumer Name:

CLIENTA

Select Controls to Override Defaults:

limit × limit_interval × × ▾

3

☐ Diagnostic Mode:

Selected Controls:

Control:

limit

New Value:

3000000 Press Enter to apply

Control:

limit_interval

New Value:

Default: 1 day

4

Home

Back

Onboard

5

Step 9: Manage Consumer Controls (optional)

If desired, the App Control Manager can update values stored in a consumer's metadata:

Step 1: In the App Control Manager, click **Manage Consumers >> Manage**.

Step 2: Select **Consumer** from the Select Consumer drop-down.

Step 3: Select the **control(s)** to update from the Select Consumer Controls to Update drop-down

Step 4: In the **New Value** field, enter the updated value for each selected control.

Step 5: If the updated values should be applied to other or all consumers, click **Apply to Other Consumers**, then select either the applicable consumers or click **Select all**.

Step 6: Click **Update**.

Select Consumer:

CLIENTA

2

Select Consumer Controls to Update:

limit ×

limit_type ×

3

☐ Diagnostic
Mode:

Selected Controls:

Control:

limit

New Value:

Current: 5000000

4

Control:

limit_type

New Value:

Current: record_limit

5

☒ Apply to
Other
Consumers

Select Consumer(s):

Choose an option

☐ Select all

6

Home

Back

Update

Step 10: QA/Test the Native App

Install the native app available from the private listing. For instructions on how to install a native app, visit the **Install the Application** section

<https://docs.snowflake.com/en/developer-guide/native-apps/tutorials/getting-started-tutorial#id6>.

Once installed, test the application as required.

Step 11: Promote Application Package to Prod

Once the application has passed testing, it is ready to be promoted to the prod environment. This process creates the prod environment, **P_<APP_CODE>_SOURCE_DB_PROD**, cloning the **P_<APP_CODE>_SOURCE_DB_DEV** database and all of its objects. The **P_<APP_CODE>_SOURCE_DB_PROD** database will serve as the source for any production-ready application packages.

Step 1: In the App Control Manager, click **Manage App >> App Package >> Promote**.

Create Application Package



Click the button below to create a new Application Package

Create

Manage Application Versions



Click the button below to create, patch, or drop a version

Versions

Promote Application Package



Click the button below to promote an application package to the PROD environment.

Promote

Drop Application Package



Click the button below to drop an application package.

Drop

NOTE: the Marketplace listing created from the application package must be first unpublished and deleted.

Step 2: Select the applicable **application package** from the Select Application Package drop-down.

Step 3: Select the applicable **version** from the Select Version drop-down.

Step 4: Select the applicable **patch** from the Select Patch drop-down.

Step 5: Click **Promote**.

Promote Application Package

Select Application Package:

P_SDE_1_6_APP_PKG_FREE_STAGING 2

Select Version:

V1_0_0 3

Select Patch:

9 4

Promote 5

Step 12: Create Listing for Production-ready App

Repeat [Step 6](#) to create an application package for the production-ready code/objects and [Step 8](#) to onboard consumers (if privately listed).

Removals

The following sections detail how to remove the various components of the native app, from removing a consumer's access to the application, to removing the entire ACF from the provider's account.

Remove Consumer

In the event the provider should remove the consumer, the following steps detail how to remove a consumer:

Step 1: In the App Control Manager, click **Manage Consumers** >> **Remove**.

Step 2: Select **Consumer(s)** from the drop-down.

Step 3: Click **Remove**.

Select Consumer(s) to Remove:



Home

Back

Remove

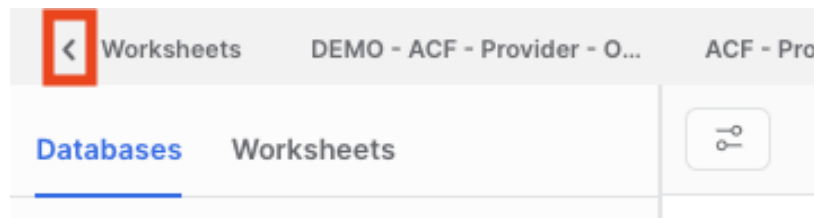
Remove Listing

The following details how to remove the private listing, in the event the provider wants to remove the private listing, in order to remove the native app.

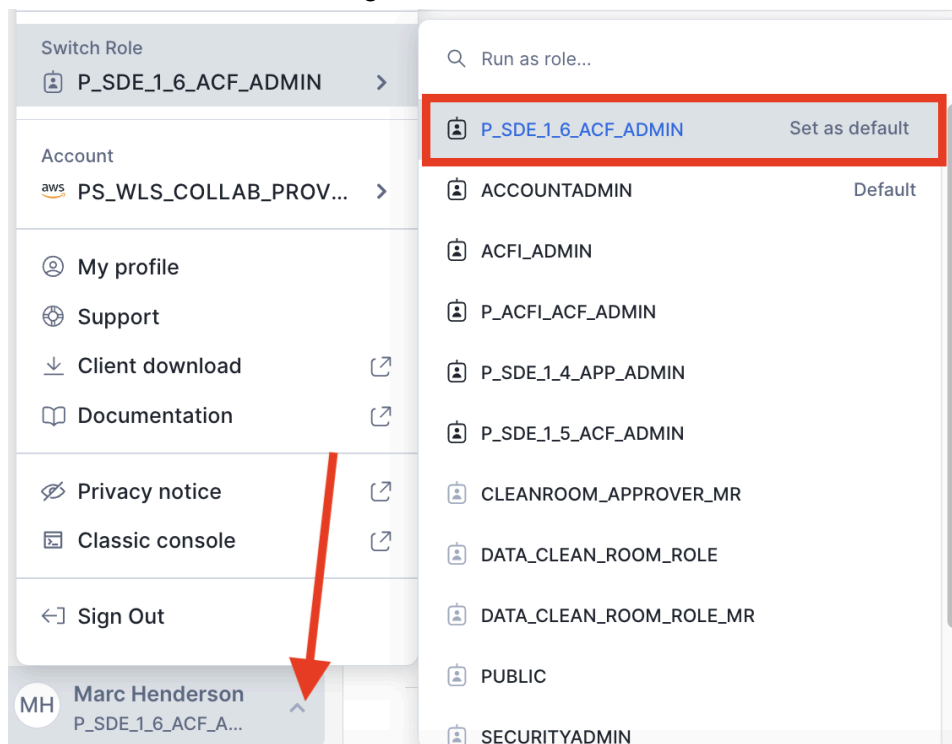
NOTE: This does not remove the application from the provider's account. Consumers will no longer have access to the application.

Step 1: Log into **Snowsight**.

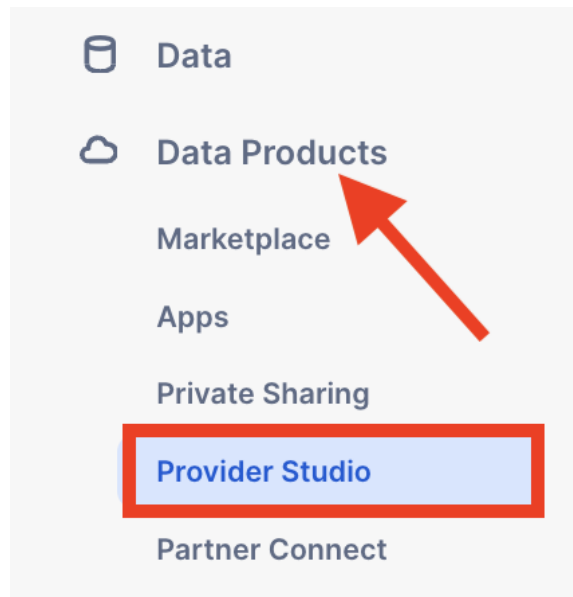
Step 2: Once logged in, if not at the Snowsight home screen, click the **Back** button, in the top left area of the UI, to open the left navigation menu.



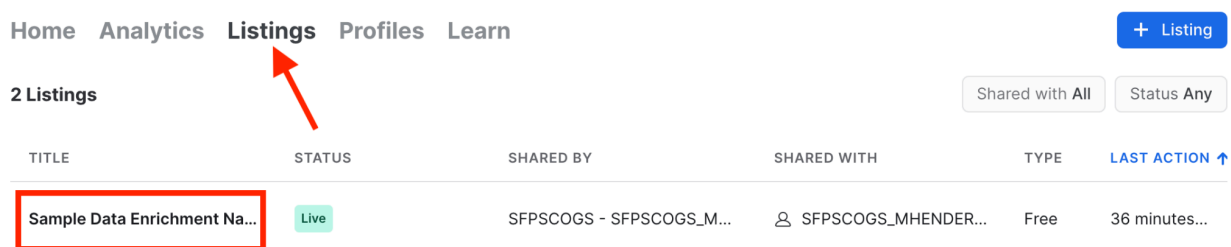
Step 3: Switch to the **P_<APP_CODE>_ACF_ADMIN** role, by clicking the drop-down in the bottom left area of the UI, then hovering over the Switch Role menu item.



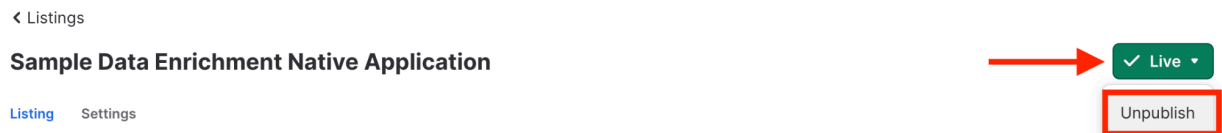
Step 4: Click **Data Products**, then **Provider Studio**.



Step 5: Click the **Listings** tab and select the listing for this application.



Step 6: Click **✓ Live**, then **Unpublish**. When the dialog box appears, click **Unpublish**.



Unpublish Listing

Sample Data Enrichment Native Application will no longer be visible to the selected consumers. However, those who have gotten your data product will continue to have access to it.

Cancel

Unpublish

Step 7: Delete the listing, by clicking the **trashcan** icon. When the dialog box appears, click **Delete**.

< Listings

Sample Data Enrichment Native Application



Preview

Publish Listing

Delete Listing

Sample Data Enrichment Native Application will be deleted, and all existing consumers will lose access to the data. Make sure to inform your consumers so as not to break their applications.

Are you sure you want to delete this listing?

Cancel

Delete

Drop Version

The following steps detail how to remove a version for a particular application package:

Step 1: In the App Control Manager, click **Manage App >> App Package >> Versions**.

Create Application Package



Click the button below to create a new Application Package

Create

Manage Application Versions



Click the button below to create, patch, or drop a version

Versions

Promote Application Package



Click the button below to promote an application package to the PROD environment.

Promote

Drop Application Package



Click the button below to drop an application package.

Drop

NOTE: the Marketplace listing created from the application package must be first unpublished and deleted.

Step 2: Select the **application package** from the Select Application Package drop-down.

Step 3: Select **DROP** from the Create, Patch, or Drop Version drop-down, depending on desired action.

Step 4: Select the **version** from the Select Version drop-down, depending on desired action.

Step 5: Click **DROP**.

Application Package Versions

Select Application Package

P_SDE_1_6_APP_PKG_FREE_STAGING

2

Create, Patch, or Drop Version

DROP|

3

Select Version:

V1_0_0

4

Home

Back

Drop

5

Remove Application Package

The following steps detail how to remove an application package.

NOTE: Any listing using the application package should be unpublished and deleted prior to removing the application package.

Step 1: In the App Control Manager, click **Manage App >> App Package >> Drop**.

Create Application Package



Click the button below to create a new Application Package

Create

Manage Application Versions



Click the button below to create, patch, or drop a version

Versions

Promote Application Package



Click the button below to promote an application package to the PROD environment.

Promote

Drop Application Package



Click the button below to drop an application package.

Drop

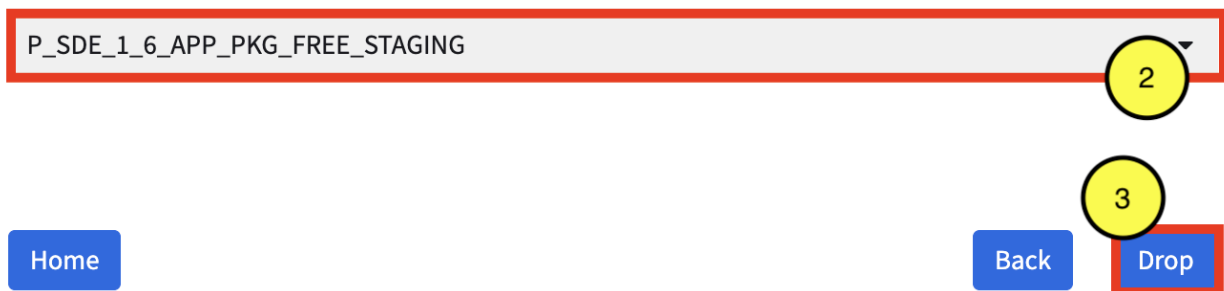
NOTE: the Marketplace listing created from the application package must be first unpublished and deleted.

Step 2: Select the **application package** from the Select Application Package drop-down.

Step 3: Click **DROP**.

Drop Application Package

Select Application Package



P_SDE_1_6_APP_PKG_FREE_STAGING

Home Back Drop

Remove ACF

The following steps detail how to remove In the event the provider should remove the native app, and the ACF itself (including all consumer logs/metrics and metadata):

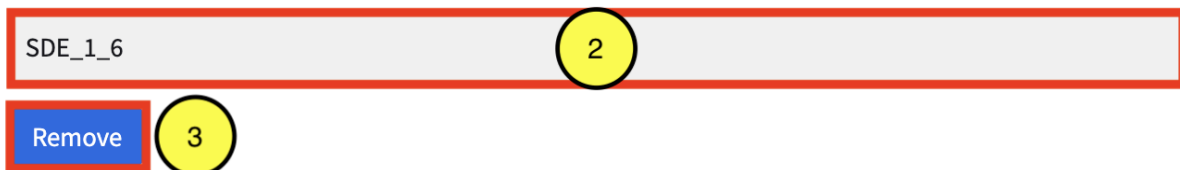
NOTE: a user granted `ACCOUNTADMIN` is required to perform this action

Step 1: In the App Control Manager, click **Remove ACF**.

Step 2: Type the **App Code** (in **red**) to confirm removal.

Step 3: Click **Remove**.

Type: **SDE_1_6** to confirm removal.



SDE_1_6

Remove

Remove App Events from Event Account

The next step is to remove the app's events and the objects used to stream and share events to the main account from the event account.

On a worksheet in the event account, execute the following:

```
USE ROLE ACCOUNTADMIN;  
USE WAREHOUSE <APP_CODE>_EVENTS_WH;  
CALL EVENTS.EVENTS.REMOVE_APP_EVENTS (TO_ARRAY ( '<APP_CODE>' ) );
```

NOTES:

- <APP_CODES> = a comma-separated string of app code(s) to create streams/tasks for.
- Events for multiple apps can be removed at once, using this command.

Remove All Events from Event Account (Optional)

To fully remove all event tables, shares, listings, etc created in the event account, on a worksheet, execute the following:

```
USE ROLE ACCOUNTADMIN;  
USE WAREHOUSE <APP_CODE>_EVENTS_WH;  
CALL EVENTS.EVENTS.REMOVE_ALL_EVENTS ();
```