IT Procurement App

Creators Low Code App Build Lab Guide

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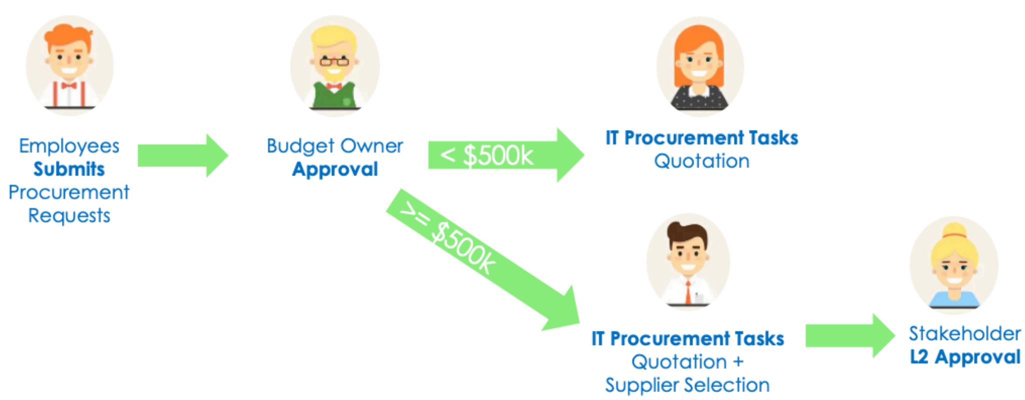
Lab Overview

In our lab scenario, we will role play the IT Procurement team receiving IT procurement requests from the organization's users. Prior to creating Purchase Requisition (PR) or Purchase Orders (PO) on ERP systems, the IT procurement team will need ensure the following steps are completed:

1. Check that the supplier is onboarded from an internal homegrown system. For this exercise, we will assume all requested suppliers are already onboarded, and we will be integrating with the MySQL database of the homegrown Procurement system to retrive registered suppliers' information.

2. Dependent on the requested budget, ensure the list of procurement tasks and approvals are completed prior to proceeding with the Purchase Requisition (PR) or Purchase Orders (PO) process on ERP systems.

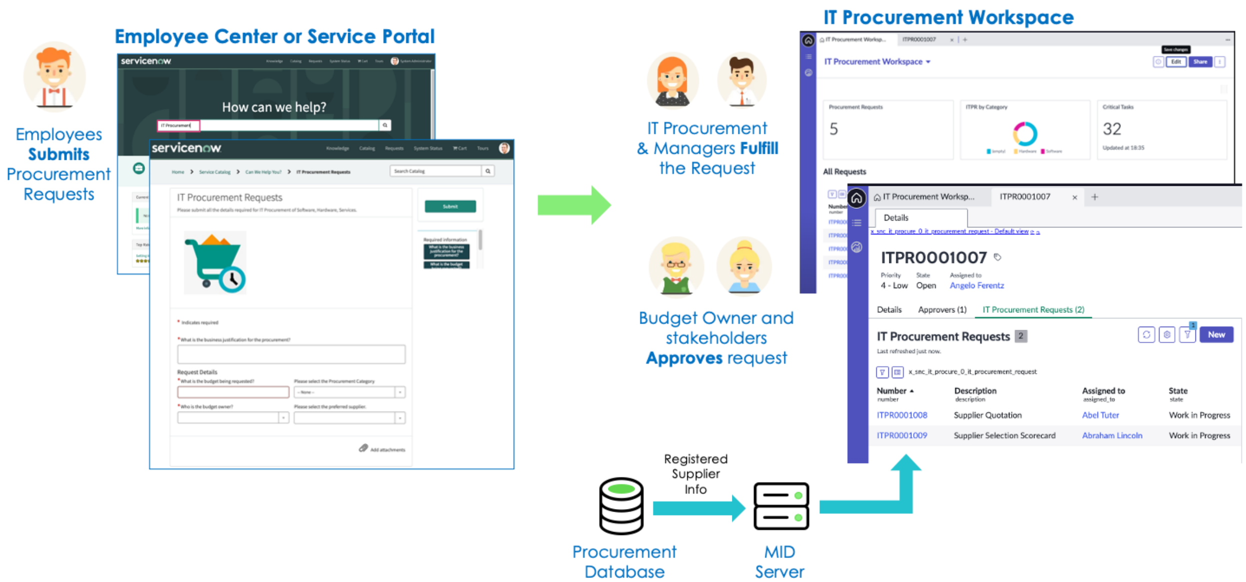
Requested Budget	# of Suppliers Required	Procurement Tasks	Levels of Approval
< 500k	1 (Primary)	Quotation	1 (Budget Owner)
>= 500k	2 (Primary & Secondary)	Quotation Suppliers Selection Scorecard	1 (Budget Owner) 2 (Stakeholder)



When all the pre-requisites procurement tasks and approvals are completed and obtained. The typical process would be for procurement to create the PR and PO on the ERP. ServiceNow has OOTB integration spokes that integrate with ERP systems whereby ServiceNow becomes the single layer of enagement streamlining all procurement backoffice ERP activities.

In this lab, we will focus in the automation of IT Procurement Request fulfillment by building a Low Code IT Procurement App. ERP integrations will not be included in this workshop.

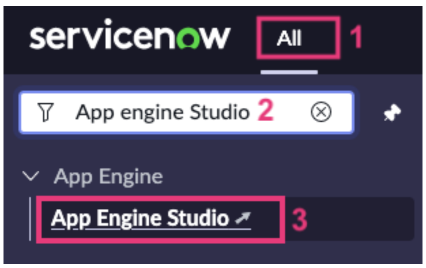
The diagram below summaries the architecture of our IT Procurement App on a high level. A MID Server will be validated to be used for connecting the ServiceNow instance with the Procurement MySQL database hosted on AWS cloud.



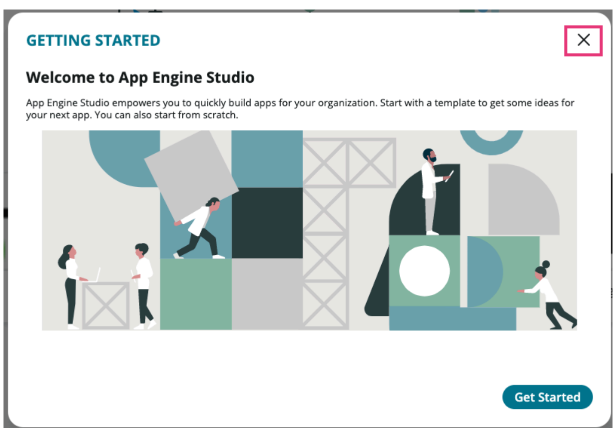
Exercise 1: Build Data Tables / Models

Create the IT Procurement Application

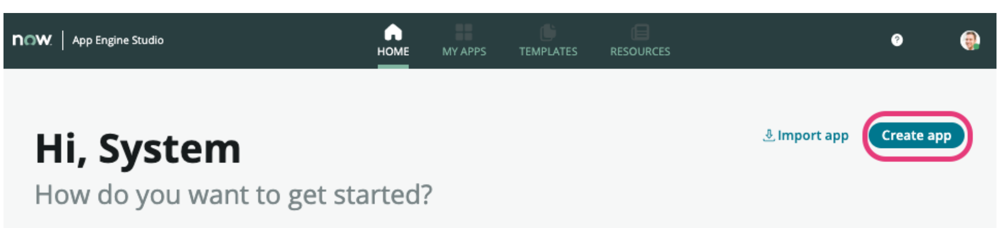
1. Let's begin our ServiceNow Creators Low Code journey by logging into the ServiceNow Lab Instance. Once logged in, search for **App Engine Studio** from the **All** navigator. Click **App Engine Studio** (AES) to launch AES in a new tab. Access AES from the new tab.



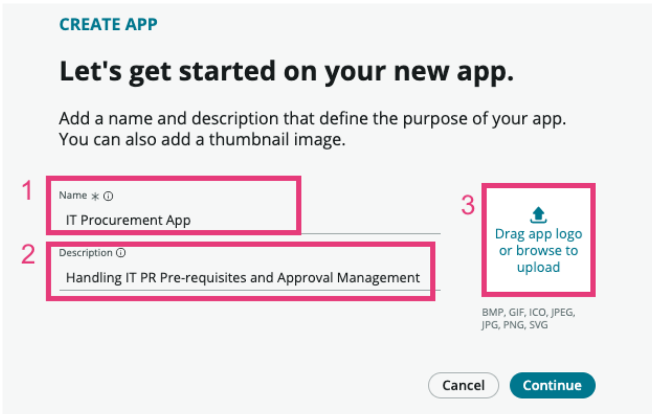
2. Click X to close the GETTING STARTED dialog.

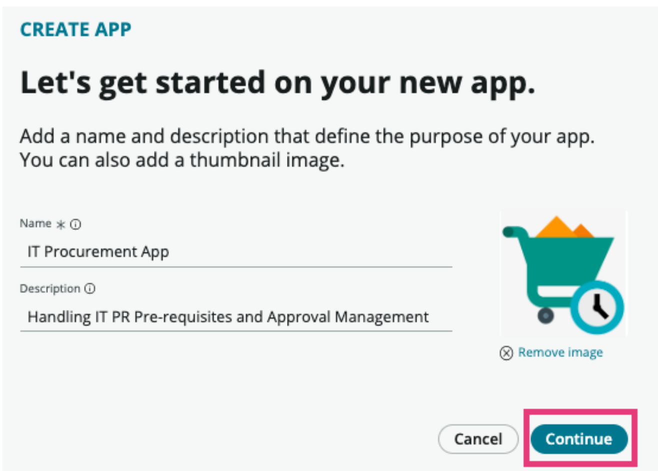


3. Click **Create app**

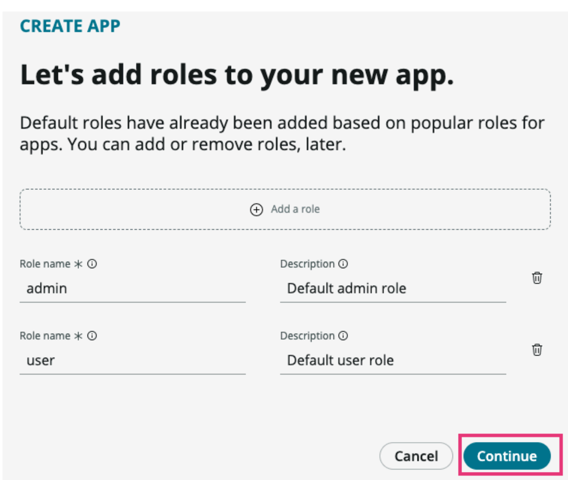


4. On the Create App page, **Name** the app as **IT Procurement App**, **Description** as **Handling IT PR Pre-requisites and Approval Management**. Optionally, upload an image to be used for the application logo. Click **Continue**.

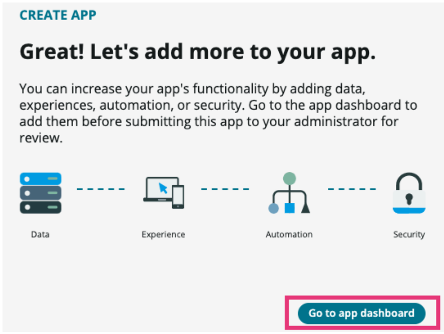




5. Leave the default user roles (admin and user) and click **Continue**



6. Click **Go to App Dashboard**. We have successfully created a scoped application on the Now platform called IT Procurement Application.

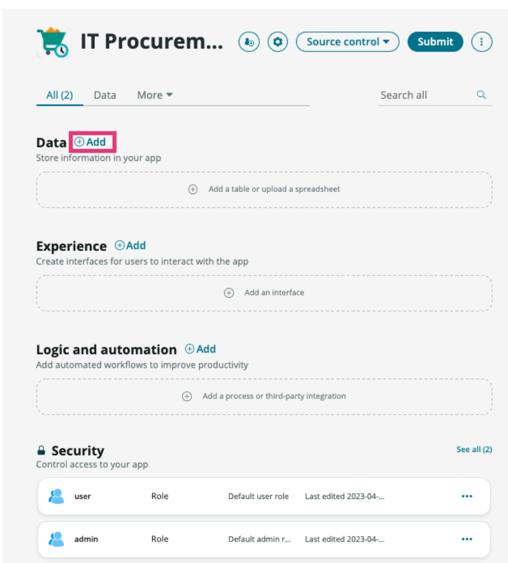


Next, we will create two data tables (models) the IT Procurement Application:

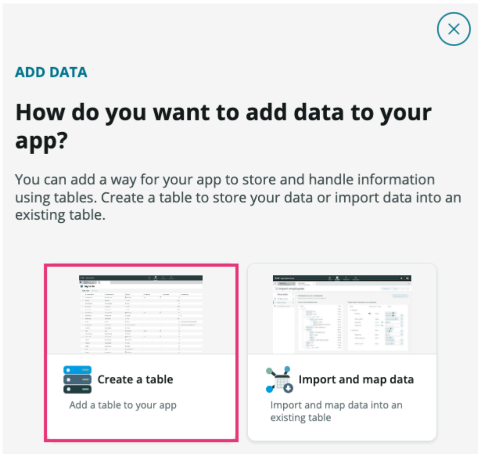
1. Suppliers – stores registered supplier information.
2. IT Procurement Request – stores each IT Procurement request raised by end users

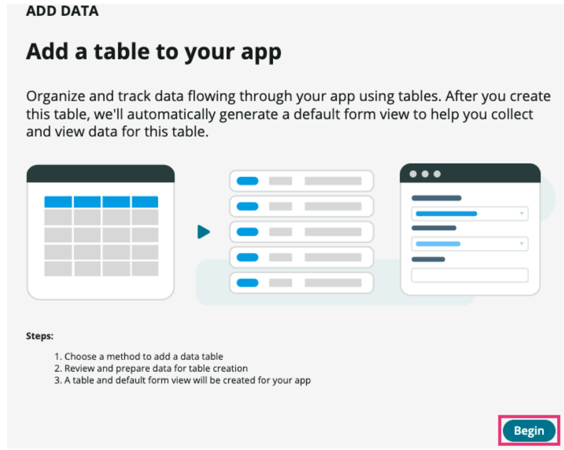
Create the Suppliers Data Table

1. Let's start building the first app component by adding the Suppliers Data model. Click **+ Add** in the Data section.

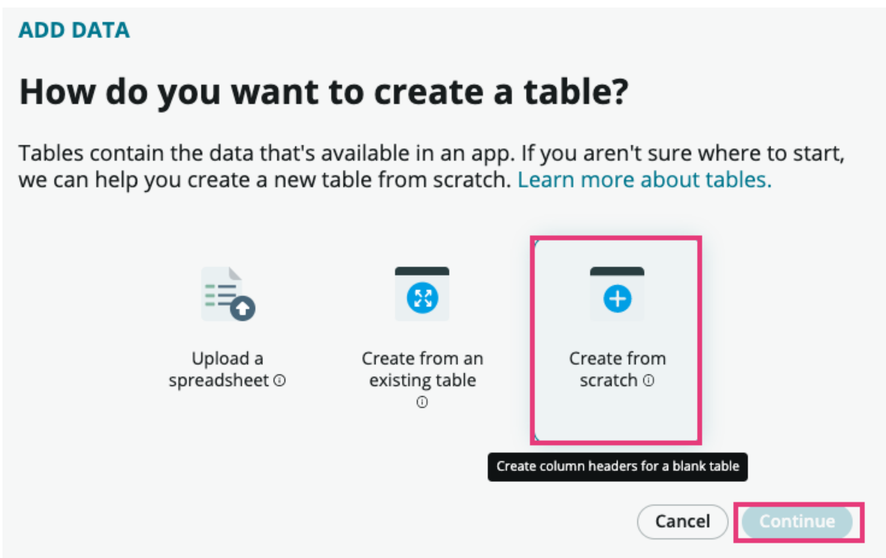


2. Click **Create a table** and click **Begin**.



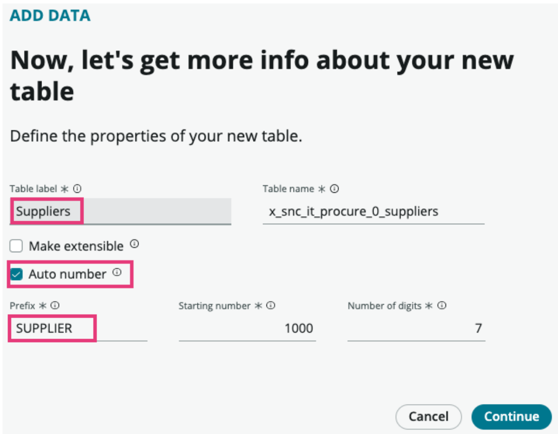


3. We are going to **Create from scratch** and click **Continue**.

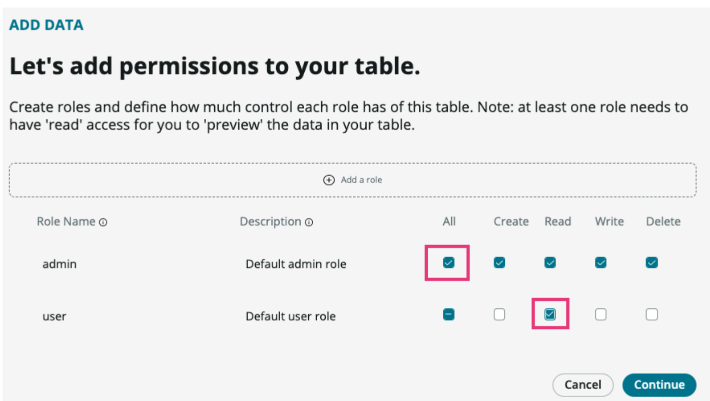


4. Define the **Suppliers** table with:
   - Table label: **Suppliers**
   - Check **Auto number**
   - Auto number **Prefix: SUPPLIER**

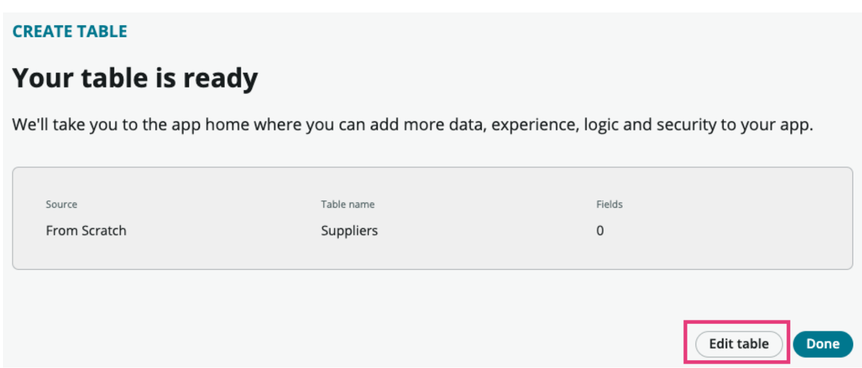
   Click **Continue**.



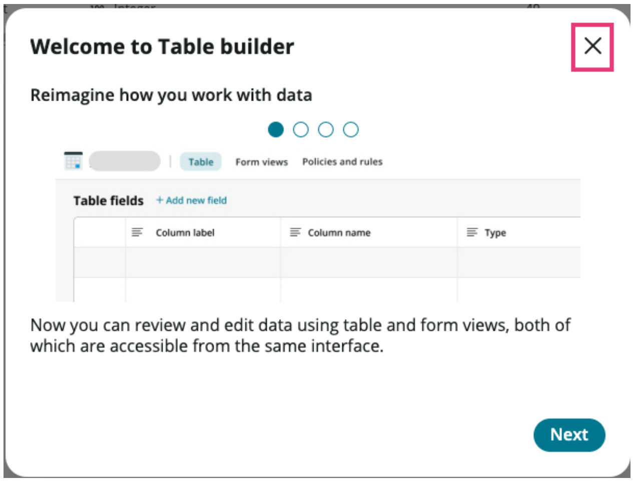
5. On **Let's add permissions to your table**, allow **All** access for **admin** role and **Read** access for **user** role. Click **Continue**.



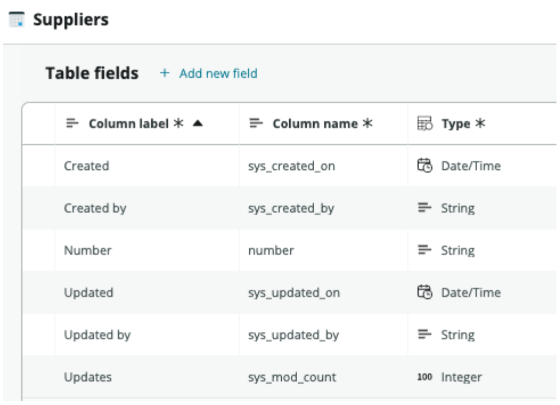
6. Click **Edit table** from the **Your table is ready** screen. The **Suppliers Table builder** tab will open.



Click **X** to close the **Welcome to Table Builder dialog**.



Note there are *six* default data fields in every custom table created on the Now platform.



Column label *	Column name *	Type *
Created	sys_created_on	Date/Time
Created by	sys_created_by	String
Number	number	String
Updated	sys_updated_on	Date/Time
Updated by	sys_updated_by	String
Updates	sys_mod_count	100 Integer

7. Let's add new data fields to the **Suppliers** table, here is a summary of the data fields that needs to be added:

Column Label	Type	Max Length	Display
Supplier	String	100	On
Supplier Address	String	200	
Procurement System Supplier ID	String	Default (40)	
Contract Status	Choice (Dropdown with –None--): • In Progress • Active		
Compliance Status	Choice (Dropdown with –None--): • In Progress • Active		

Click **+ Add new field**.

Enter the new field **Column Label** as **Supplier** which has **String** **type** and **Max length** of **100**. Toggle **Display** **ON**. Click **Done**. The purpose of turning display on is so when the

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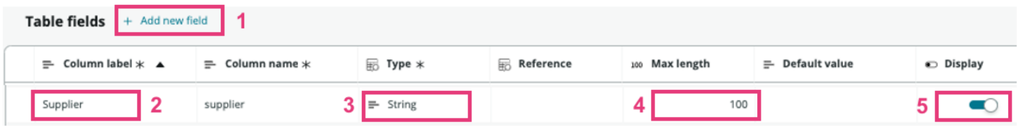
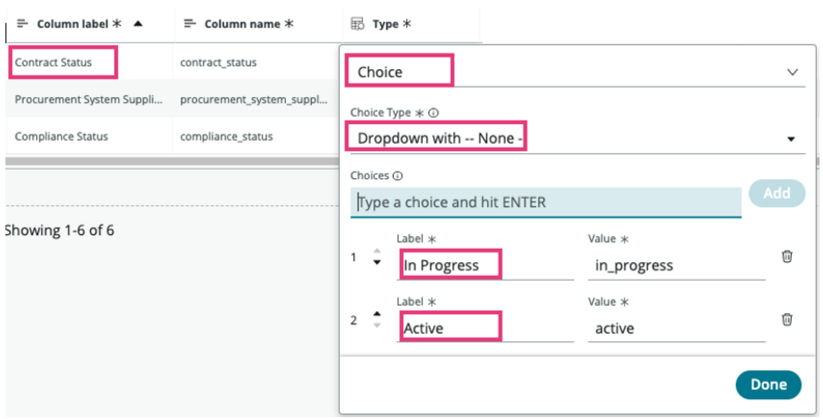
Suppliers table is referenced by another table, the Supplier name (field) will the default field to be displayed.

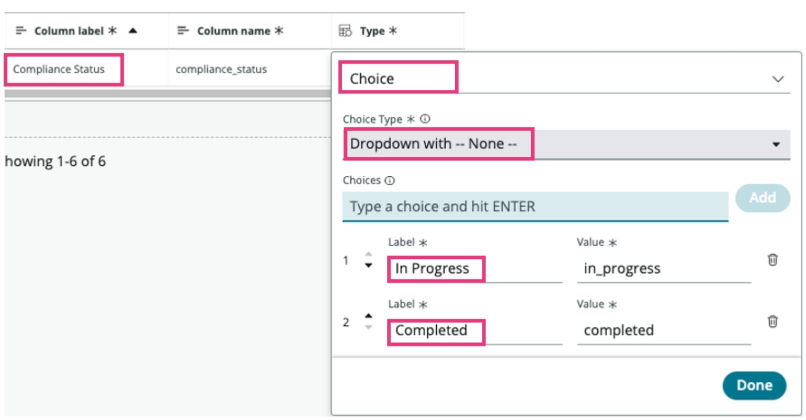


8. Click **+ Add new field**. Enter the new field **Column Label** as **Contract Status** has **Choice type** of **Dropdown with – None -**, where the choices are **In Progress** and **Active**. Click **Done**.

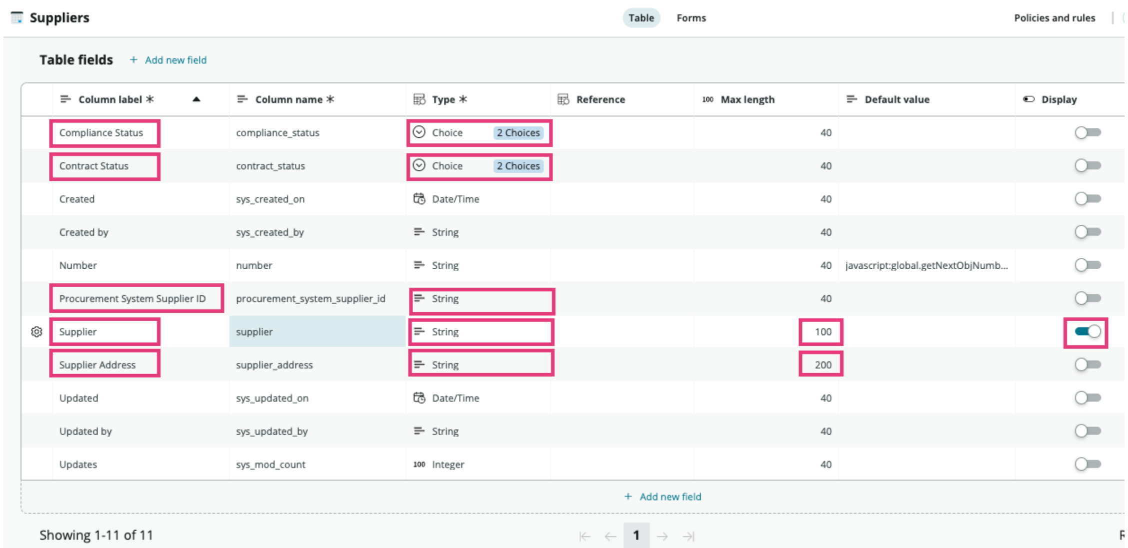


9. Click **+ Add new field**.

   The **Compliance Status** new field has **Choice** type of **Dropdown with – None -**, where the choices are **In Progress** and **Completed**. Click **Done**.

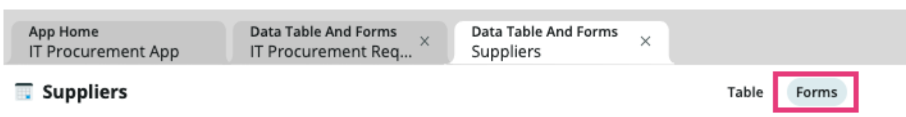


10. Continue to add **Supplier Address** and **Procurement System Supplier ID** new data fields and their configurations. When you are finished with new data fields configuration, the table should look similar to the following:



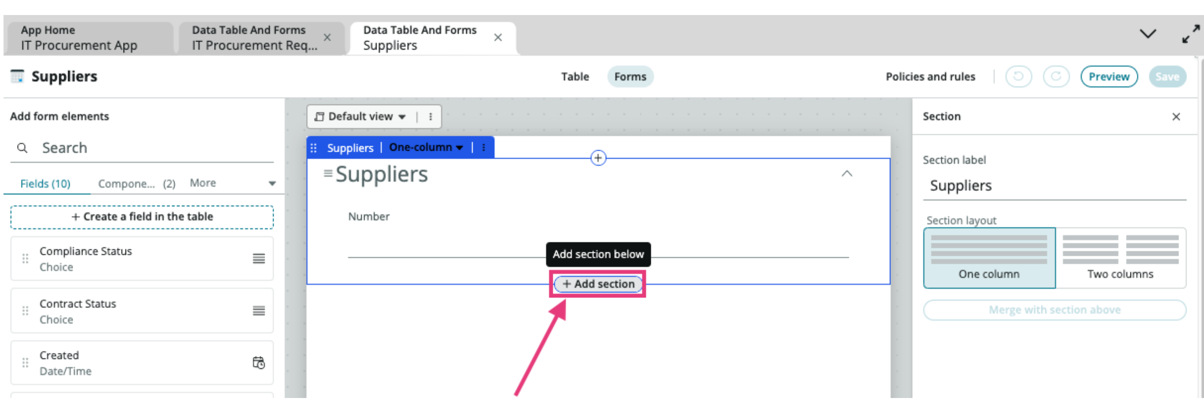
11. Click **Save** the changes made on the Suppliers table.

12. New we will configure the default form for the Suppliers table. Click **Forms** tab.

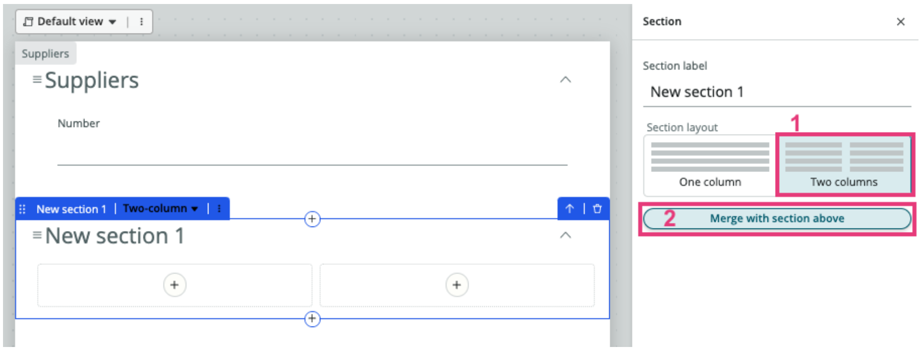


13. We would like to add the following data fields to the form:
    - Compliance Status
    - Contract Status
    - Procurement System Supplier ID
    - Supplier
    - Supplier Address
    - Updated

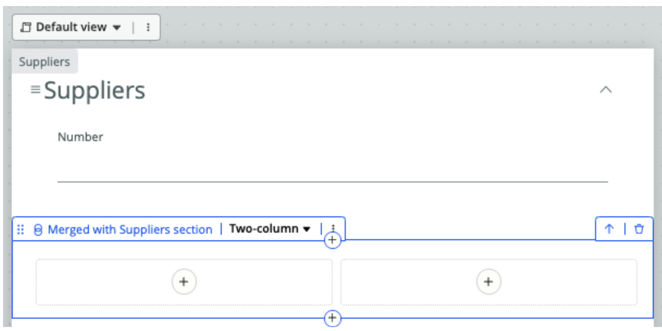
    Hover over to the Suppliers Section in the form editor. Click the **+ Add section** button to add a section below the default section.



From the Section configurator (right side), select the **section layout** as **Two columns** and **Merge with section above**.

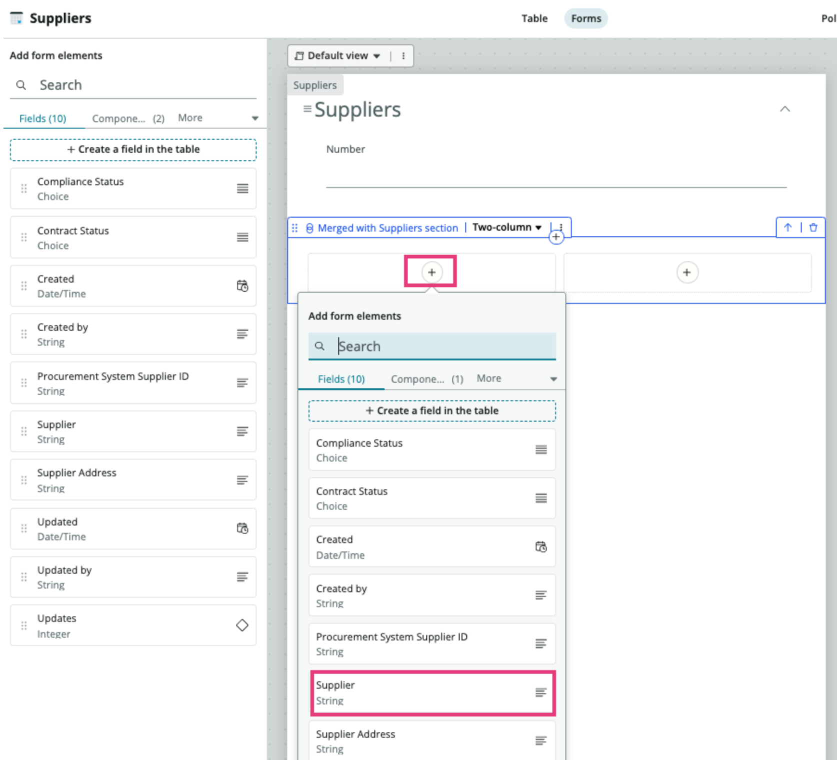


This is what the section show look like, a container with two columns:

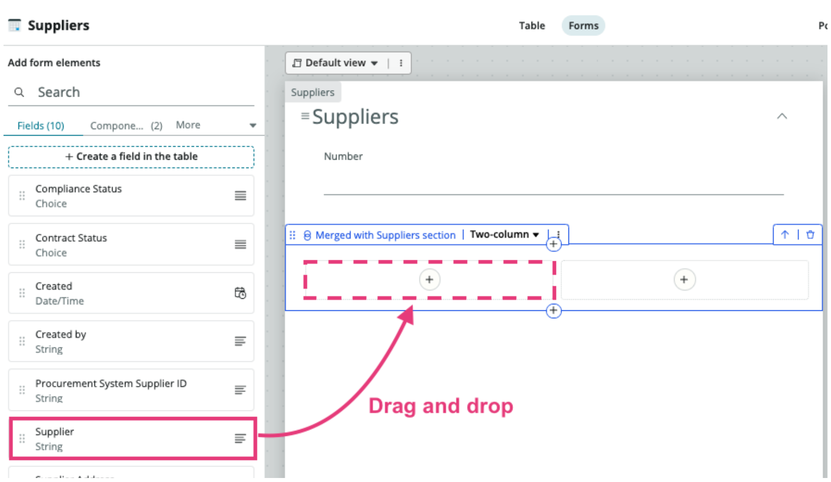


14. There are two ways to add data fields to the form, (a) from the form editor panel in the middle, click **+** in the the first colum of the two column container to add a field to the area or (b) alternatively, drag and drop fields from **Add form elements** on the left to the desired location in the form editor panel. We will add the following fields to the form layout:
    - Supplier
    - Supplier Address
    - Procurement System Supplier ID
    - Compliance Status
    - Contract Status
    - Updated

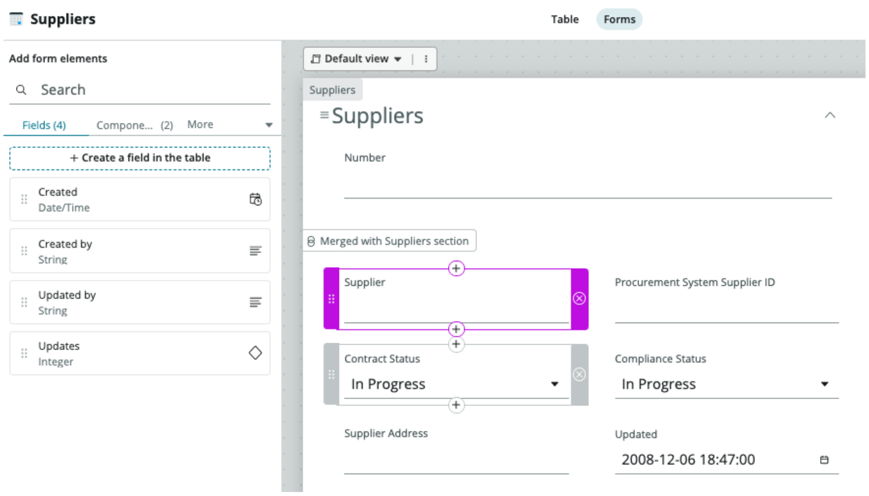
Click **+**, search for **Supplier** in the **Add form elements drop down list**, select **Supplier**.



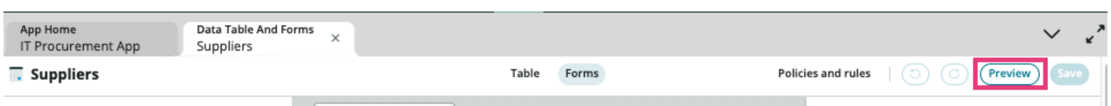
Alternatively, use the drag and drop method as shown below:



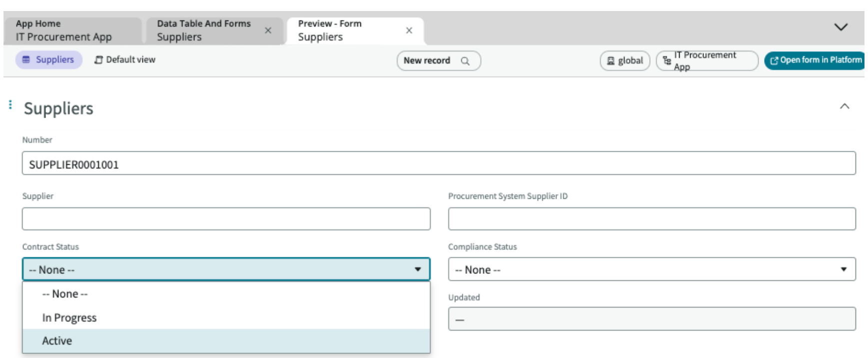
Continue with adding the rest of the data fields to the form. The form should look like the following after you have added all the fields to the form layout:



15. Click **Save** to save your changes.
16. You can **Preview** the form.



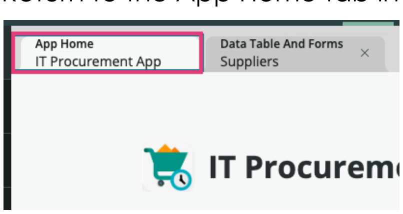
Close the **Preview – Form tab** after you have finished reviewing the form.



We have successfully completed our first **Suppliers** custom data table/model in the scoped IT Procurement App. **Close** the form preview tab.

Create the IT Procurement Request Table

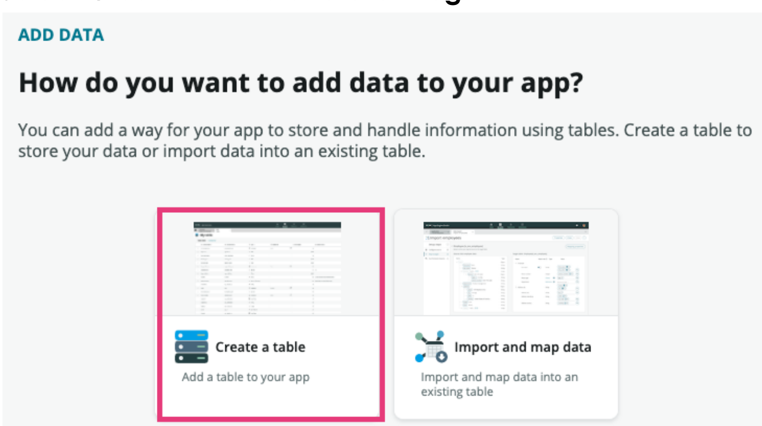
1. Return to the App Home tab in AES.

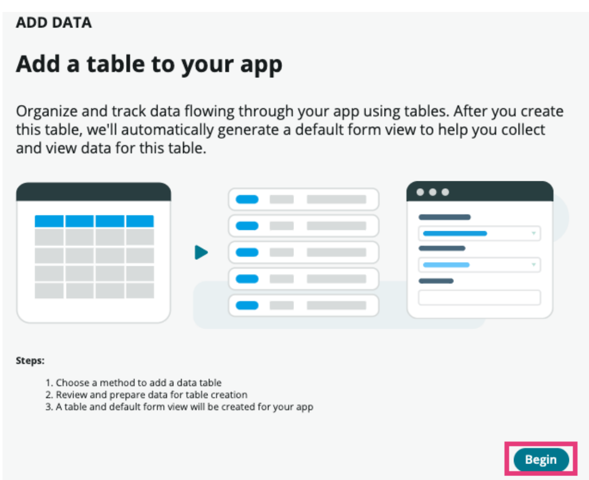


2. We will create a second data table for storing IT Procurement Requests to be raised by the end users.

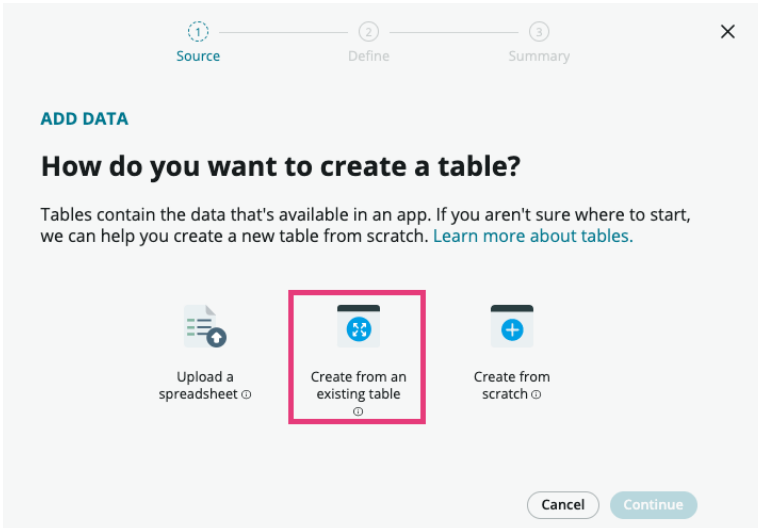
   Click **+ Add** data table.

3. Select **Create a Table** and click **Begin**

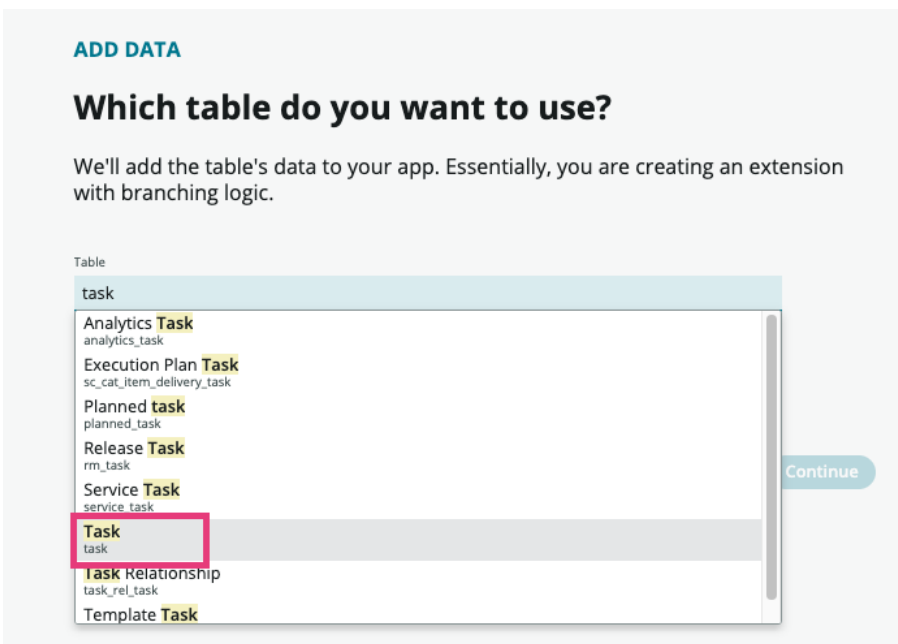




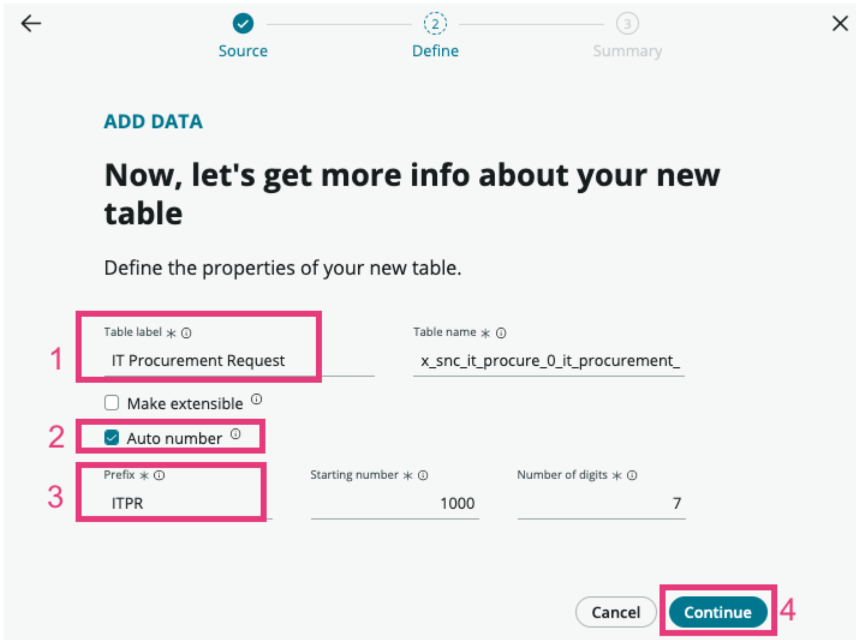
4. We will extend the **Task** data model so select **Create from an existing table**. And Click **Continue**.



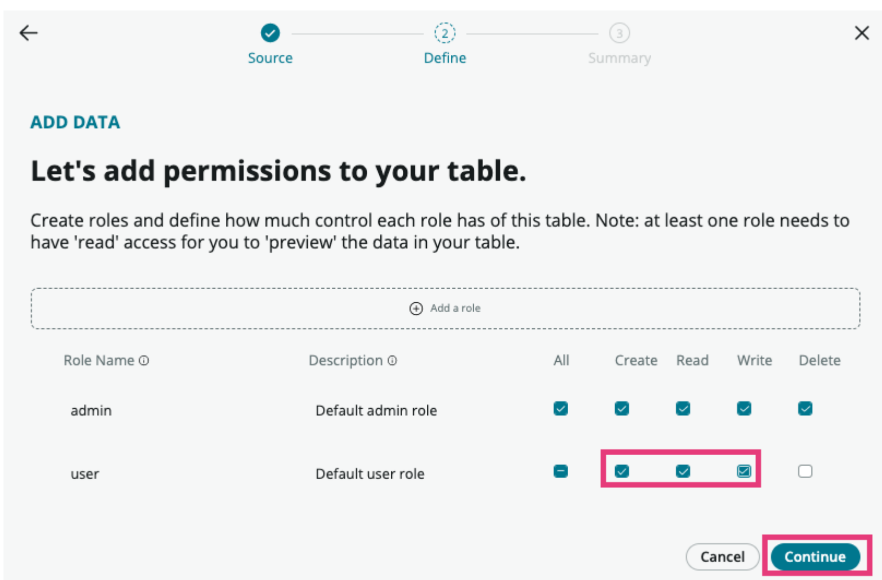
5. Search for the **Task [task]** table, select it and click **Continue**.



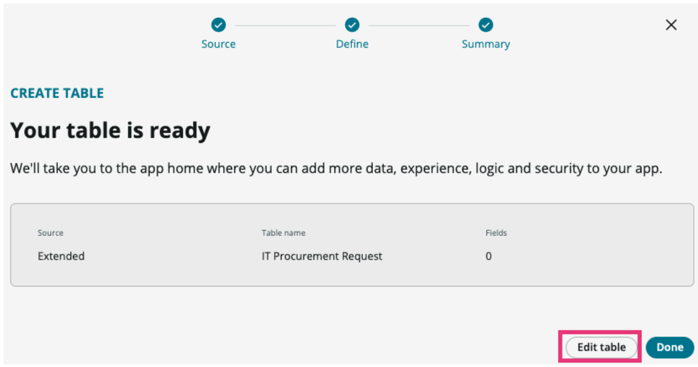
6. Enter **Table label** as **IT Procurement Request** and note that the **Table name** will be automatically populated. **Select Auto number** of the table entries. Enter Auto numbering **Prefix** as **ITPR** and click **Continue.**



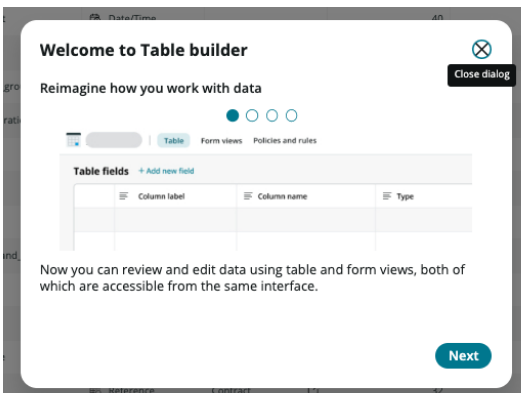
7. Allow the **admin** role with **All** rights access and **user** role with **Create / Read / Write** access to the **IT Procurement Request table**. Click **Continue**.



8. When the table is ready, click **Edit Table**

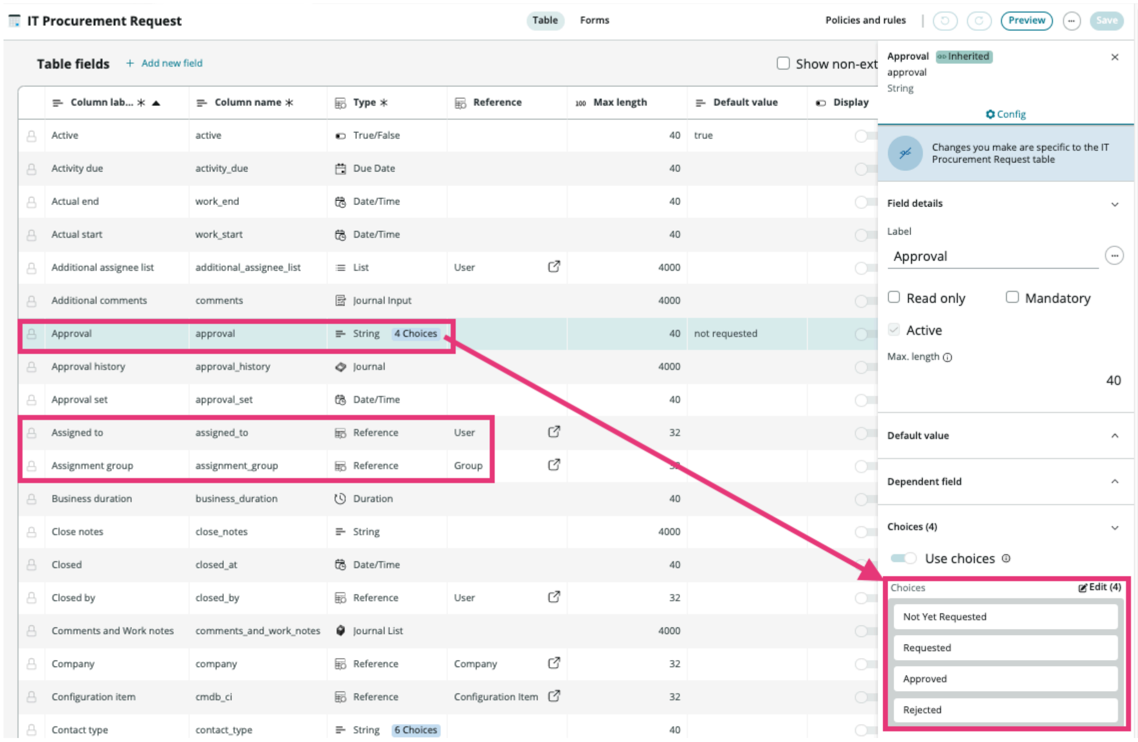


If the Welcome to Table builder message pops up, click **Close dialog**

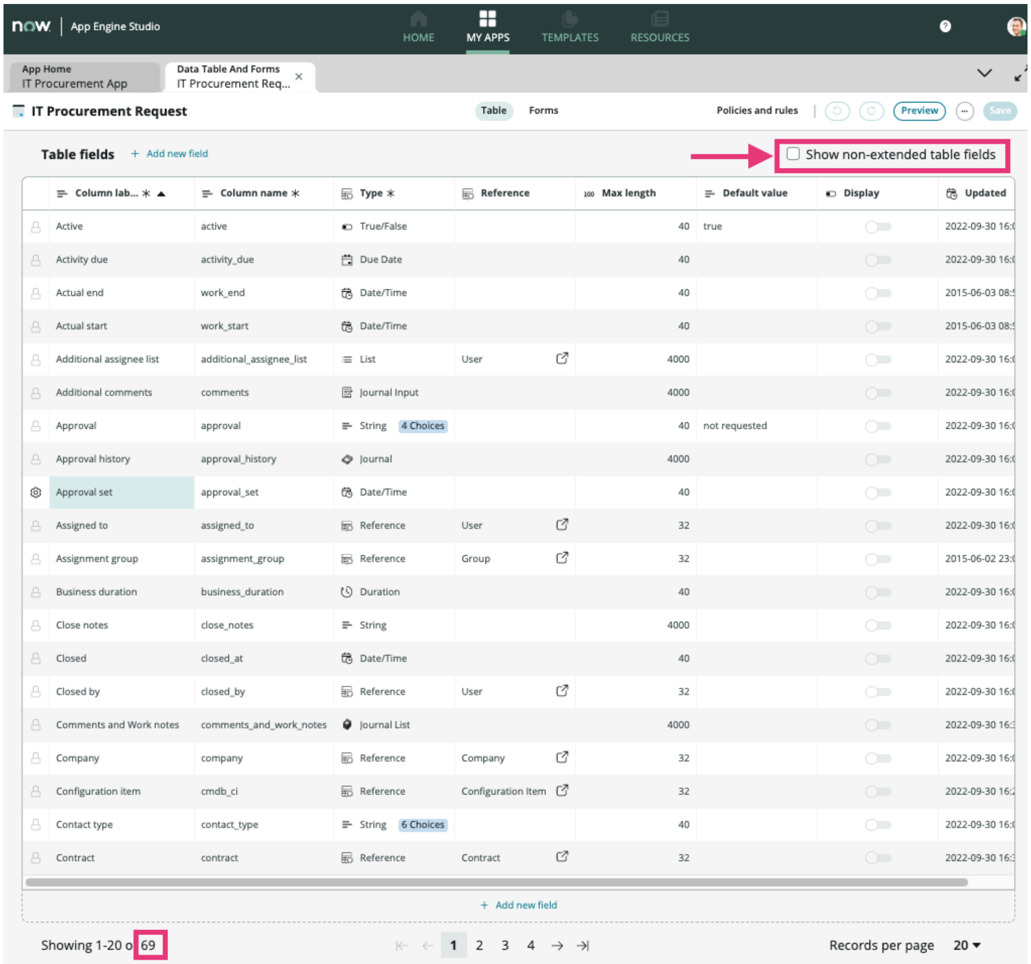


9. Since we have extended the IT Procurement Request table from the Task data table, there are 69 predefined data fields. We will be using some of these fields including:
    - Assigned to
    - Approval
    - Opened by (will be renamed to Requestor in this lab)
    - Parent
    - Approval history
    - Etc.

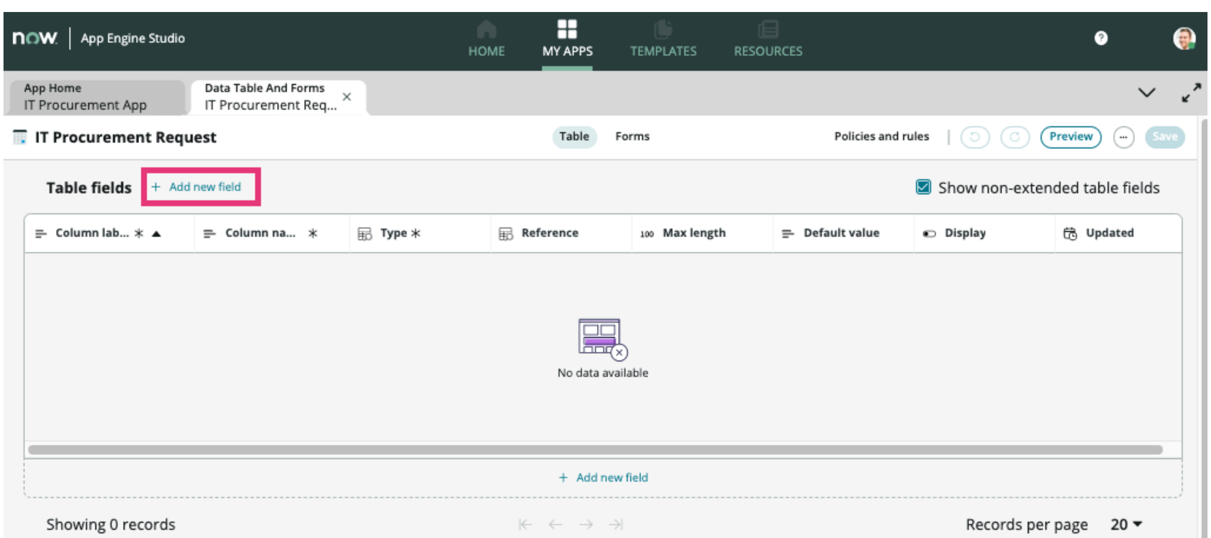
Get familiar with the the extended data fields. The example below shows the default configuration of the **Approval** data field, where is this a Choice type of 4 choices.



We will start adding new data fields that are non-extended fields, for the ease of seeing the new fields to be added, check **Show non-extended table fields**. Note that all the extended table fields will be hidden.



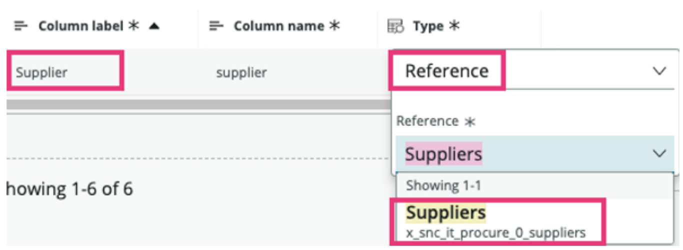
10. Click **+ Add new field**.



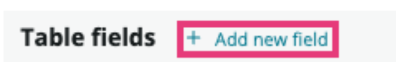
Add the following list of new fields to the IT Procurement Request table:

Column label	Type	Reference	Max length
Supplier	Reference	Suppliers	
Business Justification	String		500
Procurement Category	Choice (Software, Hardware, Services)		
Budget Owner	Reference	User	
Requested Budget	Decimal		
Secondary Supplier	Reference	Suppliers	

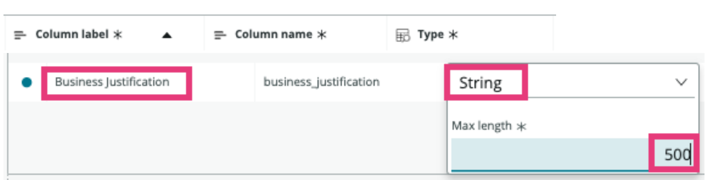
Let's start with the Supplier data field. Enter **Column Label** as **Supplier**, select **Reference** as Type. **Search** for **Suppliers [x_snc_it_procure_0_suppliers]** table and select it as the reference table.



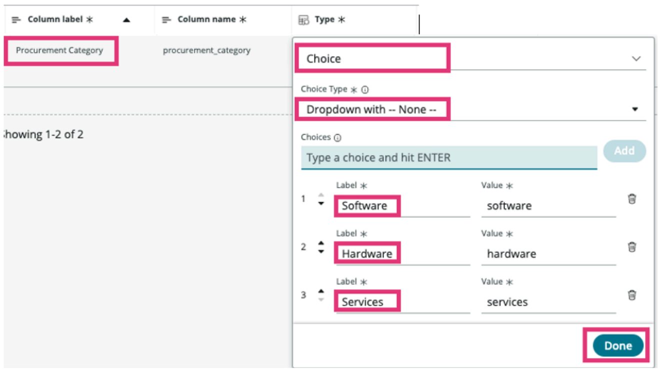
11. Click **+ Add new field**.



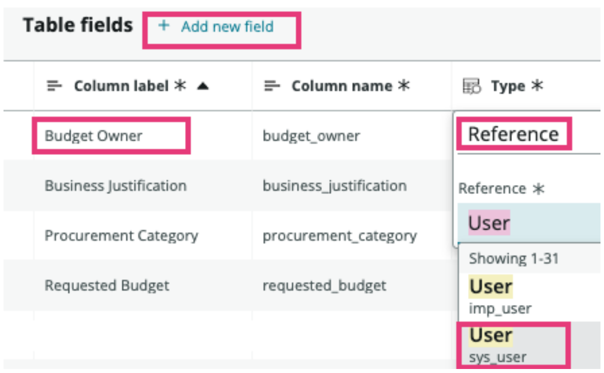
Enter **Column Label** as **Business justification** with **Type String** and **Max length** of **500**.



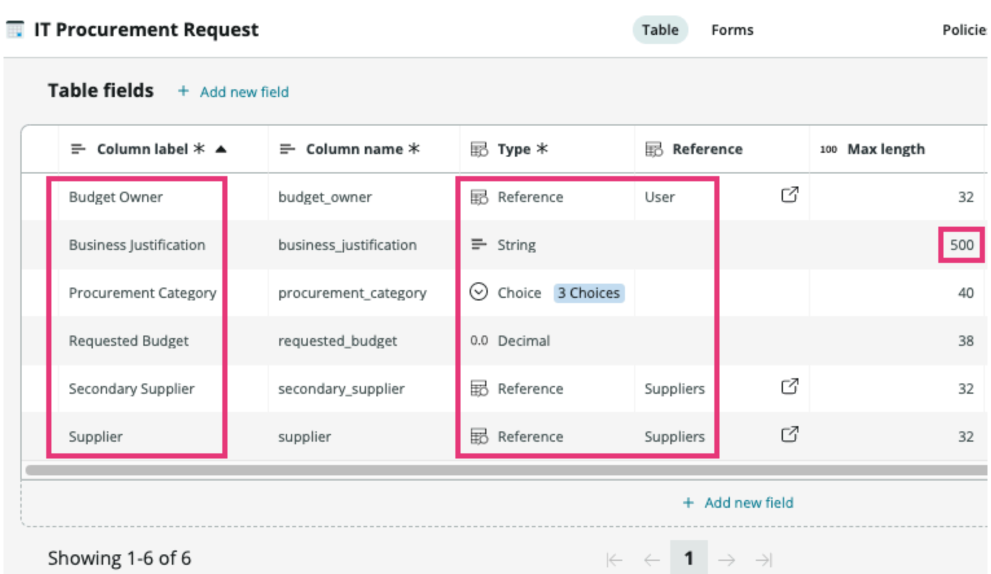
12. Click **+ Add new field**. Enter **Column label** as **Procurement Category** with **Choice Type** of **Dropdown with – None –**. Add the three choices: **Software**, **Hardware** and **Services**. Click **Done**.



13. Enter **Column Label** as **Budget Owner**, select **Reference** as Type. **Search** for **User [sys_user]** table and select it as the reference table.



14. Complete the table by adding **Requested Budget** and **Secondary Supplier** data fields with similar steps. The table should look like the following after all the new fields are added.



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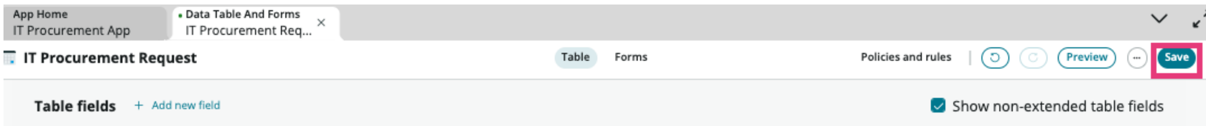
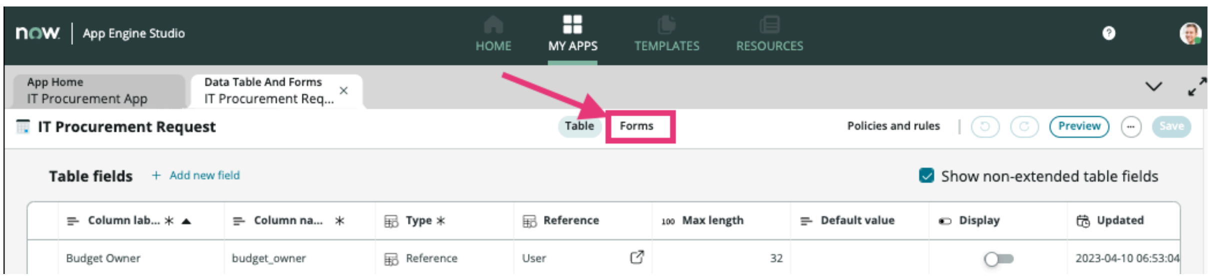
15. Click **Save**.

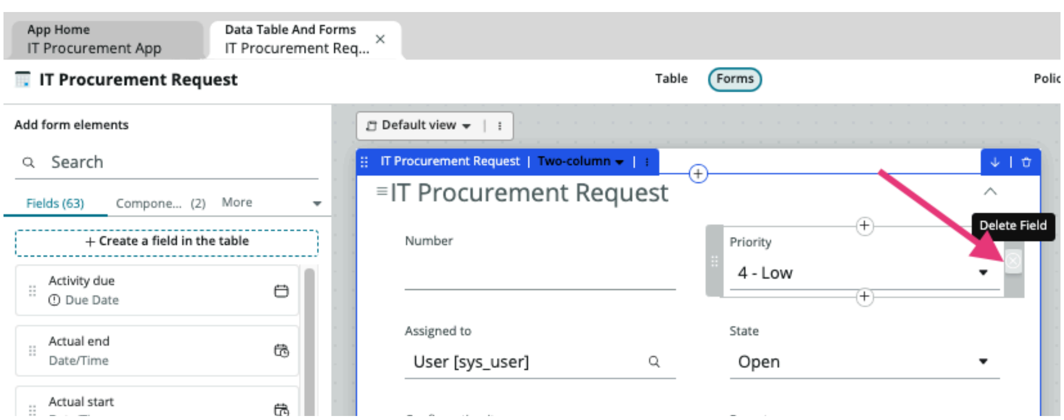


16. Next, we will configure the default form for IT Procurement Requests. Click the **Form tab**.

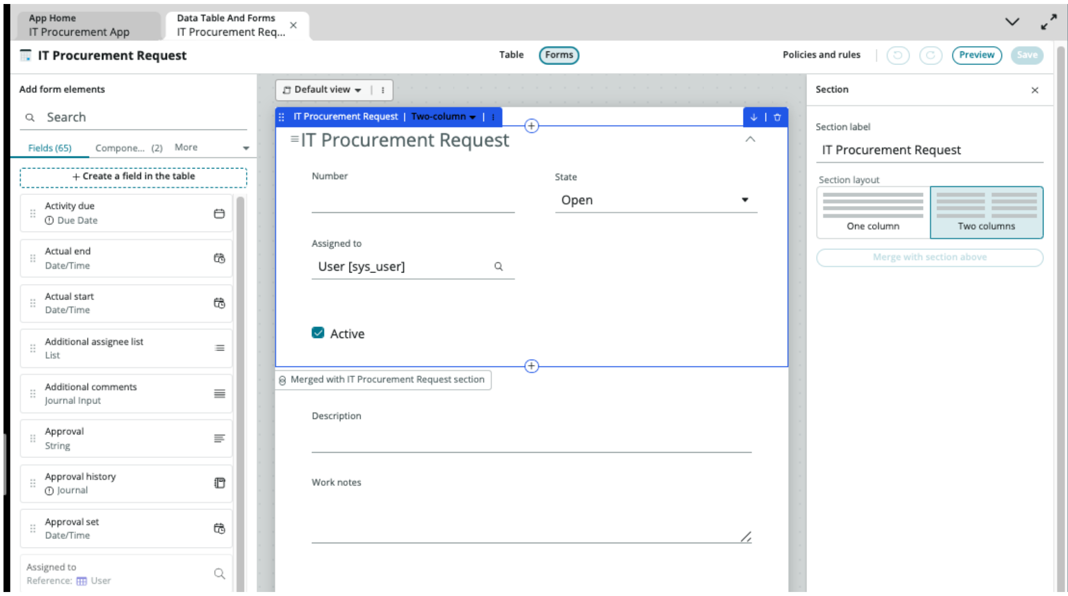


17. We will remove the default field that is not needed for the IT Procurement Request form:
    - Priority
    - Configuration Item
    - Parent
    - Short Description

To remove the field from the form, hover over the data field, click on the **X** to remove the field.

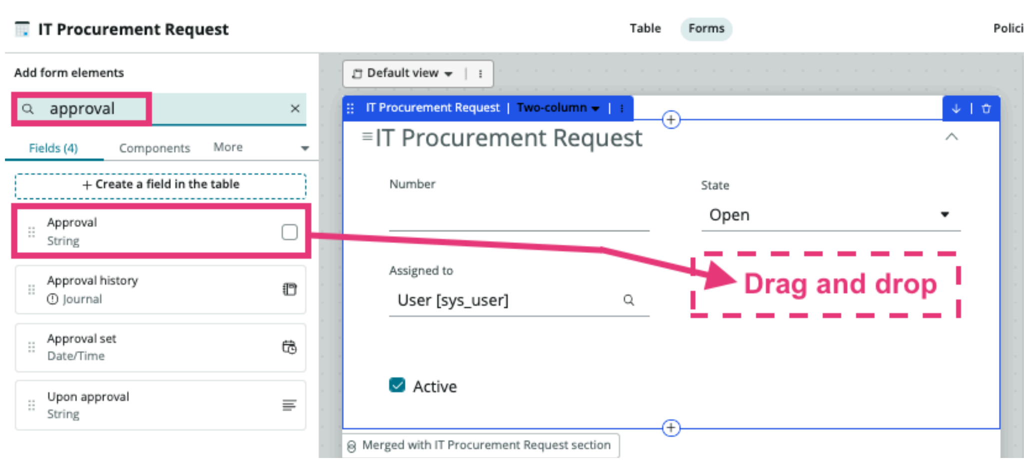


After you have removed the fields, the form should look like this:

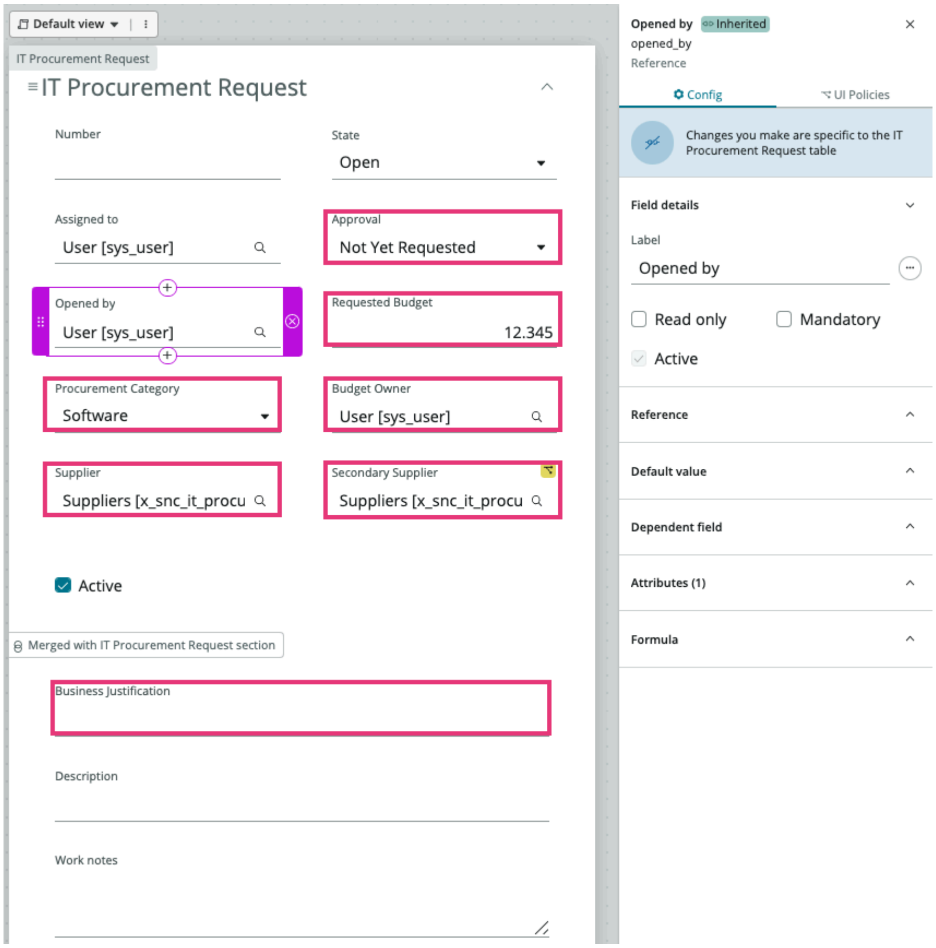


18. Add the data fields of interest to the IT Procurement Request form:
    - Approval
    - Budget Owner
    - Business Justification
    - Procurement Category
    - Opened by
    - Supplier
    - Secondary Supplier
    - Requested Budget

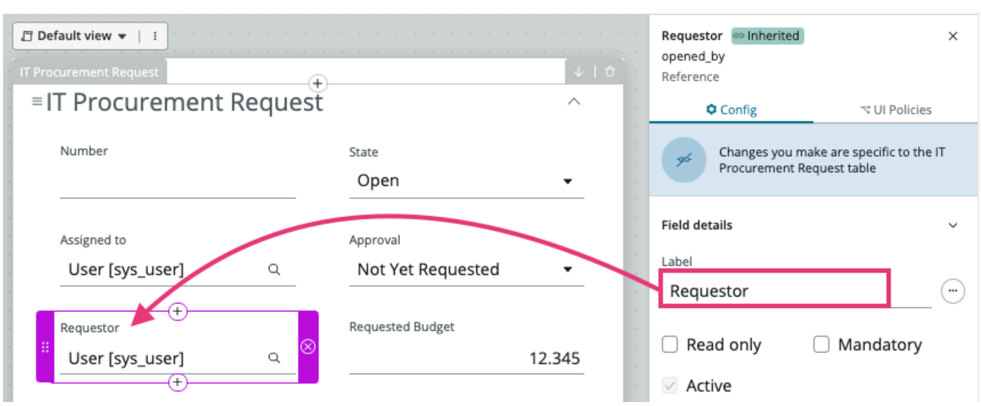
    Use the **form element search bar**, search for **Approval**. Locate the Approval field from the **Add form elements** menu below, hover over the **Approval** field, **drag and drop** the Approval field to the desired location within the form. Repeat the same with other field of interest.



19. The result should look like the form below:



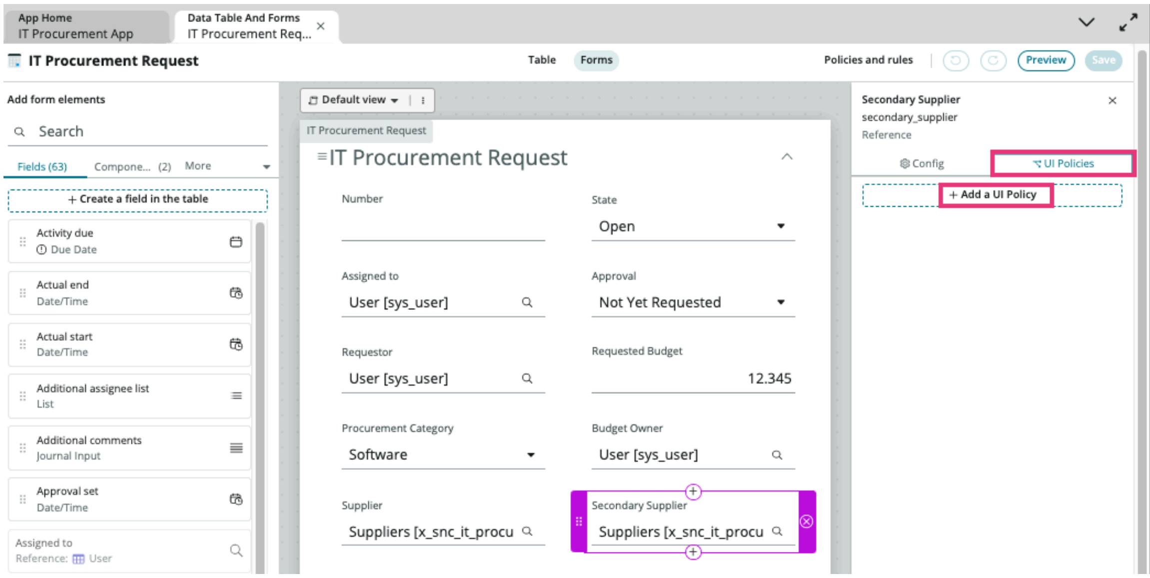
20. Note that we can change the data field label of the default fields. Select **Opened by** data field and change the **Label** from Opened by to **Requestor**.



21. Click **save**.

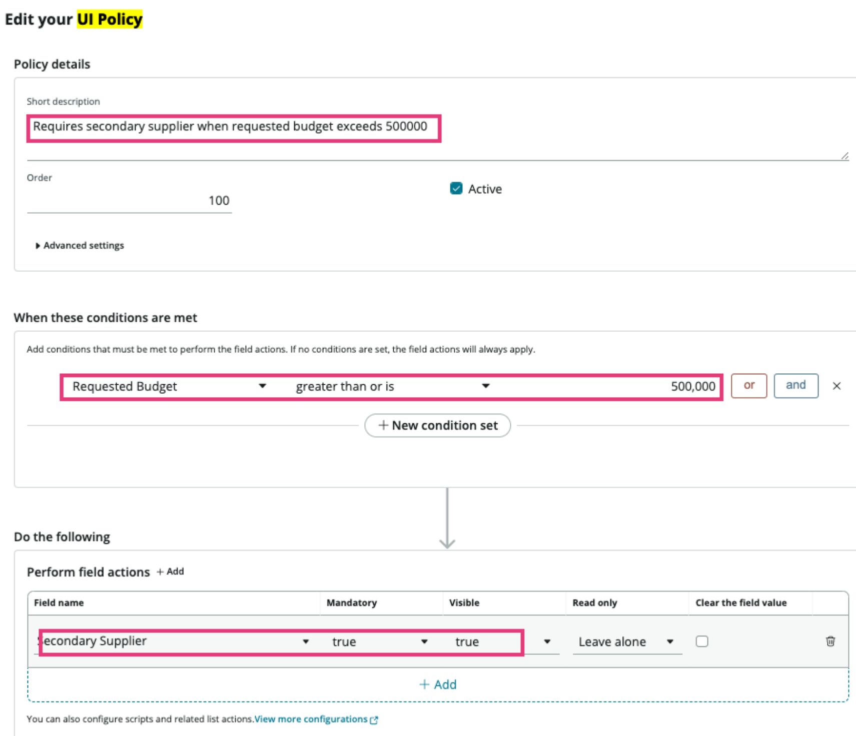
servicenow

22. Let's add a **UI policy** to the Secondary Supplier field as it should only be required (displayed) when the requested budget is greater than or equal to 500k. Select the **Secondary Supplier** field. From the Secondary Supplier configurations panel, click on the **UI Policies** tab. Click **+ Add a UI Policy**.



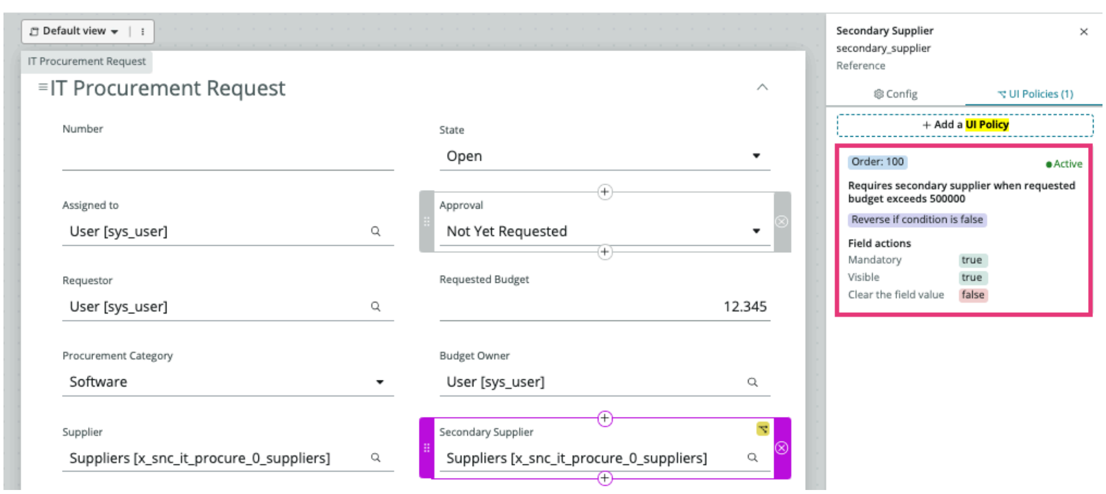
From **Set up your UI Policy**, configure the policy as follows:

Short description	**Requires secondary supplier when requested budget exceeds 500000**
Condition	**Requested Budget is greater than or is 500000**
Perform field Actions	**Secondary Supplier**; **Mandatory** is **True**; **Visible** is **True**

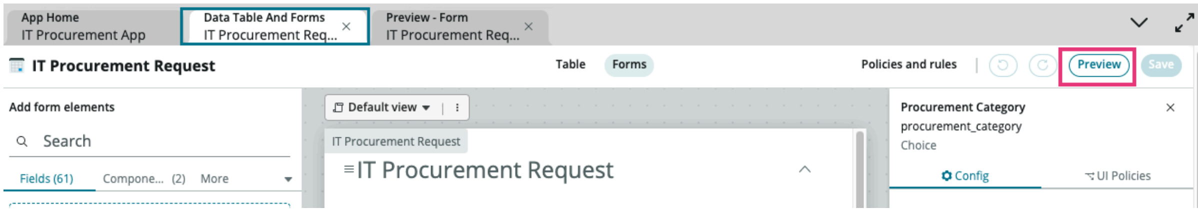


Click **Add UI Policy**.

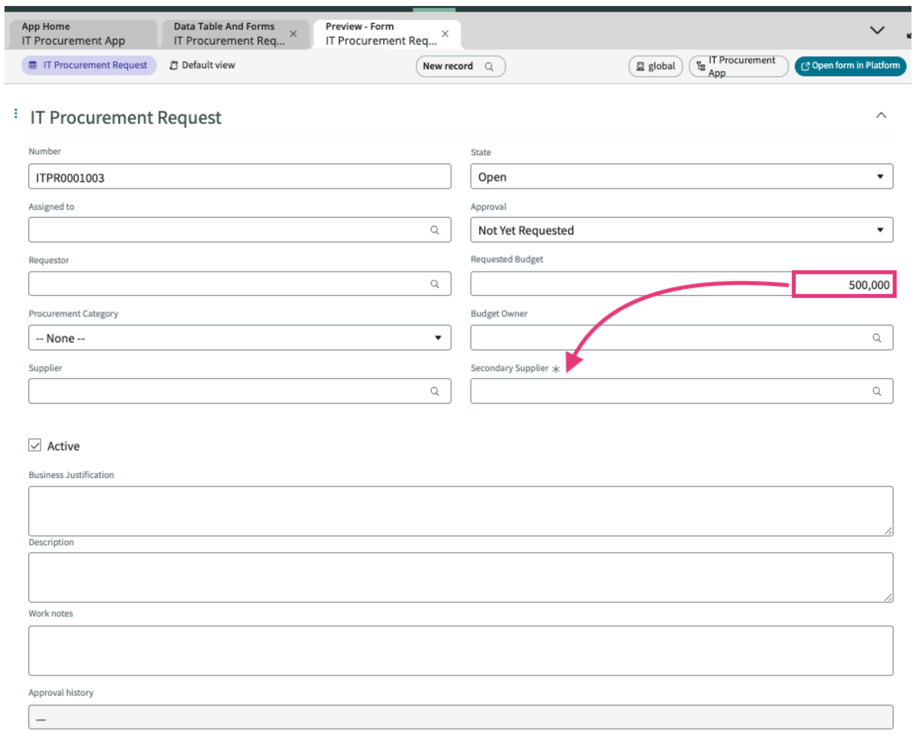
23. Review the UI Policy configured. Click **Save**.



24. Click Preview to check out what the form looks like.

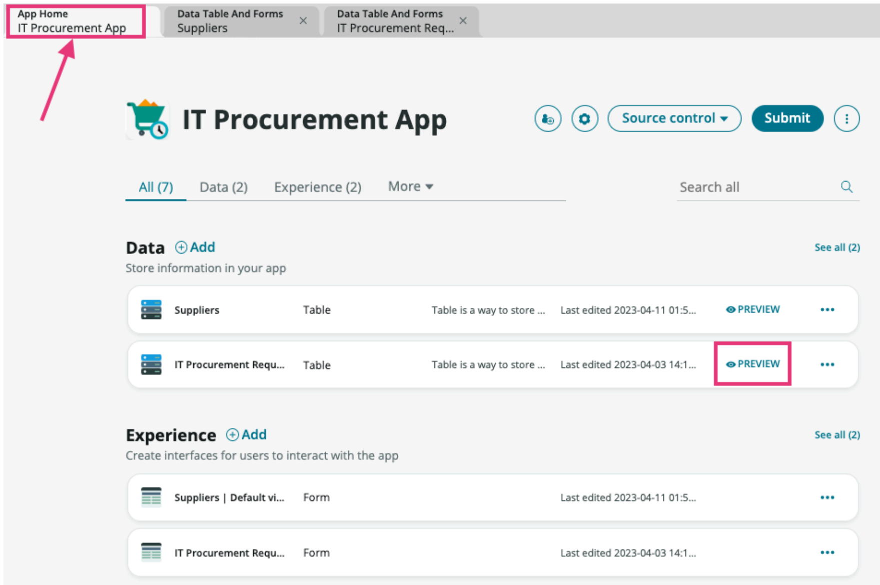


From the preview of the IT Procurement Request form enter **500000** in **requested budget** and verify that the Secondary Supplier field will appear. We have successfully added dynamic behaviours to our IT Procurement Request form using UI Policy.

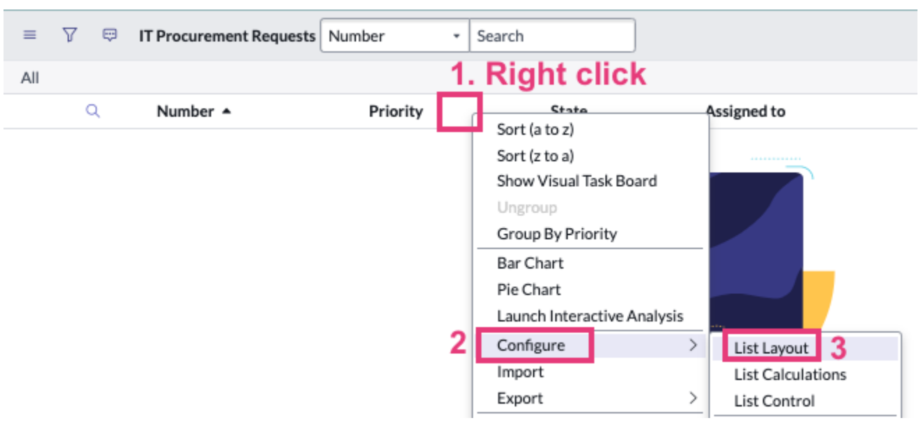


After you have explored the form, **Close** the preview tab.

25. Go back to the **App Home** tab and make note that the **Data** models and Forms **Experiences** is now part of the Low Code App component. Click **Preview** IT Procurement Request Data table.

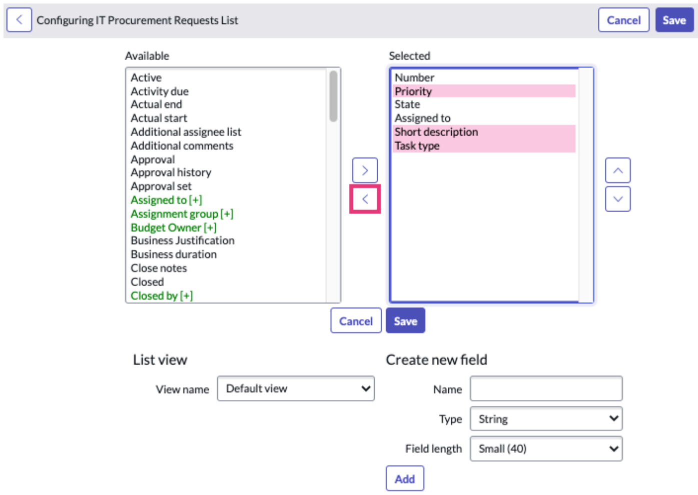


26. The default field layout of the IT Procurement Request table, is based on the Task table. Let's change the default layout for the purpose of our application. **Right click** on the title row of the IT Procurment Requests Table table, click **Configure**, click **List Layout**.



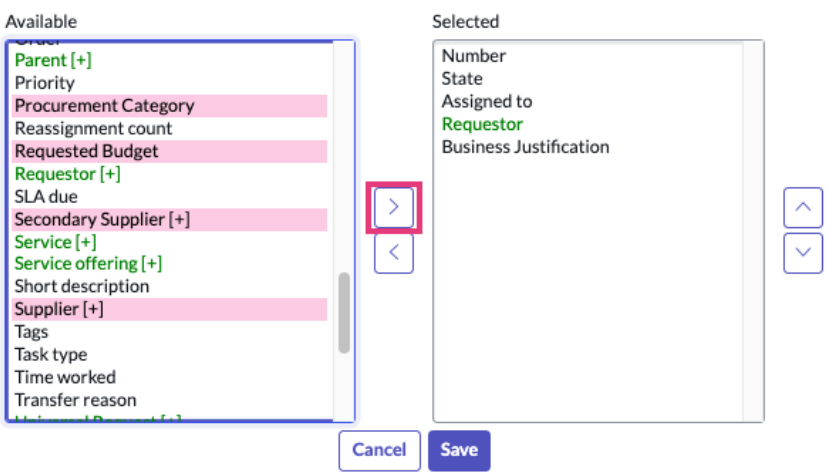
Remove irrelevant fields by multi-selecting the fields in the Selected area, and click <:

- Priority
- Short description
- Task type

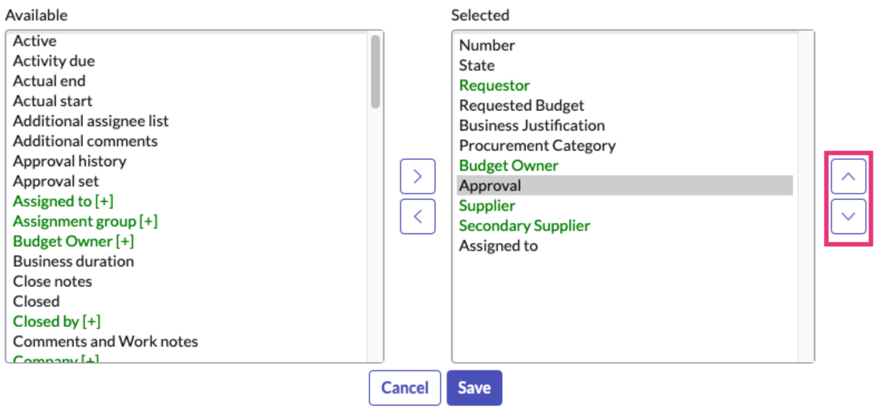


Then add the relevant fields by multi-selecting from Available area and click [>]:

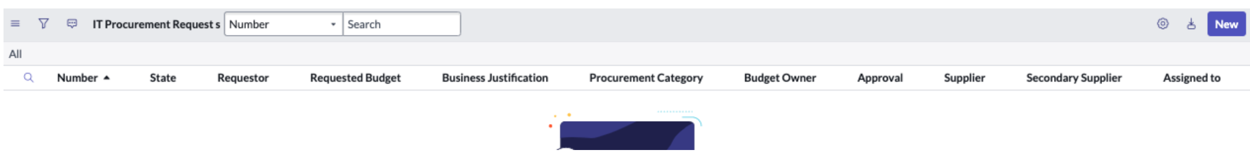
- Requestor
- Business Justification
- Requested Budget
- Budget Owner
- Procurement Category
- Suppllier
- Secondary Supplier
- Approval



Change the order of the selected fields using the up and down arrows. Click **Save**.



27. Note that the IT Procurement Request table layout has updated.

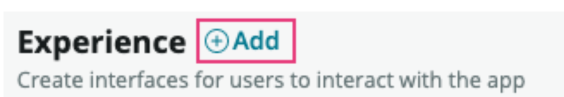


We have successfully completed the data model and their default configurations.

Exercise 2: Build User Experice

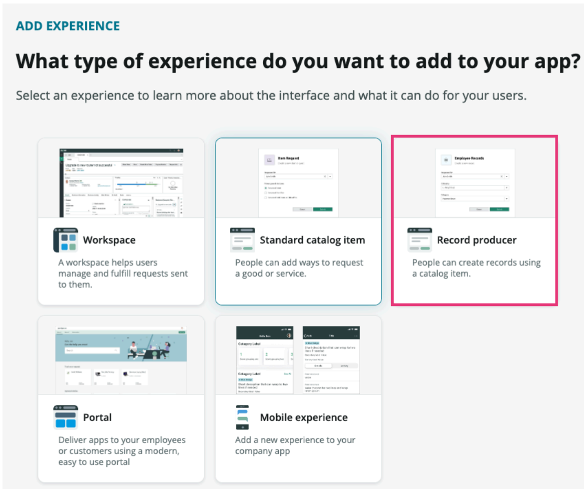
Create User Friendly Form using Record Producer

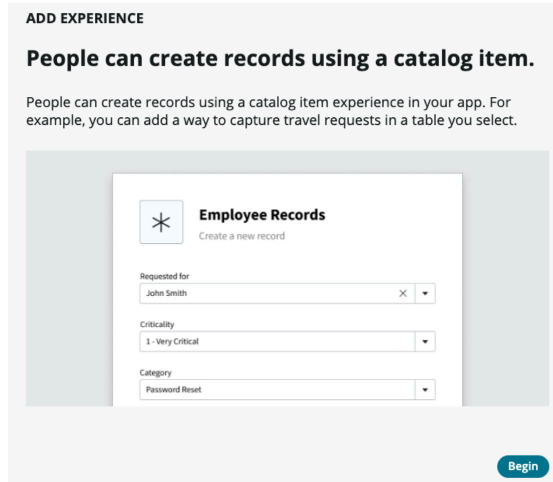
1. Click **+Add** to add a user experience.



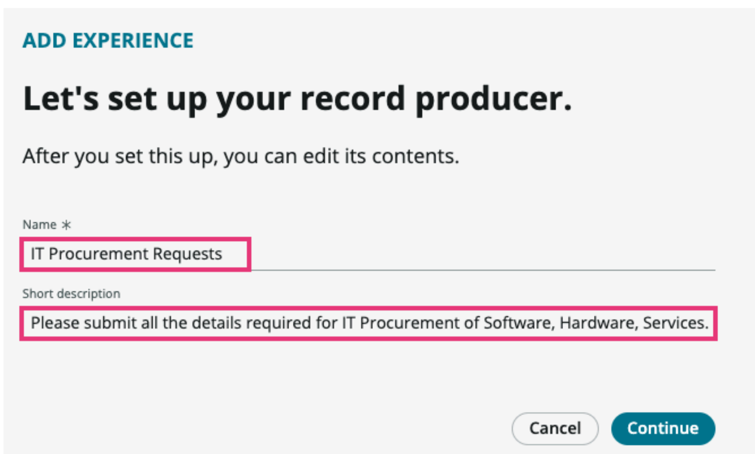
2. Select **Record producer** from **What type of experience do you want to add to your app?** Click **Begin**.

servicenow

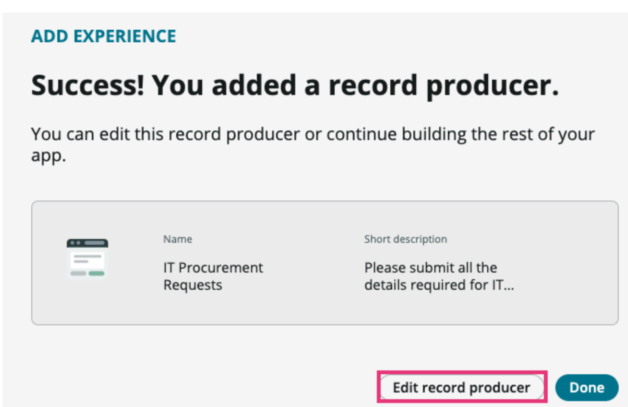




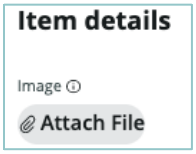
3. Enter **Name** as **IT Procurement Requests** and enter **Short description** as **Please submit all the details required for IT Procurement of Software, Hardware, Services**. Click **Continue**.

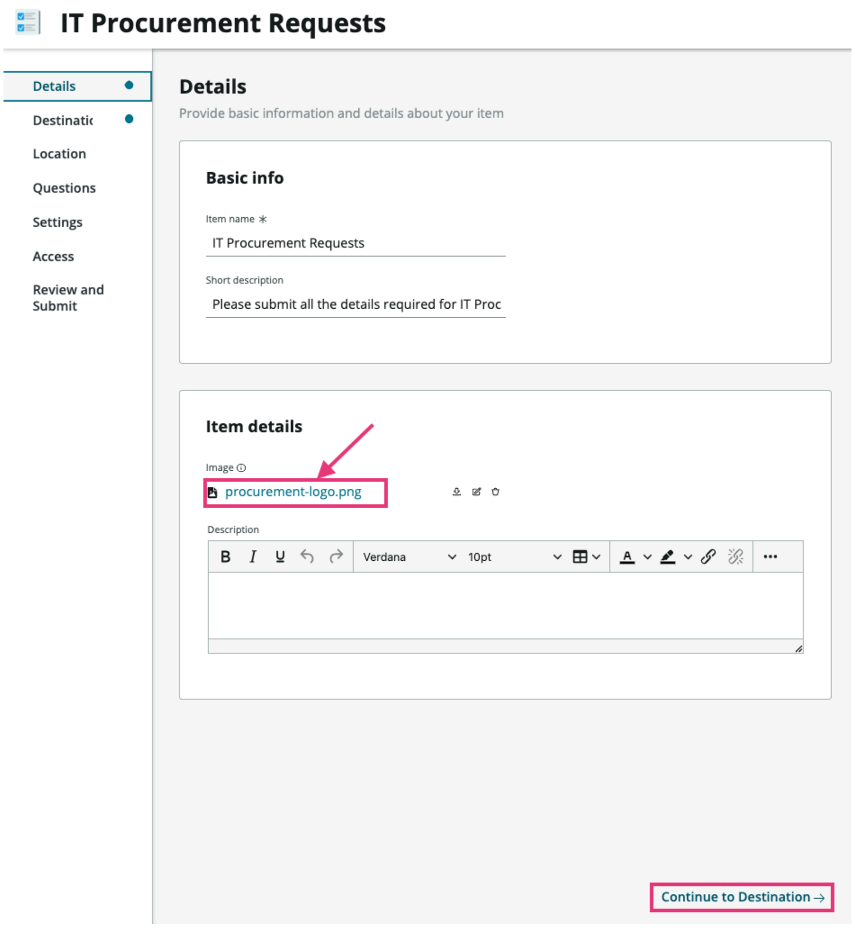


4. Click **Edit record producer**.

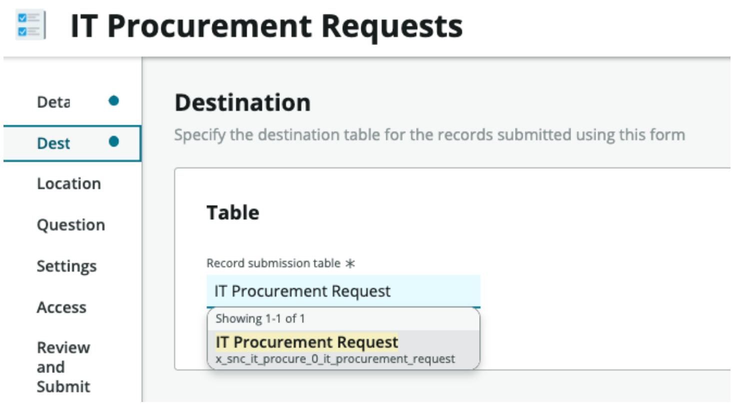


[Optional] Click **Attach File** from **Item details**. Upload a relevant image file as the record producer image. Click **Continue to Destination →**

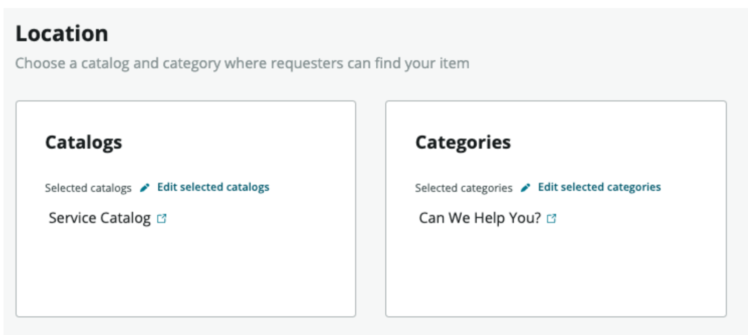




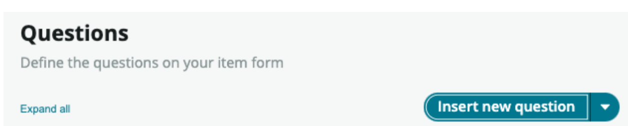
5. Select Destination Table as **IT Procurement Request** [x_snc_it_procure_0_it_procurement_request]. Click **Contine to Location →** at the bottom right.



6. Click **Browse** from **Catalogs**. Select **Service Catalog** as the **Catalogs** Location and select **Can We Help You?** As the **Categories**. Click **Continue to Questions →** at the bottom right.



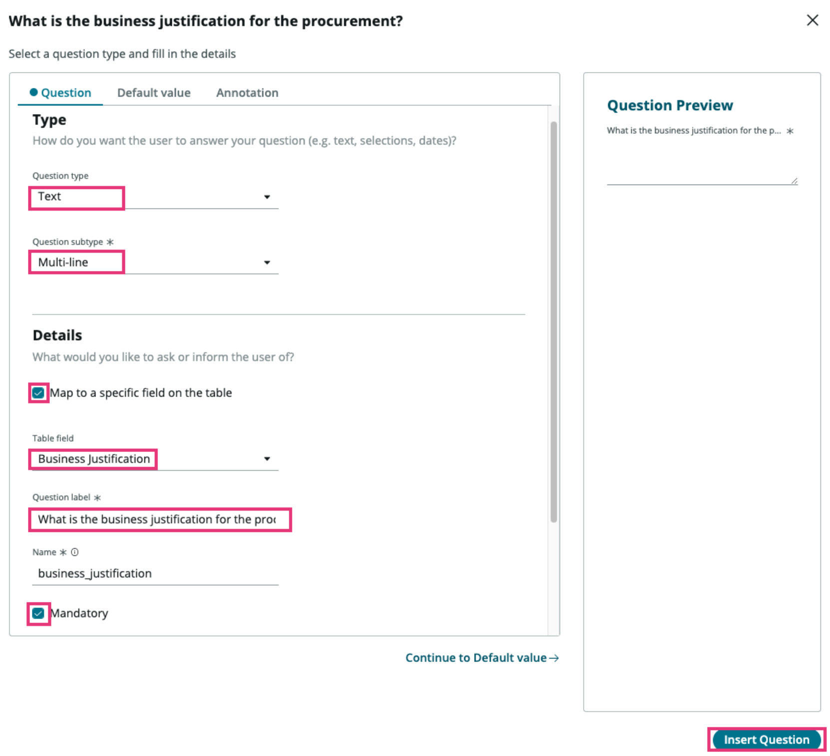
7. Click **Insert new question**.



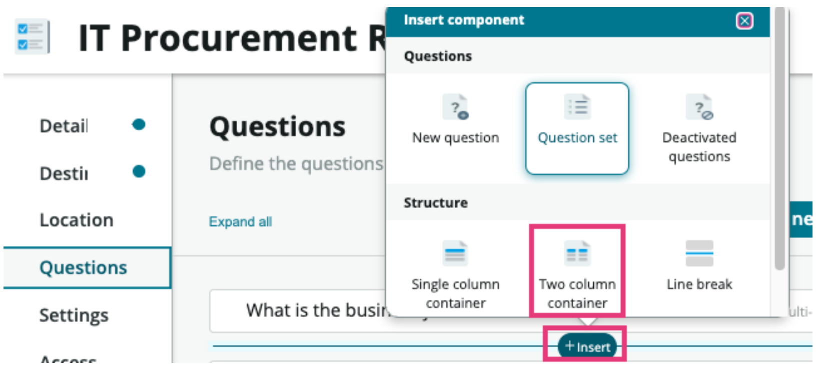
8. In the Question Editor, configure:

Question Type = Text Question Subtype = **Multi-line** **Check** Map to a specific field on the table Table field = **Business Justification** Question Label = **What is the business justification for the procurement request?** **Check** Mandatory

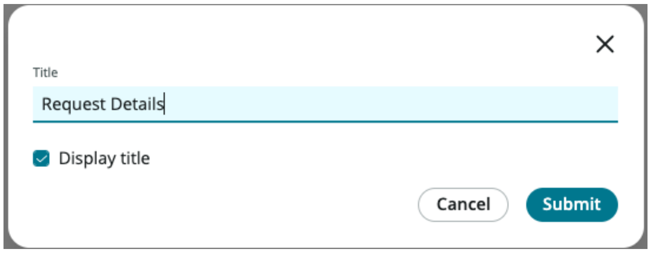
Click **Insert Question** at the botton right.



9. Click **+ Insert** positioned after the first question and select **Two column container** from the Insert component pop-up.

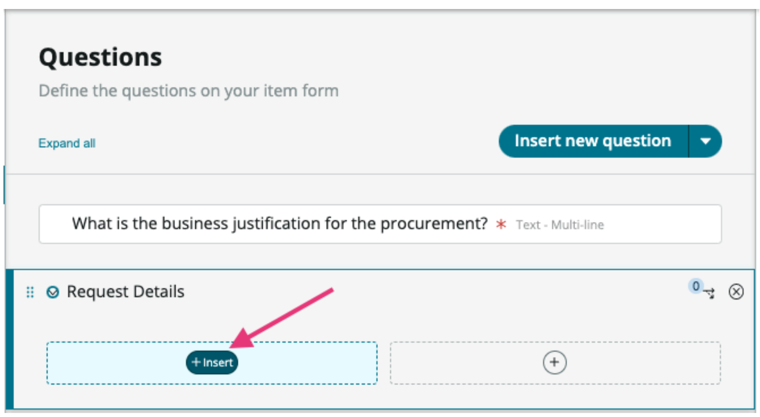


Enter **Request Details** as the container Title. Click **Submit**.



10. Expand the Requested details container.

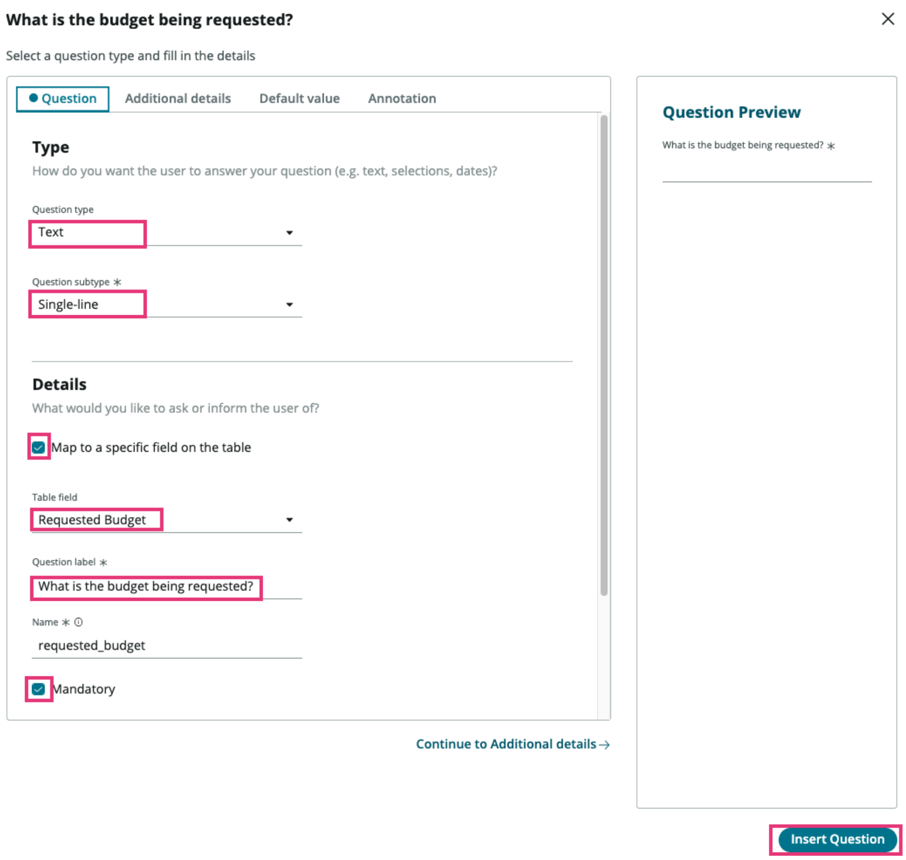
11. Hover over to the first column field of the two columns **Request Details container**. Click **+ Insert** and click **New Question** to insert a new question.



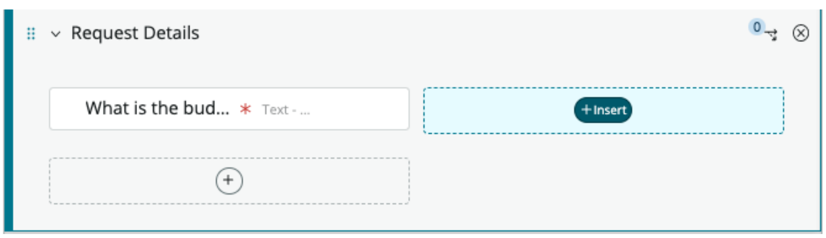
12. In the Question Editor, configure:

Question Type = **Text**
Question Subtype = **Single-line**
Check Map to a specific field on the table
Table field = **Requested Budget**
Question Label = **What is the budget being requested?**
Check Mandatory

Click **Insert Question** at the botton right.



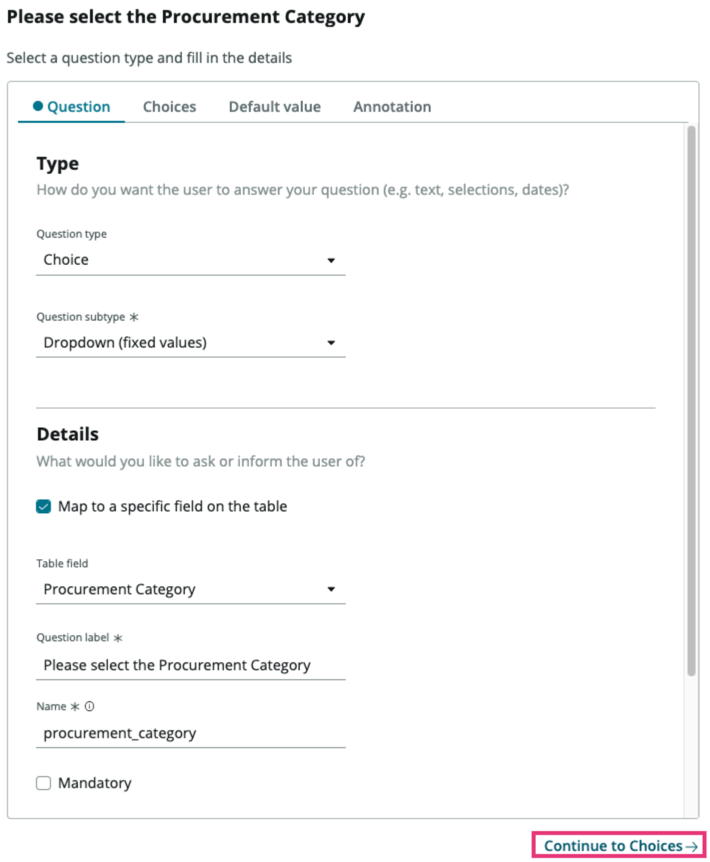
13. Hover over to the second column field of the two columns **Request Details container**. Click **+ Insert** and click **New Question** to insert a new question.



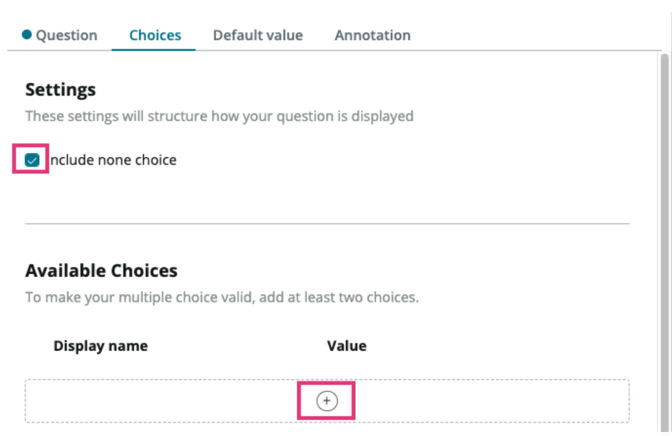
14. In the Question Editor, configure:

Question Type = **Choice**
Question Subtype = **Dropdown (fixed values)**
Check Map to a specific field on the table
Table field = **Procurement Category**
Question Label = **Please select the Procurement Category**

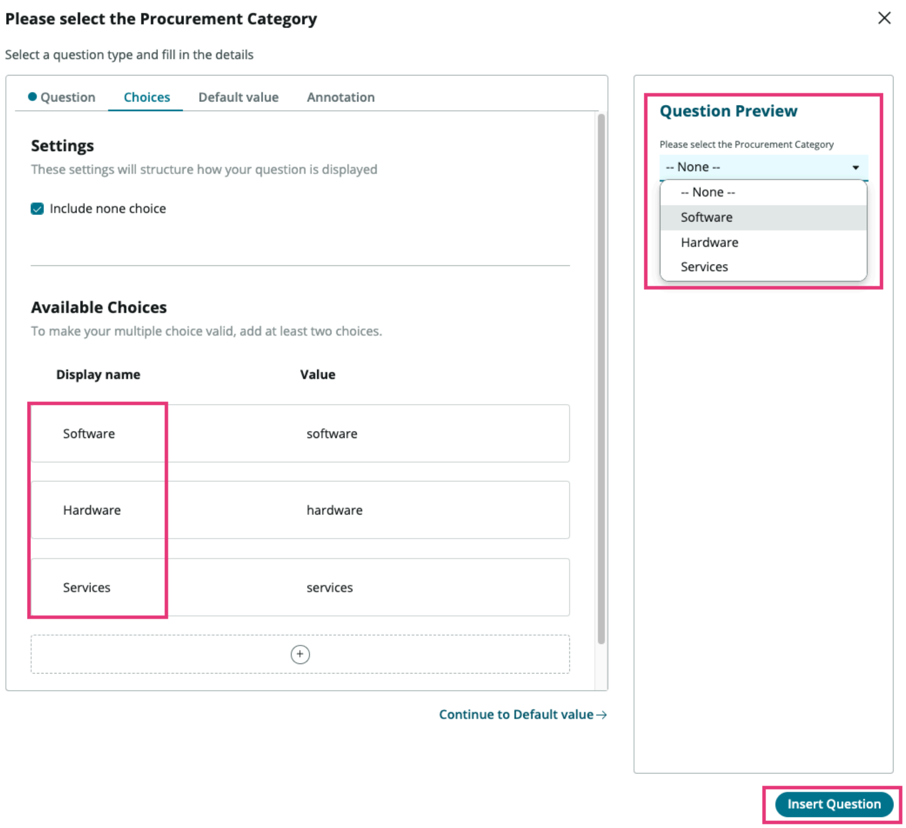
Click **Contine to Choices** at the botton right.



Check **Include none choice**. Click the **+** to add new choices.



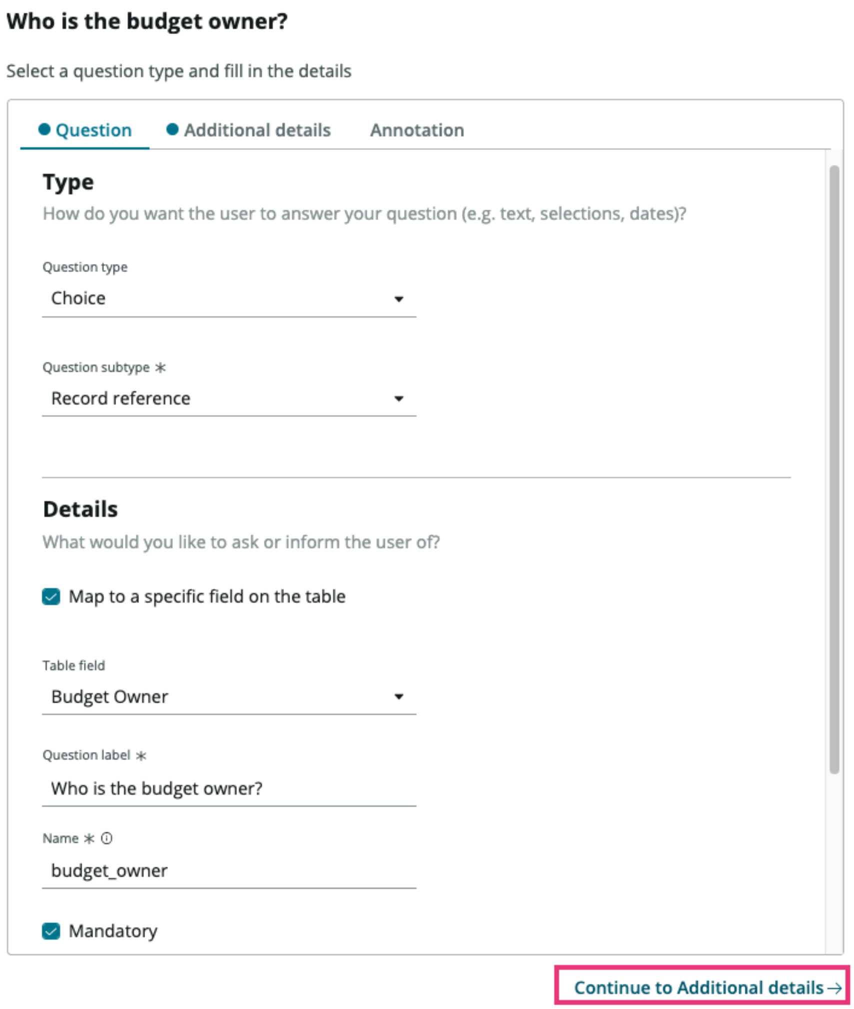
Add 3 choices with the **Software**, **Hardware**, **Services** as the **Display name**, keep the Choice Values as default. Note that on the right panel, you can preview the question. Click **Insert Question**.



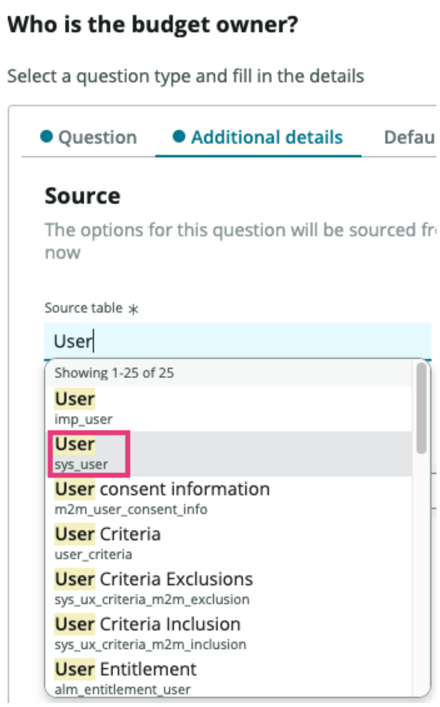
15. **Insert** another question in the Request Details container.

Question Type = **Choice**
Question Subtype = **Record reference**
Check **Map to a specific field on the table**
Table field = **Budget Owner**
Question Label = **Who is the budget owner?**

Click **Contine to Additional details →**.



Select **User [sys_user]** as the **Source table**. Click **Insert Question**.



16. Insert new question.

Question Type = **Choice** Question Subtype = **Record reference** Check **Map to a specific field on the table** Table field = **Supplier** Question Label = **Please select the preferred supplier.**

Click **Contine to Additional details →**.

Select **Suppliers [x_snc_it_procure_0_suppliers]** as the **Source table**.

Click **Insert Question**.

17. Insert new question.

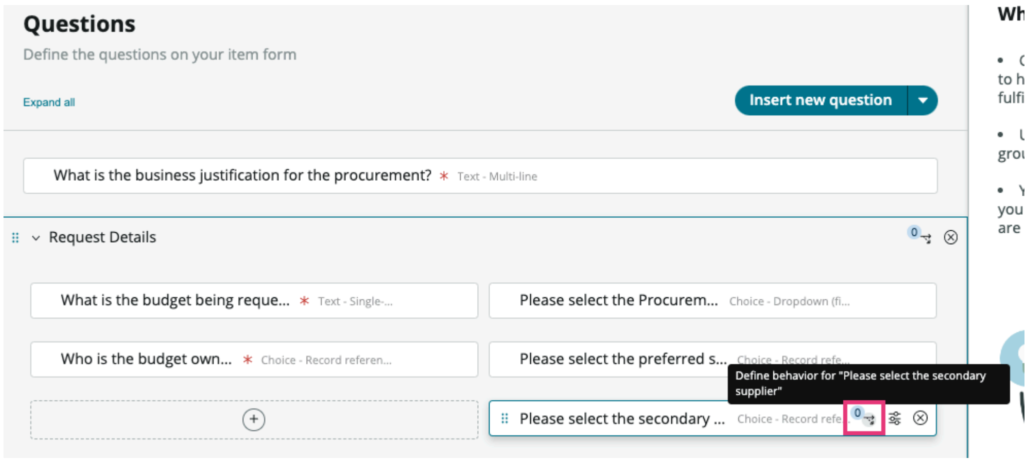
Question Type = **Choice** Question Subtype = **Record reference** Check **Map to a specific field on the table** Table field = **Secondary Supplier** Question Label = **Please select the secondary supplier**.

Click **Contine to Additional details →**.

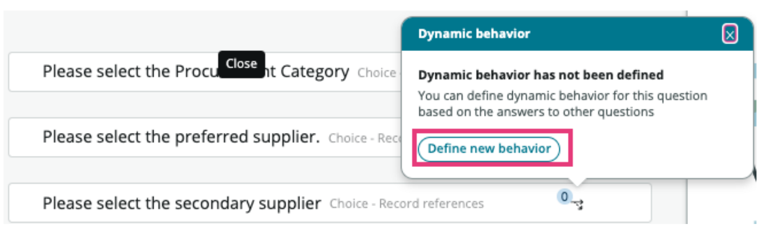
Select **Suppliers [x_snc_it_procure_0_suppliers]** as the **Source table**.

Click **Insert Question**.

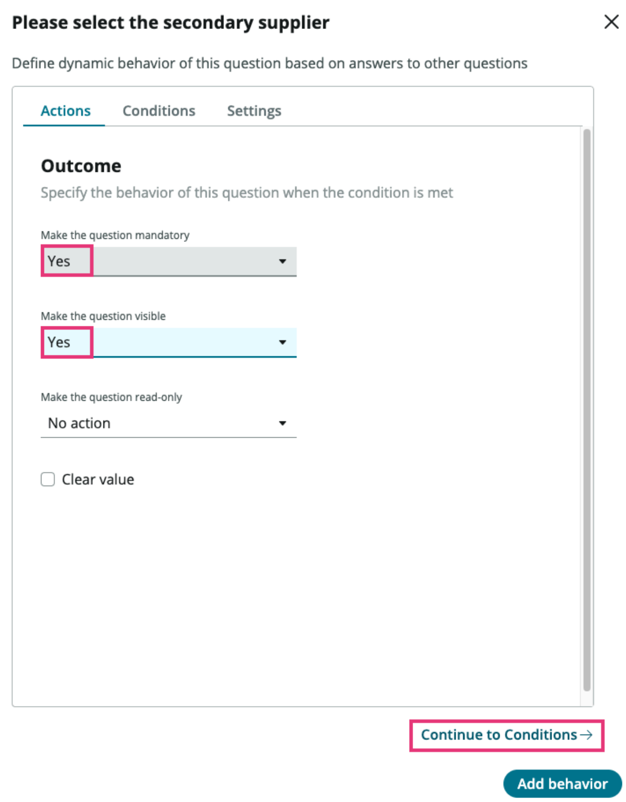
18. As the secondary supplier selection is only valid if the requested budget is greater than 500k. Configure behaviour to only display the secondary supplier question if the requested budget exceeds 500k. **Hover over** the **secondary supplier question** and click the **define behaviour**  icon.
19.



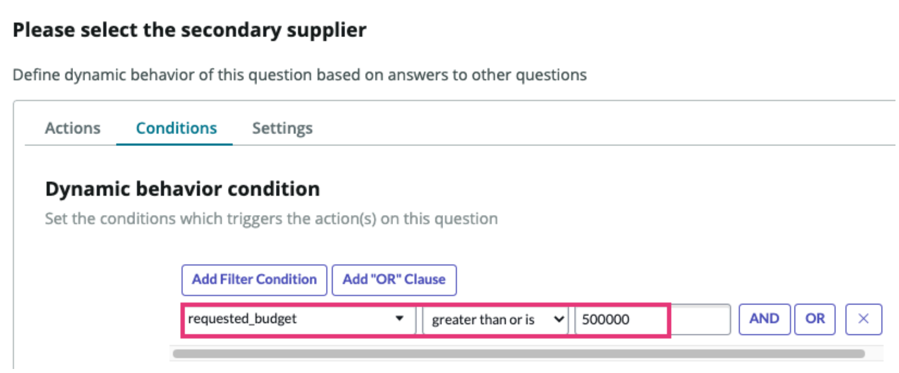
Click **Define new behaviour** from the pop up bubble.



Make the question both **mandatory** and **visible** by selecting **Yes**. Click **Continue to Conditions →**.

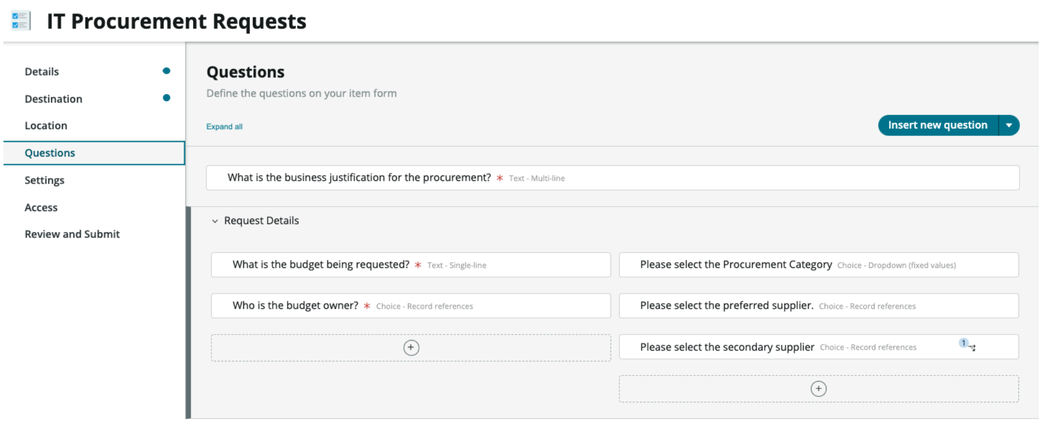


Add the **Dynamic behaviour condition** of **requested_budget greater than or is 500000**.

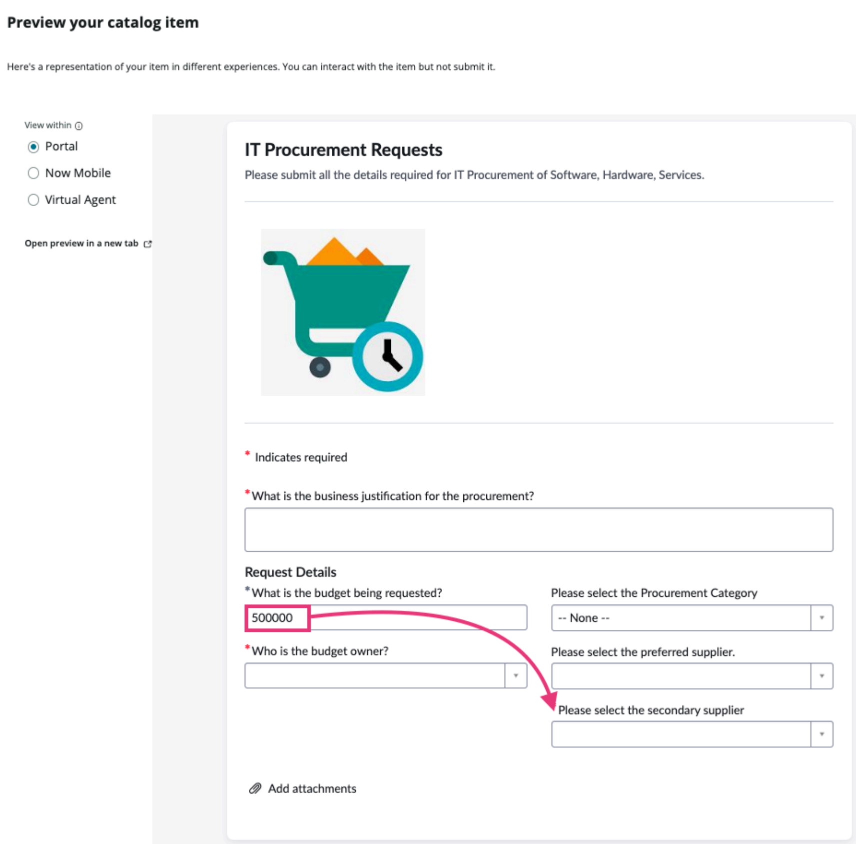


Click **Add behavior.**

20. The record producer should be configured as follows:

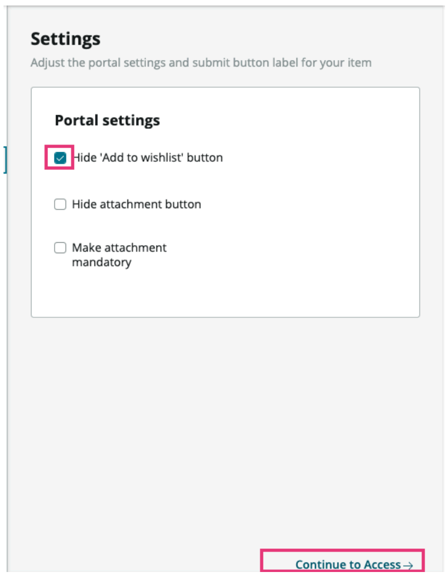


Click **Preview**. Review the IT Procurement Request record producer. **Close** the preview tab. Enter **500000** as answer to **What is the budget being requested?** And note that the **Please select the secondary supplier** field would appear. Clilck **X** to close the Preview.

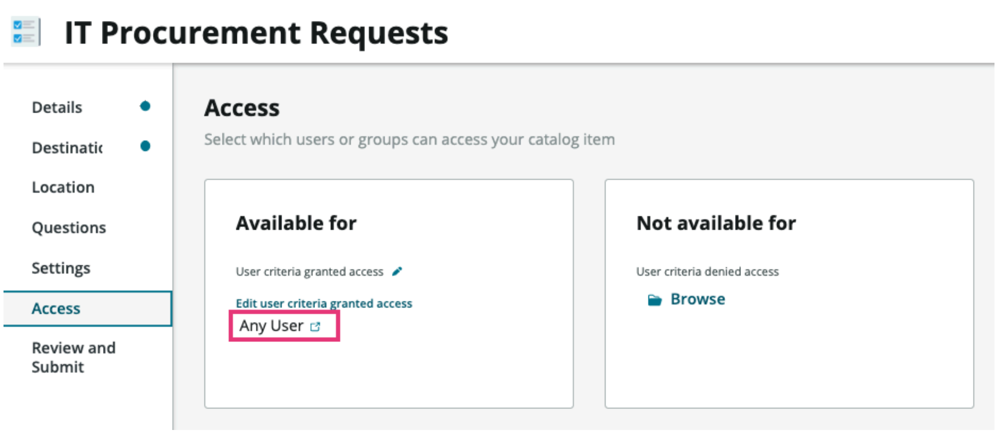


Click **Continue to Settings →**

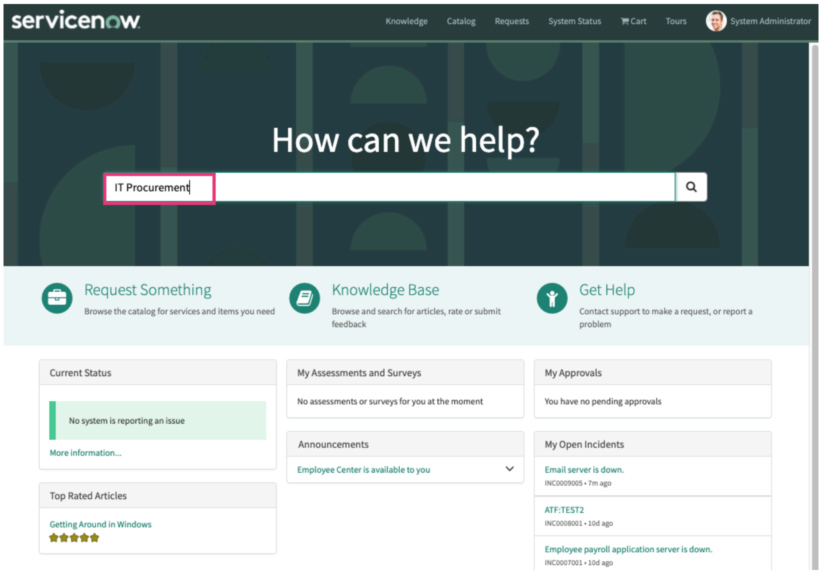
21. Check **Hide ‘Add to wishlist’ button**. Click **Contine to Access →** .



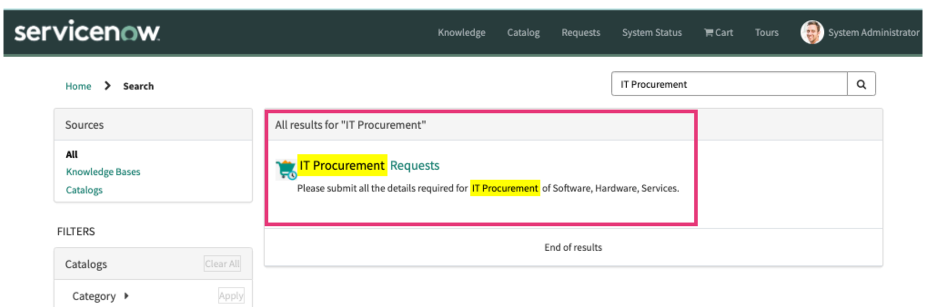
22. Add **Any User** to the **Available for** Access configuration. Click **Contine to Review and Submit →**.



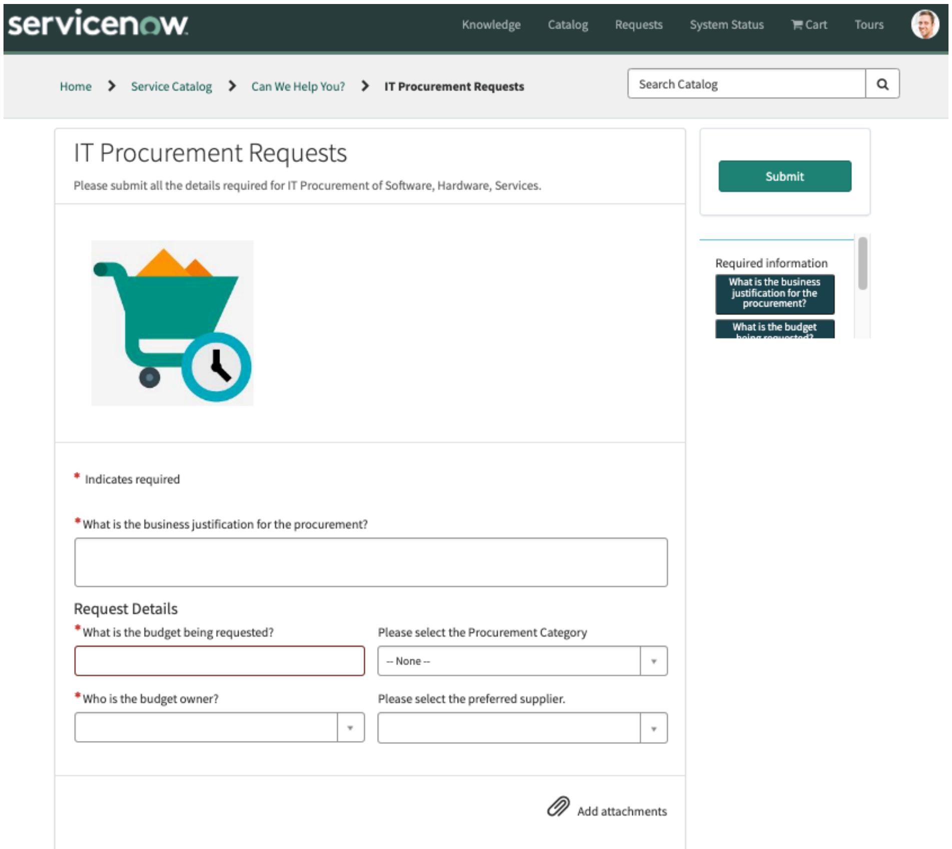
23. Review the IT Procurement Requests record producer and click **Submit**. Close the **Record Producer** tab.
24. Open a new browser tab and vist the Service Portal by entering the url: **https://<your-instance>.service-now.com/sp**. Search **IT Procurement** from the How can we help serach bar.



Select **IT Procurement Requests** from the returned search results.



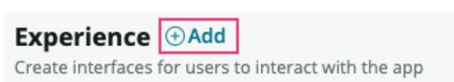
We has successfully completed configuration of the record producer for IT Procurement Requests and its accessible from the **Service Protal**. Employees from the Organization can now make IT Procurment requests from ServiceNow as the single layer of engagement.



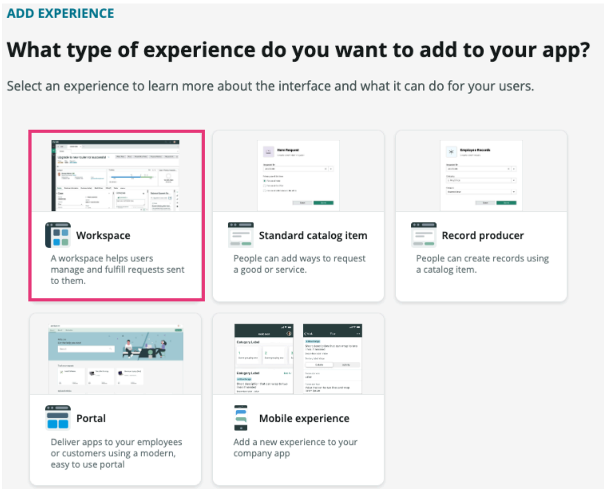
Build an IT Procurement Workspace

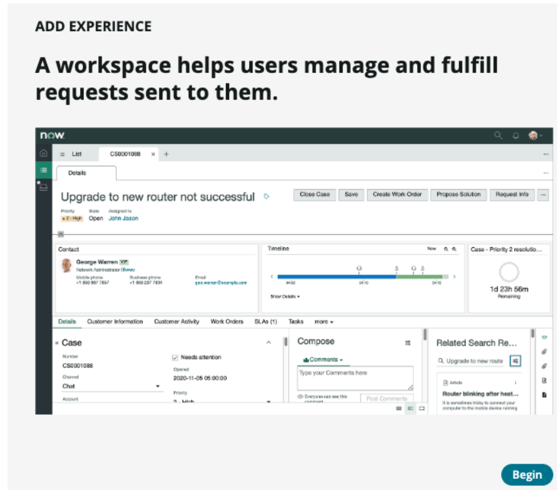
IT Procurement, budget owners and approvers will be using the IT Procurement Workspace to manage, approve and perform analytics on the IT Procurement requests.

1. Return back to the App Engine Studio **App Home tab** and click **+Add** to add a user experience.

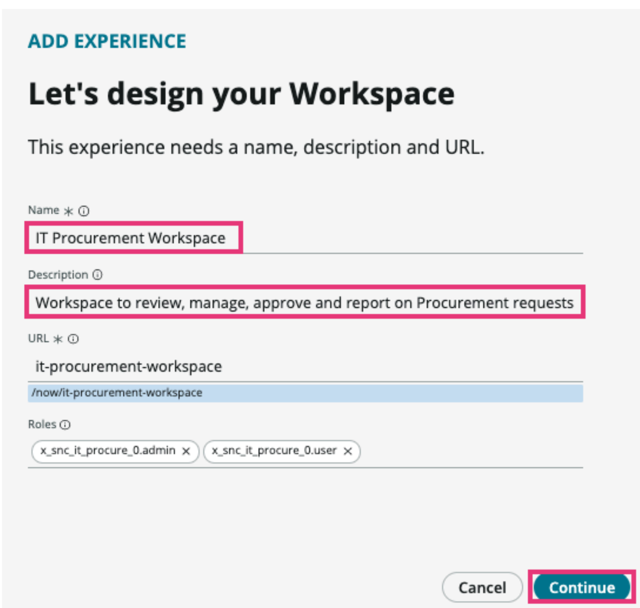


2. Select **Workspace** from **What type of experience do you want to add to your app?** Click **Begin**.

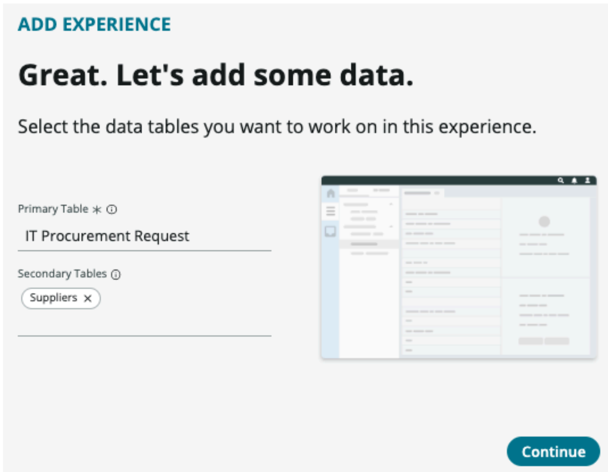




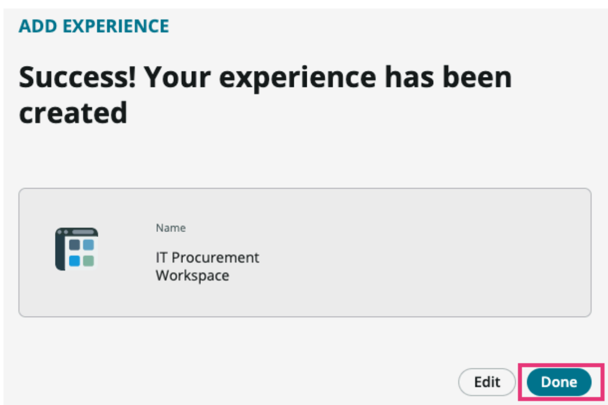
3. In **Let's design your Workspace**, enter **Name** as **IT Procurement Workspace**, enter **Description** as **Workspace to review, manage, approve and report on Procurement requests**. Click **Continue**.



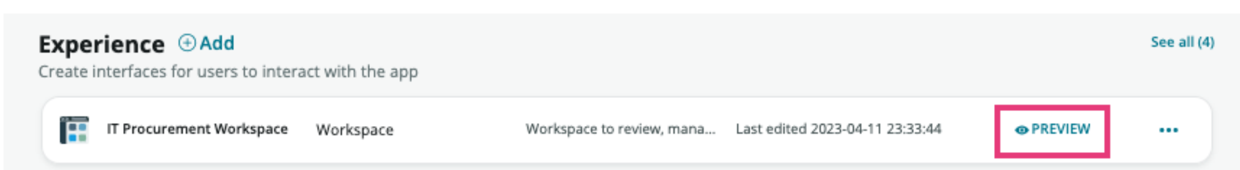
4. In **Great. Let's add some data**, leave the default settings where the **Primary Table** is the **IT Procurement Requests** table and the **Secondary Table** is the **Suppliers Table**. Click **Continue**.



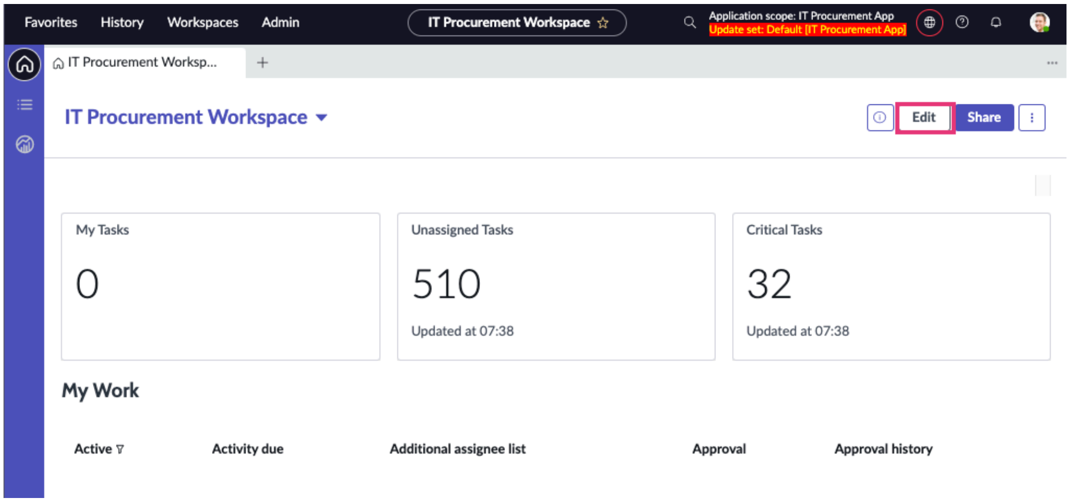
In **Success! Your experience has been created**, click **Done.**



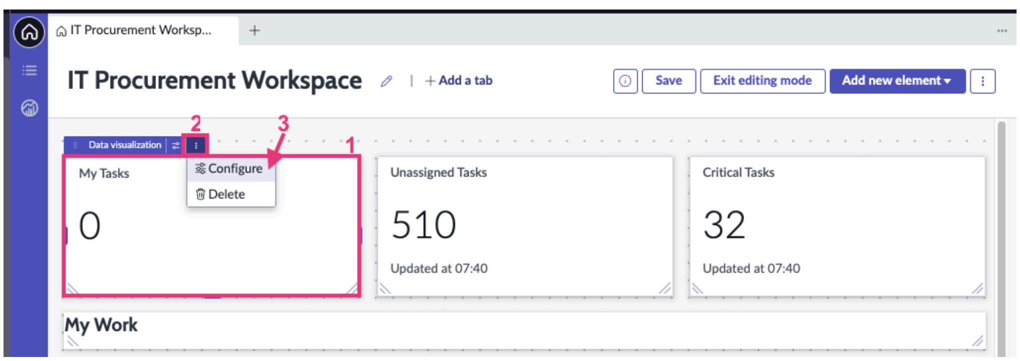
5. From the **App Home** tab, click **Preview** next to the **IT Procurment Workspace Experience**. This lauches a new browser tab with the IT Procurement Workspace.



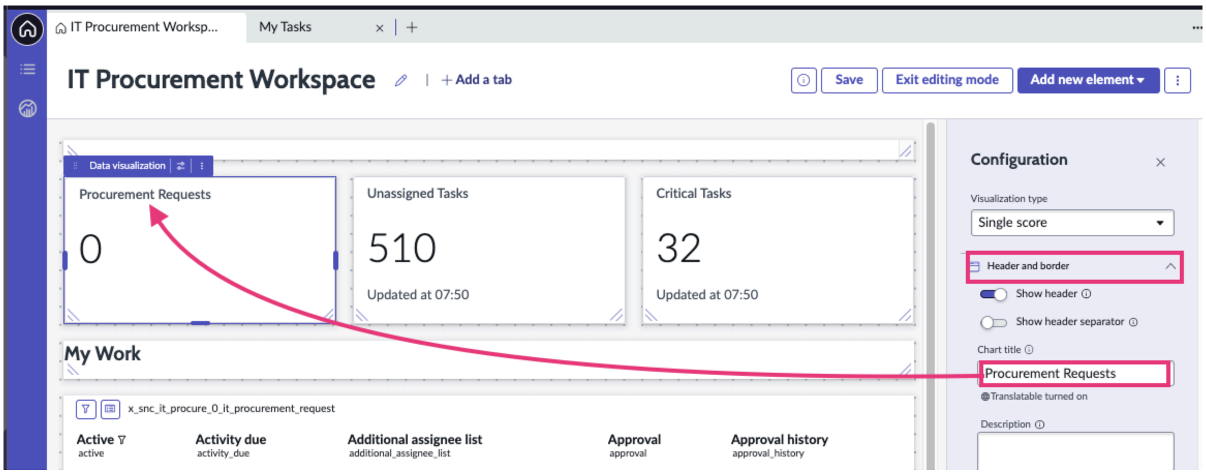
6. Click **Edit** to start configuring the Workspace.



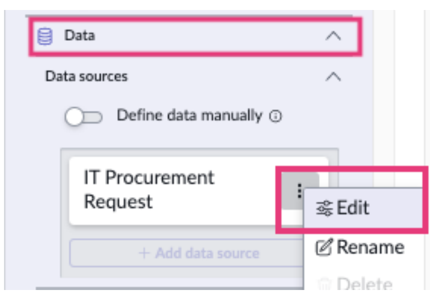
7. Let's update the **My Tasks** Data visualization card. Click the **My Tasks card**, note that a menu appears on top of the My Tasks card, click the 3 vertical dots, from the dropdown click Configure Configure.



The **Configuration** panel will appear on the right side. Expand **Header and border**, change the **Chart title** from My Tasks to **Procurement Requests**.

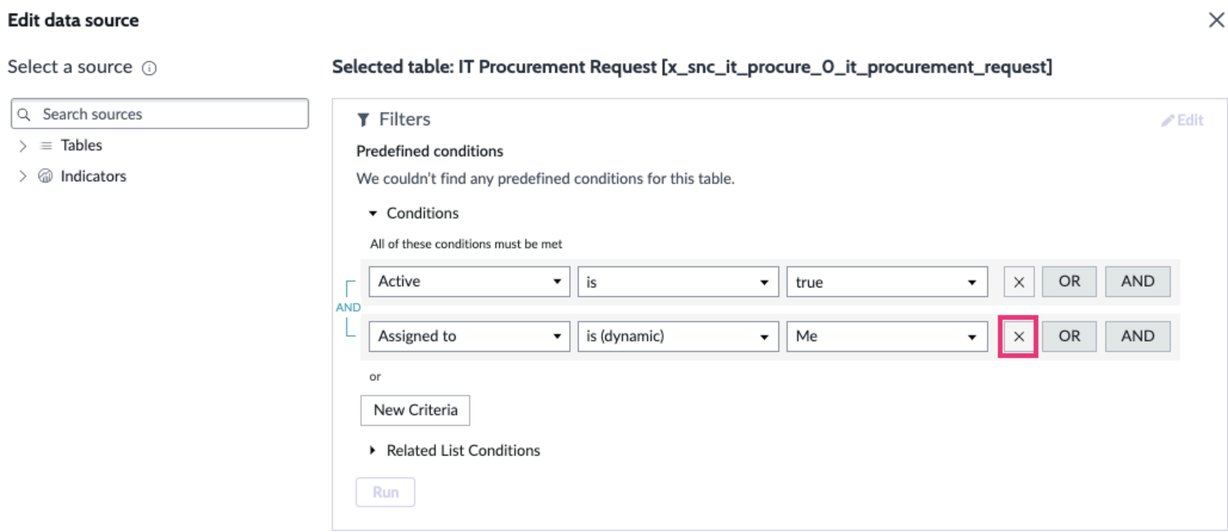


The Score card data visualization has a filter applied by default, let's remove the filter so the total number of procurement requests will be displayed. From the **Data sources Configuration**, click ⋮ next to **IT Procurement Request Data sources**, click Edit from the dropdown.



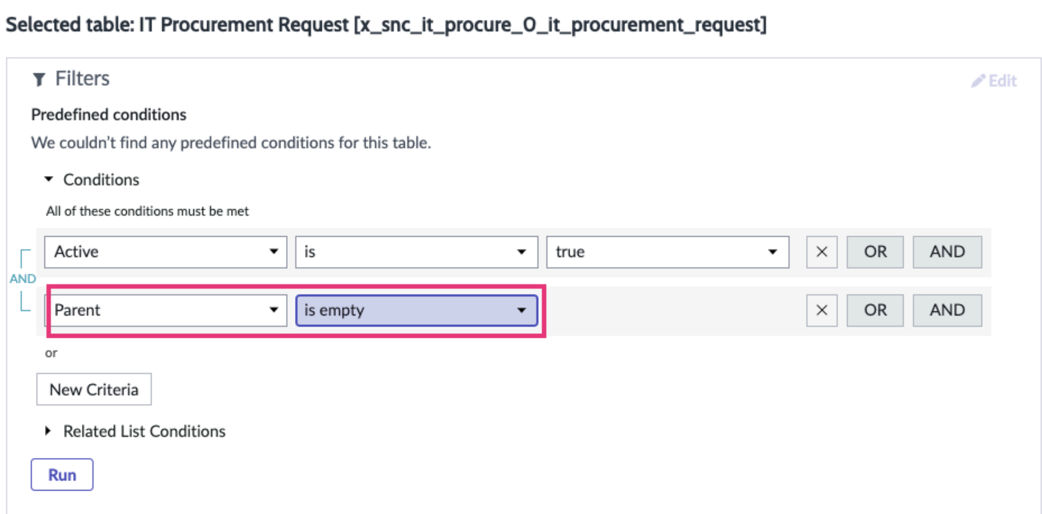
Click **Edit** filters.

Remove the **Assigned to is (dynamic) Me** filter by clicking **X**.



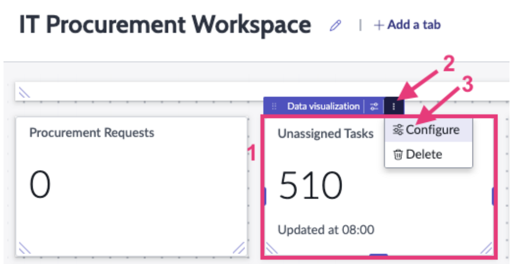
Click **AND** to add a condition

Configure the **condition** where **Parent is empty**. We will be creating sub-tasks from the Master (parent) IT Procurement Request record, we do not want the sub-tasks to be listed.

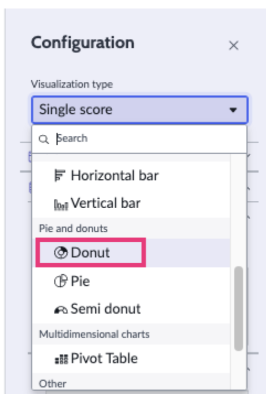


Click **Apply** at the bottom right.

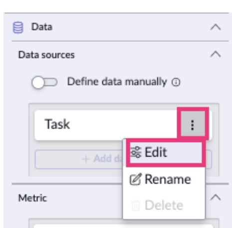
8. Let’s edit another data visualization card. Click on the **Unassigned Tasks** card. Click ⋮ to configure the card, and from the dropdown click Configure.



From the **Configuration panel**, change the **Visualization type** to a **Donut.**

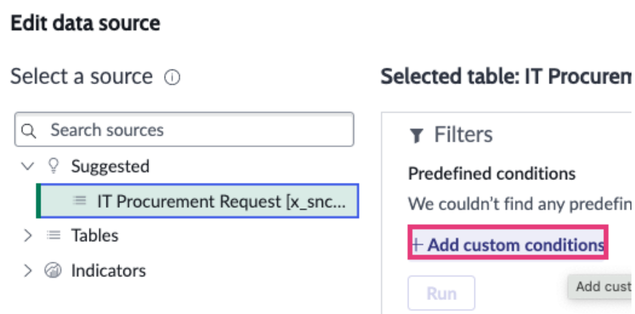


From the **Data sources Configuration**, click ⋮ next to **Task Data sources**, click Edit from the dropdown.

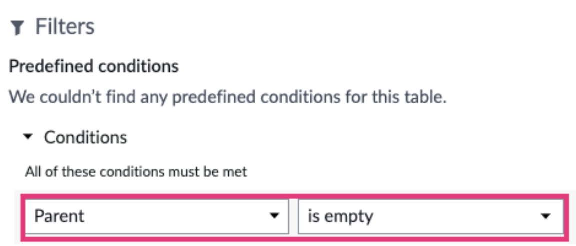


Select **IT Procurement Request** as the data source.

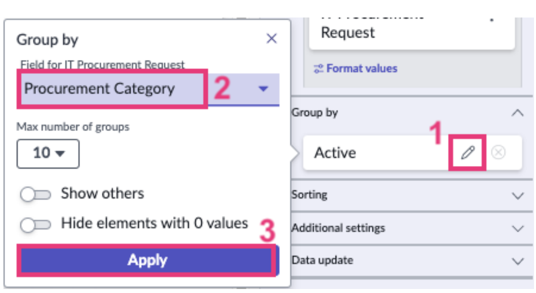
Click **+Add custom conditions**.



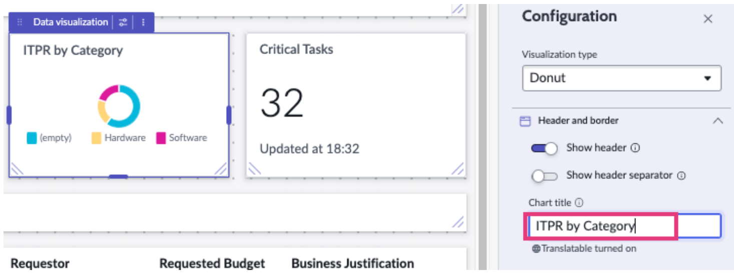
Configure the **condition** as **Parent is empty**. Click **Apply**.



From **Group by Configuration**, click next to **Active**. Select **Procurement Category** as the Group by field. Click **Apply**.

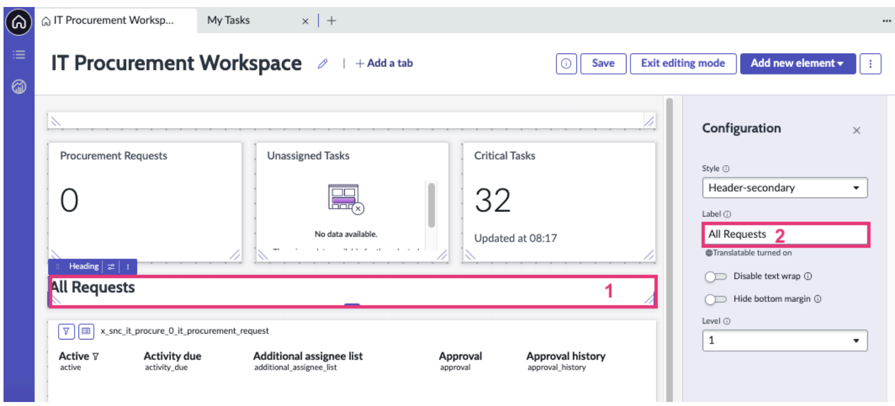


Update the **Chart title** in the **Header and border** section to **ITPR by Category**. Click **Save**.

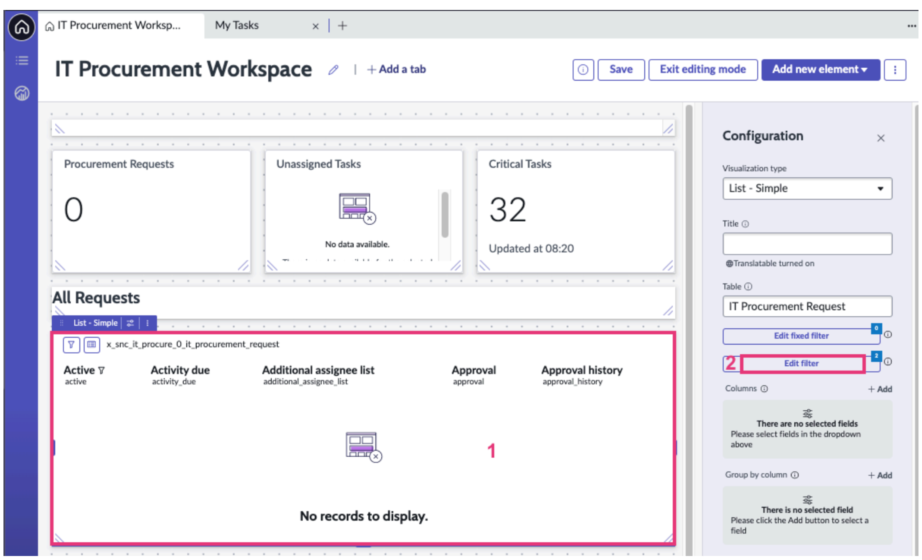


We have successfully configured a nice donut pie visual to tally on the type of procurement requests submitted. If the donut is not being displayed, it's because we do not have any IT Procurement Request data yet.

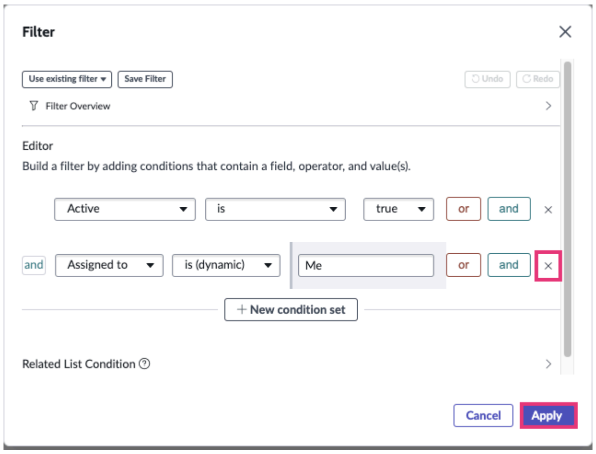
9. Click on **My Work Header**, and change the **Label** from **My Work** to **All Requests**.

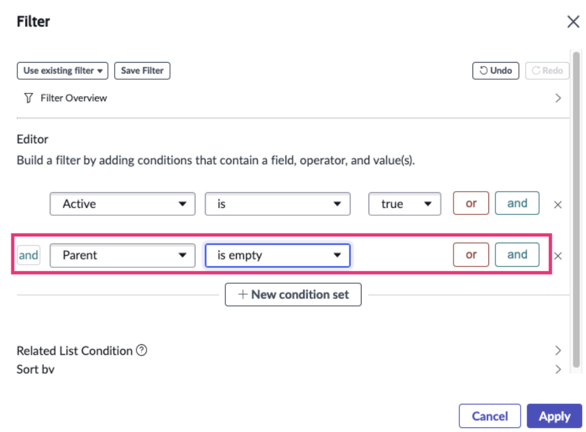


10. Click on the **List**. Click **Edit filter** from Configuration panel.

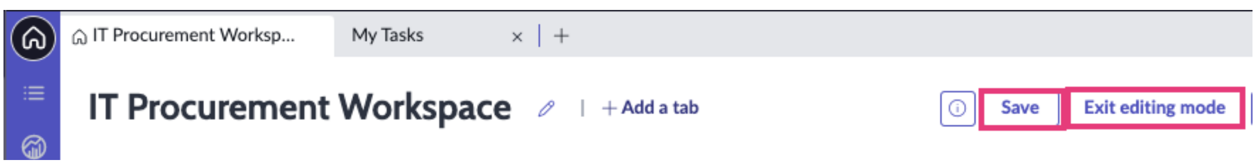


From the pop-up, remove the **Assigned to is (dynamic) Me** filter by clicking **X** next to it. Click **and** to add and configure the **Parent is empty condition**. Click **Apply**.



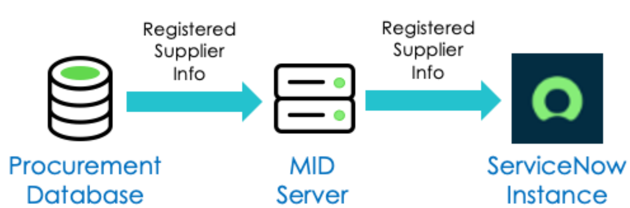


11. Click **Save**, then **Exit editing mode**. We have done editing the Workspace, we will come back to the Workspace later.



Exercise 3: Integration with Remote Database

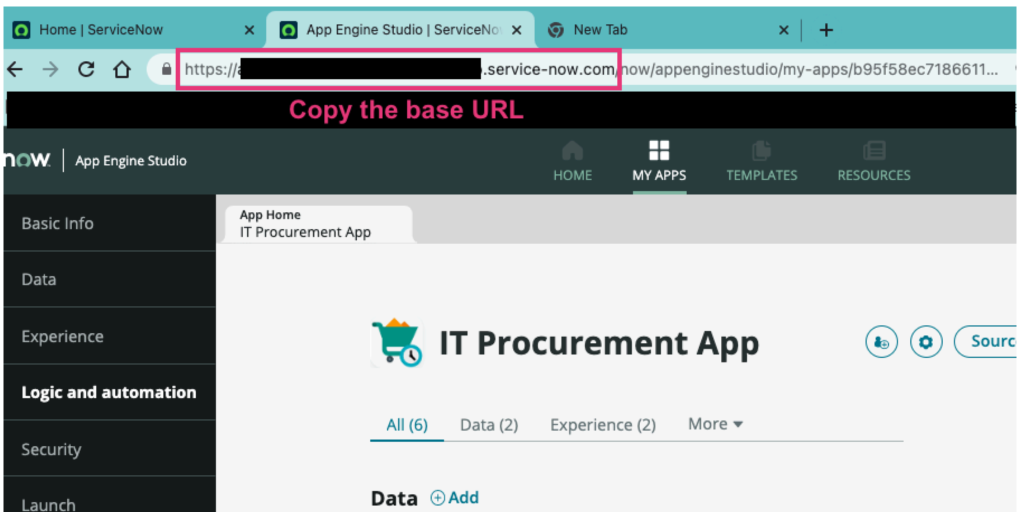
As the procurement team uses a homegrown procurement system to manage registered suppliers information, in this exercise, we will integrate with the procurement system's homegrown database. We will create a **custom spoke** (action) that will connect with the remote MySQL database running on AWS, and read all the suppliers information. The suppliers information will then be stored in the Suppliers custom table within our IT Procurement App.



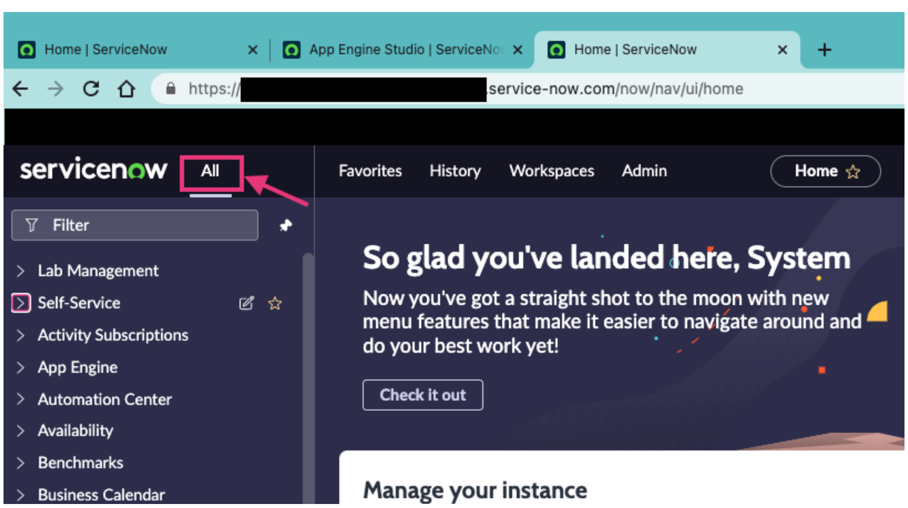
As all database connection is required to be made from the MID Server, will we first validate the MID server prior to configuring the JDBC DB connection.

Validate the MID Server

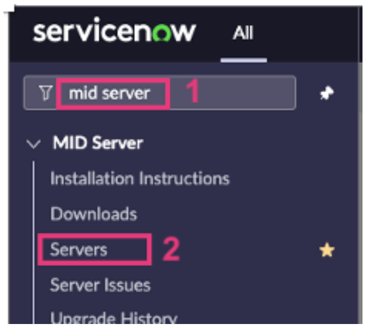
1. Go back to the ServiceNow Home brower tab. Alternatively, copy your instance base URL of format https://<instance-name>.lab.service-now.com. Open a new browser tab and open the instance URL in the new tab. This will take you to the Now platform home screen.



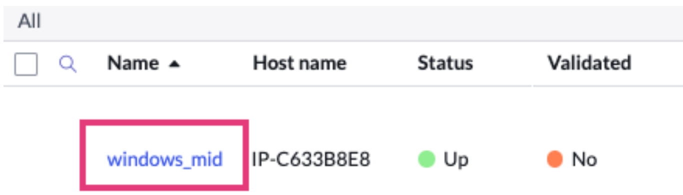
Visit the Now platform home page. Note we can access all apps on the Now platform using the **All** navigation menu.



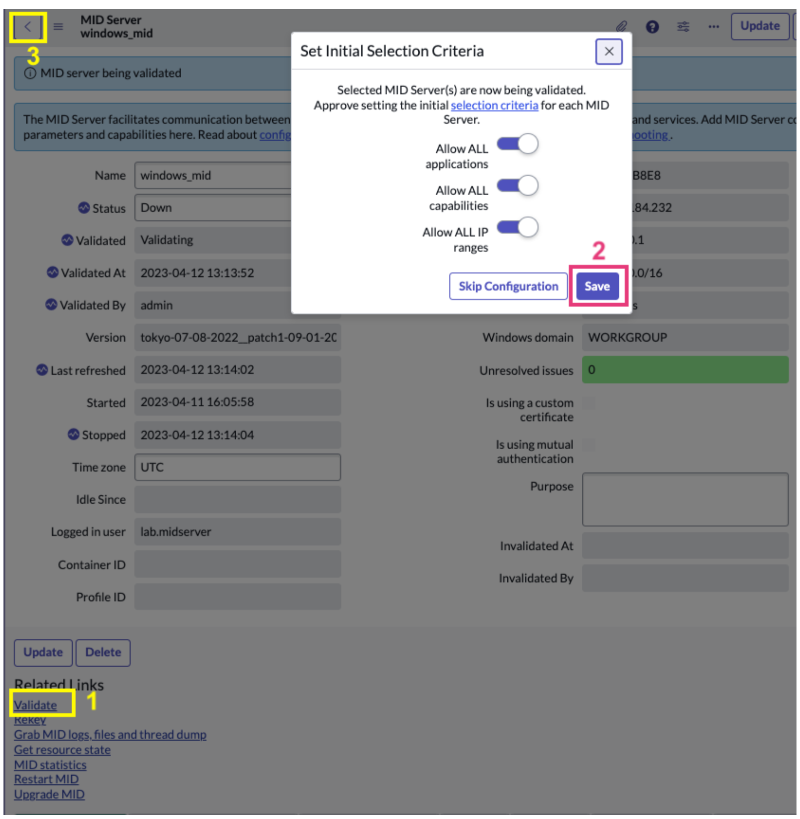
2. Validate the MID Server before we test the new JDBC Connection. From **All** navigation search bar, search for **mid server** and navigate to **Servers** within the **MID Server** menu.



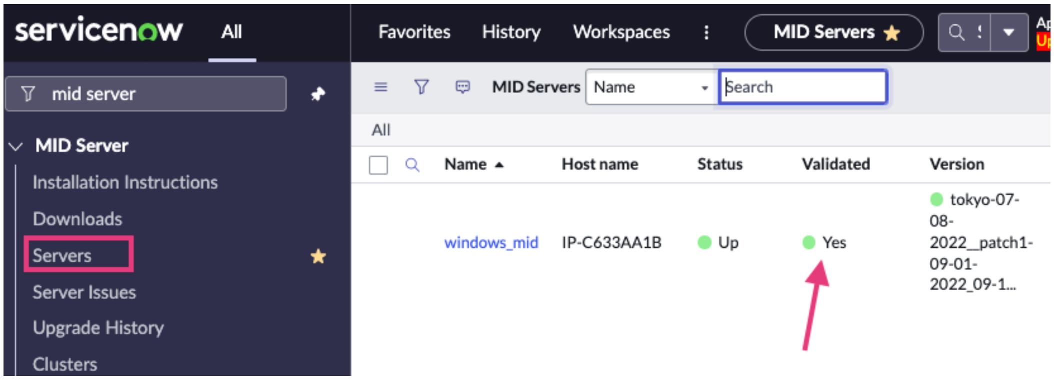
Click to **windows_mid** open the only MID server record in the list.



Click **Validate** from **Related Links**. Click **Save** from **Set Initial Selection Criteria** pop-up window. Click **<** to return to the MID Server list while validation is taking placec.



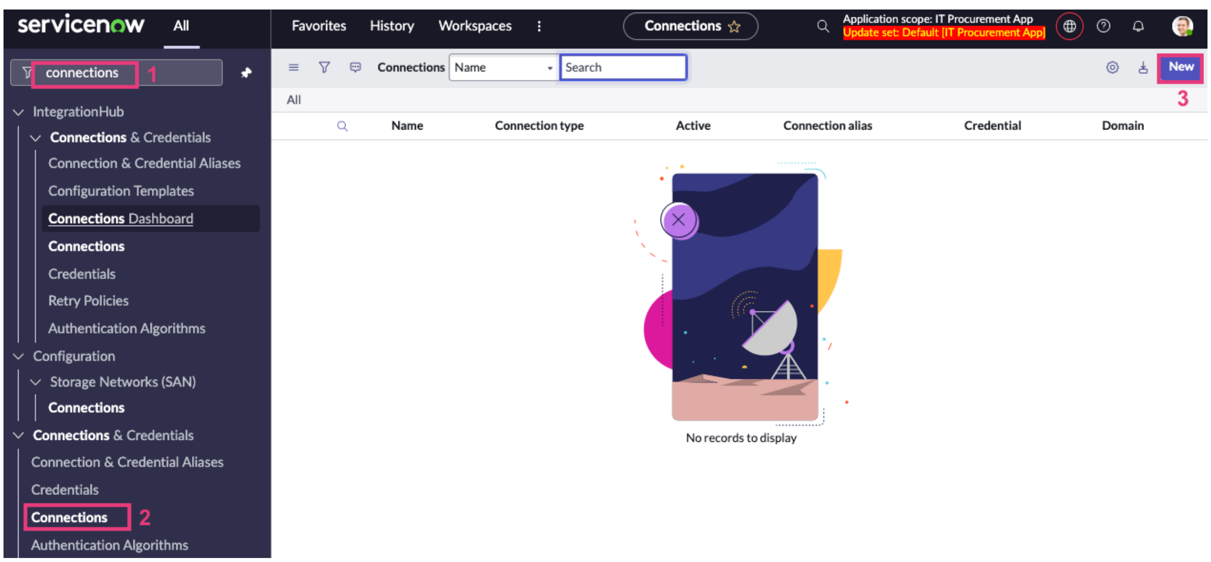
3. Note that the **windows_mid** server is **validated**.



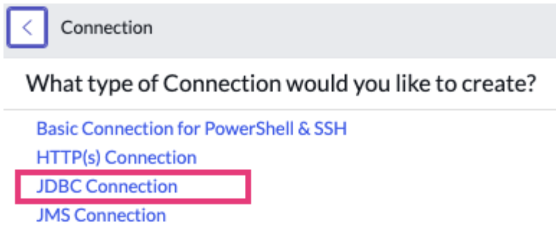
Configure JDBC Remote Database Connection

1. Search for **connections** from the All menu nagviation search bar and click **Connections** within the **Connections & Credentials** menu.   This will open the list of connections records which is empty initially.

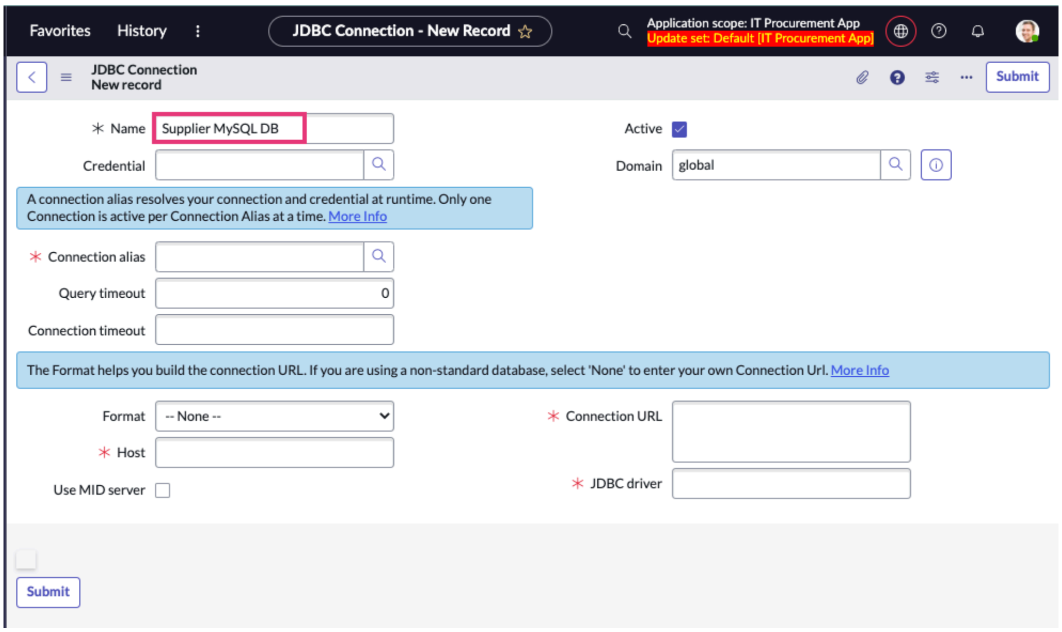
   Click **New** from the Connections table to create a new connections record.



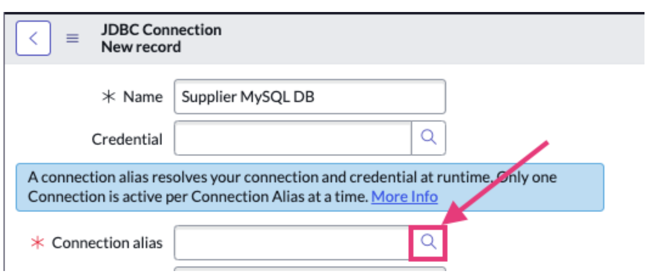
2. Select **JDBC Connection** as the type of connection to be created. We would like to connect to the remote AWS MySQL database with a JDBC connection.



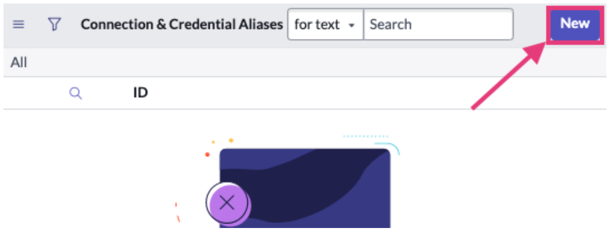
3. Enter the connection **Name** as **Supplier MySQL DB**.



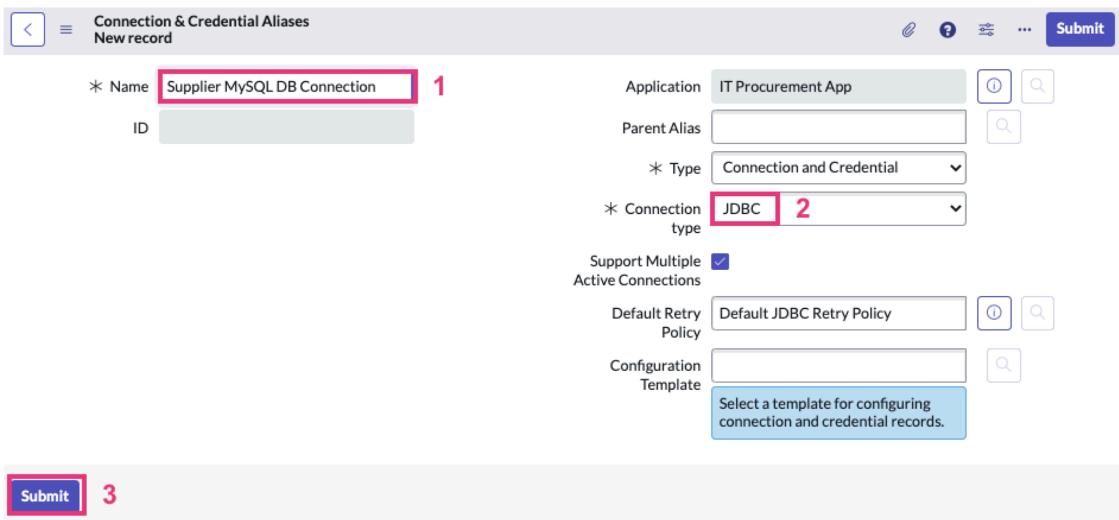
4. Click the **magnifying glass** from the **Connection alias** input field to add details of the MYSQL DB JDBC connection.



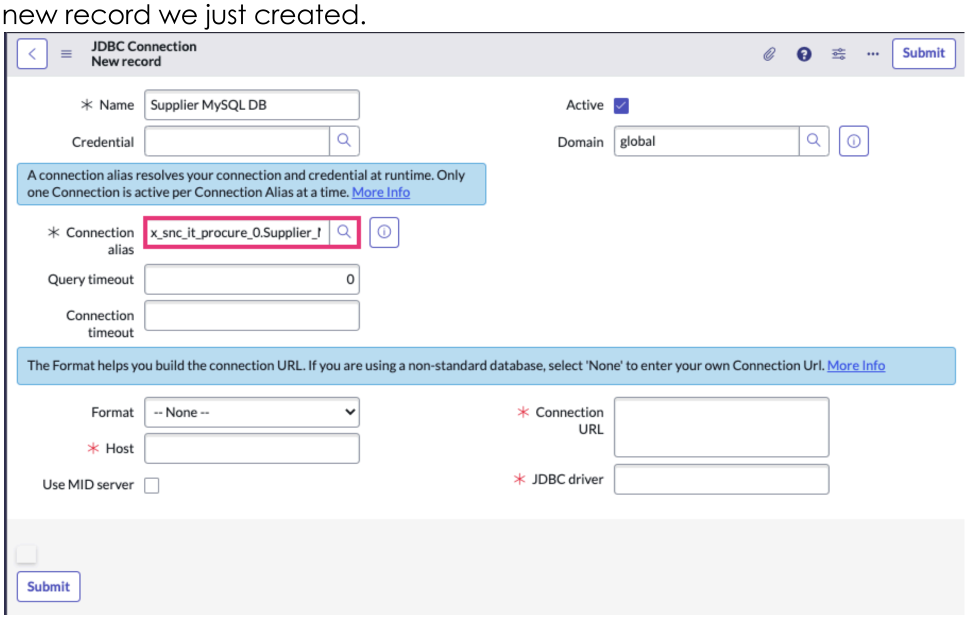
5. Note that a new browser tab opens showing the **Connection & Credential Aliases** list. Click the **New** button from top left to create a new **Connection & Credential Alias**.



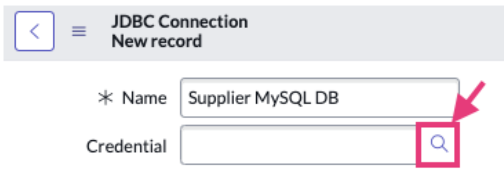
Enter **Name** as **Supplier MySQL DB Connection**, select **JDBC** as the **Connection type**, click **Submit** to create the Connection & Credential Aliases record.



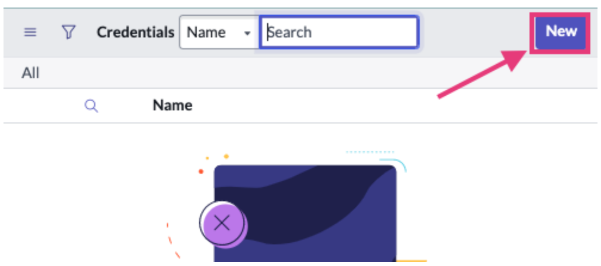
This will close the Connection & Credential Aliases browser tab and return to the **JDBC Connection New record** page. Note that the Connection alias is now populated with the new record we just created.



6. Click the **magnifying glass** from the **Credential** input field to add credentials for connecting to the MYSQL DB JDBC connection.

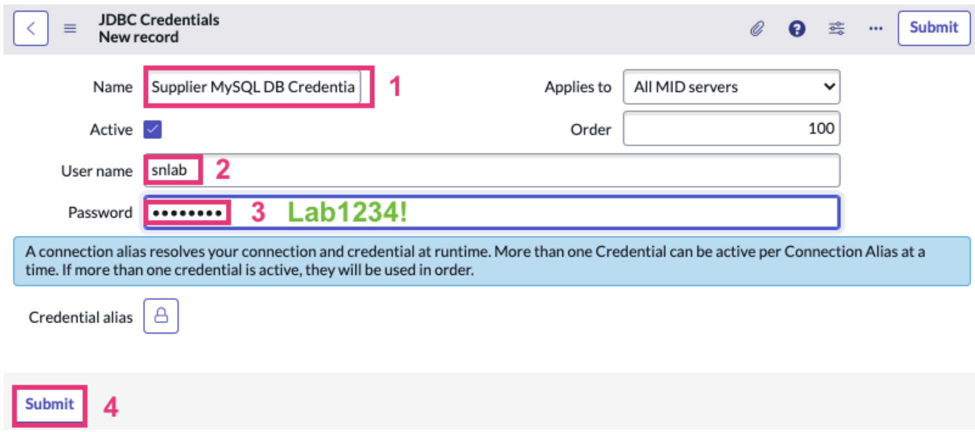


Click **New** from top right to create a new **Credentials** record.

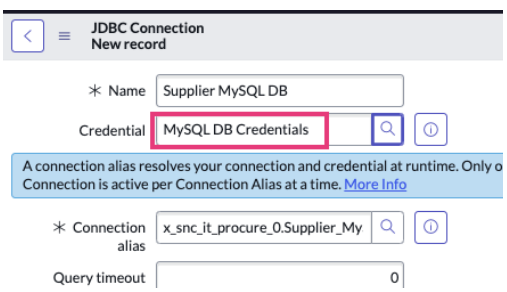


Select **JDBC Credentials** as the **type of Credentials** to be created.

Enter **Name** of the JDBC Credentials record as **MySQL DB Credentials**. Enter **User name** as **snlab**, **Password** as **Lab1234!**. Click **Submit** to save the new credentials.



This will close the JDBC Credentials browser tab and return to the **JDBC Connection New record** page. Note that the Credential is now populated with the new credential record we just created.

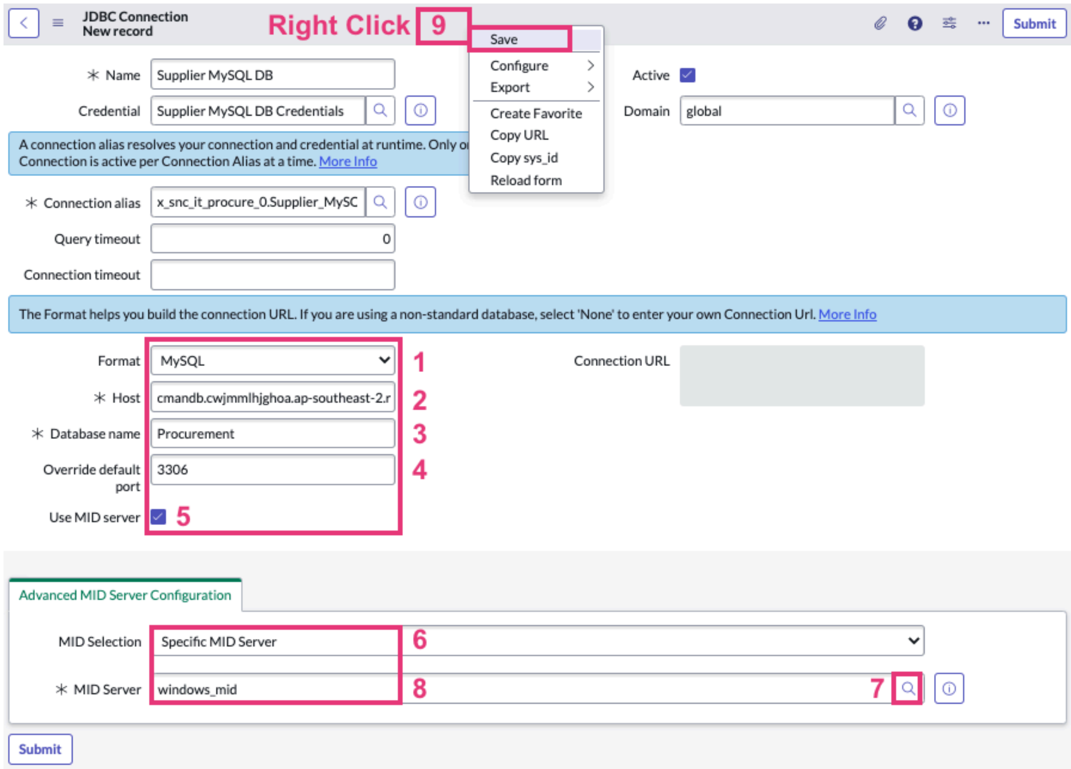


7. In the **JDBC Connection New record** page, select Format as **MySQL**, enter the **Host** as **cmandb.cwjmmlhjghoa.ap-southeast-2.rds.amazonaws.com**, **Database** name as **Procurement**, and Overide default port with **3306**.

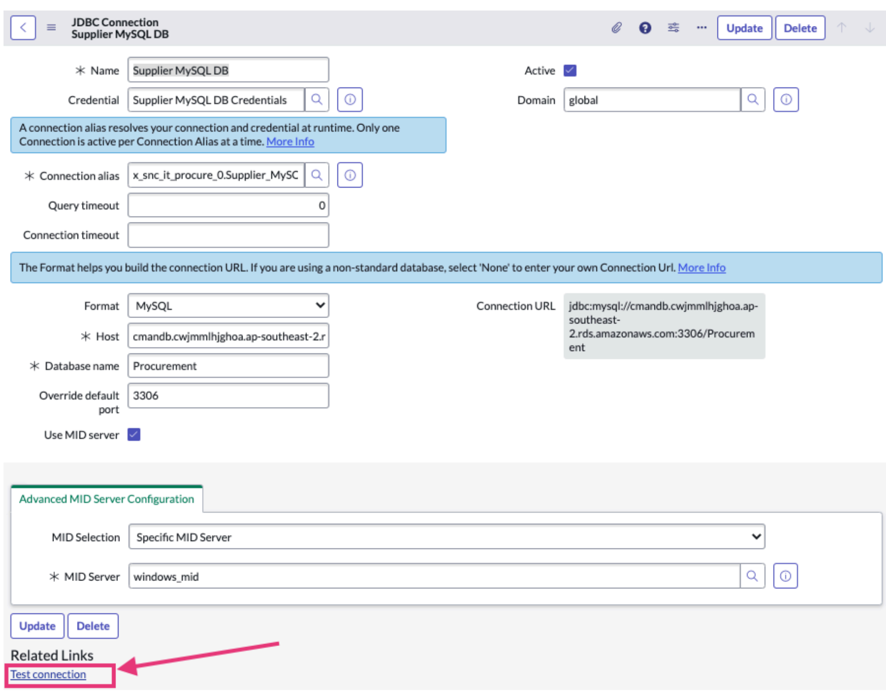
   Check **Use MID server**. Advanced MID Server Configuration tab will be displayed. Select **Specific MID Server** as **MID Selection**.

   Click the **magnifying glass** on the right of the **MID Server** input field, and select the available MID Server with Name **windows_mid**. Compare your entries with the JDBC Connection form shown below.

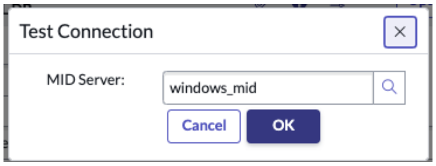
   Right click on the **JDCB Connection title grey bar**, click **Save**.

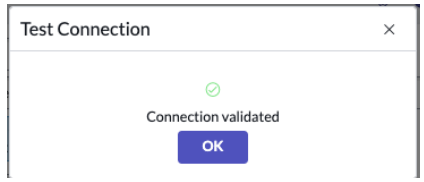


8. Click **Test connection** to test the MySQL JDBC connection.



Click **OK** from the Test Connection pop-up window. Click **OK** when connection is validated.



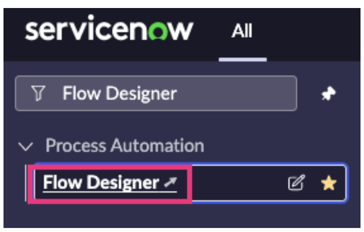


We have connected to the remote AWS MySQL database successfully.

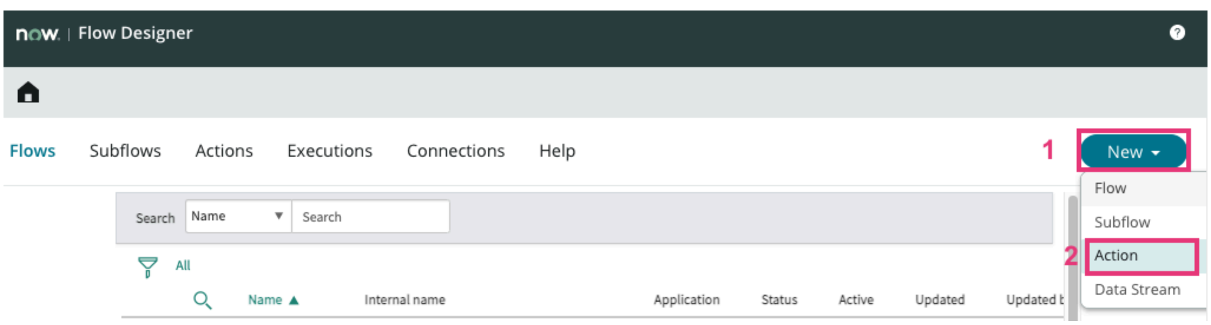
Build Custom Integration to Extract Suppliers Data from Procurement DB

Now we are ready to create an Action as the custom MySQL DB integration spoke and build the Workflow that reads registered Suppliers information from the Procurement database and populating the information the custom **Suppliers** table within our App.

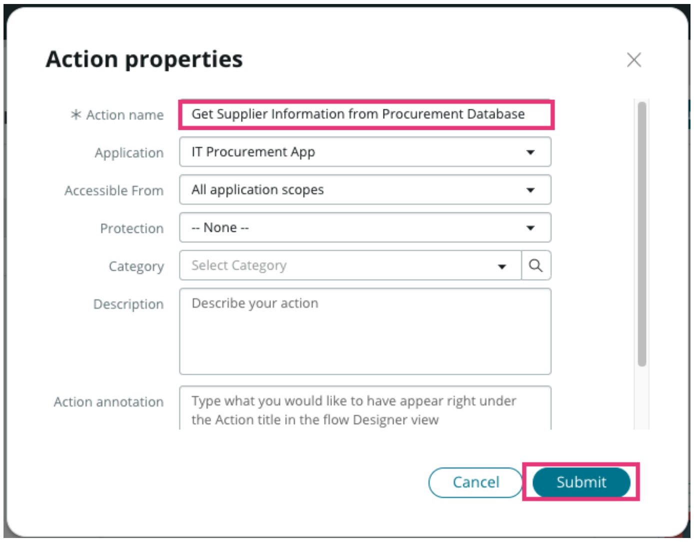
1. Search for **Flow Designer** from **All** navigation menu, click **Flow Designer** within the **Process Automation** menu. Flow designer will be opened in a new browser tab.



2. Click the **New** button and select **Action** from the drop-down.

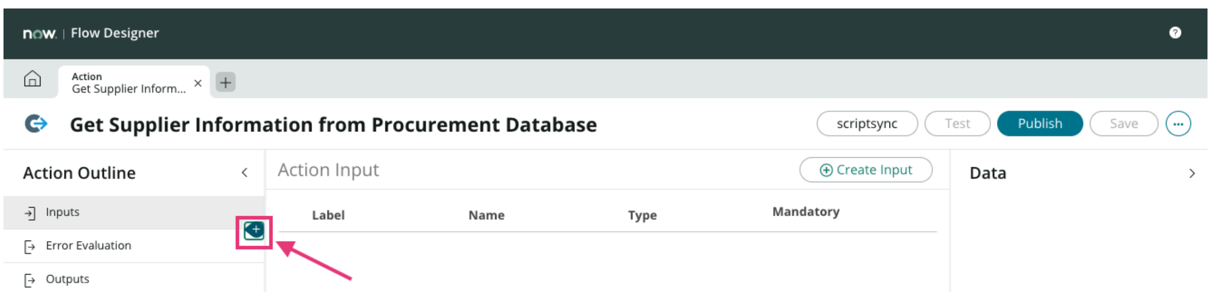


3. In the Action properties pop-up window, enter **Action name** as **Get Supplier Information from Procurement Database**, click Submit.

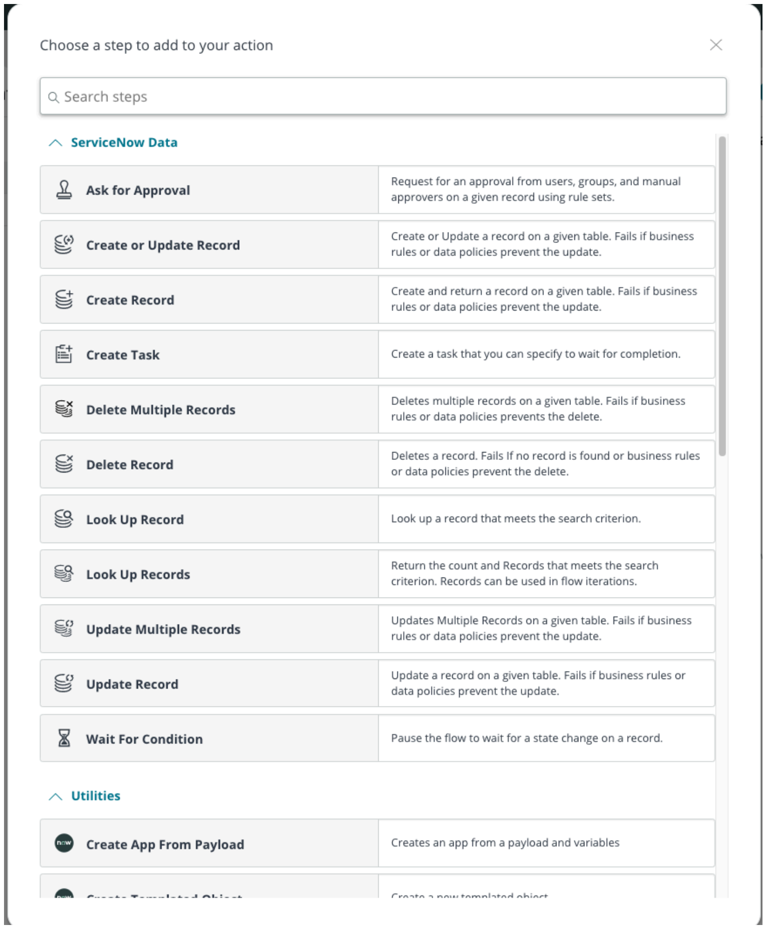


The Action editor is launched.

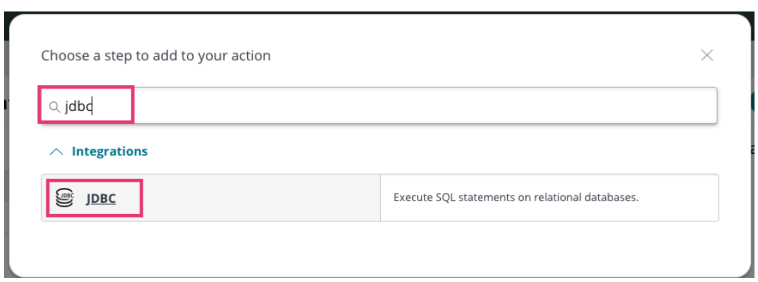
4. In the **Action Outline** left menu, click the **+** icon in-between the **Inputs** and **Error Evaluation** Actions.



The **Choose a step to add to your action** window will pop-up.

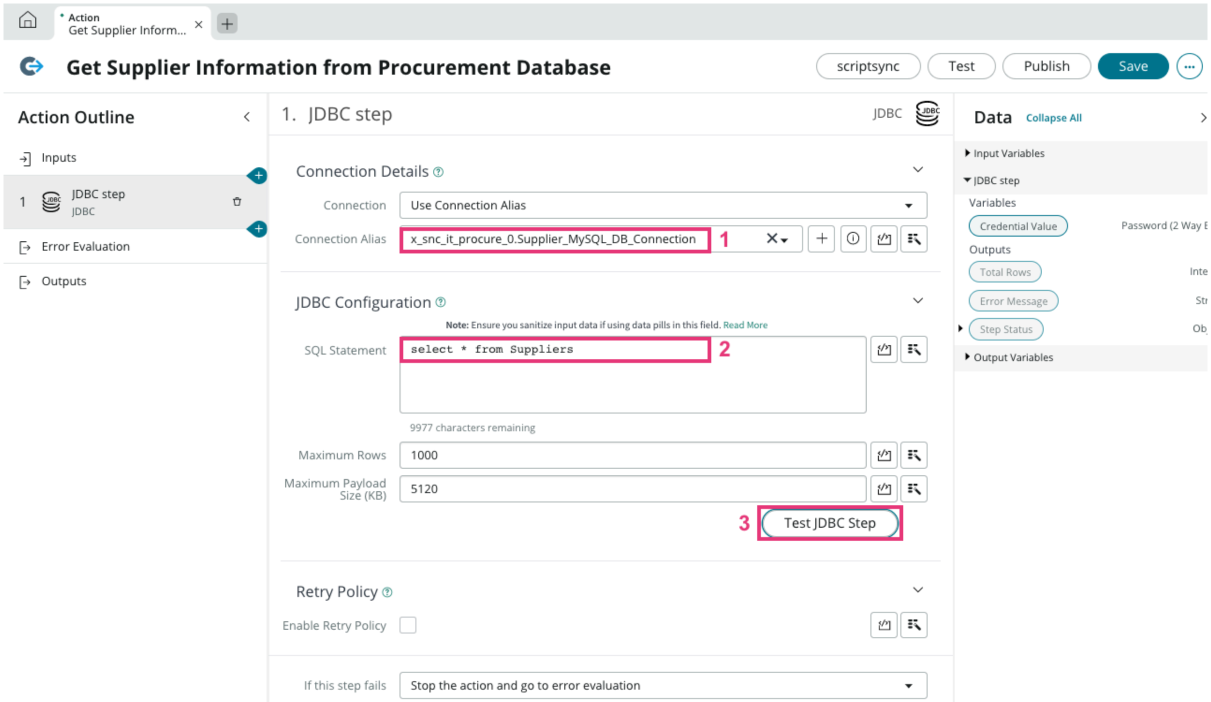


Search for **jdbc**, and select the **JDBC** option returned from the search bar.



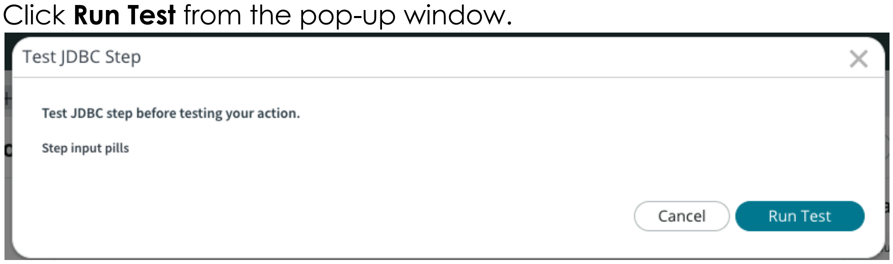
This will add the **JDBC Step** in the Action Outline.

5. Click the drop-down triangle arrow to select **x_snc_it_procure_0.Supplier_MySQL_DB_Connection** as the **Connection Alias**. Note that the connection alias name may be different in your instance, select the one that you have created from previous steps. In **SQL Statement**, enter **select * from Suppliers**. This is a SQL statement that reads all the records in the MySQL Suppliers table within the Procurement database.

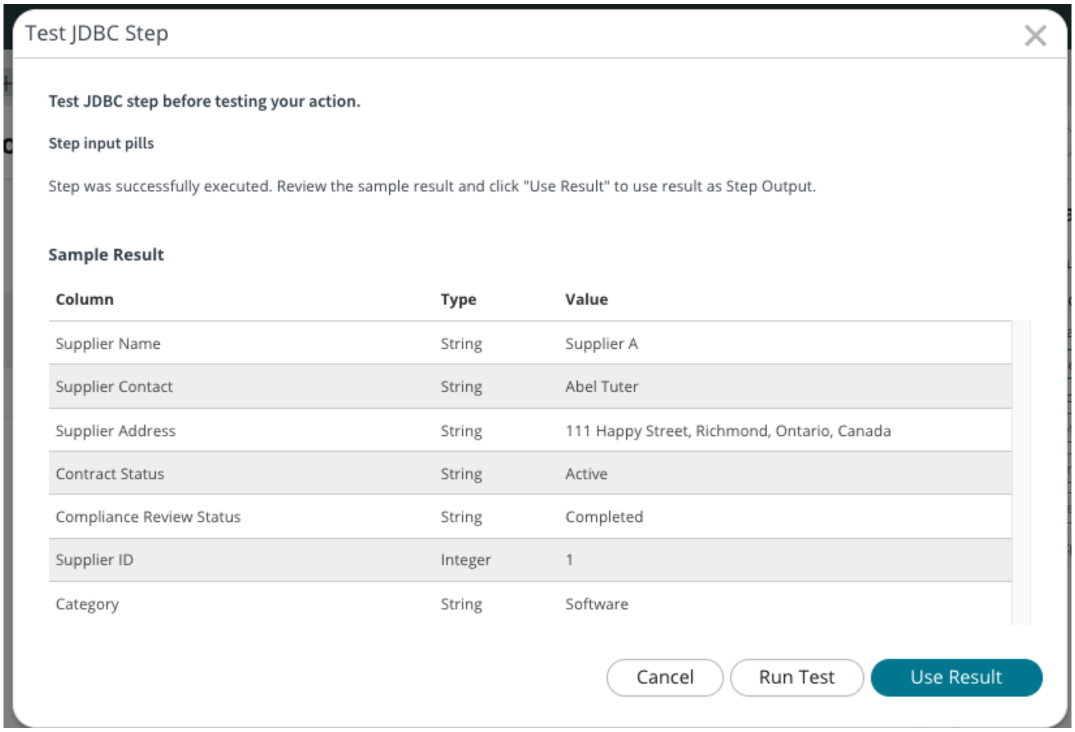


6. Click **Test JDBC Step** to test our connection and SQL statement. If you are getting an error from the test, check the syntax of the SQL statement.

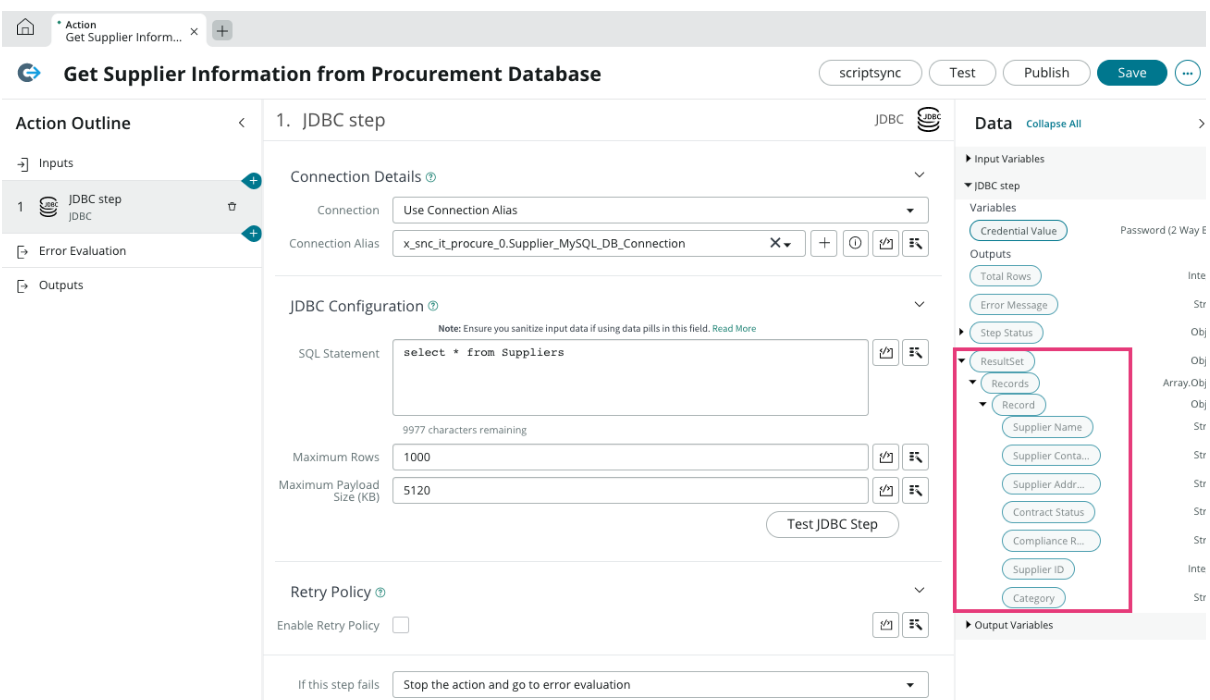
   Click **Run Test** from the pop-up window.



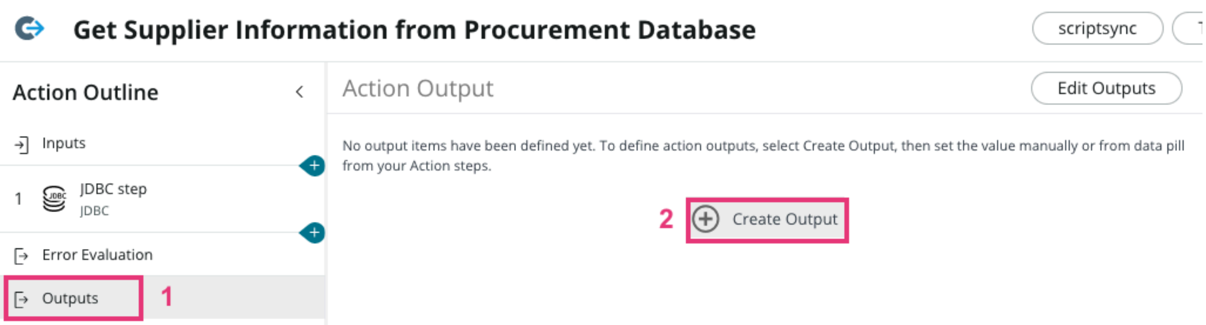
   Note that the test report shows all the information read form the remote MySQL database. Click **Use Result**.



This will create the **ResultSet JDBC Step Output**, it can be seen from the Data menu left panel. Click **Save**.

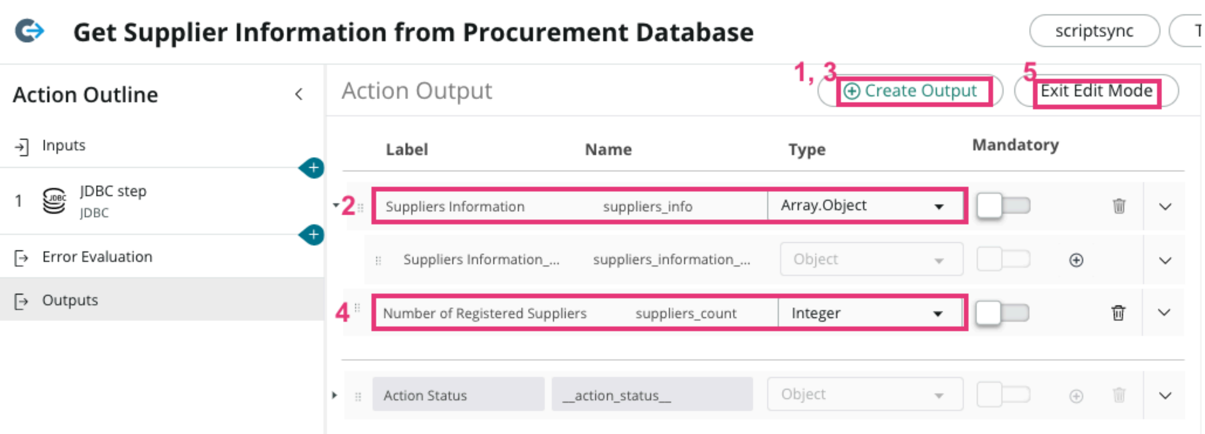


7. The last part of the custom integration action is to define the output. From the **Action Outline** menu on the left, click **Outputs**. From the Action Output editor, click **+ Create Output**.



Add the output variables:

Label	Name	Type
Suppliers Information	suppliers_info	Array.object
Number of Registered Suppliers	suppliers_count	Integer



Click **Exit Edit Mode**.

8. From the Data menu on the right panel, drag and drop the **JDBC step Outputs**, **ResultSet > Records** and **Total Rows** data pills into the Action Output **Suppliers Information** and **Number of Registered Suppliers** variables respectively.

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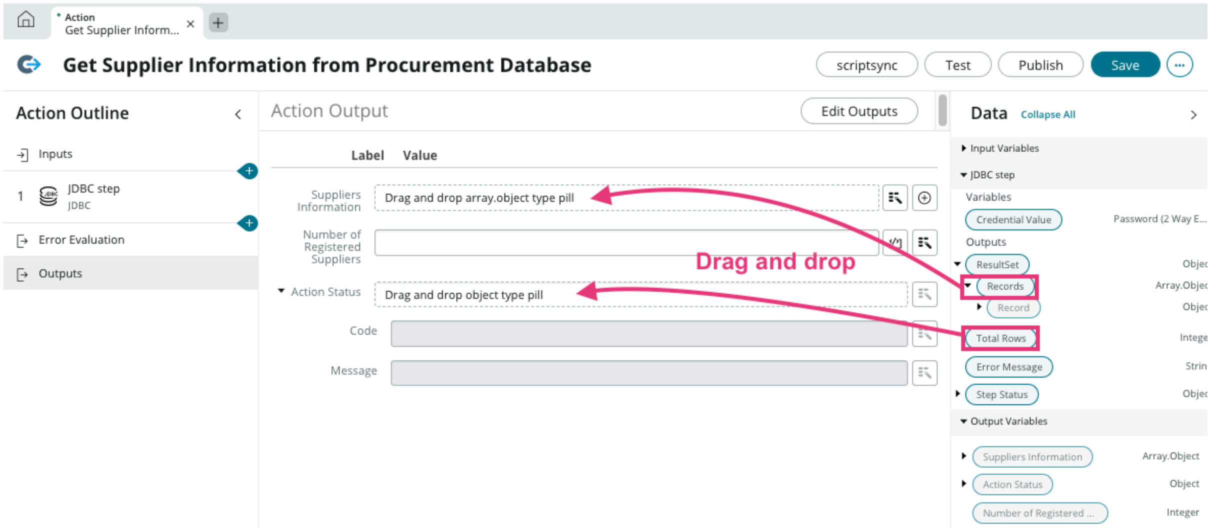
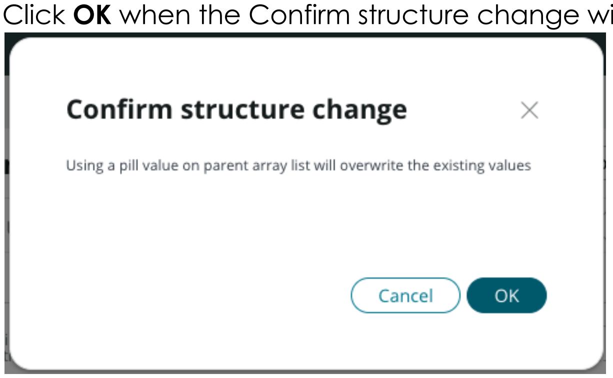
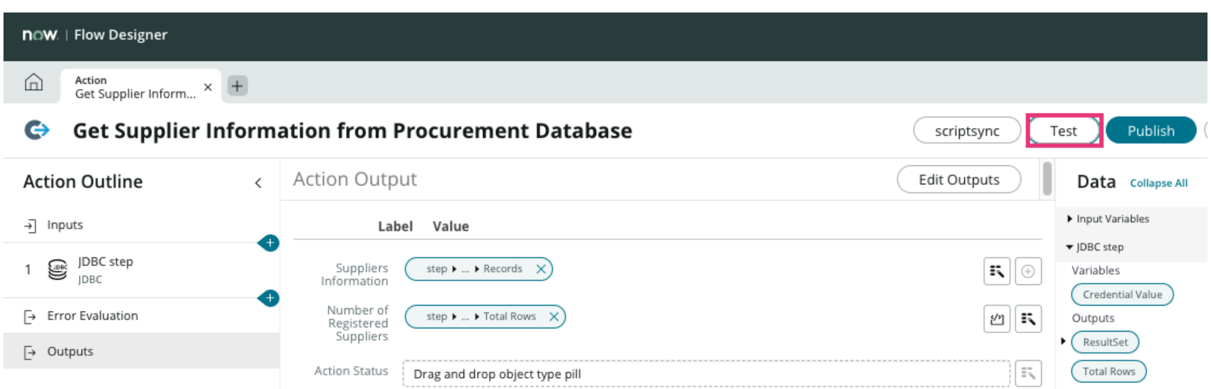


Click **OK** when the Confirm structure change window pops-up.

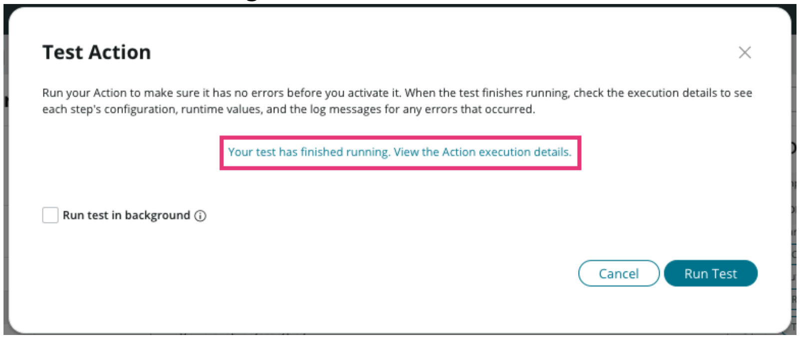


Click **Save**.

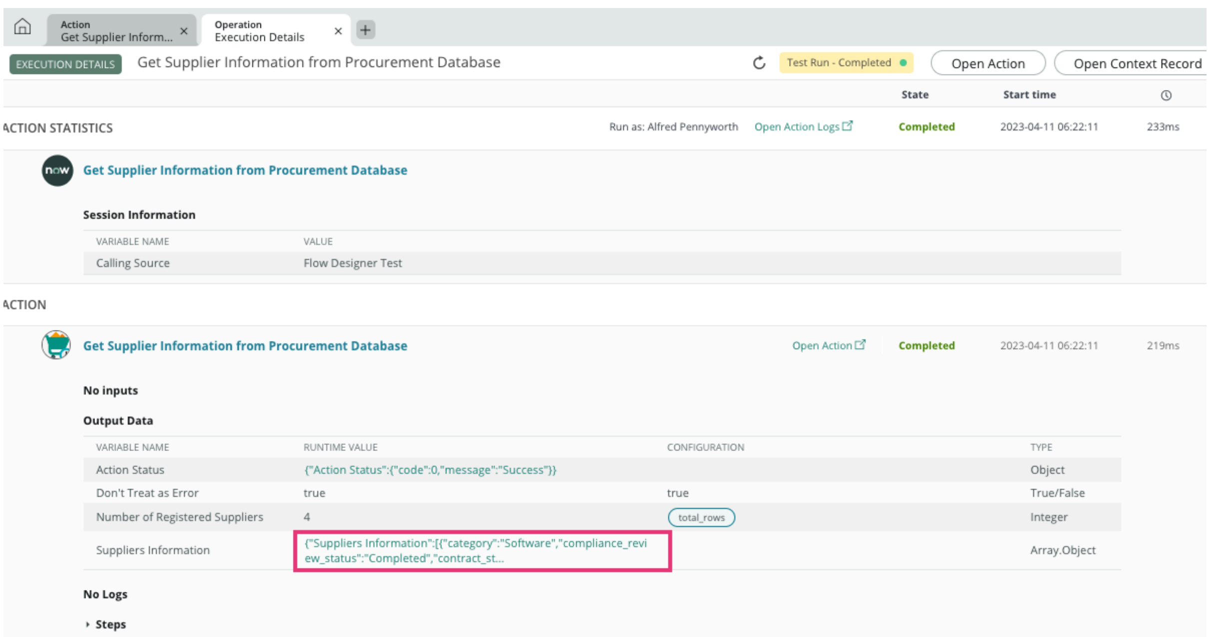
9. We have now completed the custom integration Action and is ready to test it. Click **Test**.



Click **Run Test** from **Test Action** pop-up window. After the test has finished running, click **Your test has finished running. View the Action execution details**.



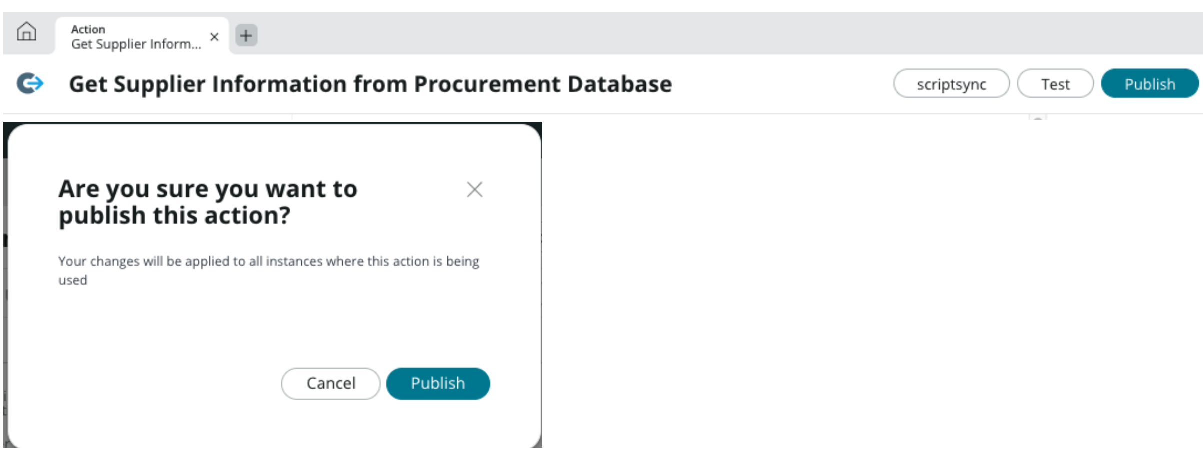
Note that the action ran successfully. Click into the **Suppliers Information** to check the returned information from the remote database.



Review the information retrieved from the Procurement database. Note that there are 4 registered suppliers returned from the Procurement database's Suppliers table.

Close the results window. **Close** the Operation Execution Details tab. **Close** the Test Action pop-up window.

10. Click **Publish** so that the **Get Supplier Information from Procurement Database** action can now be used in a workflow. Click **Publish** from the pop-up to confirm.



Close the Flow Designer browser tab.

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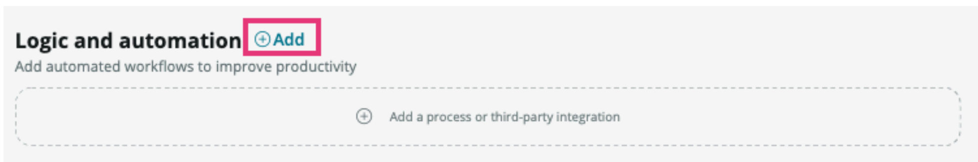
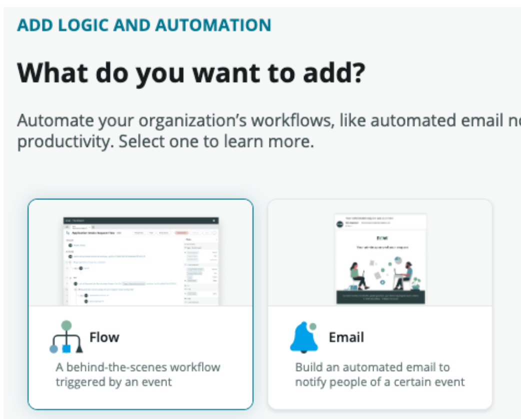
Build the Integration Workflow

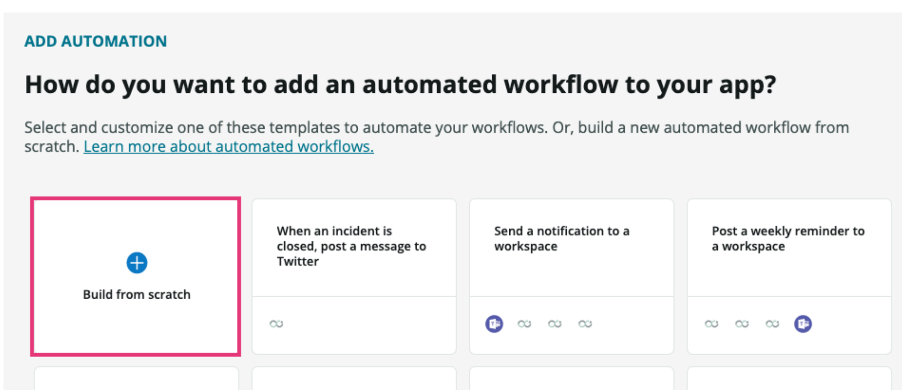
1. Let's create the workflow that ingest Suppliers Information from the remote Procurement MySQL database using the Action that we have created from the previous exercise. Return to the **App** Engine **Studio** browser tab with. From the **App Home** tab, click **+ Add** in **Logic and automation**.



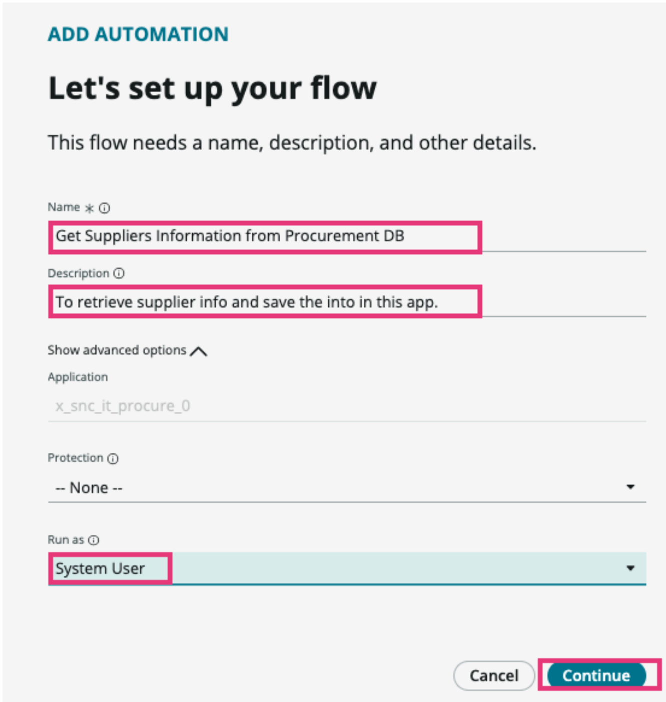
2. Select **Flow** from **What do you want to add?**



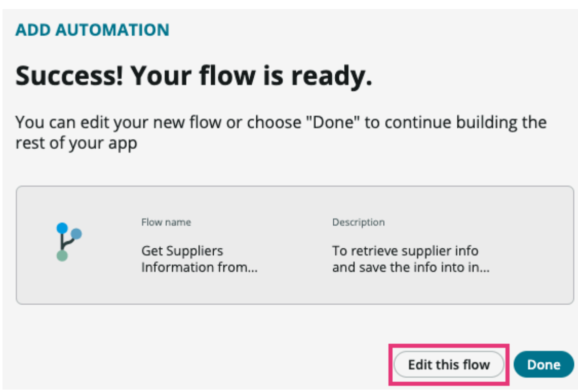
3. Select **Build from scratch** from **How do you want to add an automated workflow to your app?**



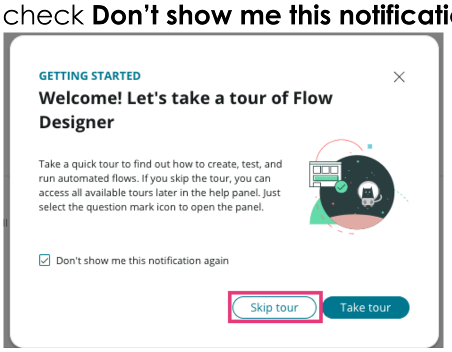
4. In the **Let's set up your flow window**, enter **Name** as **Get Suppliers Information from Procurement DB**, enter **Description** as **To retrieve supplier info and save the info into in this app**. Click **Show advanced options**. Select **Run as System User**. Click **Continue**.



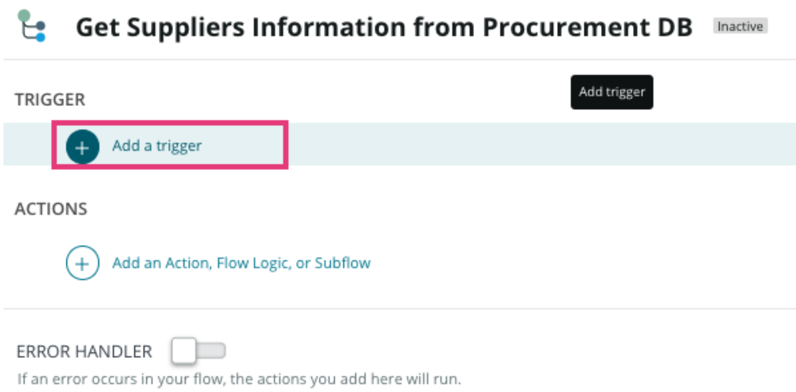
5. Click **Edit this flow**.



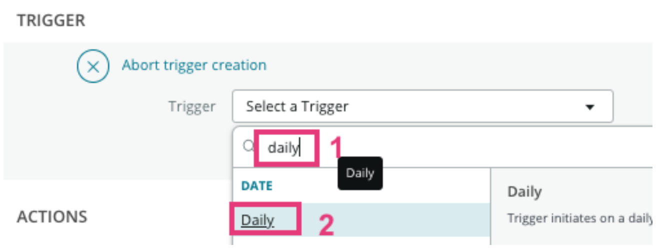
This opens the **Flow Designer**. If the **Welcome! Let's take a tour of Flow Designer** window pop-up, check **Don't show me this notification again**, and click **Skip tour**.



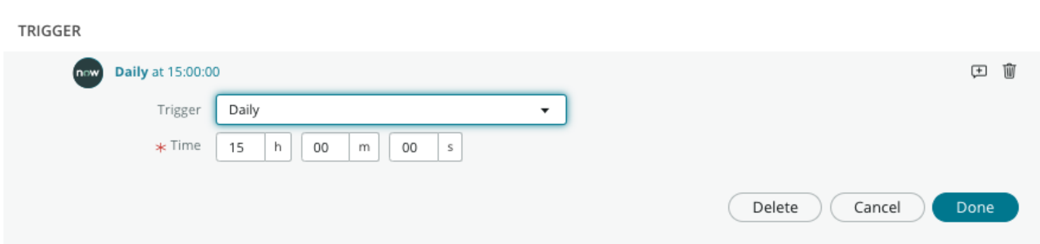
6. From the Flow Designer, in the Trigger section, click **+ Add a trigger**.



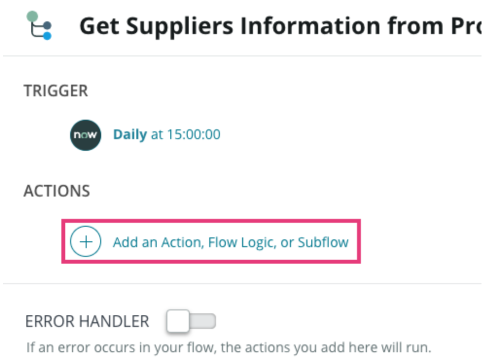
We intend to import the suppliers information once a day. Search **daily** from the **Select a Trigger search bar**. Select **Daily** from the **DATE trigger category**.



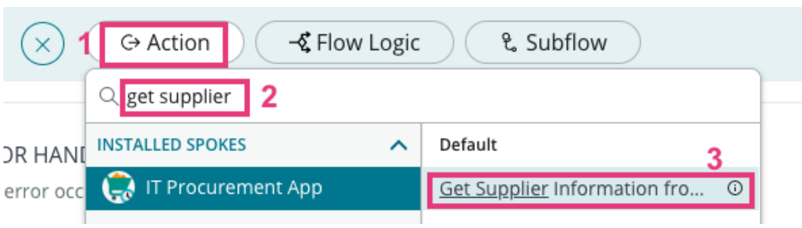
Leave the default time as is and click **Done**.



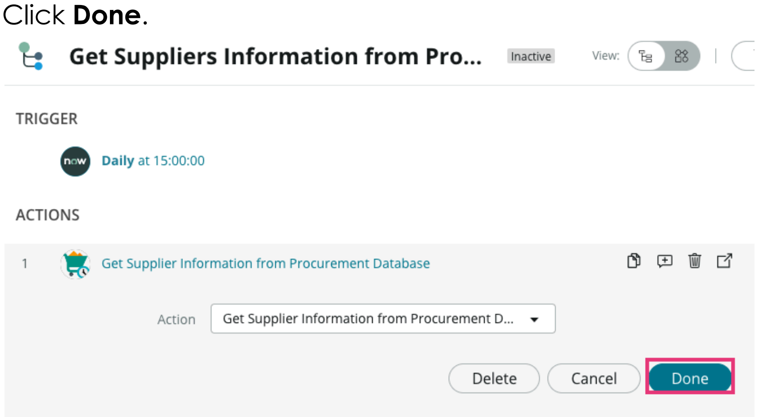
7. As a first action to the workflow, it is to read the suppliers information from the remote database. To add an Action, click **+ Add an Action, Flow Logic, or Subflow**



Click **Action**, search for **get supplier**, click the **Get Supplier Information from Procurement Database** custom spoke (integration action), this is the spoke we created from previous exercise.



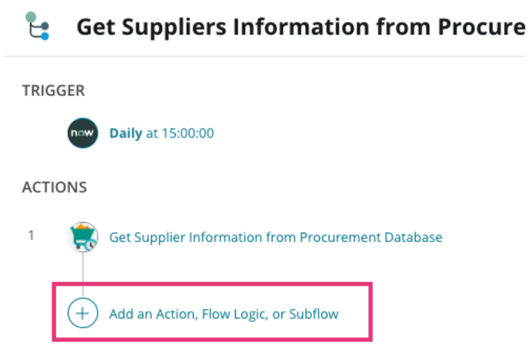
Click **Done**.

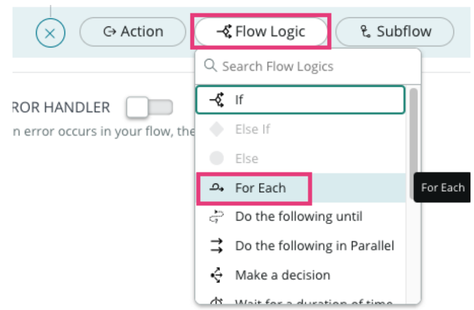


Save the Workflow.

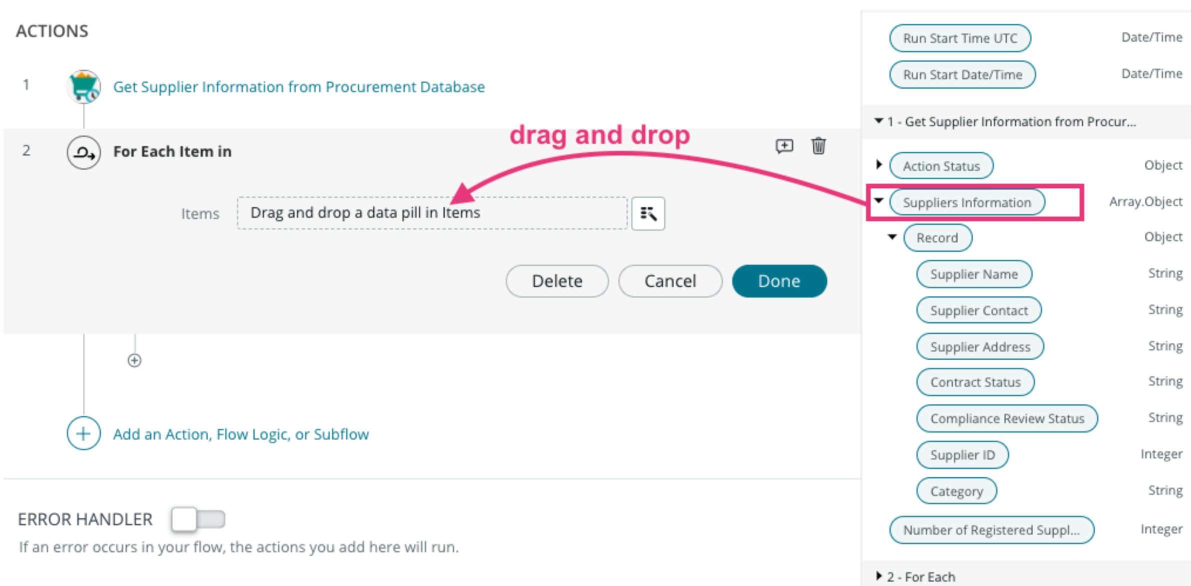
8. After reading the suppliers information, we will then write the information into our application table, the Suppliers table. Click **+ Add an Action, Flow Logic, or Subflow**. Select **Flow Logic** and click **For Each** from the drop down.

servicenow

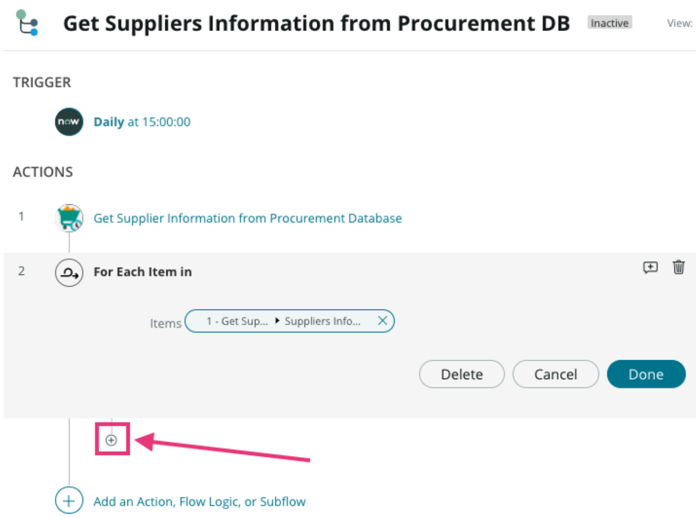




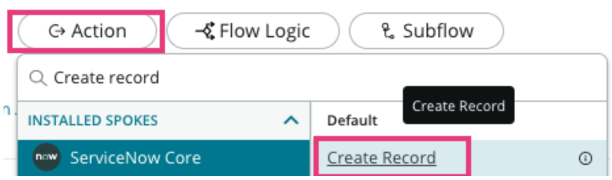
Drag and drop the **Suppliers Information** data pill from Action step 1's output into the **Items** of the **For Each Logic**. This will traverse through the list of items returned from the Procurement database read from the previous step. Click **Done**.



9. Add an Action within the For Each logic by clicking the smaller **+**.



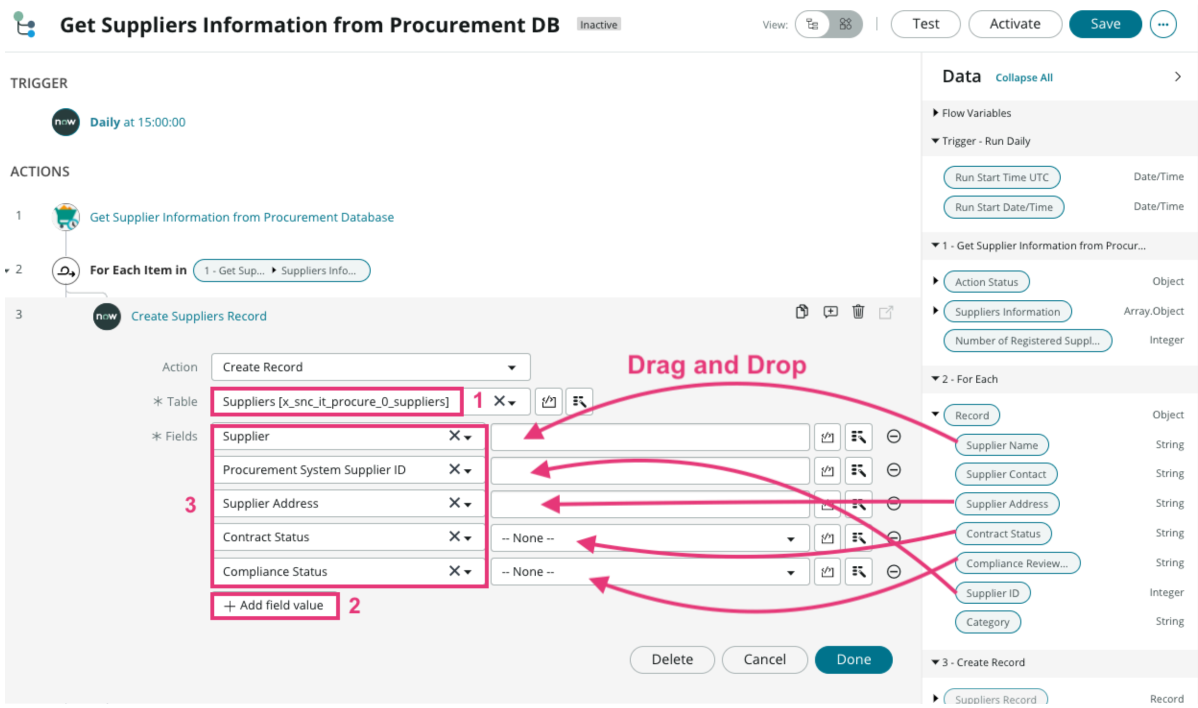
Click **Action**. Search for the **Create Record** action, and select it. We will create a record in the local Suppliers custom table for each registered supplier read from the remote procurement database.



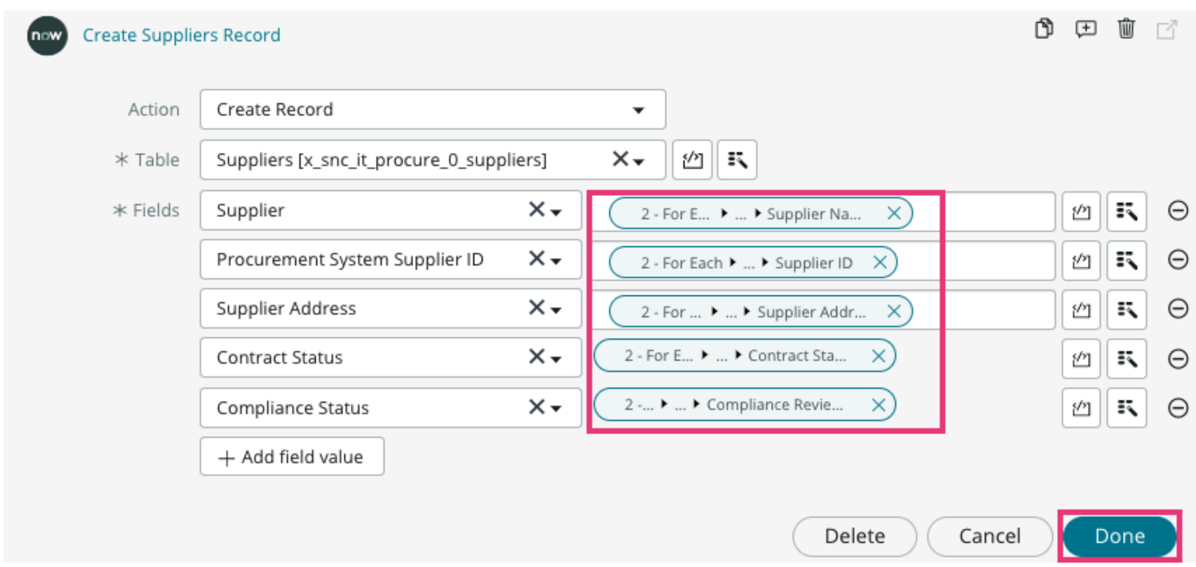
Select **Suppliers** as **Table**. Click **+ Add field values** respectively to add fields to the record:

- Supplier
- Procurement System Supplier ID
- Supplier Address
- Contract Status
- Compliance Status

From the **data output** of **2 – For Each Logic**, expand the **Record** data pill. **Drag and drop** the **Record data pills** into the respective **Create Suppliers Record** field's **value input box.** The data pills included **Supplier Name**, **Supplier Contact**, **Supplier Address**, **Contract Status**, **Compliance Review Status**, and **Supplier ID**.



The resulting Create Supplier Record Action configuration after the drag and drop activities. Click **Done**.



10. **Save** the workflow.

11. To test the workflow click **Test** and **Run Test**. After the test finishes running, click **Your test has finished running. View the flow execution details.**

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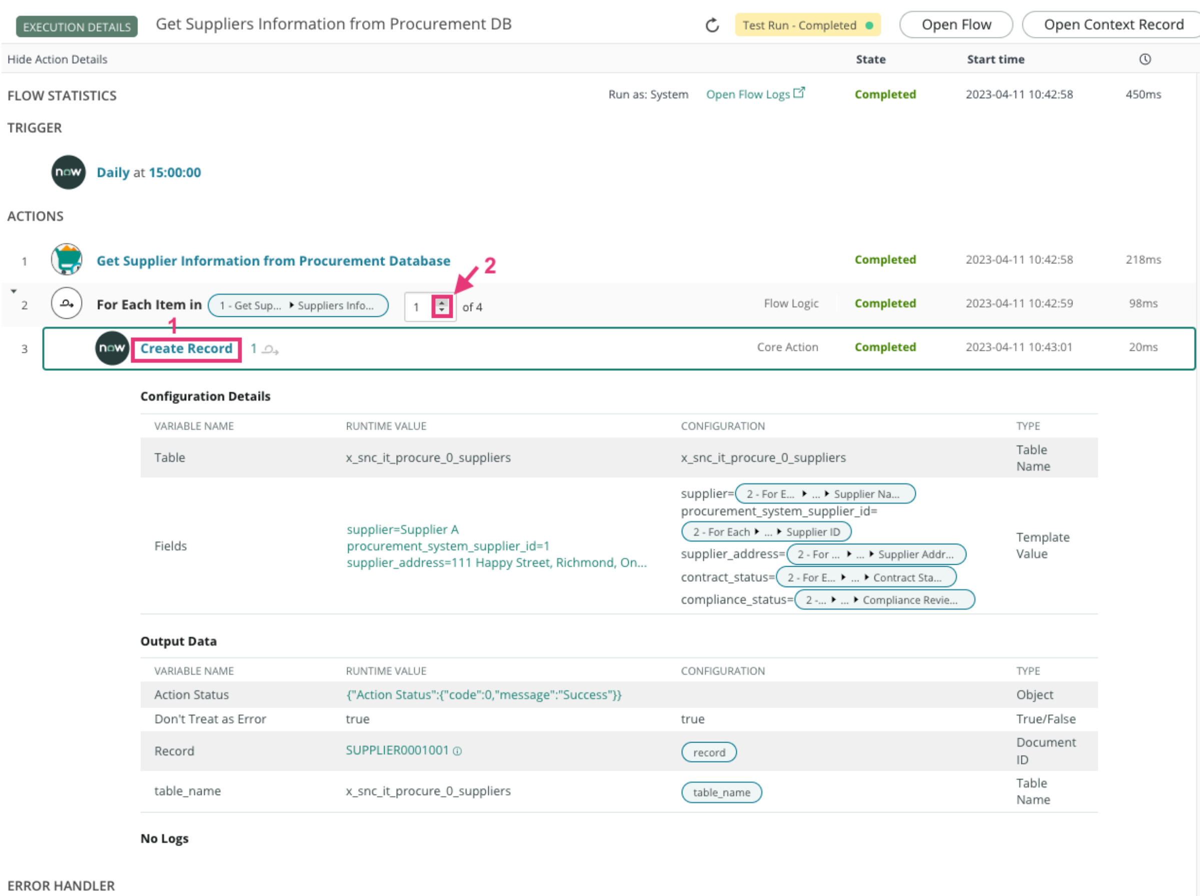
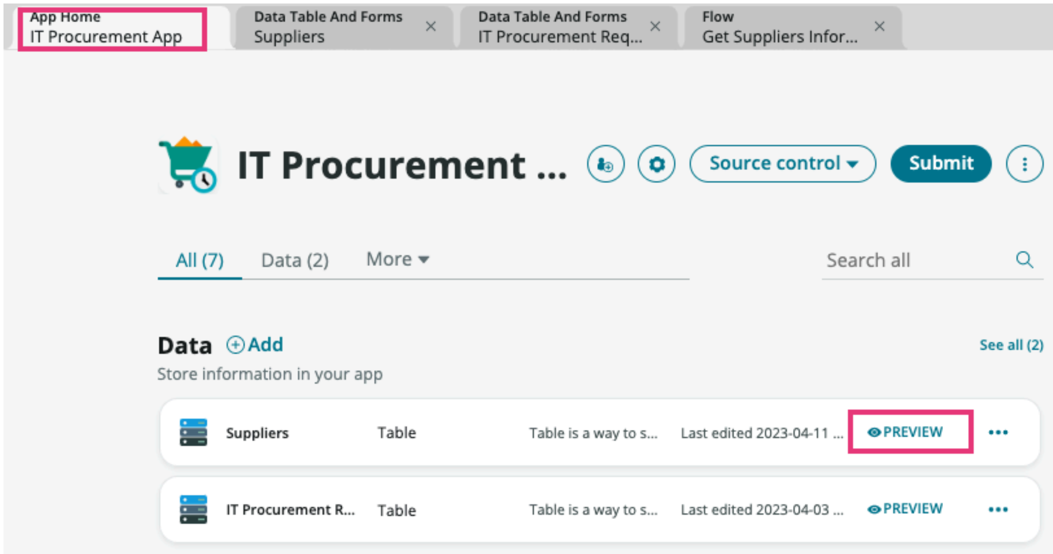
Review the test results. Review the output of step 3 by clicking **Create Record**. Traverse through the list of Suppliers written into the Suppliers table by clicking the **up** arrow count of the **For Each** logic.

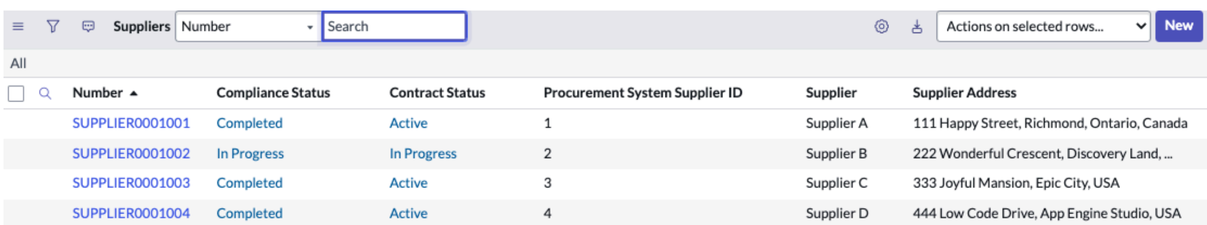


Close the **Executions** tab. **Close** the **Test Flow** pop-up window. Click **Activate**.

12. Navigate to the **App Home** tab in App Engine Studio. **Preview** the Suppliers table.



Note that all the suppliers information read from the remote database are written into the Suppliers Table.

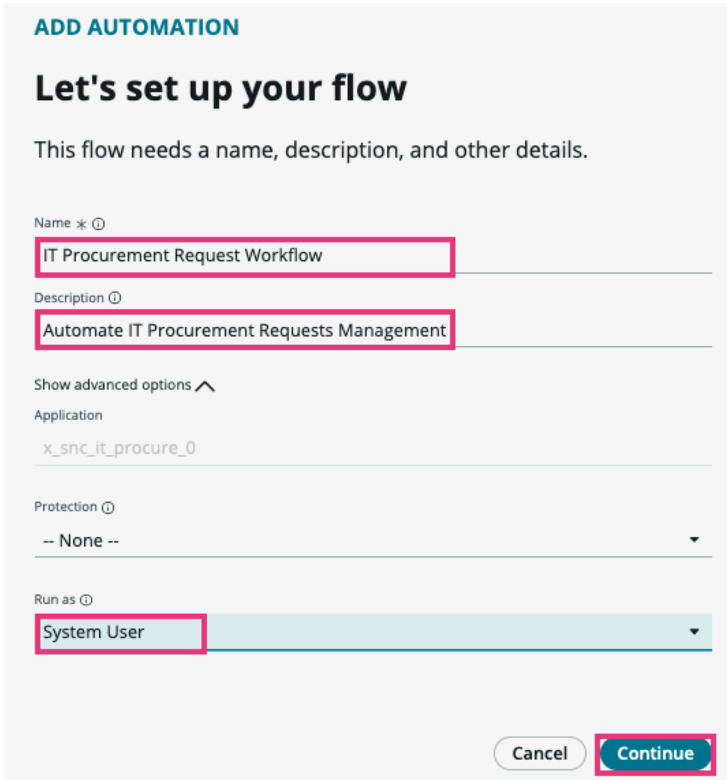


Number	Compliance Status	Contract Status	Procurement System Supplier ID	Supplier	Supplier Address
SUPPLIER0001001	Completed	Active	1	Supplier A	111 Happy Street, Richmond, Ontario, Canada
SUPPLIER0001002	In Progress	In Progress	2	Supplier B	222 Wonderful Crescent, Discovery Land, ...
SUPPLIER0001003	Completed	Active	3	Supplier C	333 Joyful Mansion, Epic City, USA
SUPPLIER0001004	Completed	Active	4	Supplier D	444 Low Code Drive, App Engine Studio, USA

We have successfully completed the integration and our first workflow. Close the Supplier table browser tab.

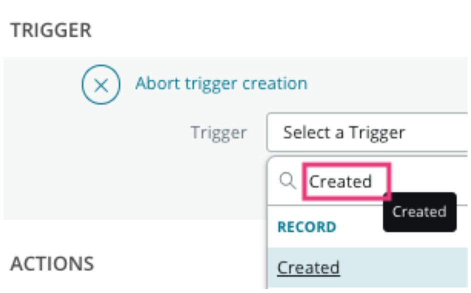
Exercise 4: Build the Automated Request Management Workflow

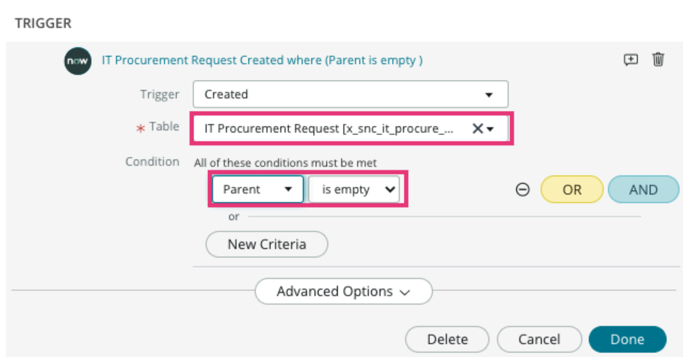
1. From App Engine Studio **App Home** tab, Click **+Add** next to Logic and automation.
   Select **Flow** from **What do you want to add?**
   Select **Build from scratch** from **How do you want to add an automated workflow to your app?**
   From **Let's set up your flow**, enter **Name** as **IT Procurement Request Workflow**, **Description** as **Automate IT Procurment Requests Management**.
   Click **Show advanced options**. Select **Run as System User**. Click **Continue**.



Click **Edit this flow** in **Success! Your flow is ready**. This will launch the flow designer with the **IT Procurement Request Workflow**.

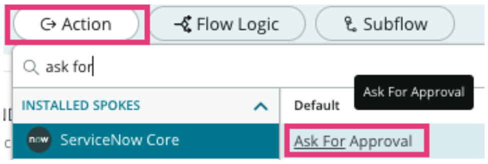
2. In the **Trigger** section, click **+ Add a trigger**. Search for **RECORD Created** as the Trigger agent, select **IT Procurement Request** as the Table. Click **+ Add filters** and configure the condition **Parent is empty** so the flow is only triggered when it is the master record request submitted by end user. Click **Done**.



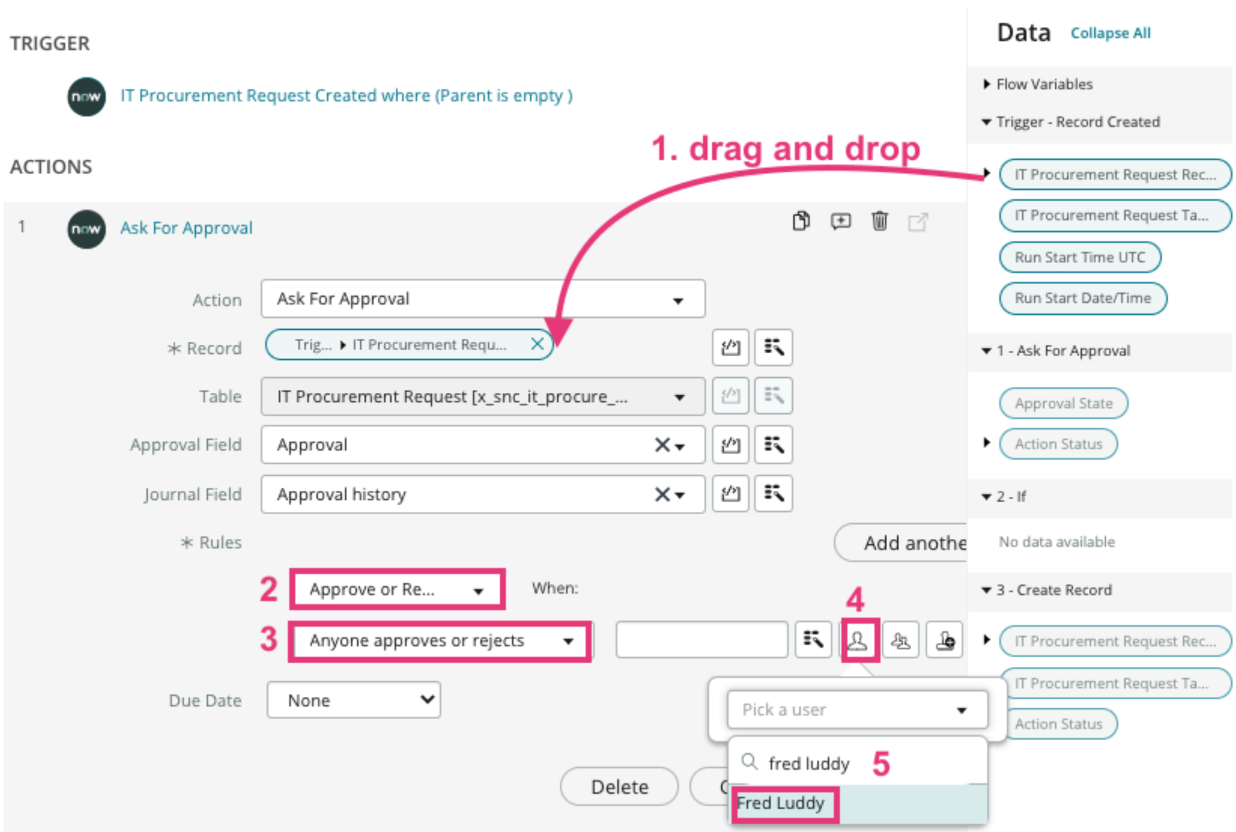


3.

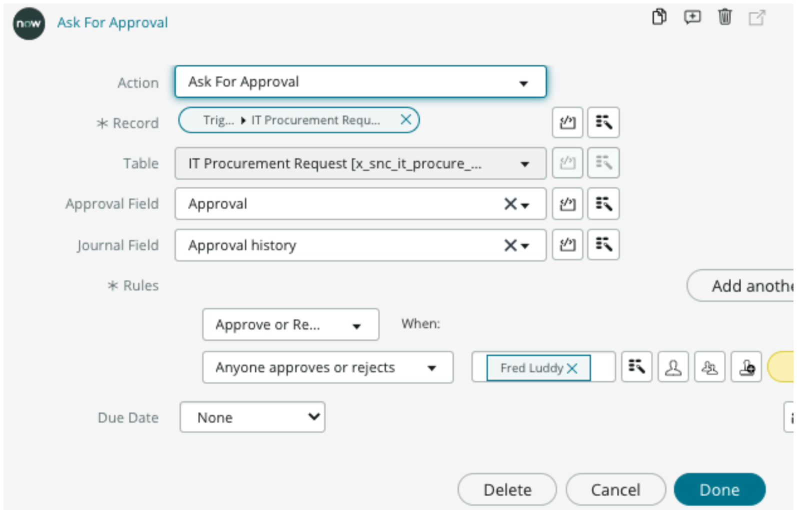
4. From the ACTIONS section, click **+ Add an Action, Flow Logic, or Subflow**. Select **Action**. Search and select the **Ask For Approval** action.



Drag and drop the **Trigger Record** as the Ask for Approval record.
Configure the **approval Rules** as **Approve or Reject** When **Anyone approves or rejects**.
Click **Add User** and select **Fred Luddy** as the **Approver**.
Click **Done**.

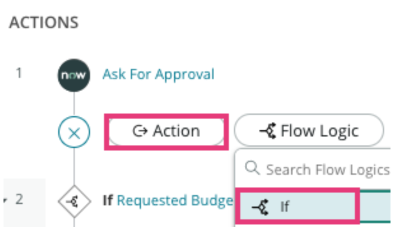


The following shows the configured **Ask for Approval** from Fred Luddy action.

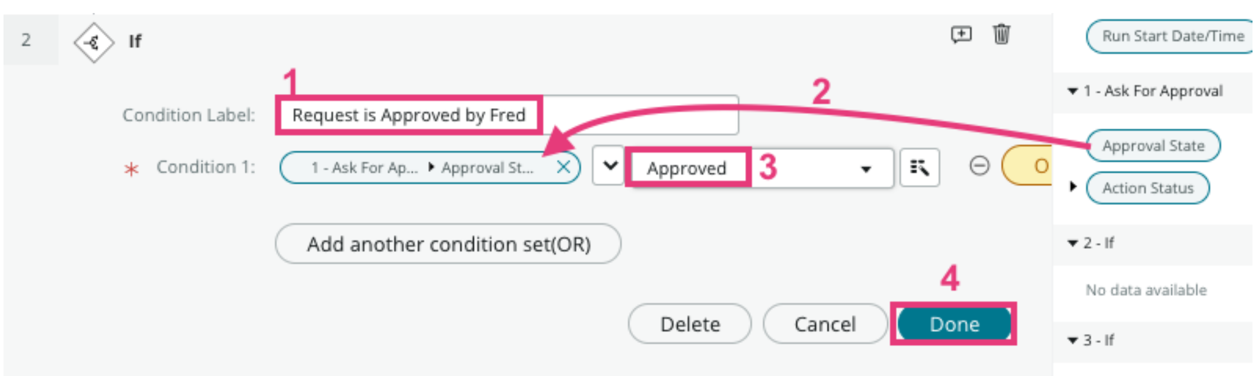


5. Dependent on the Approval results, if the IT Procurement request is Approved by Fred Ludy, then IT Procurement will carry on with the Procurement tasks. However, if the request is rejected by Fred, then the request is considered Closed Incomplete.

   Click **+ Add an Action, Flow Logic, or Subflow**. Select **Flow Logic**. Use the **If** logic.

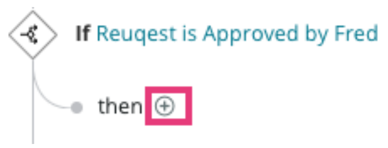


   Enter Condition Label as **Reuqest is Approved by Fred**.
   From the data pill picker right panel, Drag and drop the **Approval State output from step 1 – Ask for Approval** to the If Condition. Select **Approved** state. Click **Done**.

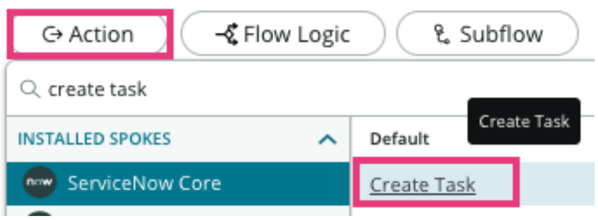


6. When the request is approved, we would like create the relevant tasks based on the budget. Create a task for Supplier Quotation which is applicable to both <500k and >= 500k.

   Click **+**, select **Action** within the **If Request is Approved by Fred Condition**.

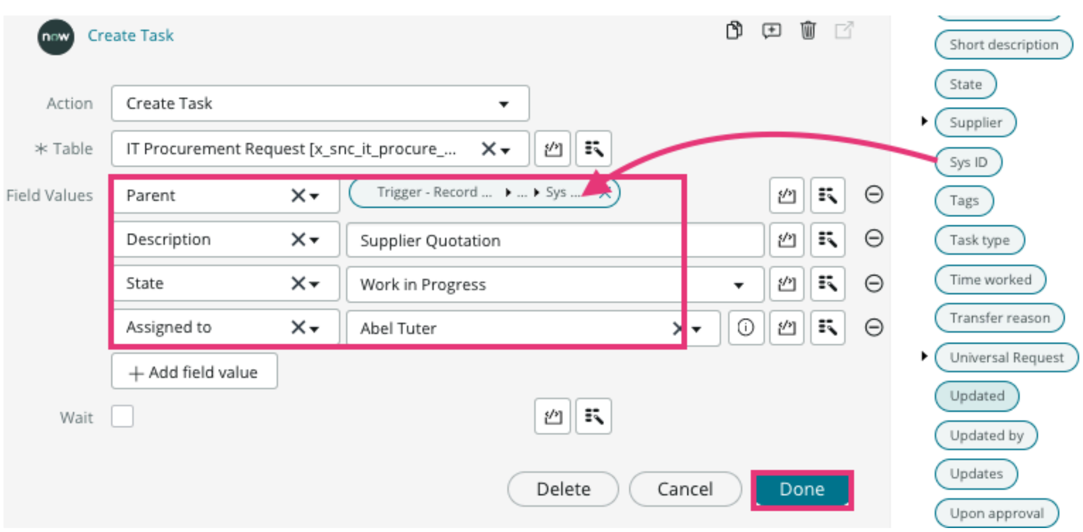


   Search and select **Create Task** as the action.



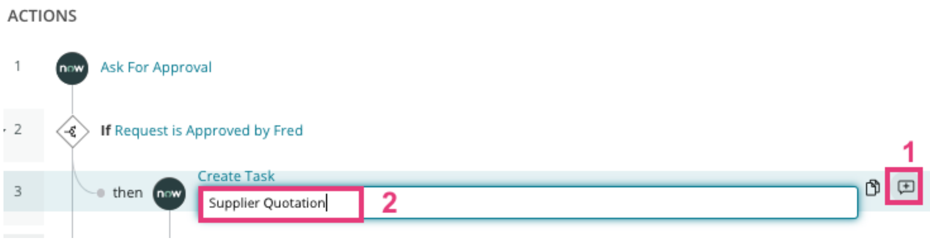
   Select **IT Procurement Request** as the Table where the record should be created. Update the record fields by **+ Add field value**:

Parent	Drag and drop the **Trigger Record's SysID**
Description	**Supplier Quotation**
State	**Work in Progress**
Assigned to	**Abel Tuter**

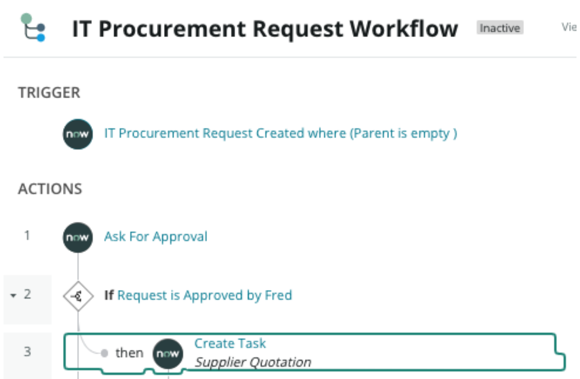


   Click **Done**.

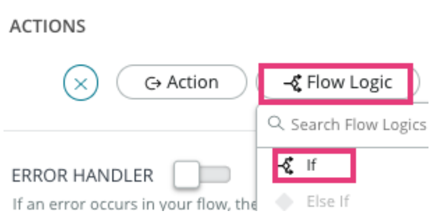
7. Select the **Create Task Action** created from the previous step. Click add annotation , enter the **annotation** as **Supplier Quotation**. Addition annotations to flow actions makes the flow easy to understand on a high level.



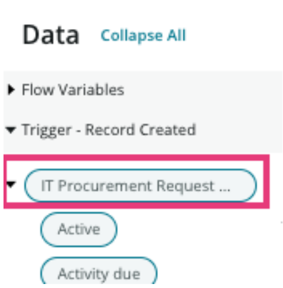
8. This is what the flow would look like by far:



9. Next is to check the requested budget to create the additional tasks if the budget is greater than 500k. Click **+ Add an Action, Flow Logic, or Subflow**. Select **Flow Logic**. Use the **If** logic.

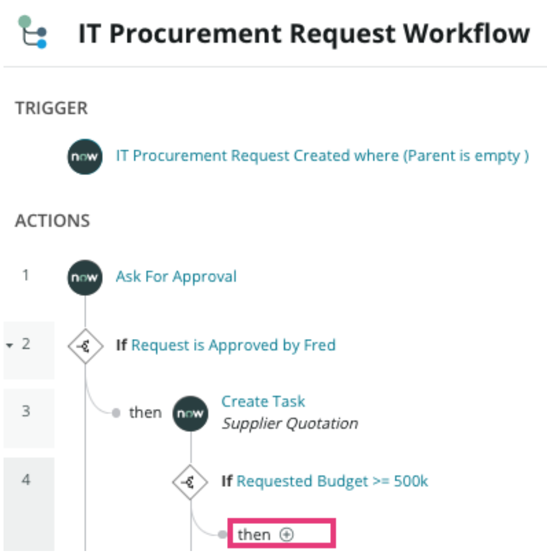


From the data pill picker right panel, expand the **IT Procurement Request Trigger record**.



Enter **Condition Label** as **Requested Budget >= 500k**.
Look for **Requested Budget** data pill, drag and drop to the **If Condition**.
Fill in the condition as **Requested Budget greater than or is 500000**. Click **Done**.

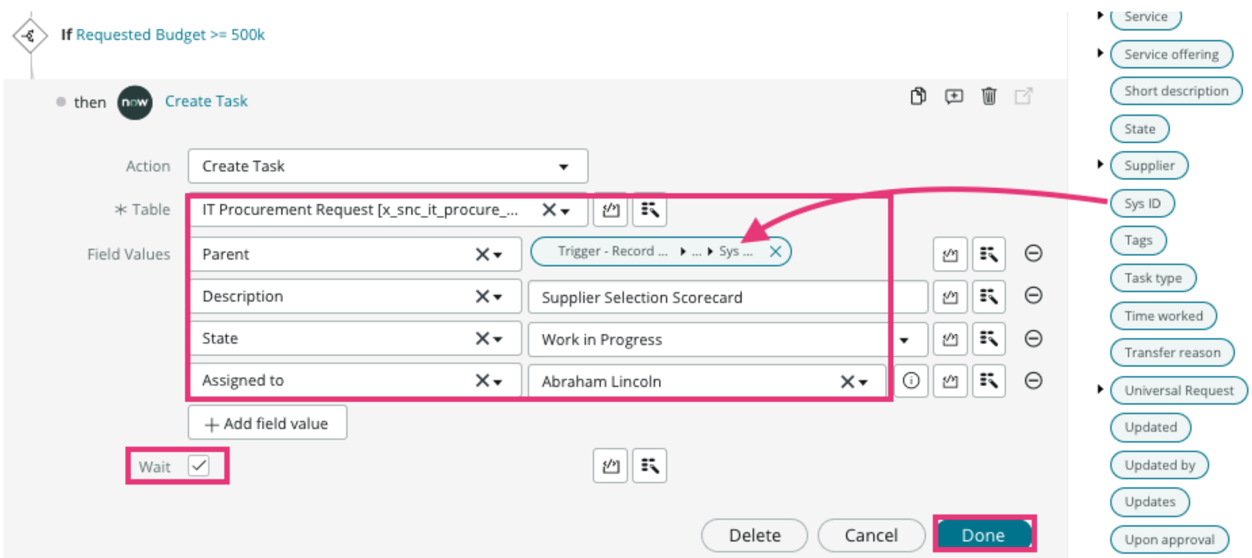
The following is what the flow looks like by far.



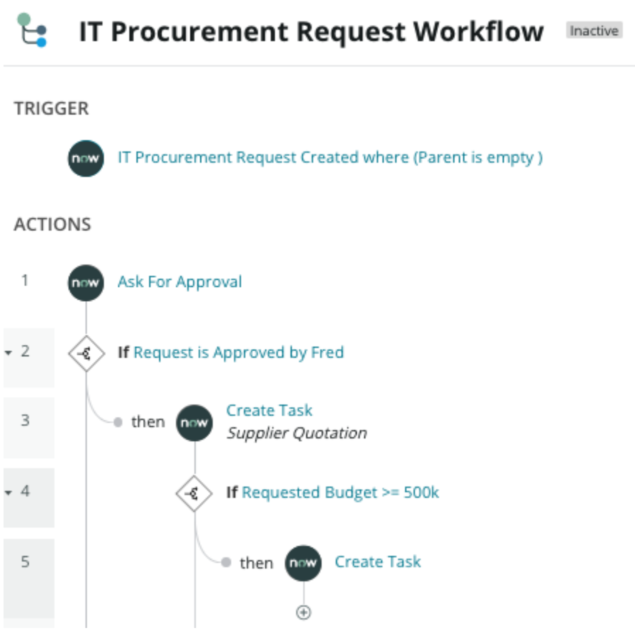
10. Within the **If budget >= 500k condition**, click **+**, select **Action**, search and select **Create Task** Action. Select the **IT Procurement Request** table where the task will reside.

    We are creating the task with the **Parent** task as the **SysID of the trigger record**, **Description** as **Supplier Selection Scorecard**, **state** is **Work in Progress**, and select **Assigned to** as **Abraham Lincoln**.

    Note that for this task, we will check **Wait**, as we want the supplier selection process/task to be completed before proceed to the 2nd level of Approval request. Click **Done**.

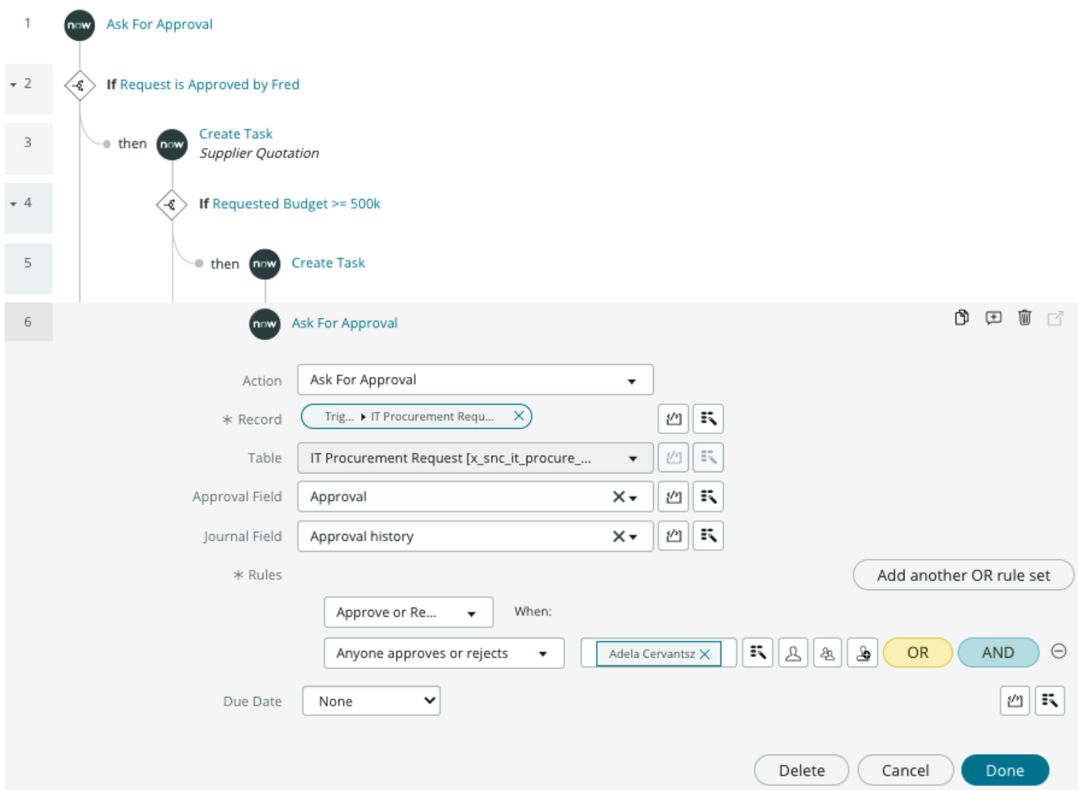


This is what the workflow looks like:

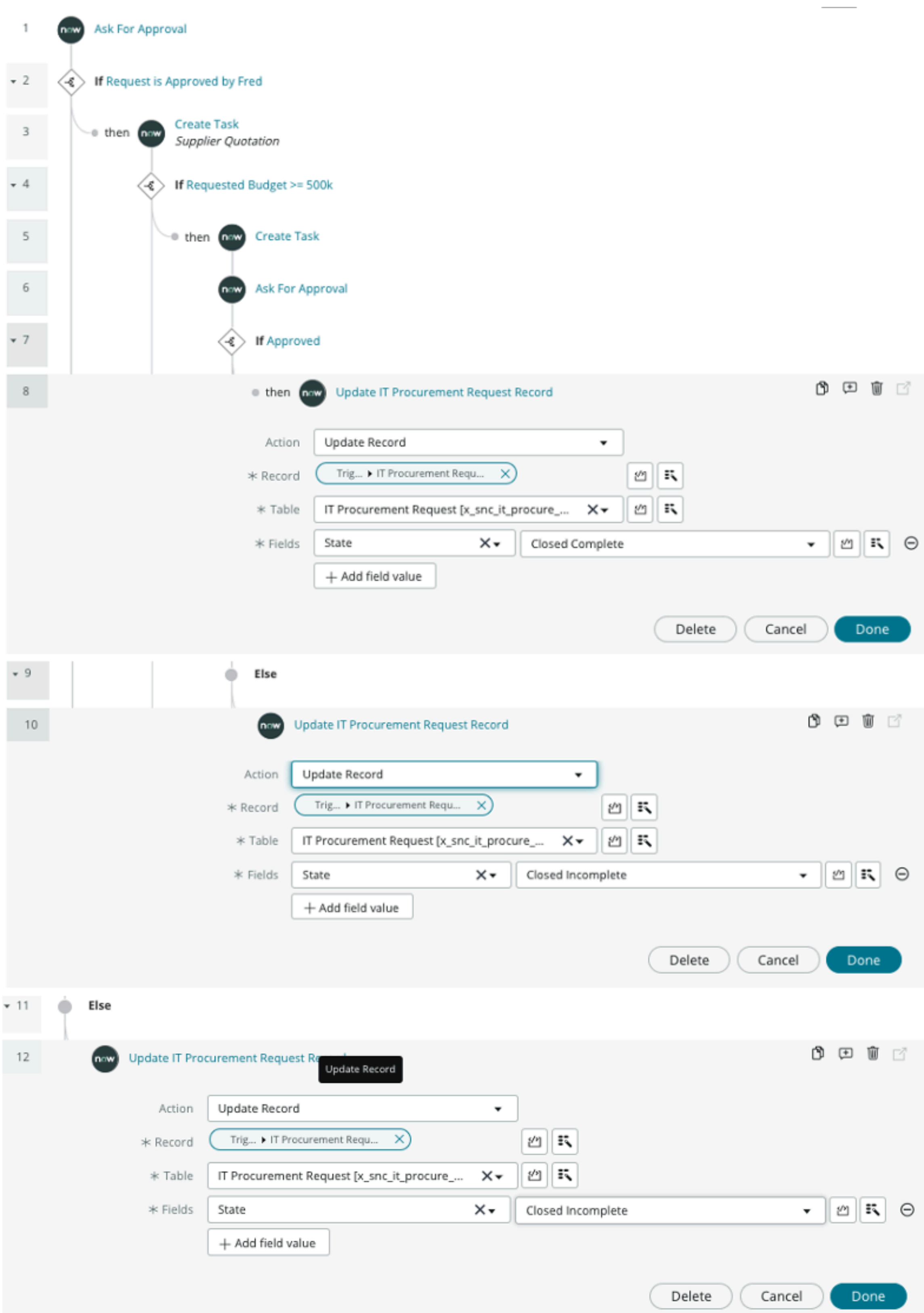


11. Click **Save**. Click **Activate**. Click **Activate** from the pop-up to confirm. The workflow is now ready for Action.

12. **[Optional]** To complete the application workflow, proceed with the following activities:
    - Add a 2nd level of Approval request for Requested Budget >= 500k

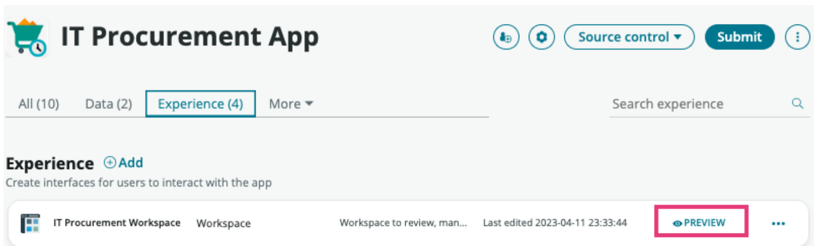


- Add an Else Condition for all rejected Approval request. Update the approved and rejected trigger record state as Closed complete and Closed Incomplete respectively.

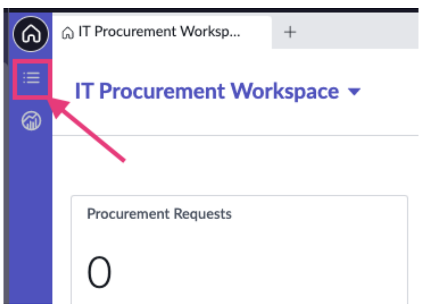

1 Ask For Approval
2 If Request is Approved by Fred
3 then Create Task
Supplier Quotation
4 If Requested Budget >= 500k
5 then Create Task
6 Ask For Approval
7 If Approved
8 then Update IT Procurement Request Record
Action
Update Record
Record
Trig... IT Procurement Requ...
Table
IT Procurement Request [x_snc_it_procure_...
Fields
State
Closed Complete
Add field value
Delete
Cancel
Done
9 Else
10 Update IT Procurement Request Record
Action
Update Record
Record
Trig... IT Procurement Requ...
Table
IT Procurement Request [x_snc_it_procure_...
Fields
State
Closed Incomplete
Add field value
Delete
Cancel
Done
11 Else
12 Update IT Procurement Request Record
Update Record
Action
Update Record
Record
Trig... IT Procurement Requ...
Table
IT Procurement Request [x_snc_it_procure_...
Fields
State
Closed Incomplete
Add field value
Delete
Cancel
Done

Exercise 5: Test the Application

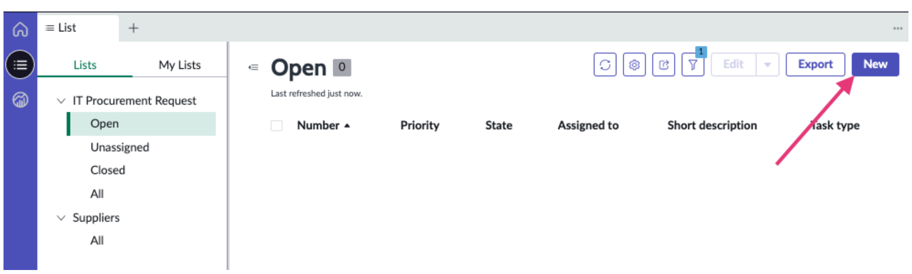
1. From App Engine Studio **App Home** tab. **Preview** the IT Procurement Workspace.



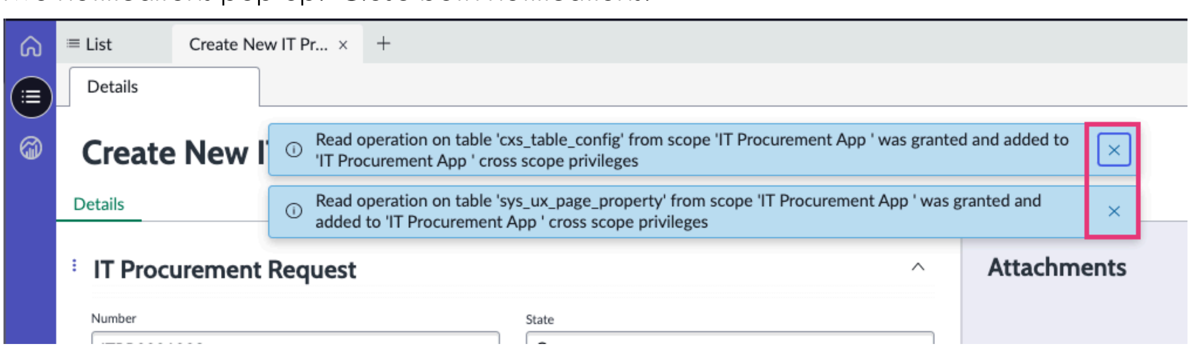
2. Click on the **list** icon to visit Workspace list page.



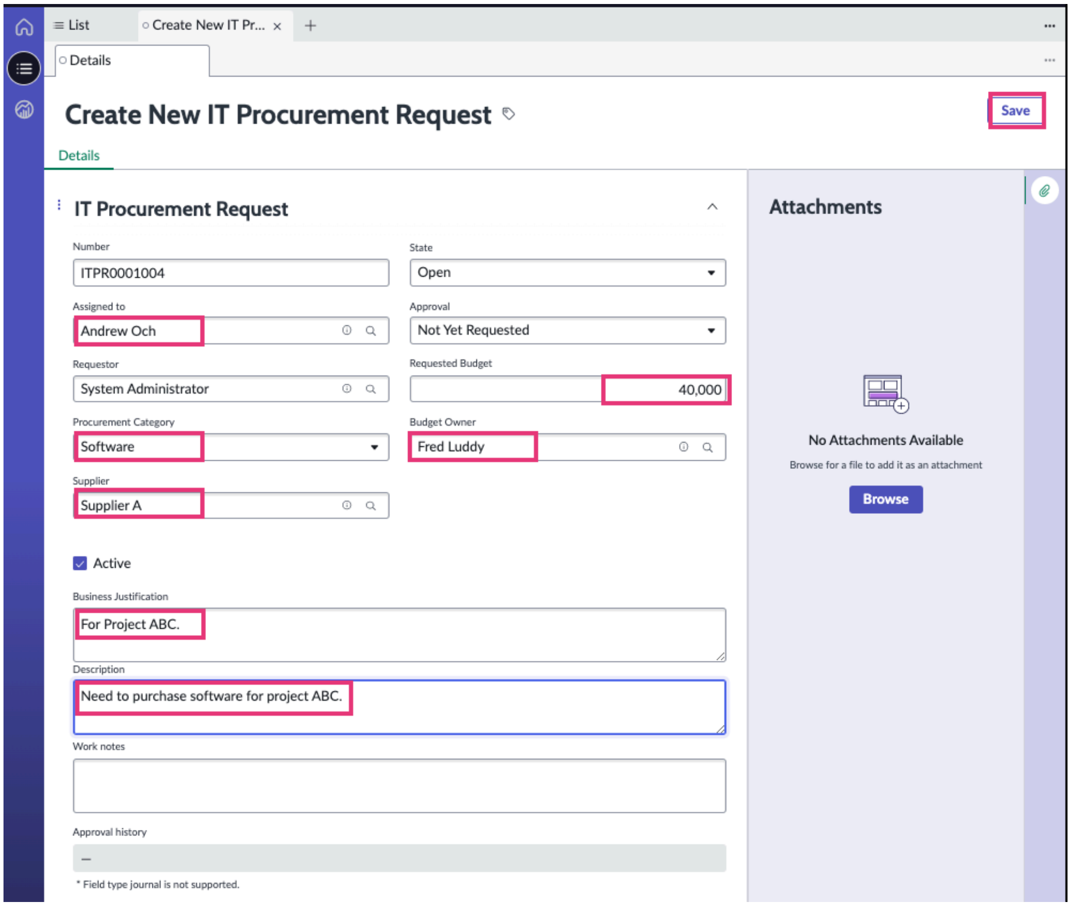
3. Click New to create a new ITPR request.



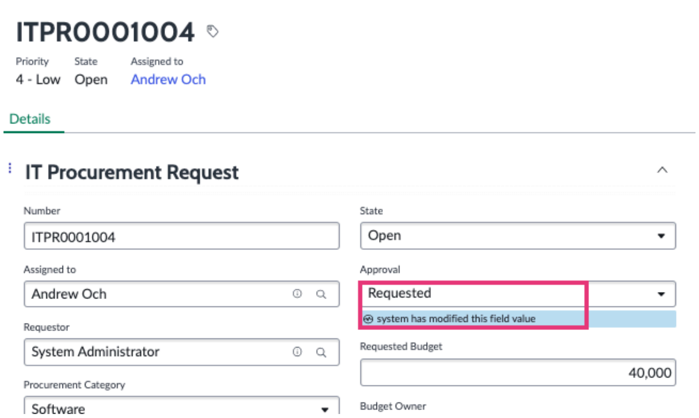
4. When accessing the Workspace IT Procurement Record page for the first time, it will show two notificaitons pop-up. Close both notifications.



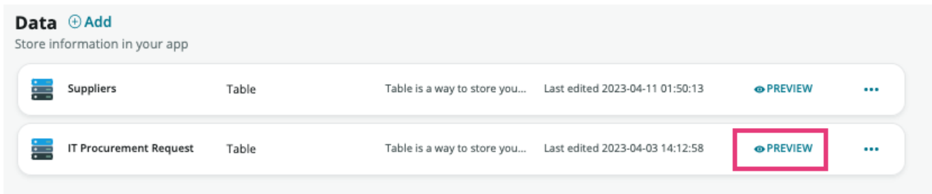
5. Enter the IT Procurement Request information as indicated below and click **Save**.



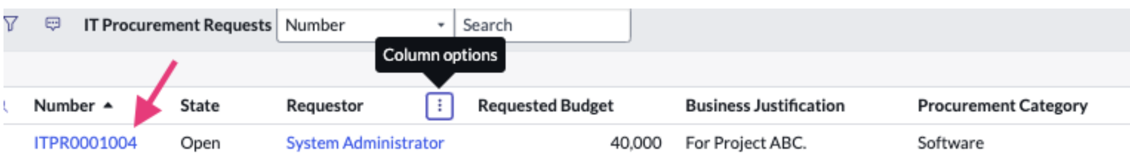
Note that the Approval field is automatically updated as **Requested** due the progess of the IT Procurement Workflow.



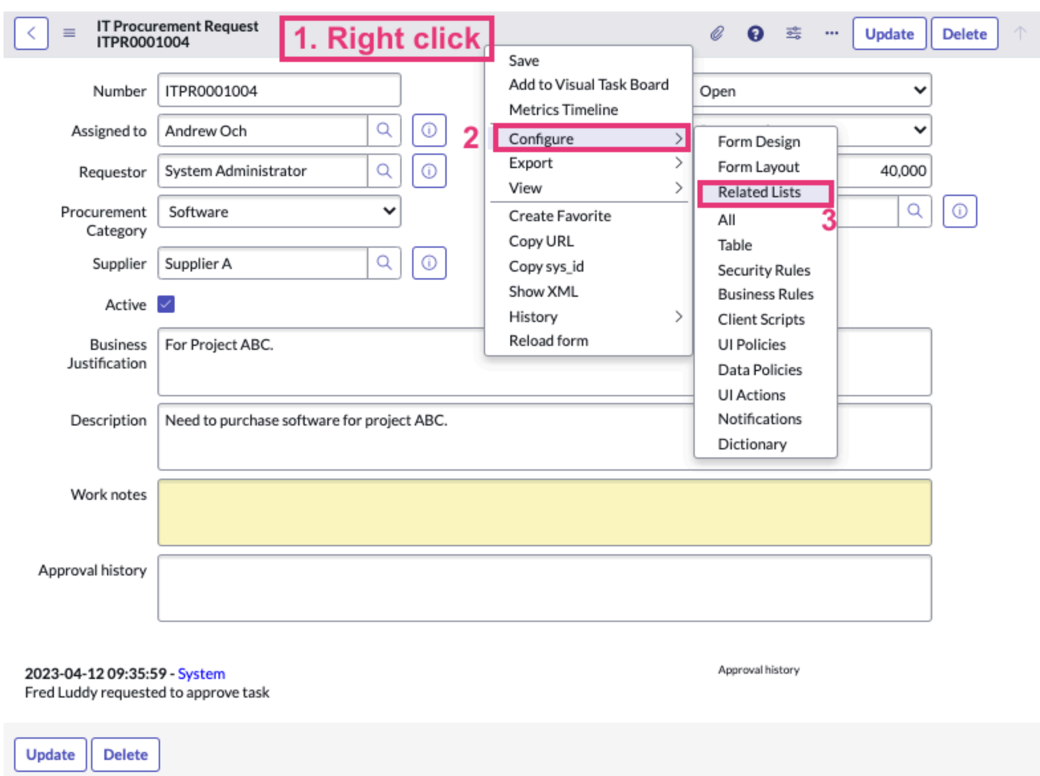
6. For IT Procurment members to be able to see all the relevant information about this workflow, let's update the record view to reflect related tables.
Go back to the App Engine Studio browser Tab. Preview the IT Procurement Request table.



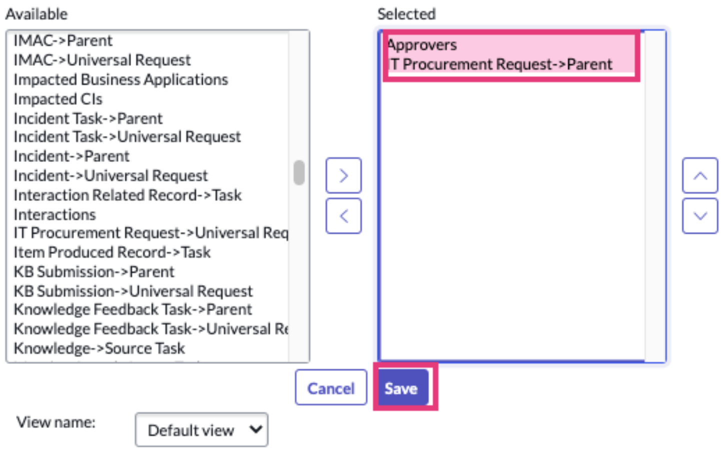
Click the **Number** field of the only record created. This opens up the IT Procurment request record.



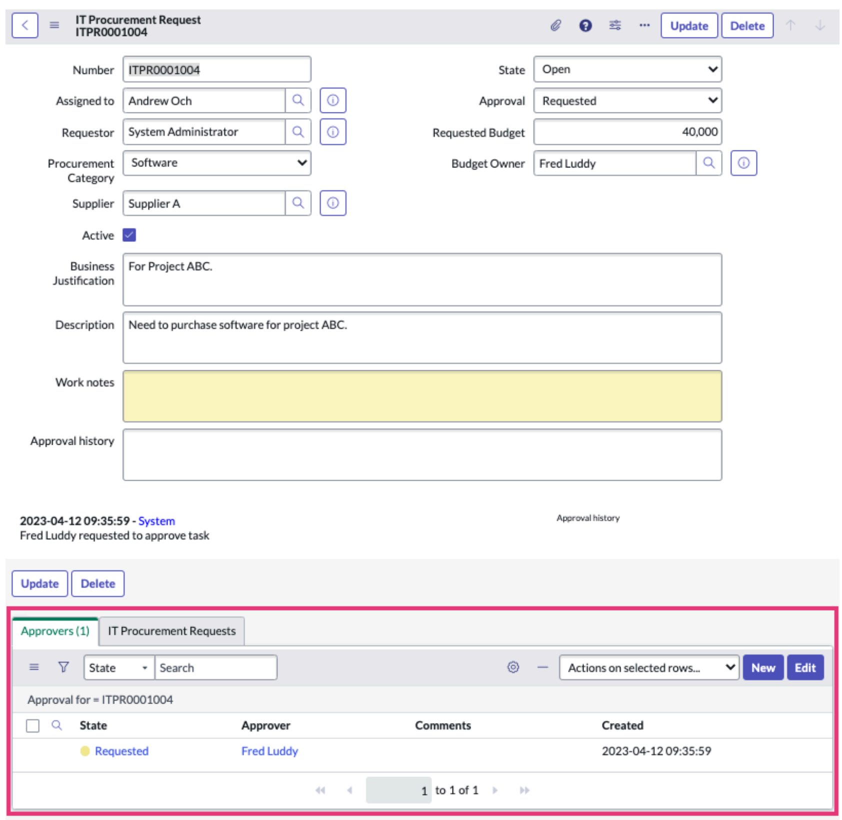
Right click on the **grey menu bar** of the IT Procurement Request record. Select **Configure**, select **Related Lists**.



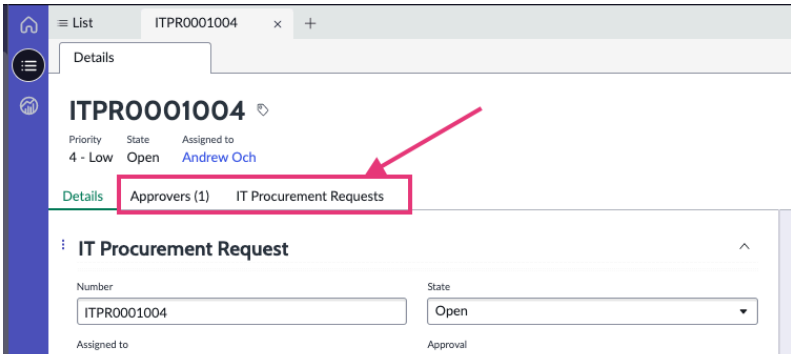
Add **Approvers** and **IT Procurement Request → Parent** from Available to **Selected**. Click **Save**.



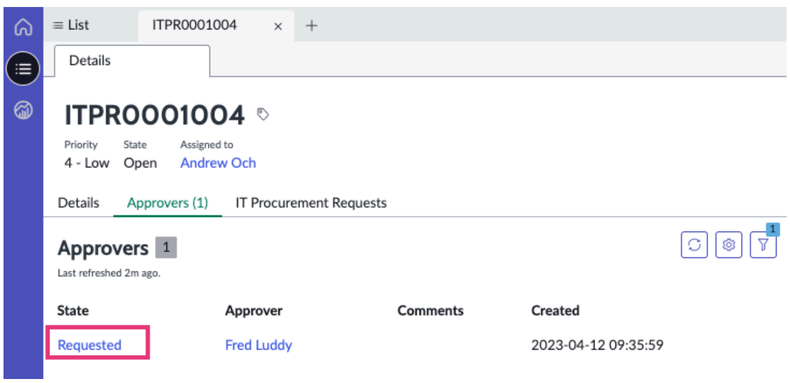
Note that the Approvers and IT Procurement Requests **related lists** appeared at the bottom of the record.



7. Go back to the browser tab with Workspace launched, refresh the record page and note that the additional tabs also appears in the Workspace Record view.

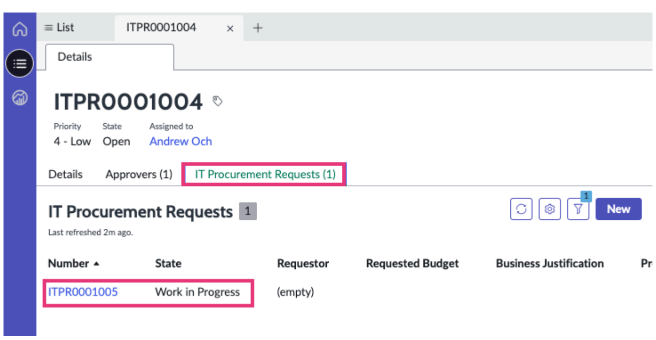


Explore the **Approvers** tab. The approval request is assigned to Fred Luddy. Click Requested state, to access the details of the approval request.

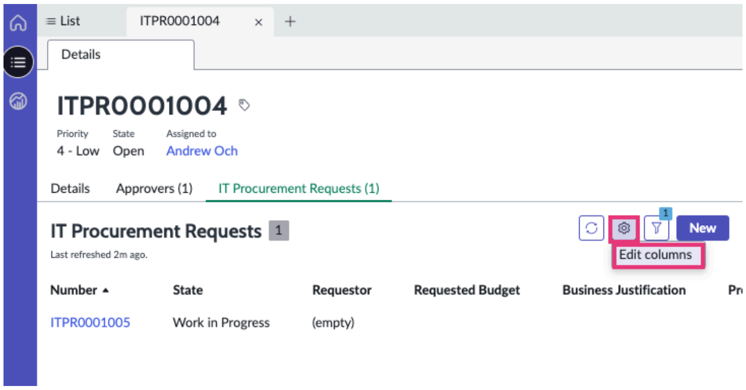


Assume we are Fred Luddy, update the Approval **State** to **Approved**. Click **Save**. **Close** the approval request tab.

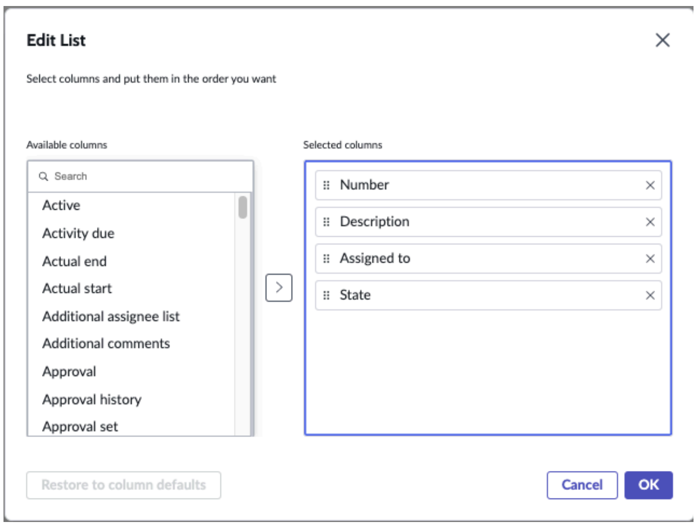
Select the **IT Procureent Request tab**, note that the Related IT Procurment Request is automatically created.



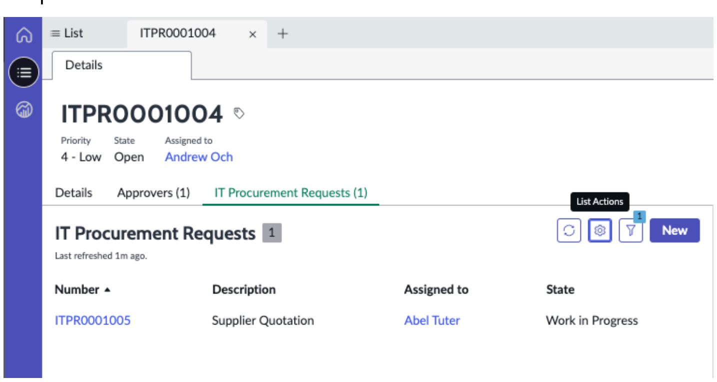
Click and **Edit columns** to edit the list layout in the workspace view.

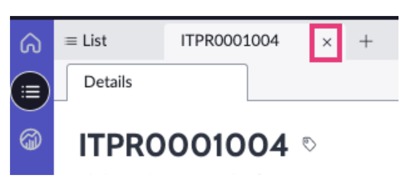


Edit the list view as shown below in Selected columns. Click OK.

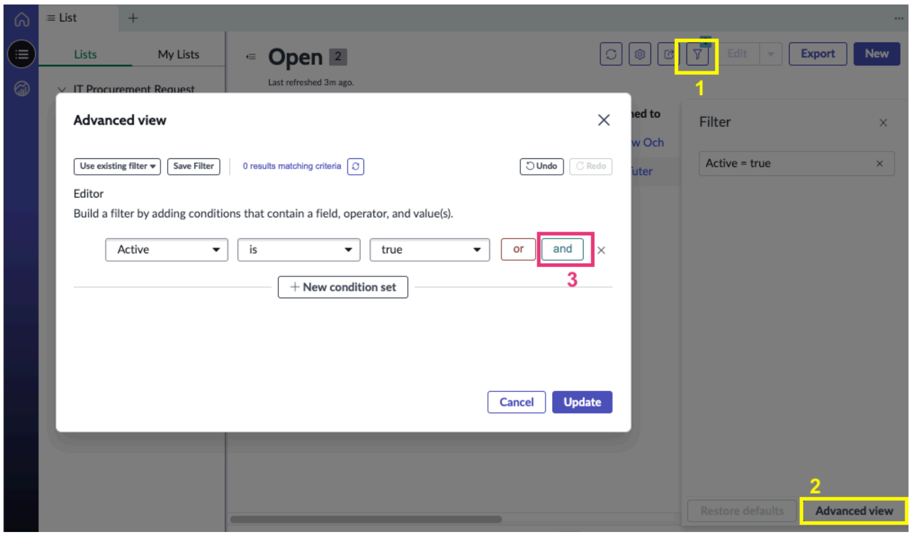


Note that the list view has been updated to show the relevant sub-tasks information. As this requested budget is < 500k, there is only one task created. Close the IT Procurement request record.





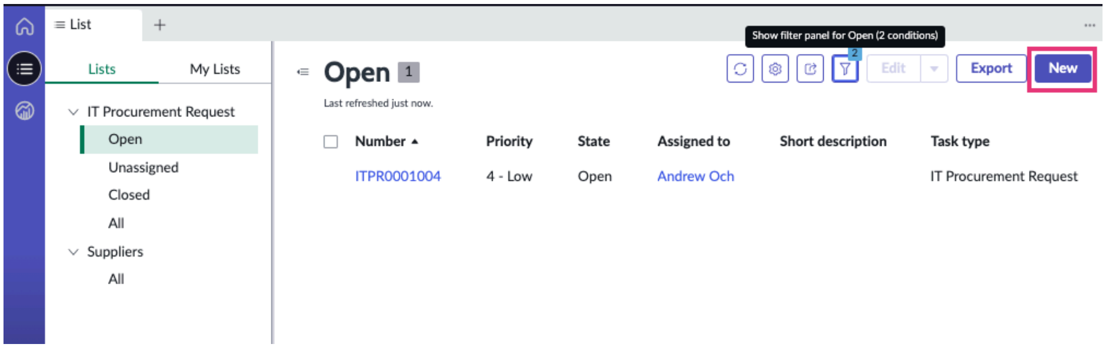
8. When we returned to the List view of IT Procurement Requests, we want to filter on only showing the Master (Parent) requests and not the sub-tasks. We will update the list view filter. Click **filter** , click **Advanced View**, click **and**.



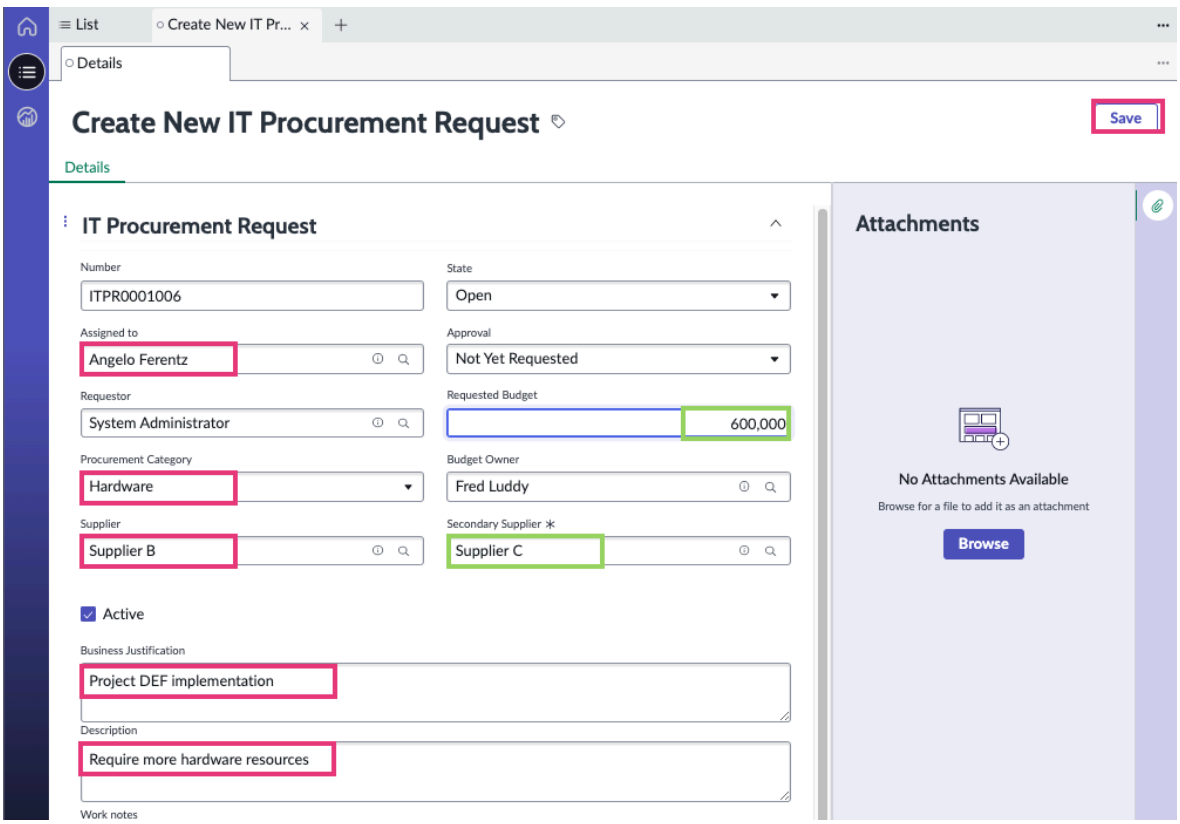
Configure **filter Parent is empty**. Optionally, you may **Save Filter**. Click **Update**.

Note that it will only show the Master (Parent) records.

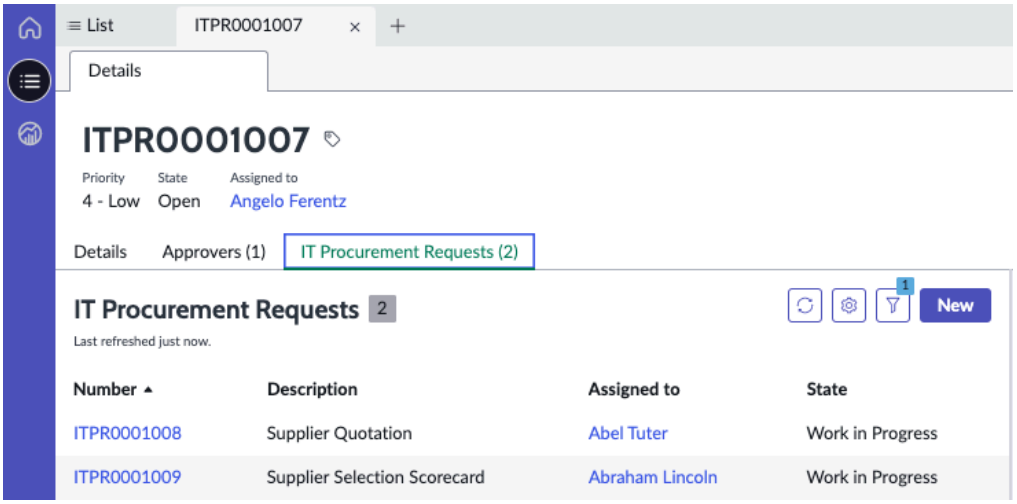
9. Let's perform another workflow test by creating an IT Procurement Request where the budget is > 500k. Click **New** to add a new IT Procurement Request.



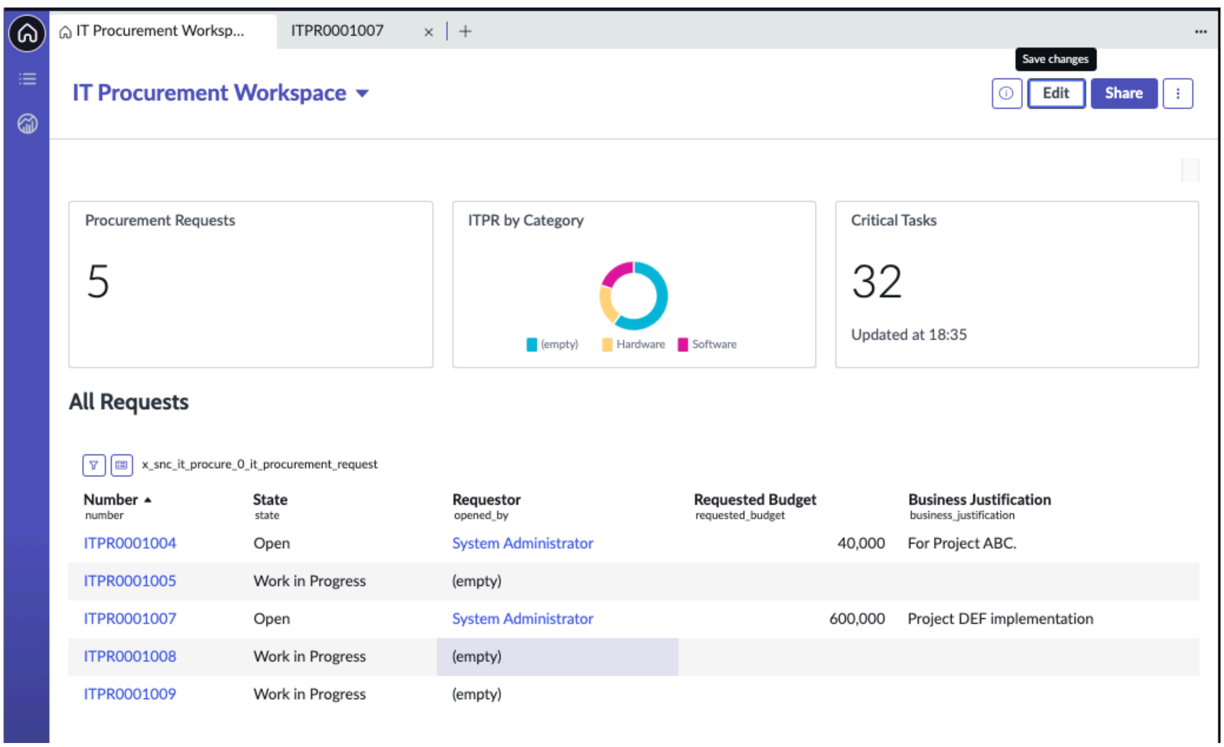
Ensure that the Requested Budget is over 500k, in the example below, **600k** was used and Secondary Supplier Information is require. **Input** all the relevant information and click **Save**.



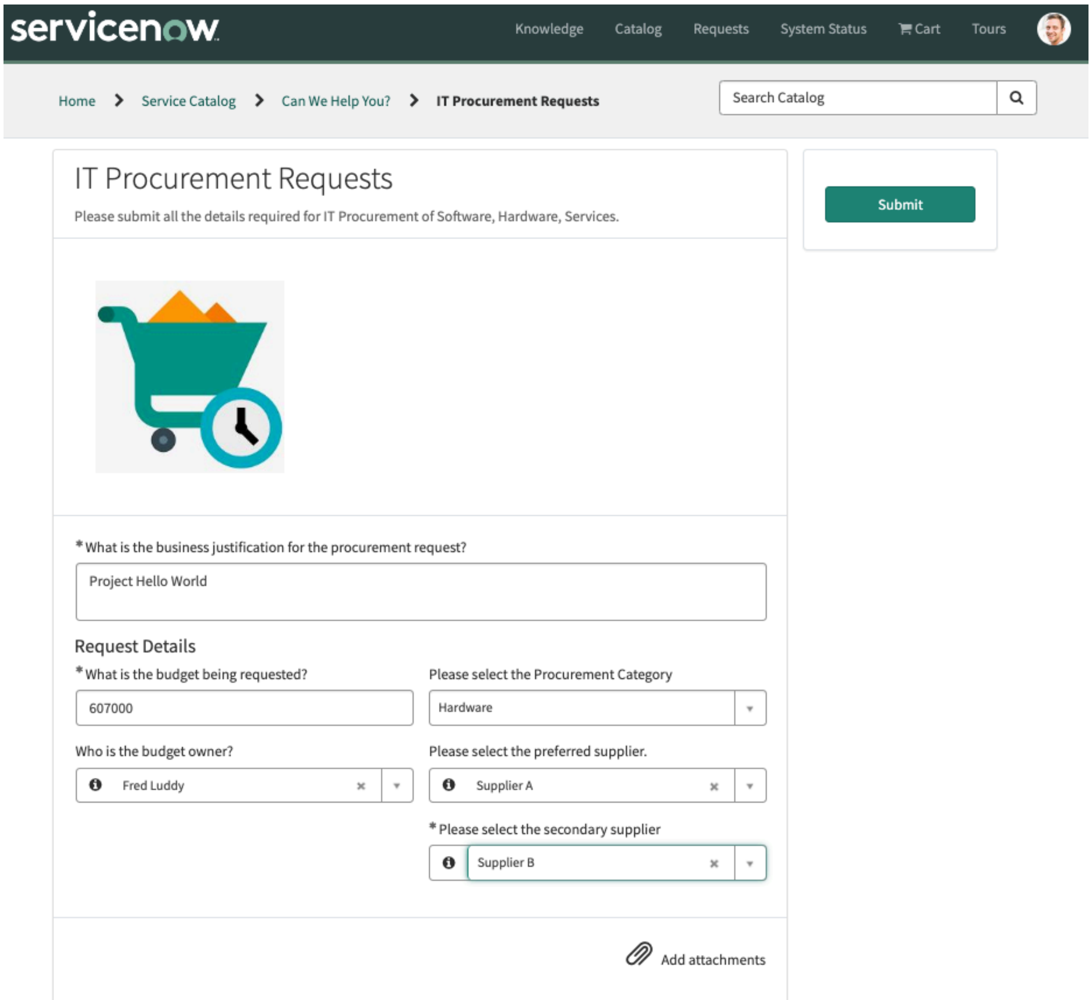
Approve the approval request. Note that after approval, two new tasks is created this time as the requested budget is > 500k.



10. Return to the Workspace Dashboard by click the **Home** Icon. Check out the graphics.



11. We can also submit the IT Procurement Request from the respective catalog item in the Services Portal for additional testing.



Congratulations, we have successfully created an application for handing IT Procurement Requests!