Power platform

App in a Day

Module 3: PowerApps Model-driven App

Hands-on Lab Step-by-Step

November 2018

Contents

PowerApps Model-driven App

Lab Prerequisites

This is the third lab in a five-part series covering PowerApps, Common Data Service, and Flow. The assumption is that you have successfully completed the first two modules, or at least the initial part of setting up an environment as described in the overview – "**00-AppInADay Lab Overview.pdf**".

If you have not completed the previous two modules, you can use the partially completed version of the lab package in the "\Completed\Module2" folder. Follow the instructions in the document "Importing Module 2 Completed" before proceeding with this module, which will provision the app, and the Common Data Service entity into your environment.

Model-driven Apps – A brief introduction

The model-driven apps are built by composing multiple page types and components built using several focused designers. Additionally, there are designers for the entity and business logic. The page types come from the View Designer, Form Designer, and Dashboard Designer. Visual components include the Sitemap Designer and Business Process Flow Designer. The App Designer then composes the app by identifying the UI elements to show. The multiple designers allow rich targeted definition of different parts of the app and its behavior.

- App Designer specifies the sitemap, global dashboards, business processes flows, and entity forms, views, and dashboards (learn more)
- Sitemap Designer provides the application navigation that is always available (learn more)
- Business Process Designer provides stages and steps to guide users consistently through common business processes within a form (learn more)
- Entity Designer defines the fields, relationships, and metadata for an entity (learn more)
- Business Rule Designer provides no-low business logic for an entity (learn more)
- View Designer specifies columns and filter conditions for a record list (learn more)
- Form Designer specifies the fields and controls along with layout for a single record (learn more)
- Dashboard Designer summaries one or more entities using charts, lists, etc. (learn more)

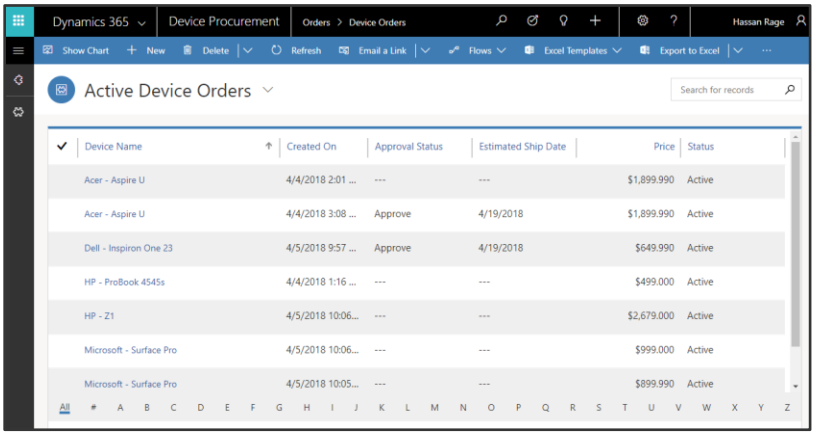
The model-driven apps are fully responsive so a single definition works from web to tablet to mobile devices. This is a different with the canvas apps which need to choose the mobile vs. Tablet when defining the app.

Scenario for building a Model-driven app

In the first lab module, you built a PowerApps Canvas application for an organization where every three years the employees go through a hardware refresh cycle. The application let employees place a request for a device using the

PowerApps app that you built. In the second lab module, using a custom entity you created in the Common Data Service lab, you stored that request for processing.

From the requesting employee's point of view, after they place the order, the new device just magically shows up. But, there is a back-office process that needs to happen to manage the procurement, setup of the device and distribution of the device to that requesting employee. In this lab you will be building a PowerApps Model-driven app that will be used by the two or three back office staff that manage fulfilling device requests. Using the Model-driven app style, you can take advantage of the Business Process feature of Model-driven apps to keep the back-office staff on track for each device request.



Model-driven apps are a new style of application you can build directly from PowerApps.com. Model-driven apps make it easy to build forms over data applications quickly. This style of application brings together forms, views, dashboards and charts quickly to provide a productive user experience for working with related data. These components can quickly be customized to show only the data that is relevant for the scenario.

Entity views: Views are what users see when they look at a list of records from the Common Data Service for Apps. Views define the columns that are visible as well as the criteria for inclusion of the records in the display.

Entity forms: Forms are used when users drill down into a record from an Entity View. Forms are created using a visual drag-and-drop designer to place fields into the form that is structured into tabs and sections.

Business process flows: These flows are interactive visual guides to help the user through a business process. Business process flows use the concept of stages that contain steps. Stages are milestones in the process that need to be completed and the steps highlight to the user either data to collect or tasks to complete the stage to progress. Flows are created using a visual designer using drag and drop to compose the flow and establish any branching conditions (different paths in the business process) that must be handled.

For more details on Model-driven apps and the differences between Canvas apps and Model-driven apps, see the product announcement at https://powerapps.microsoft.com/blog/powerapps-spring-announce/.

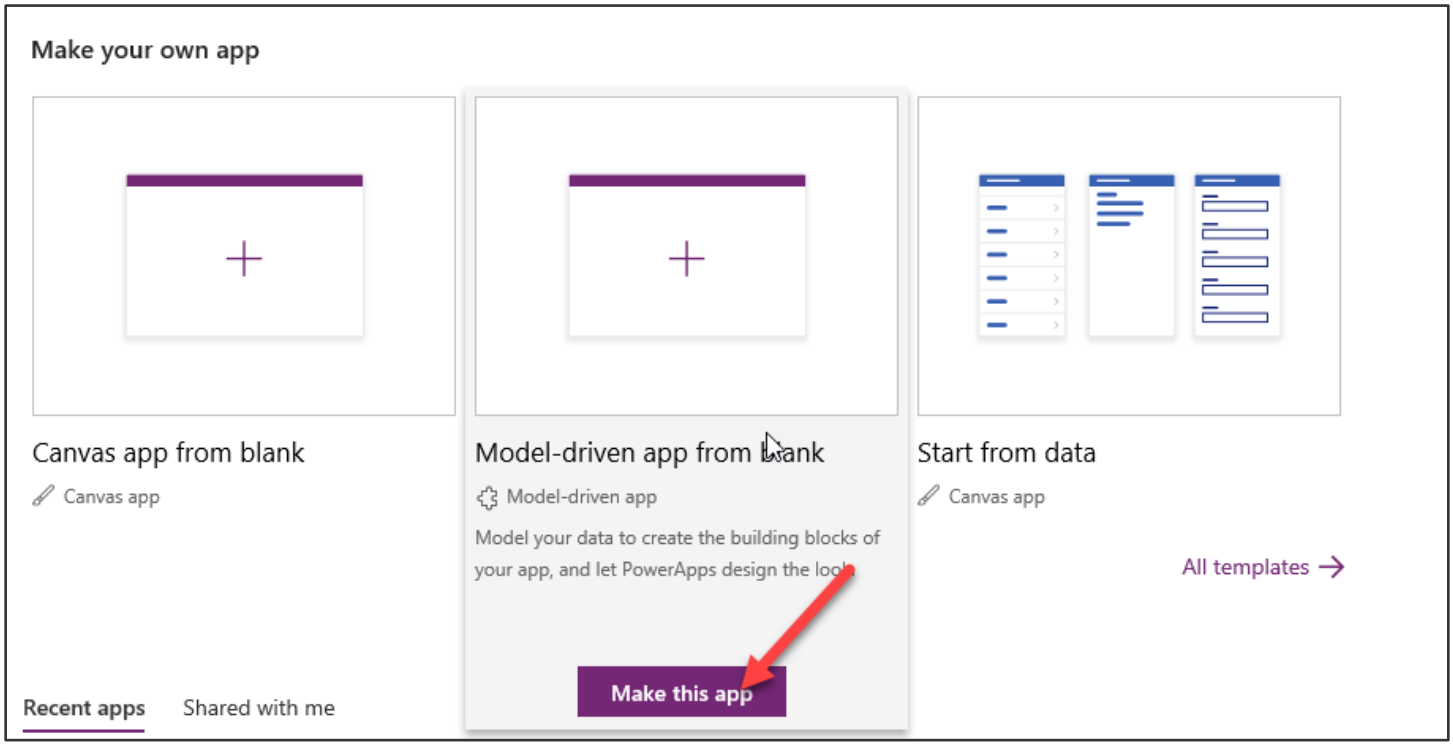
Exercise 1: Create Application and add Fields to the Device Order Entity

In this exercise, you will be creating a standalone Model-driven application that will leverage the same Device Request entity you created in the Common Data Service in Lab 2.

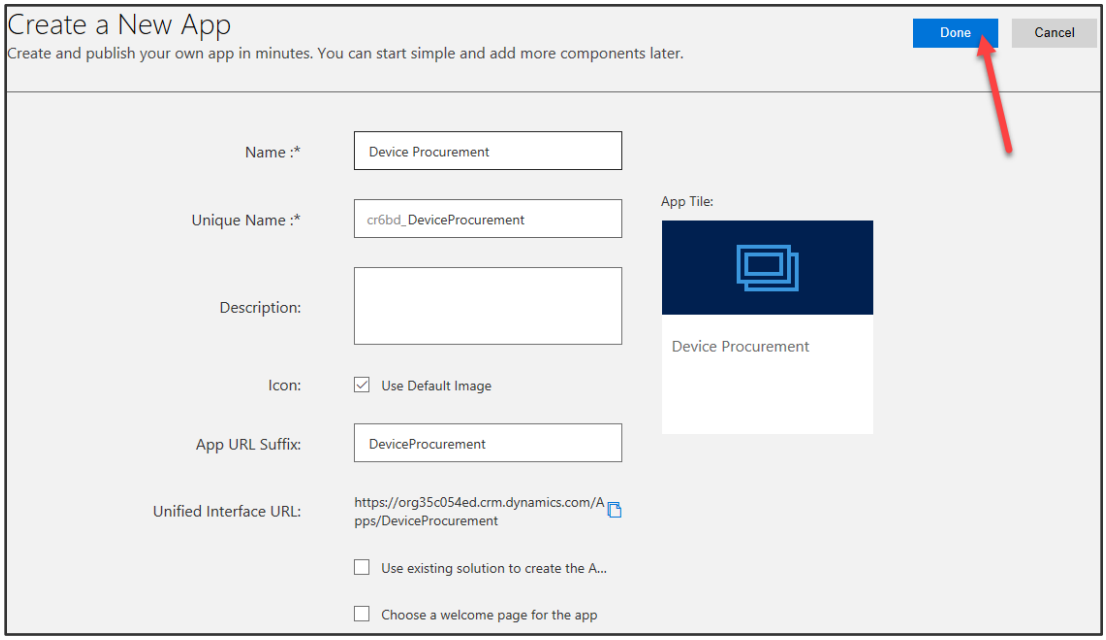
Task 1: Create an application

The first thing you will do is create a Model-driven application. This application will serve as a container to identify all the components that make up the application. It also will include a sitemap that defines the custom navigation users will use to navigate between the components (Entity views, Dashboards and other visual components).

1. Navigate to https://web.powerapps.com, and select the environment you created.
2. Hover over the Model Driven App from Black and click Make this App.

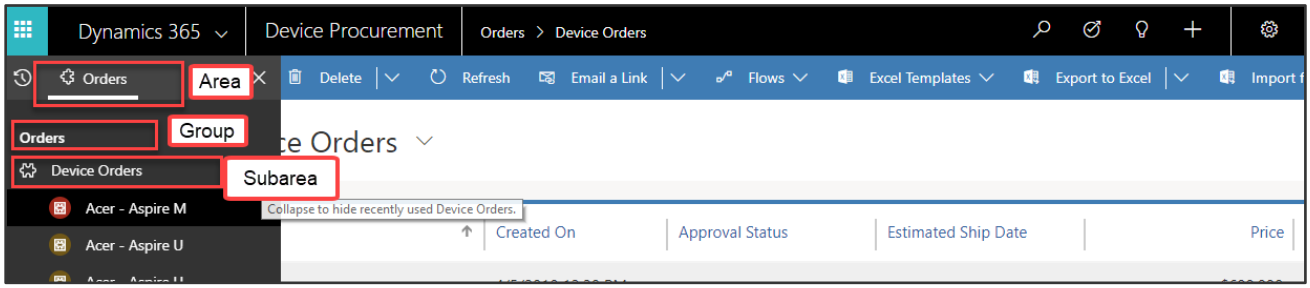


3. Enter **Device Procurement** for Name and click **Done.** You have now created the app definition and will start adding components in to build the app.

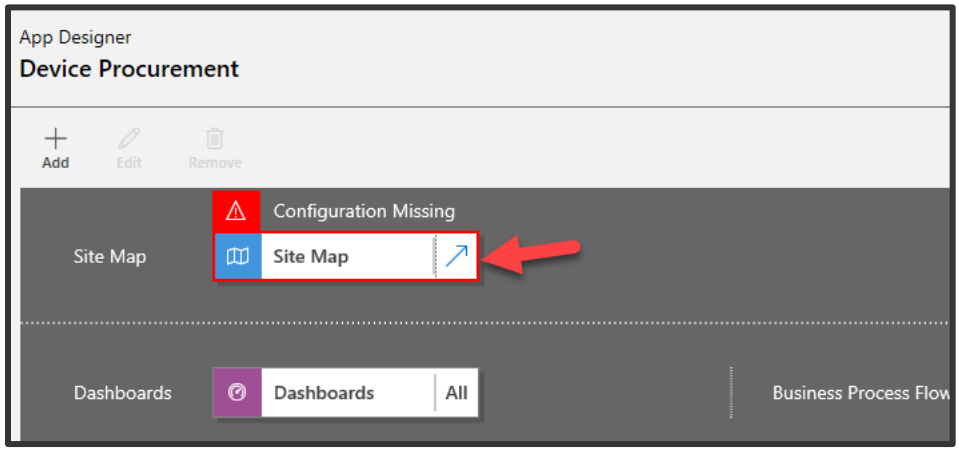


Note: When building a real app, you would also upload an image to be used as the App Tile. The App Tile is seen by the user in the list of all their applications.

Next, you will build a Site Map for the application, the completed Site Map will look like the image below.



4. Click **Site Map**. This will launch the designer that will let you modify the App navigation.



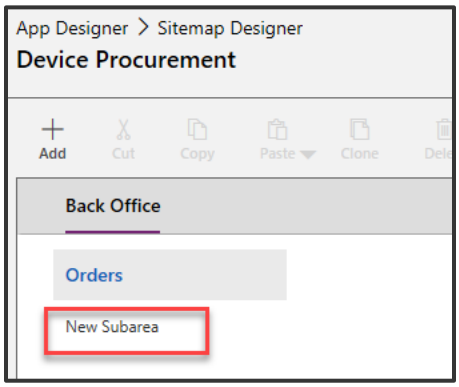
5. Select the **New Area** label, in the properties rename it **Back Office** and enter **nav_backoffice** for ID**.** If you were building a more complex application, you could use Areas to group together related items making it easy for the user to navigate between the components.

Note: The properties panel on the right will only show if you click on the New Area on the left.

6. Select the **New Group** and provide the information shown in the image.

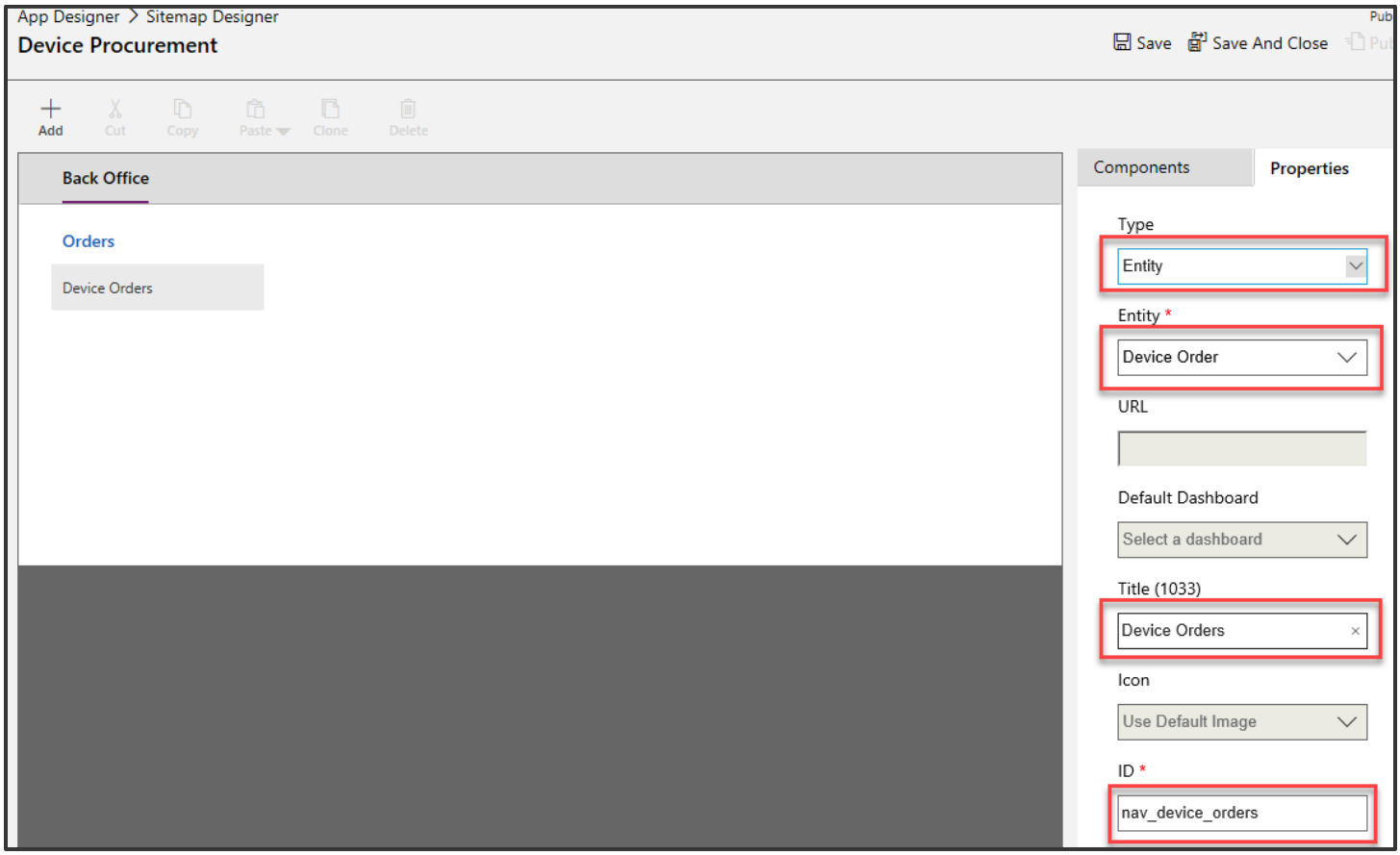
Note: The properties panel on the right will only show if you click on the **New Group** on the left.

7. Select the **New Subarea**.

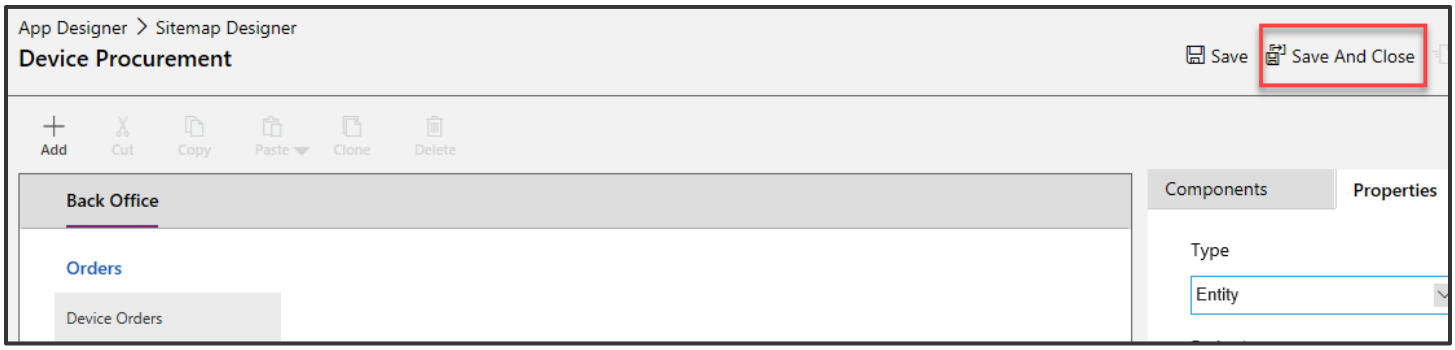


Note: The properties panel on the right will only show if you click on the New Subarea on the left.

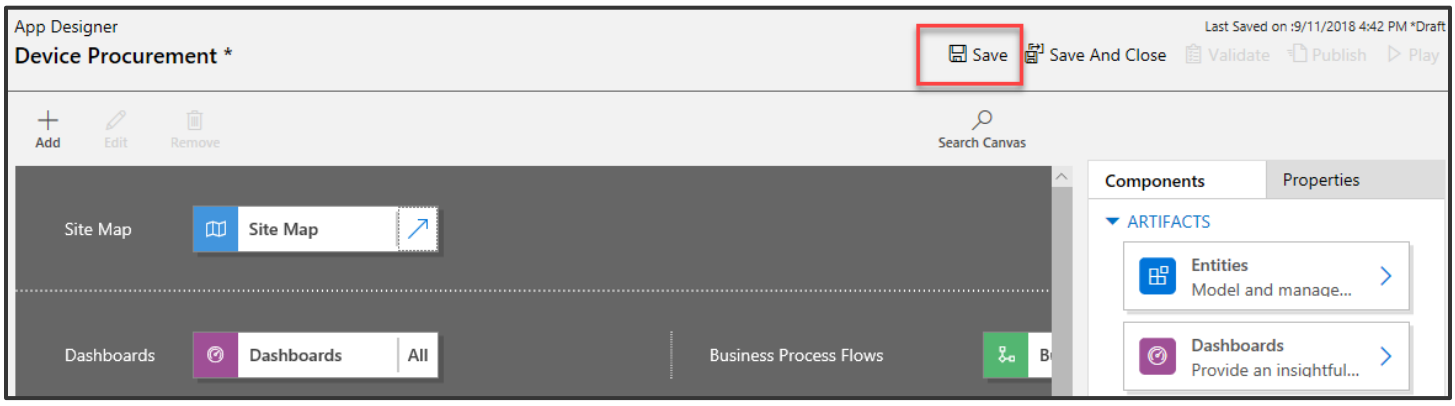
8. Set the Type field to **Entity**, select **DeviceOrder** for Entity, enter **Device Orders** for Title and enter **nav_device_orders** for ID.



9. Click **Save and Close.**



10. Click **Save** again, this time in the App Designer.



11. **Publish** the application.

12. Click **Save and Close**.

Task 2: Add procurement fields to the Device Orders

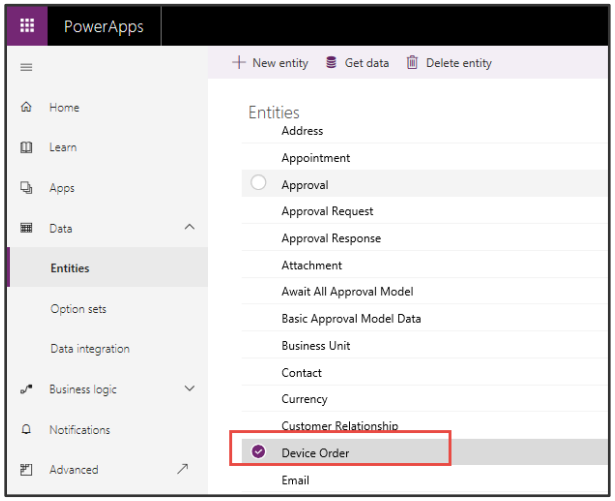
In this task, you will add new fields to the Device Order table. The fields you are going to add here are fields that support the Business Process Flow that we are going to build in the next exercise. When you use a Business Process, it consists of Stages which you can think of as major milestones in completing the work. Each Stage has one or more Steps. Steps help users keep track of what they need to do before advancing to the next Stage. Steps are just fields on the entity. To make it quicker when we create the Business Process in this task we are going to create the fields we need.

To support our scenario, we are going to add the following fields to the entity:

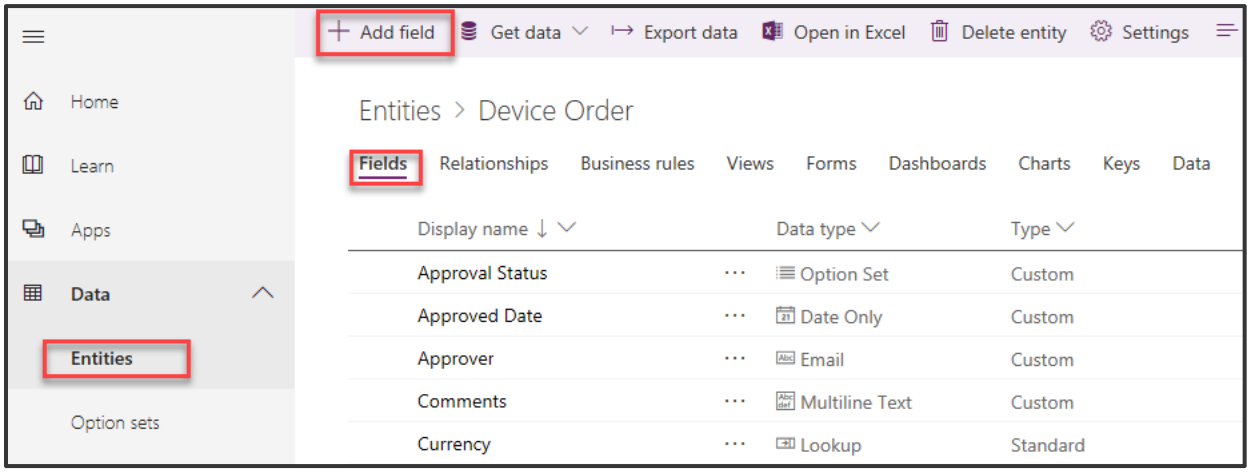
Capital Approved: This field will be used in the flow to capture that the device order has received capital approval.

Send Survey: This field will be used in the final stage. Right now the team plans on manually sending a survey to see how the user's ordering experience was, and will manually check this once they send it, but they have a desire in a future update to automate sending a survey in a future release.

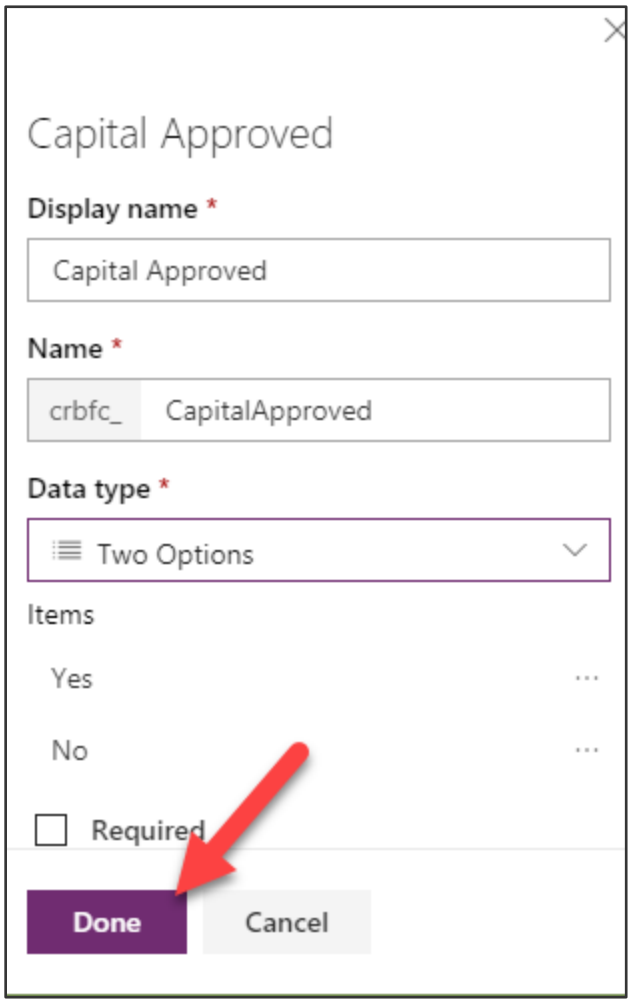
1. Navigate to https://web.powerapps.com
2. Expand **Data**, select **Entities**, search for **Device Order** and click on it.



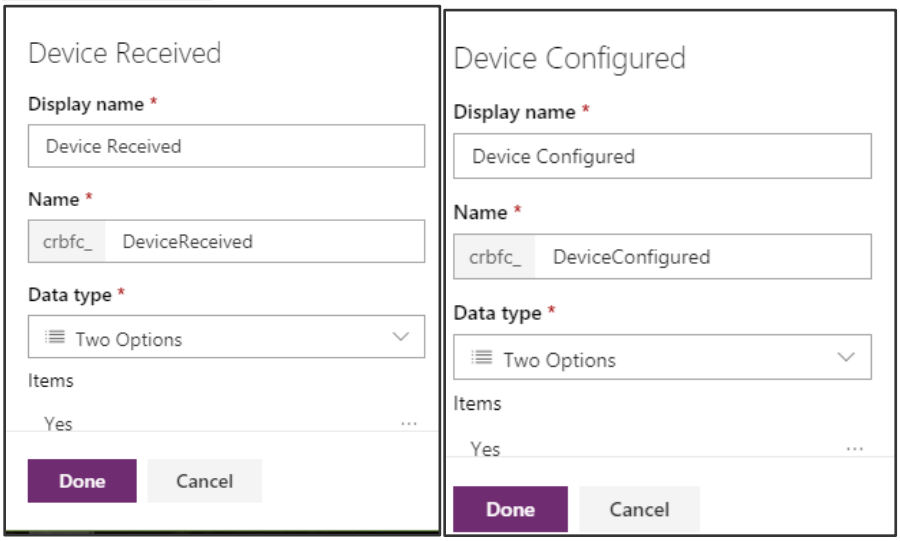
3. Make sure you have the **Fields tab** selected and click **Add Field**.

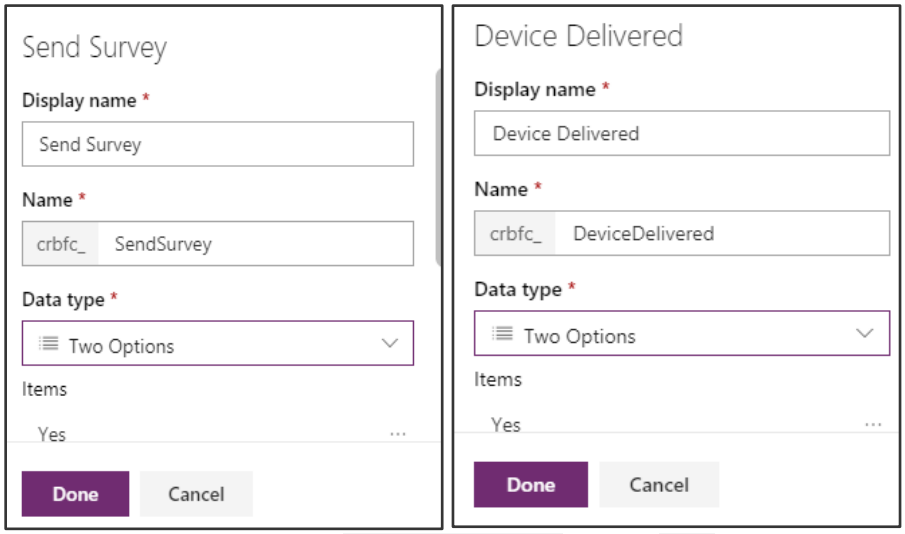


4. Enter **Capital Approved** for Display Name, select **Two Options** for Data Type and click **Done**. We are using a Two Option data type here because when we use it as a Step in the Business Process, we want to be able to simply mark it completed. Two Options are essentially a true or false field.

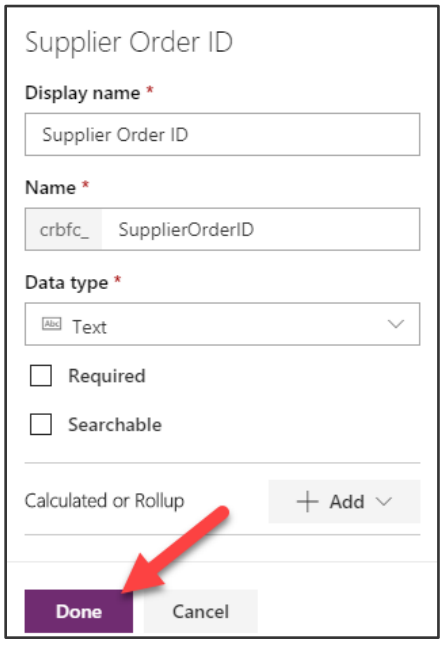


5. Create 4 more **Two Option** fields and name them **Device Received, Device Configured, Send Survey**, and **Device Delivered**.





6. Add another field, name it **Supplier Order ID**, select **Text** for Data Type and click **Done**. Notice we are not asking you to make this field required here, but we will make it a required field in the Business Process later in the lab.



7. Click **Save Entity**.

Exercise 2: Business Process Flow

In this exercise, we are going to add a Business Process Flow to the Device Order to help guide the back-office worker through the task of managing the procurement of the requested device.

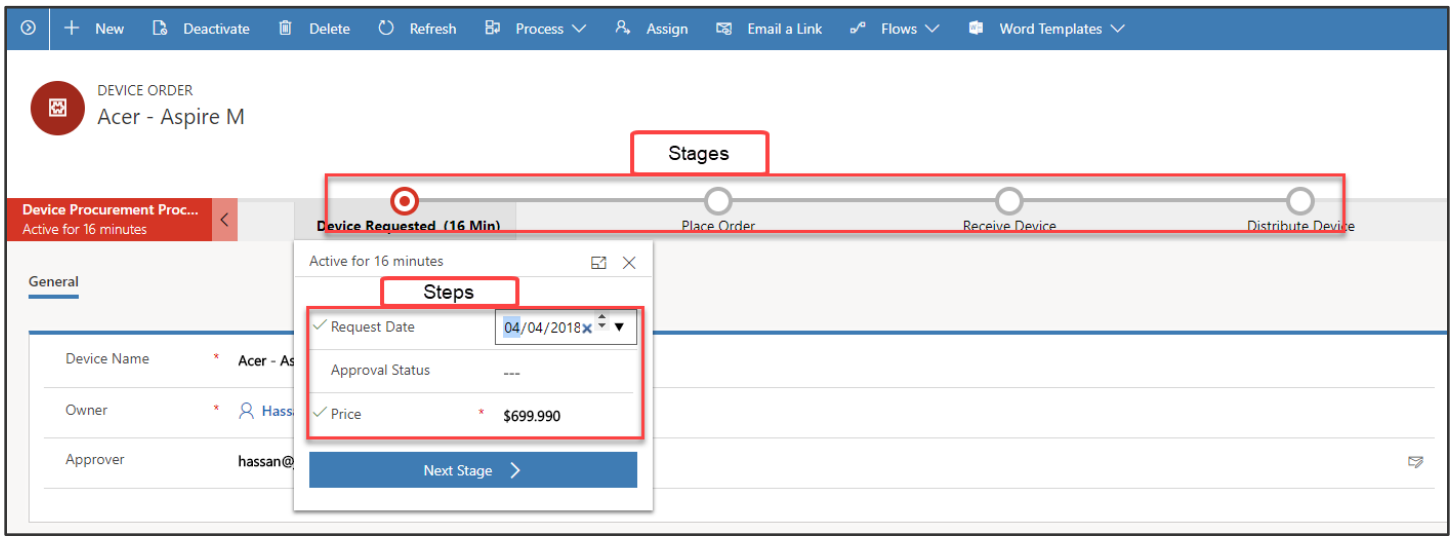
In discovery meetings with the back-office workers, we learned that a device request goes through the following tasks as they perform the magic to get the requestor their device.

- **Device Requested** – Today this is an e-mail sent to them with the device request. Going forward in the new PowerApps world this will be a Device Order record in the Common Data Service.
- **Place Order** – Once they receive the request, they will place an order with a supplier and get an order ID.
- **Receive Device** – This occurs when the device is received, and they send it to the IT staff to be configured with the standard software.
- **Distribute Device** – Once configured it needs to get to the employee that requested it, and they need to survey the employee to make sure they are happy.

Each of these represents a milestone and will become our Stages in the Business Process Flow. In a more complex scenario, you would likely end up compressing or even possibly re-imagining the business process to make it more optimal than the current process the staff performs with their existing process.

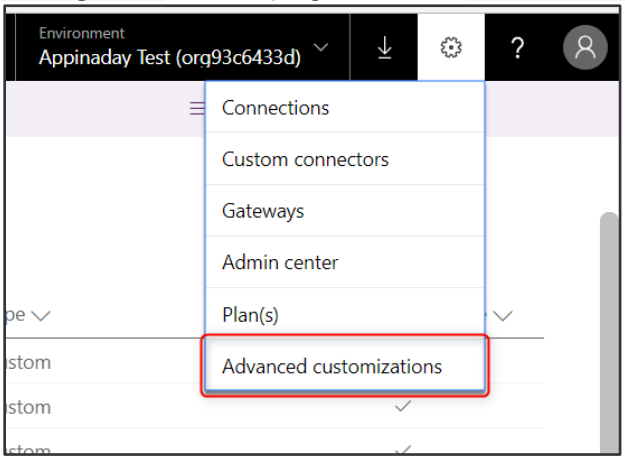
For this lab, the *Receive Device and Distribute Device stages are marked optional*. While these stages would need to be created for a full implementation of the scenario, to save time you may skip them or do them as a take home exercise.

The completed Business Process Flow will look like the image below.

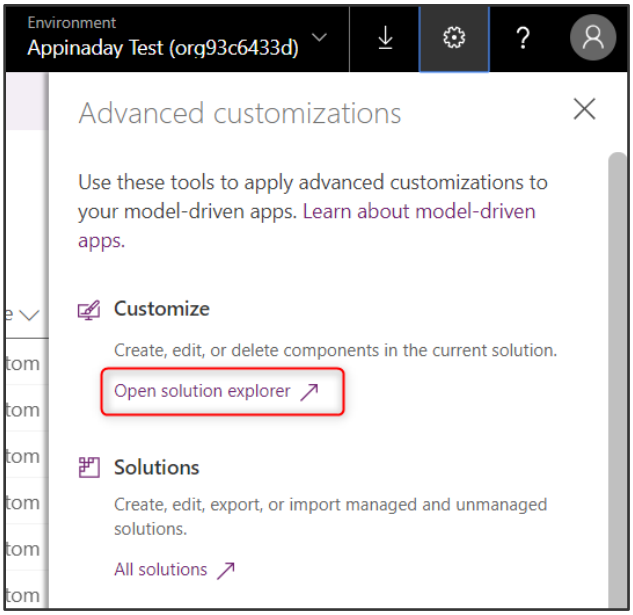


Task 1: Create business process flow

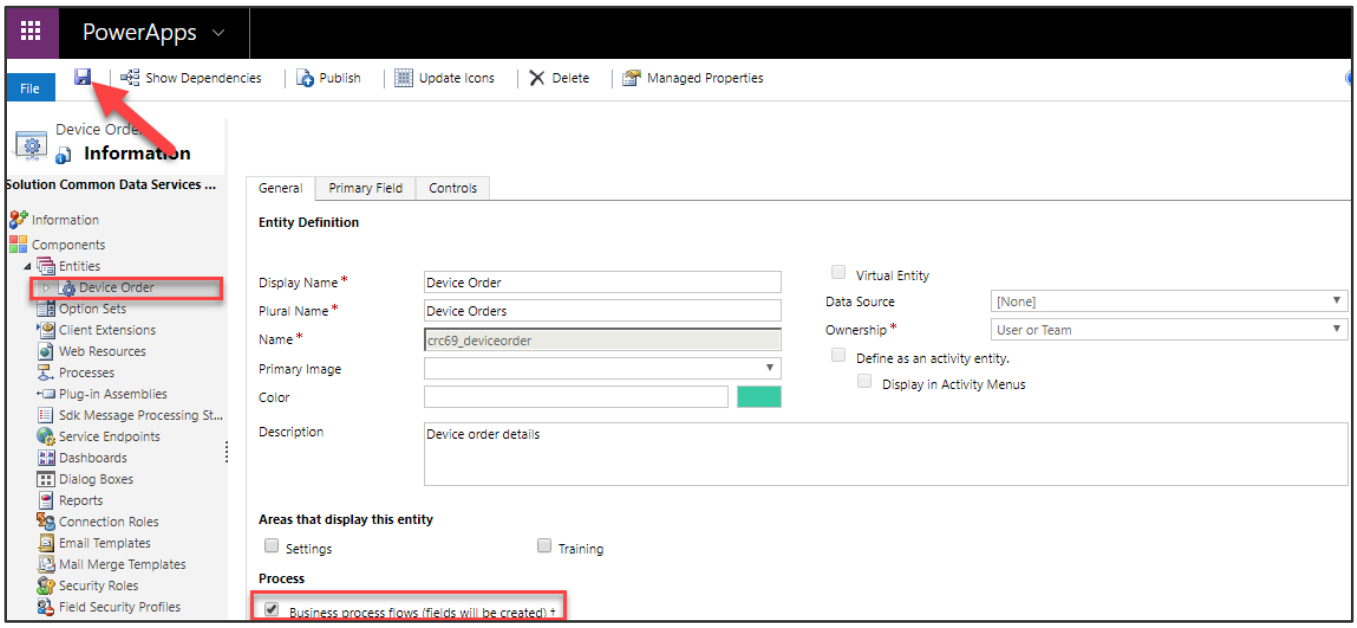
1. You need to make a one-time configuration change to enable Business Process Flows for the entity. Click on the **Settings icon** in the top right and click **Advanced customization**.



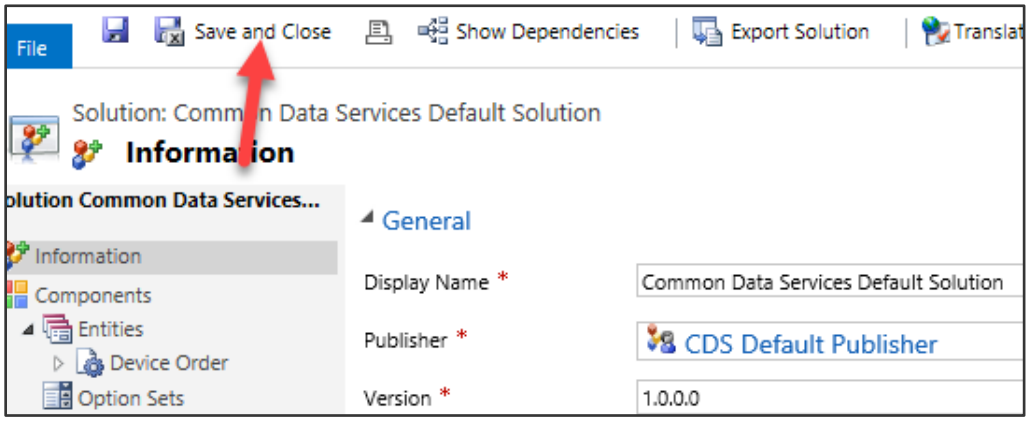
2. In the Advanced customizations pane, click **Open solution explorer**. This will navigate to solution explorer in a new tab.



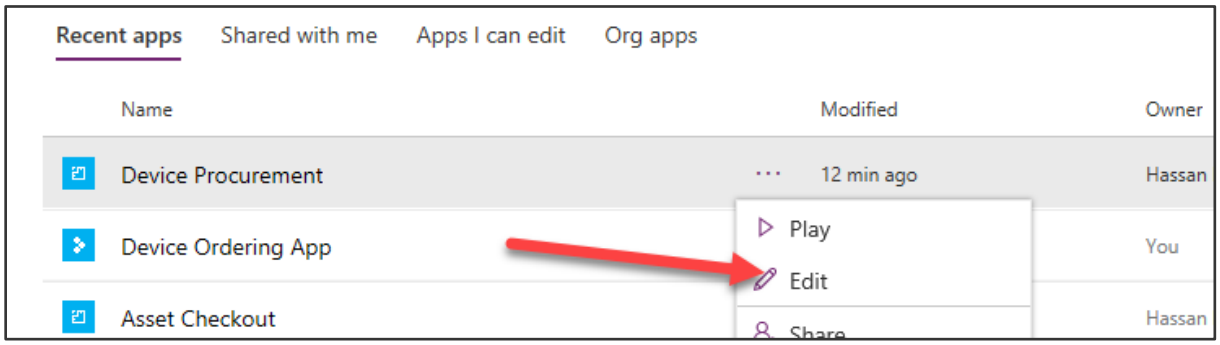
3. Expand **Entities**, select **DeviceOrders**, enable **Business Process Flow**, and click **Save**. This is a one-time change to indicate you want to enable Business Process Flows for the entity. Once you turn this field on, it is not possible to turn it off, so it should only be enabled when you are going to use the feature.



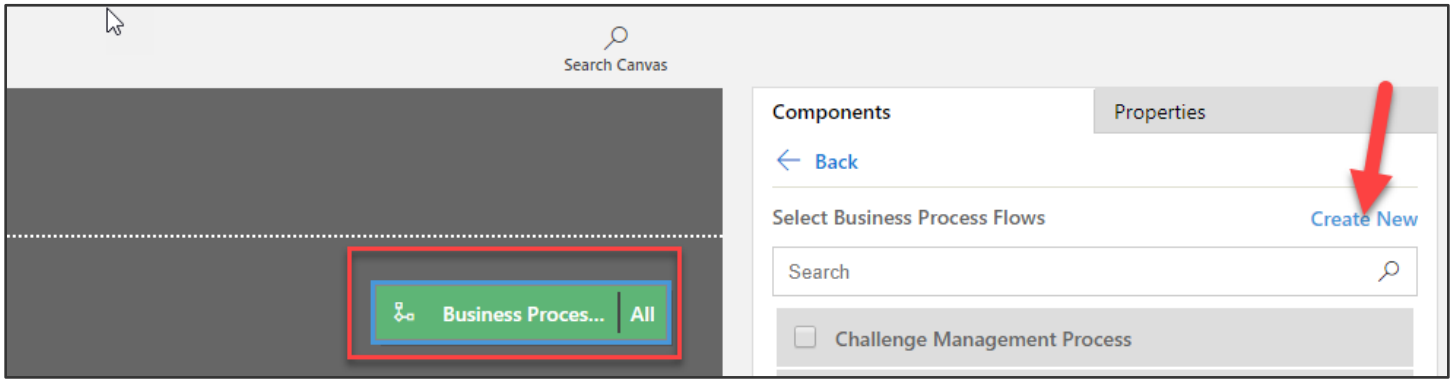
4. Select the **Information** tab and click **Save and Close**.



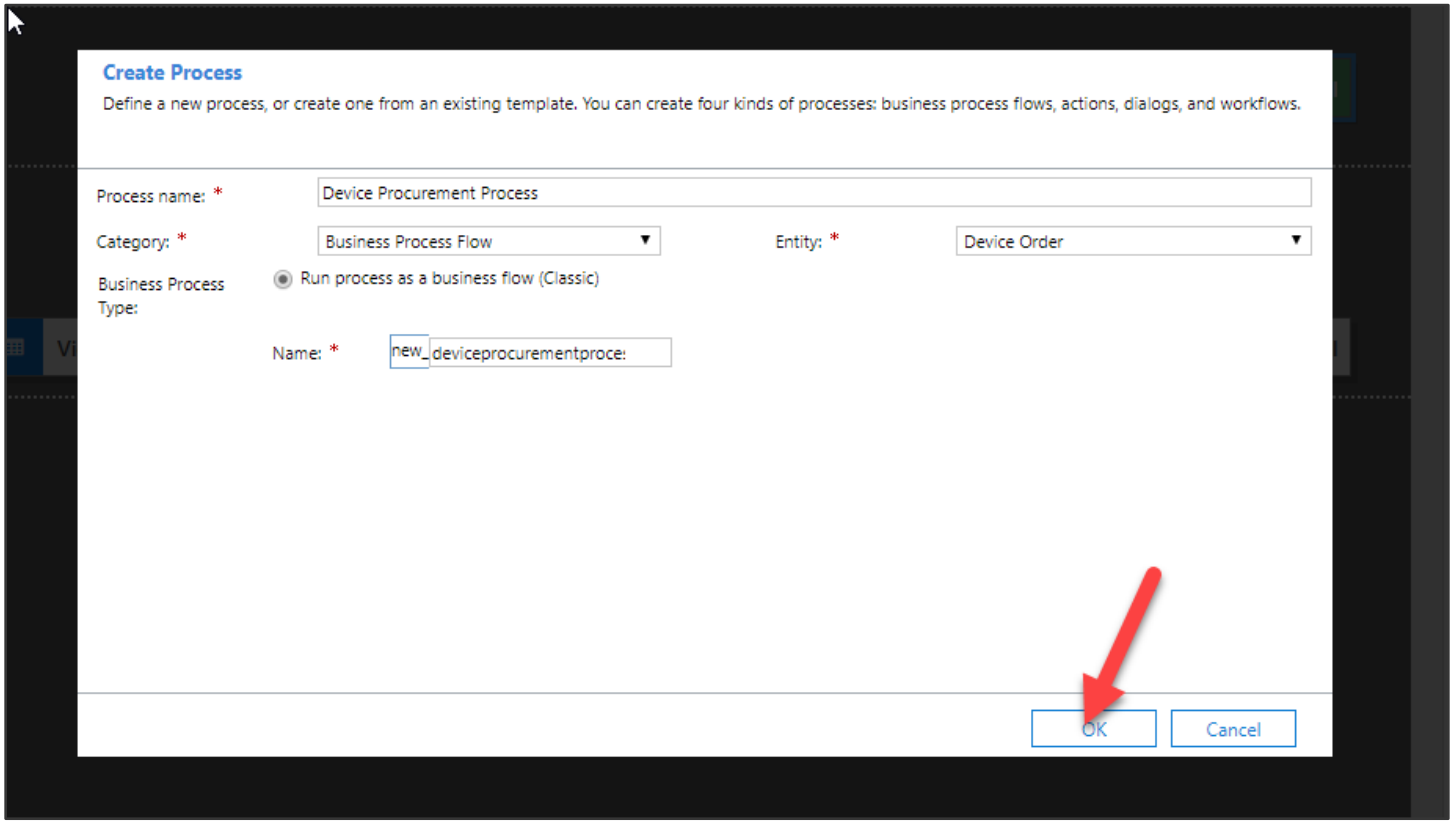
5. You will be back in the Entity view. Close the Advanced customizations pane if it still open. Select **Apps**, click the **...** and of the Device Procurement app and select **Edit**.



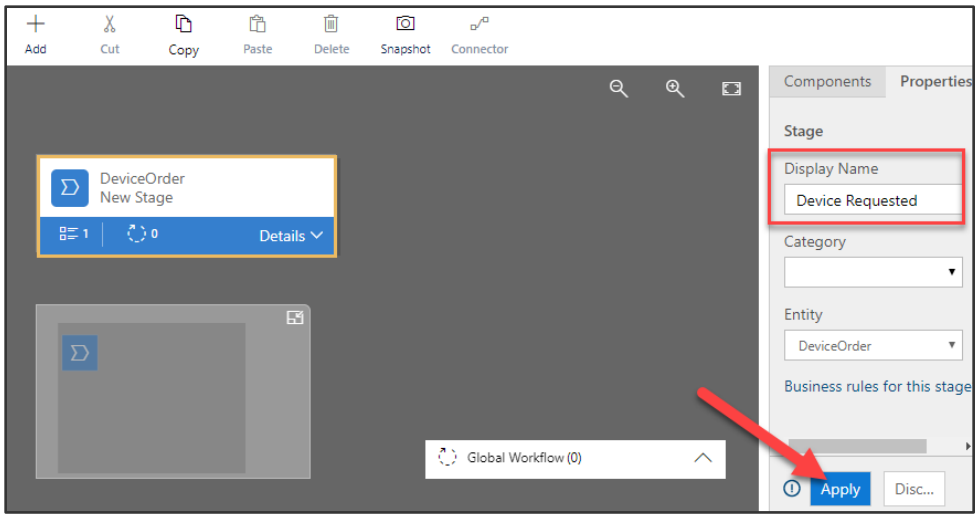
6. Select **Business Process Flows** and click **Create New**.



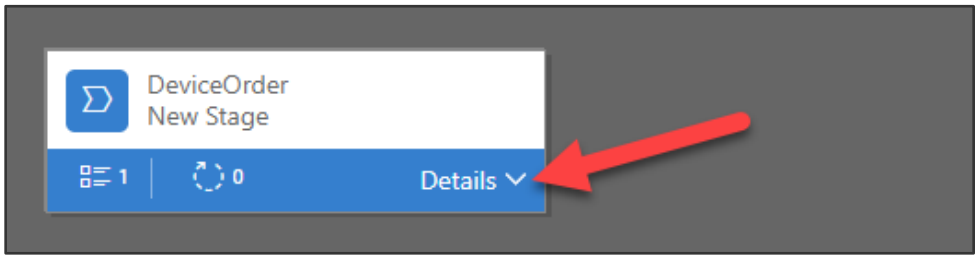
7. Enter **Device Procurement Process** for Process Name, select **Business Process Flow** for Category, select **DeviceOrder** for Entity, and click **OK**. When you create the Business Process Flow behind the scenes it creates another entity with the same name as the Business Process Flow to track the progress of each business process on the record. Because of this, choose your name carefully, for example, you wouldn't want to use the same name as your entity e.g. Device Order. Here we choose Device Procurement Process. Note: After you click OK, a new window will be loaded with the designer. If you have popup blockers enabled this might be blocked. The window might also not immediately have focus and you might have to manually bring it into focus.



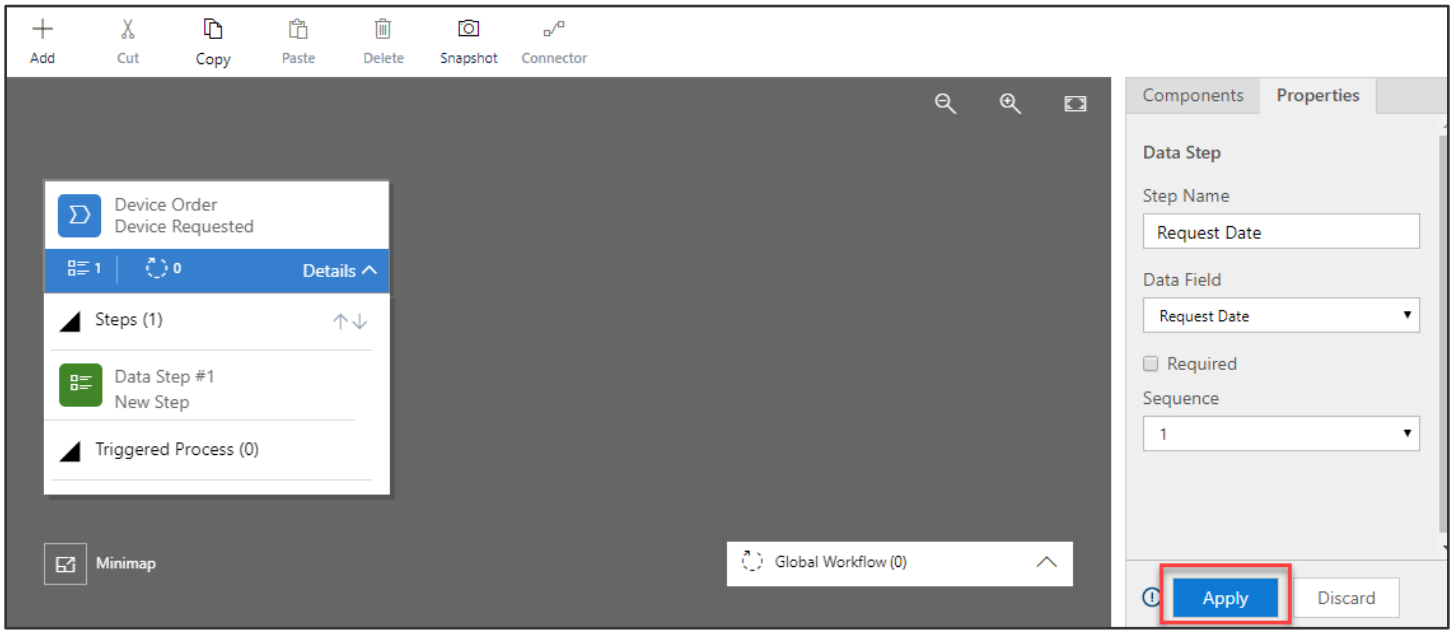
8. Select the **New Stage** and change the Display Name to **Device Requested** and click **Apply**.



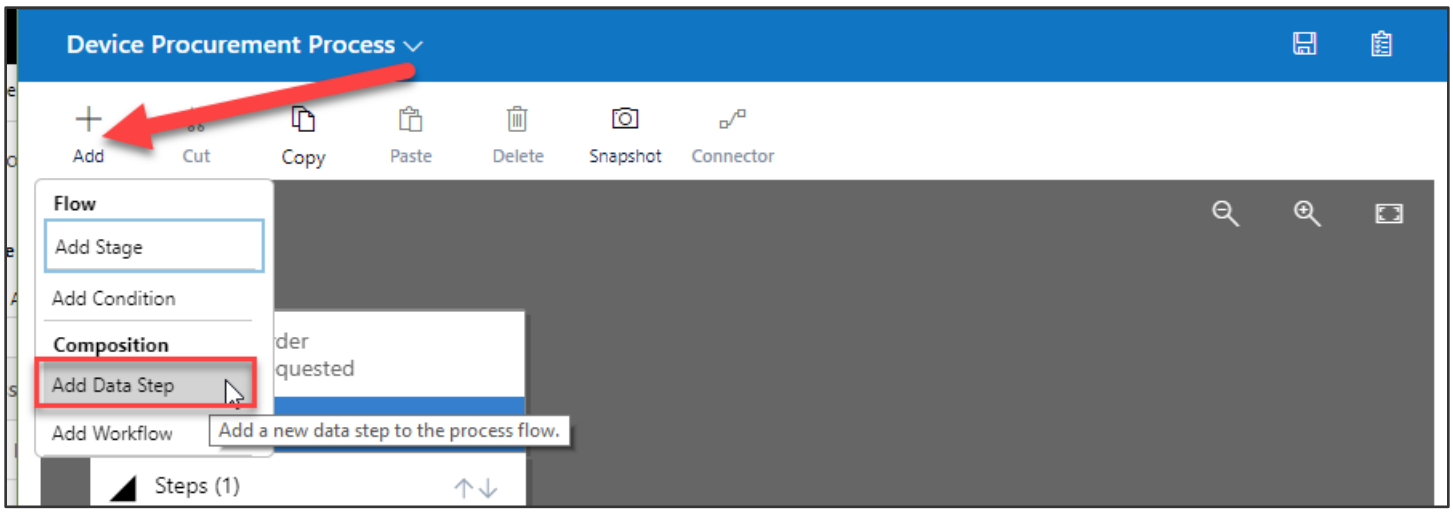
9. Click **Details.**



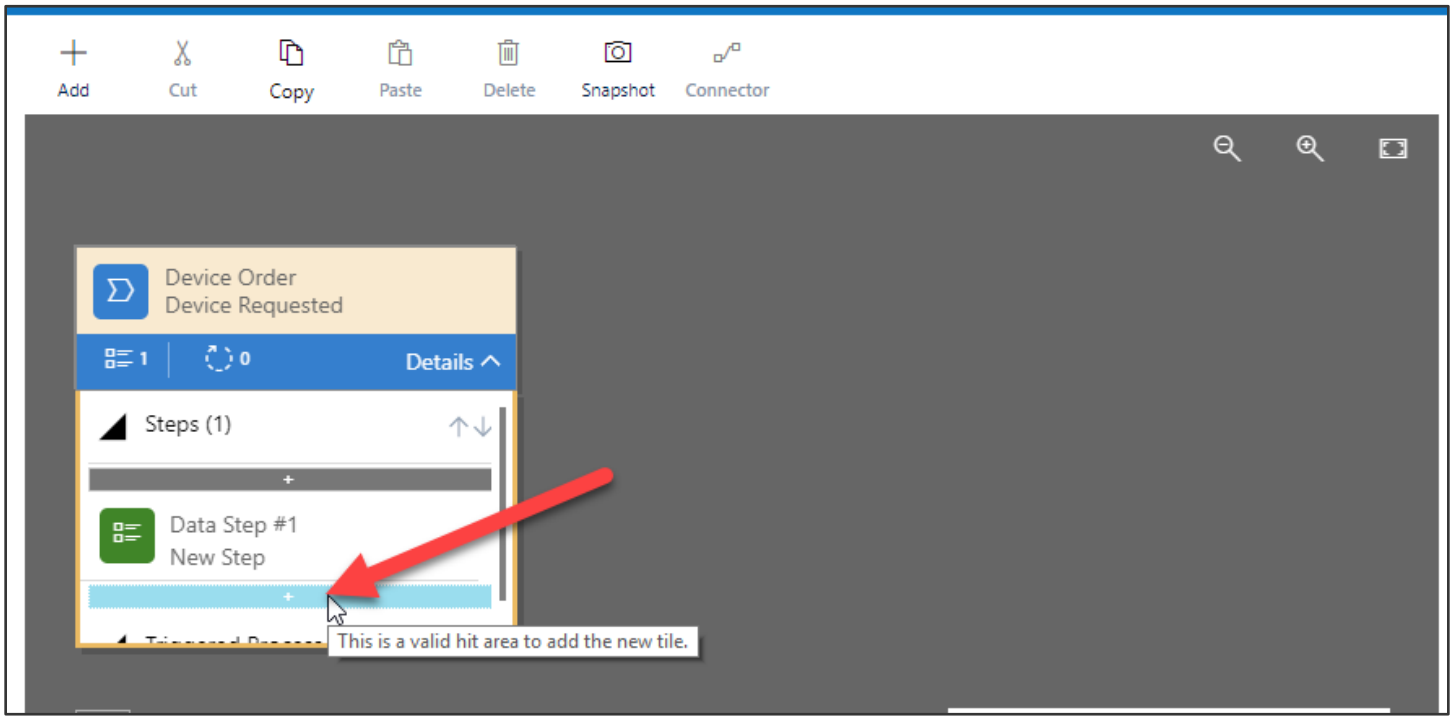
10. Select the **Data Step**, select **Requested Date** for Data Field and click **Apply**. The Step Name will auto-filled for you.



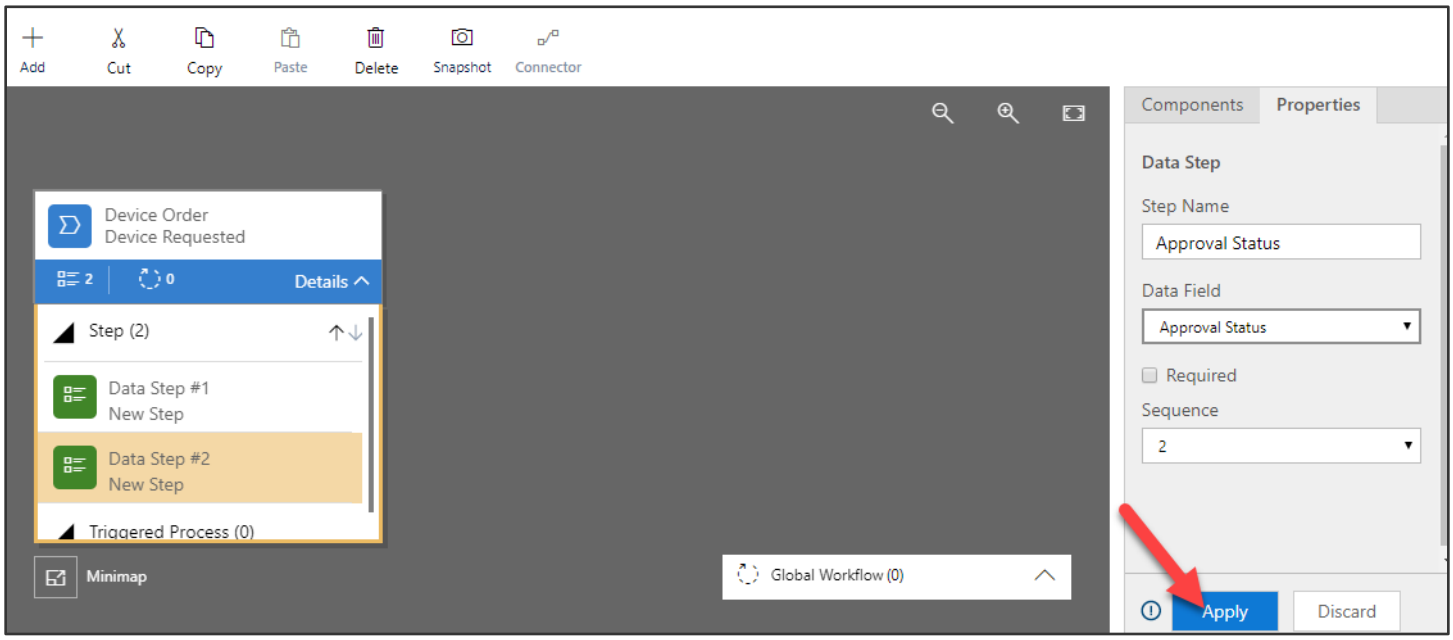
11. Click **Add** and select **Add Data Step**.



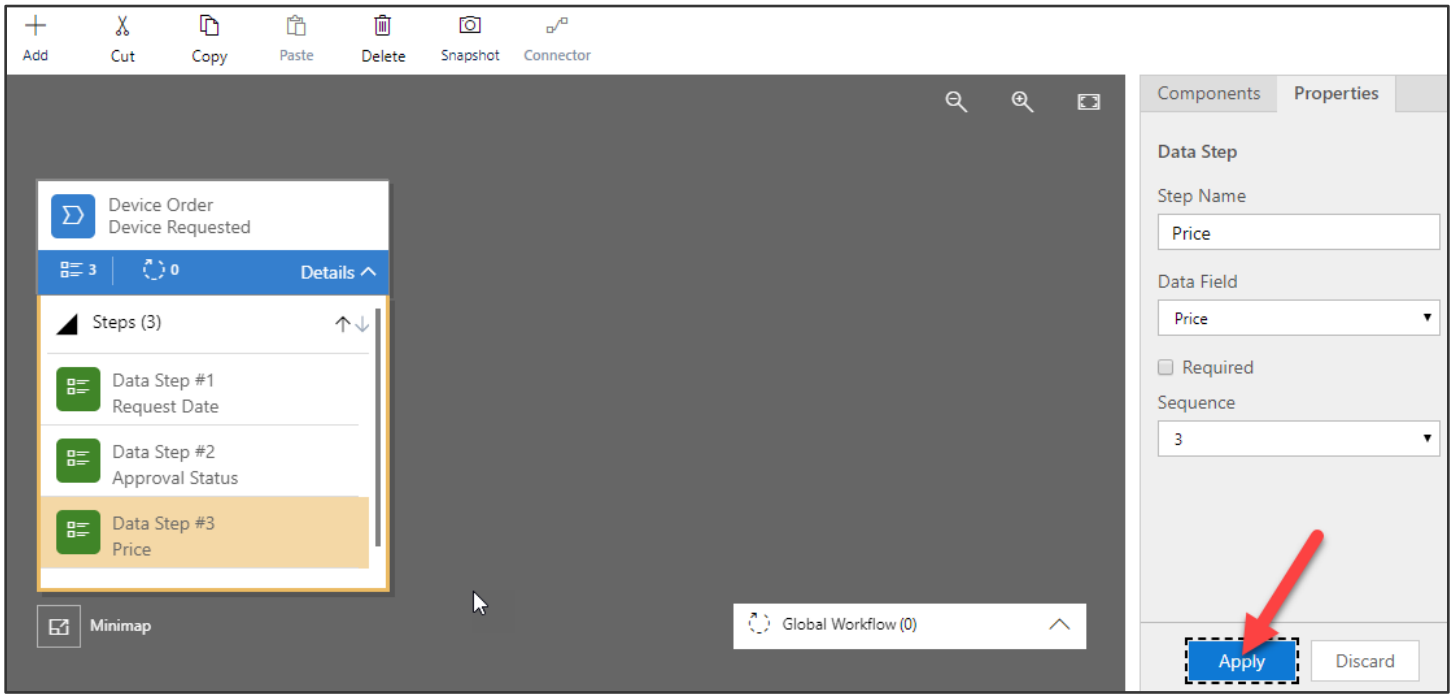
12. Click on the small + under Data Step #1.



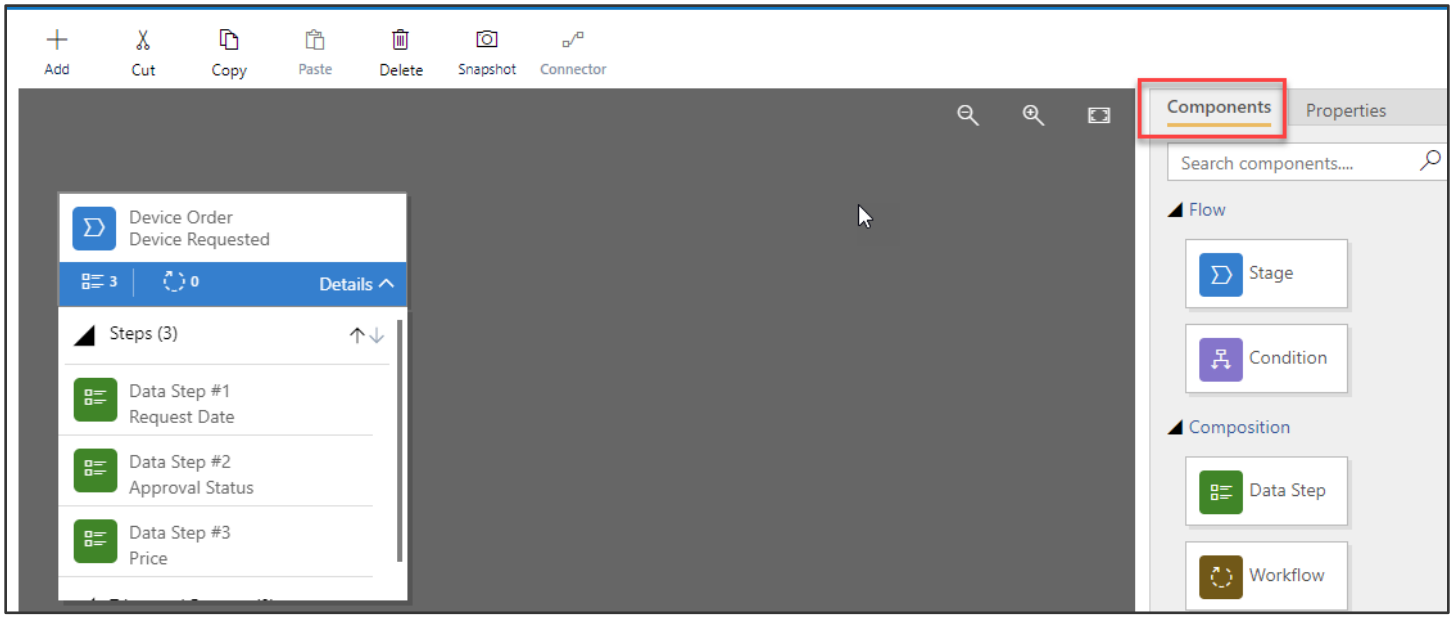
13. Select **Approval Status** for Data field and click **Apply**.



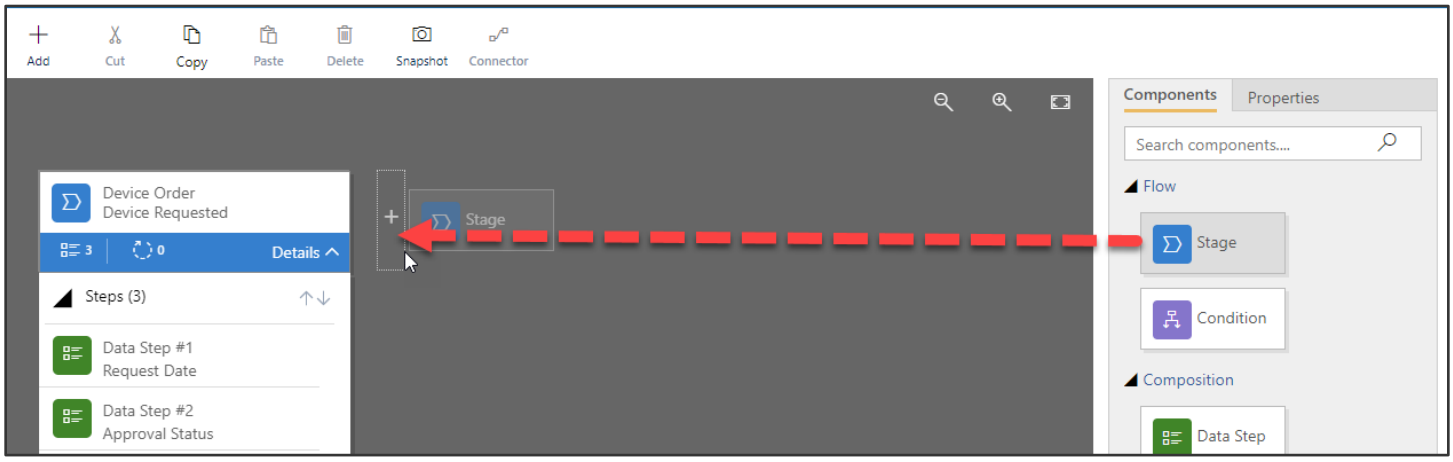
14. Add another Data Step, select **Price** for Data Field and click **Apply**.



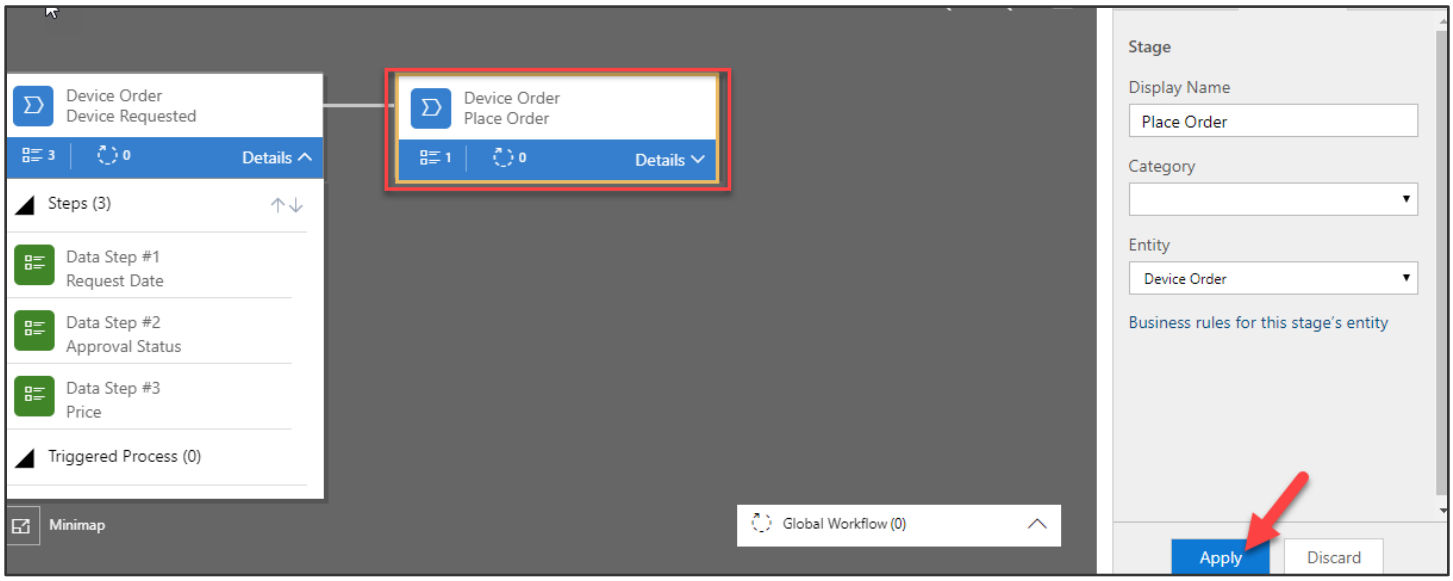
15. Select the **Components** tab.



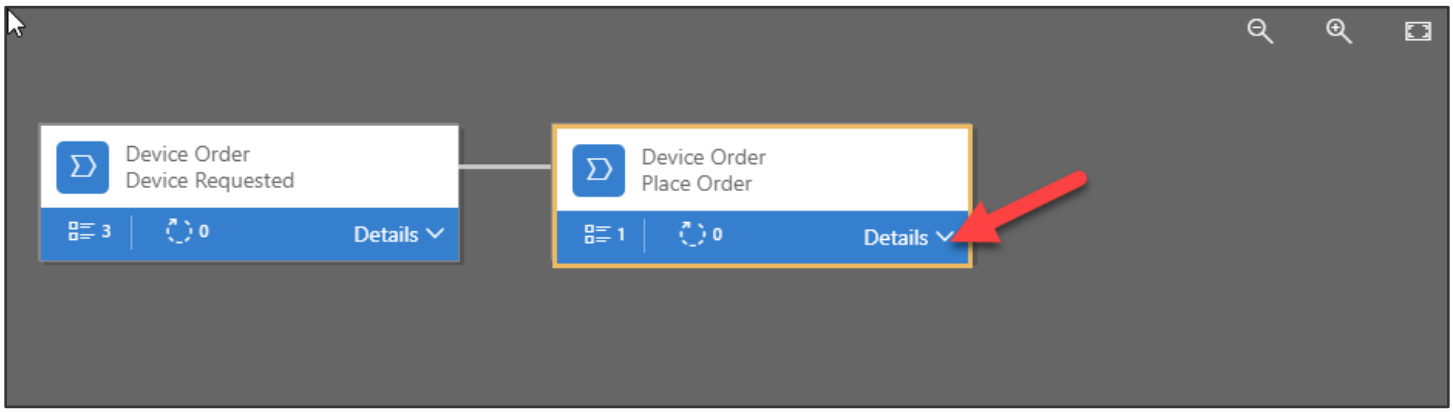
16. Drag Stage to the canvas and place to the right of the Device Requested stage.



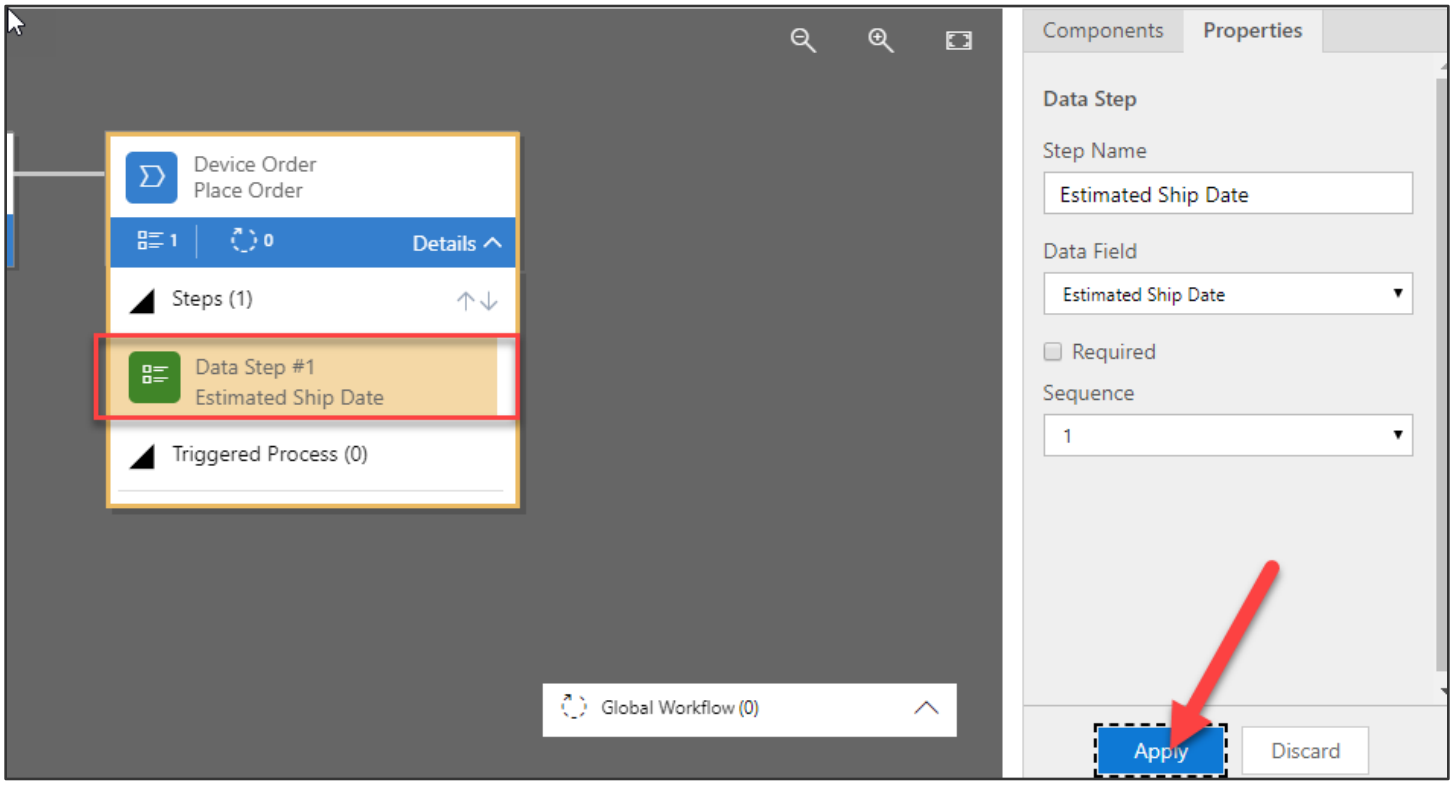
17. Select the new stage, change the Display Name to **Place Order** and click **Apply**.



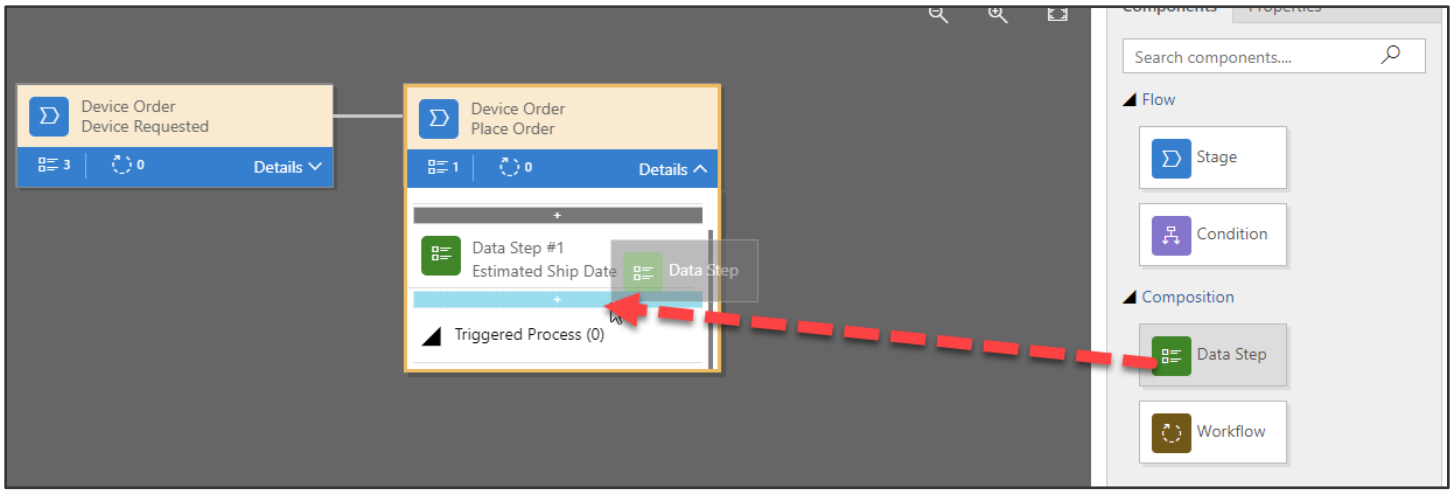
18. Click **Details**.



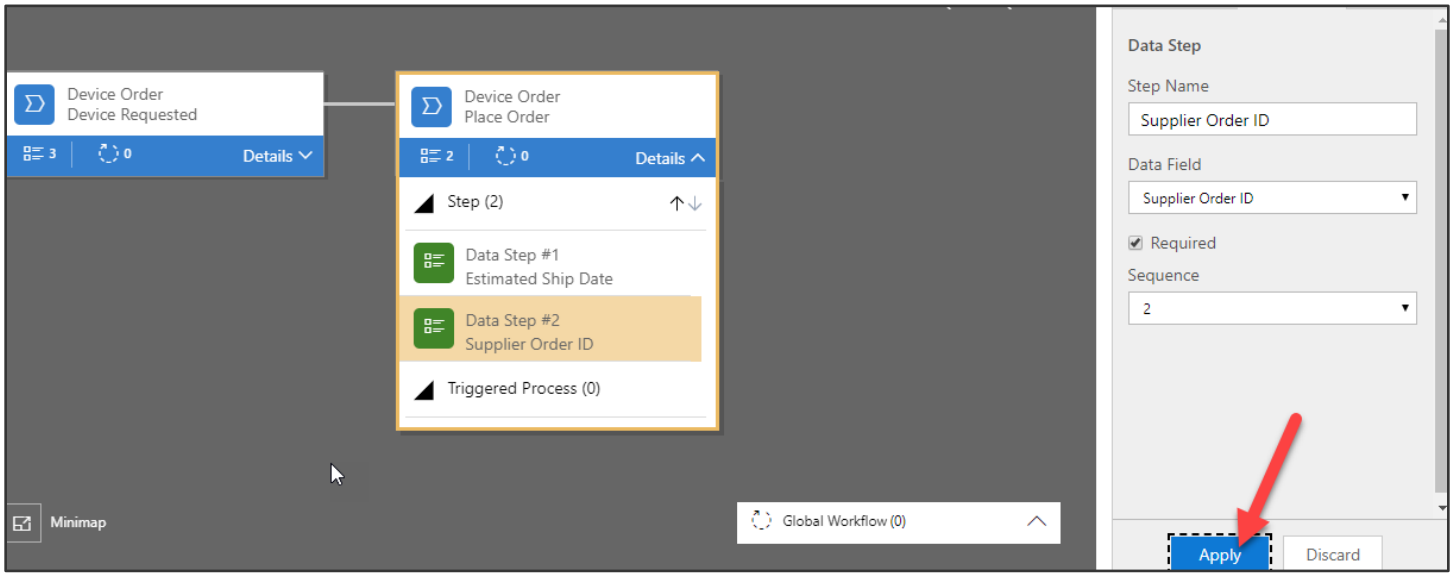
19. Select the existing Data Step, select **Estimated Ship Date** for Data Field, and click **Apply**.



20. Select the **Components** tab, drag **Data Step** to the canvas and place is under the **Estimated Ship Date** step.

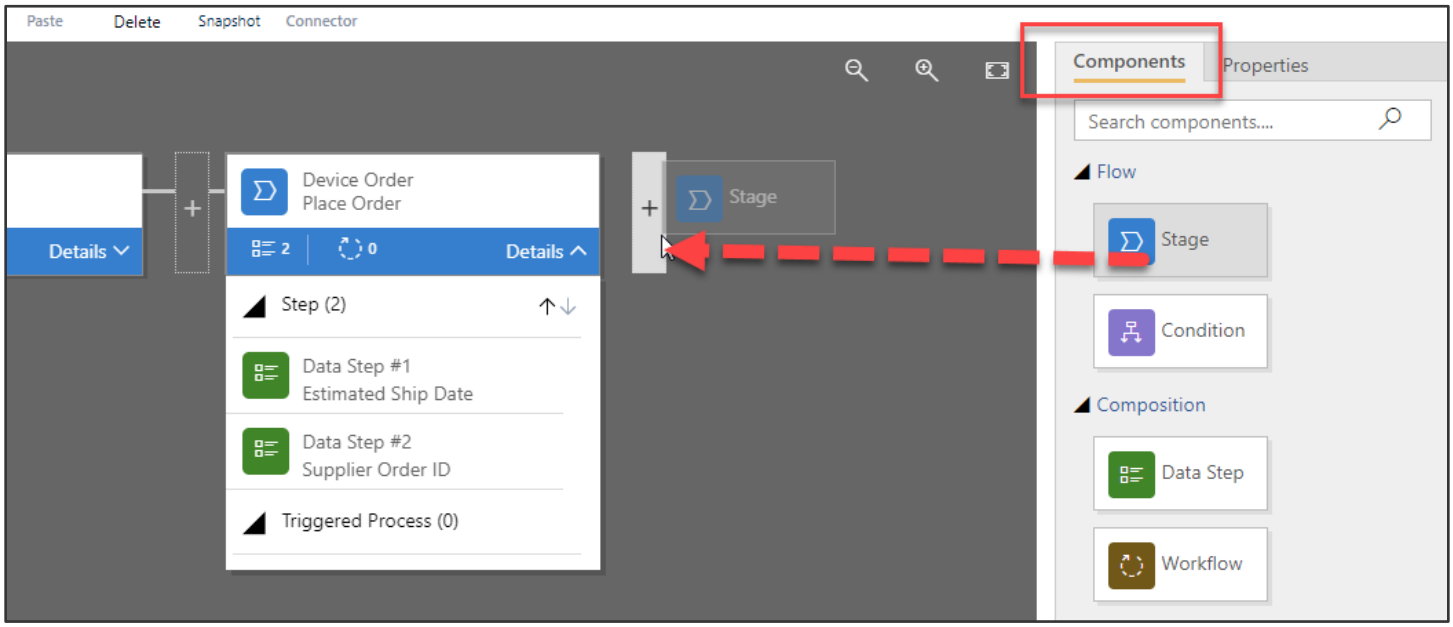


21. Select **Supplier Order ID** for Data Field, check the **Required** field to and click **Apply**. Remember from before this field isn't required, but by checking this here, we will require it to be filled out before they can advance to the next stage. It won't, however, block saving the record if there isn't a data value populated like it would if it was marked required on the field definition.

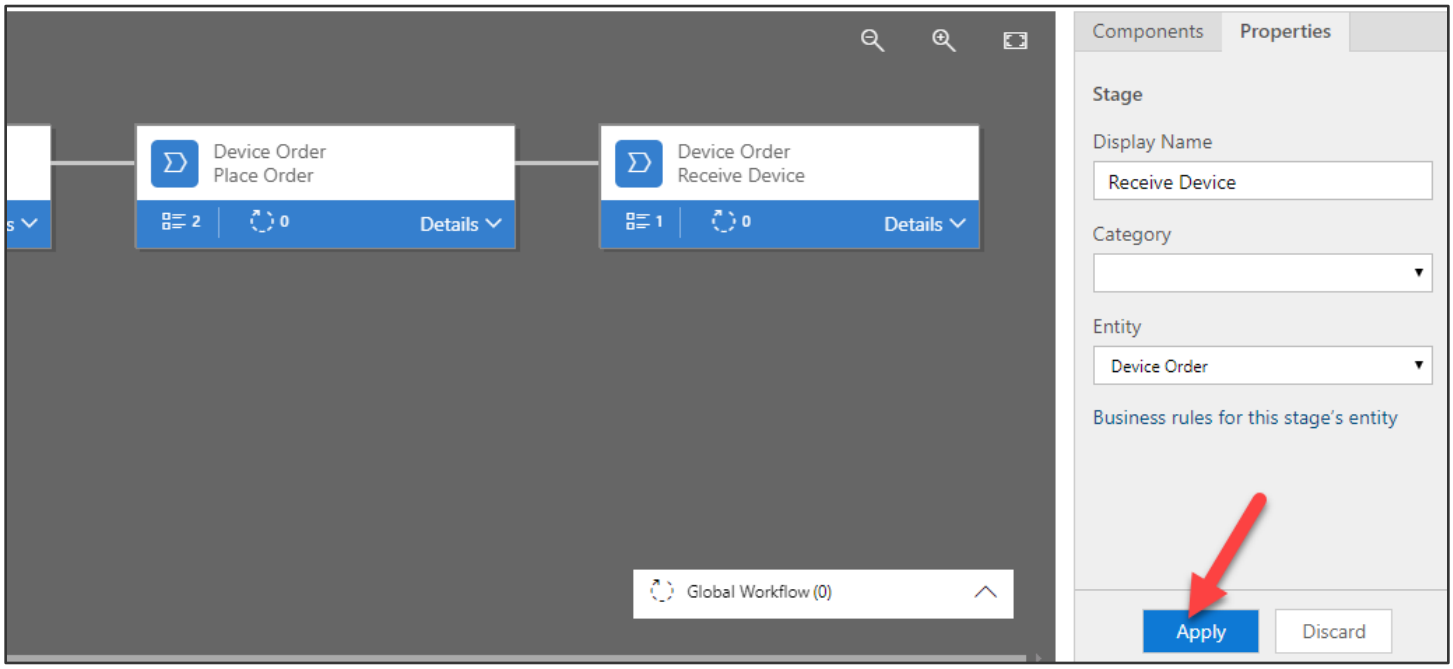


NOTE: All steps from here onwards until you reach Task 2 are OPTIONAL. These steps add two more stages to the business process using the same technique you learned above. You may skip ahead to Task 2 to add a branch condition.

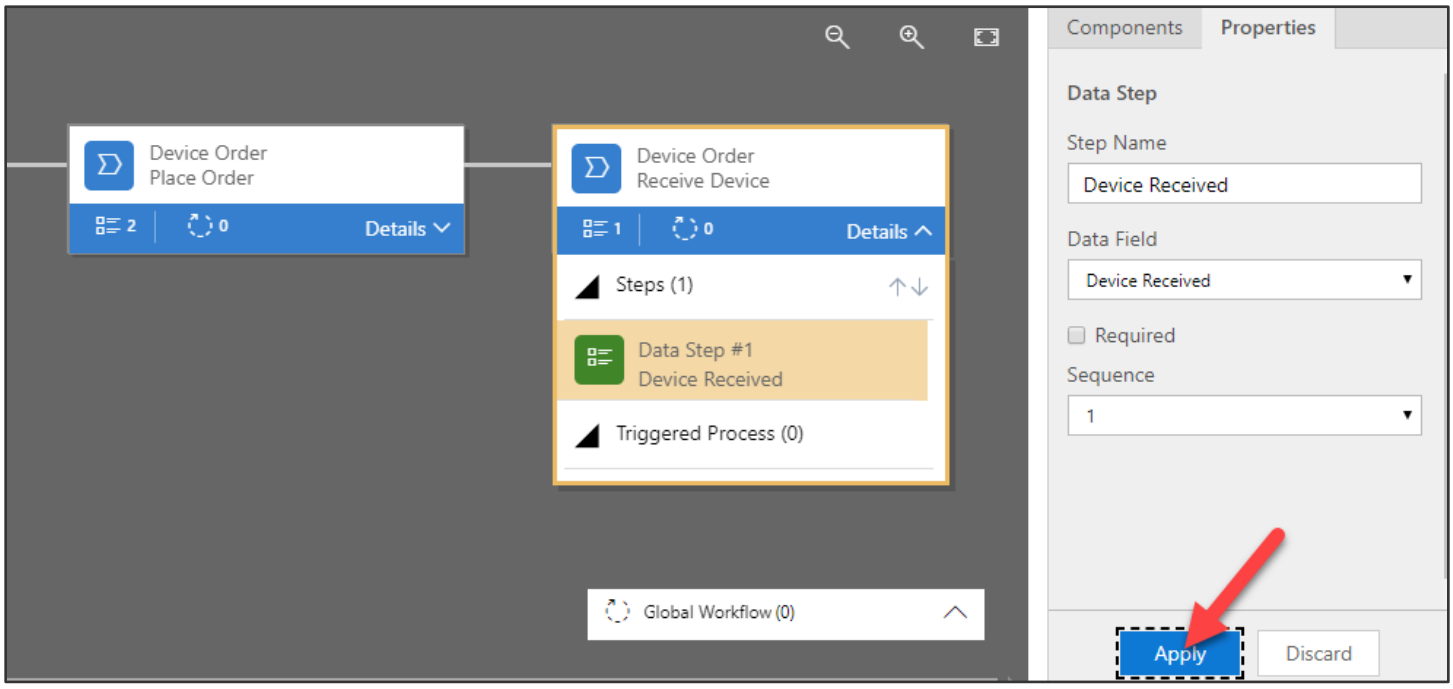
22. Select the **Components** tab and drag Stage to the right side of the **Place Order** stage.



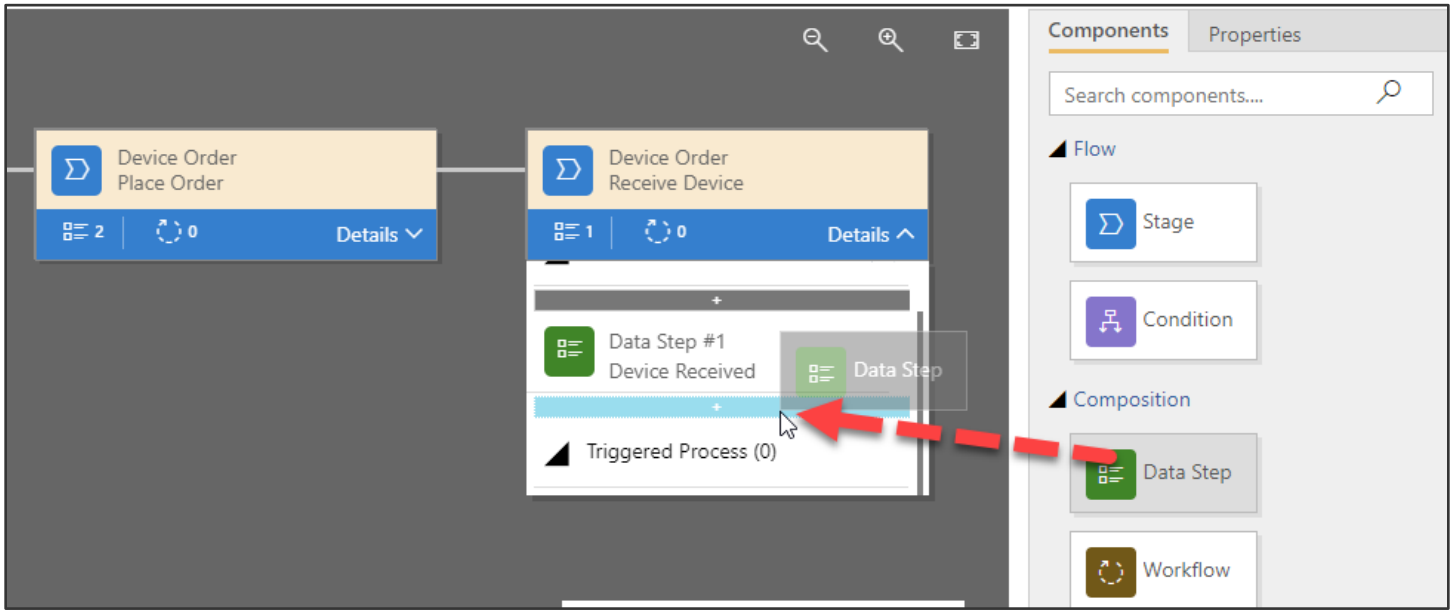
23. Select the new stage, change the Display name to **Receive Device** and click **Apply**.



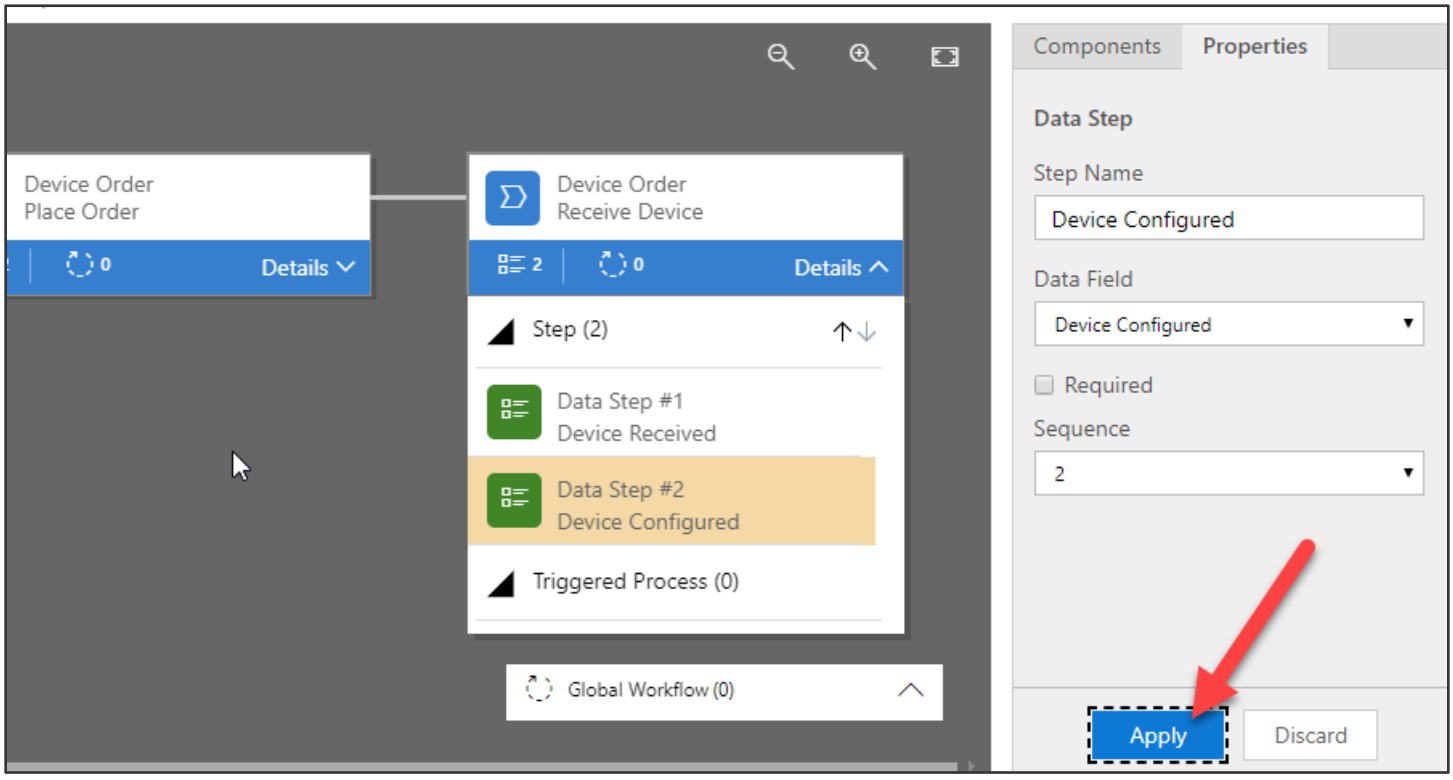
24. Click **Details**.
25. Select the existing Data Step and select **Device Received** for Data Field and click **Apply**.



26. Select the **Components** tab, drag Data Step to the **Receive Device** stage and place it under the **Device Received** step.

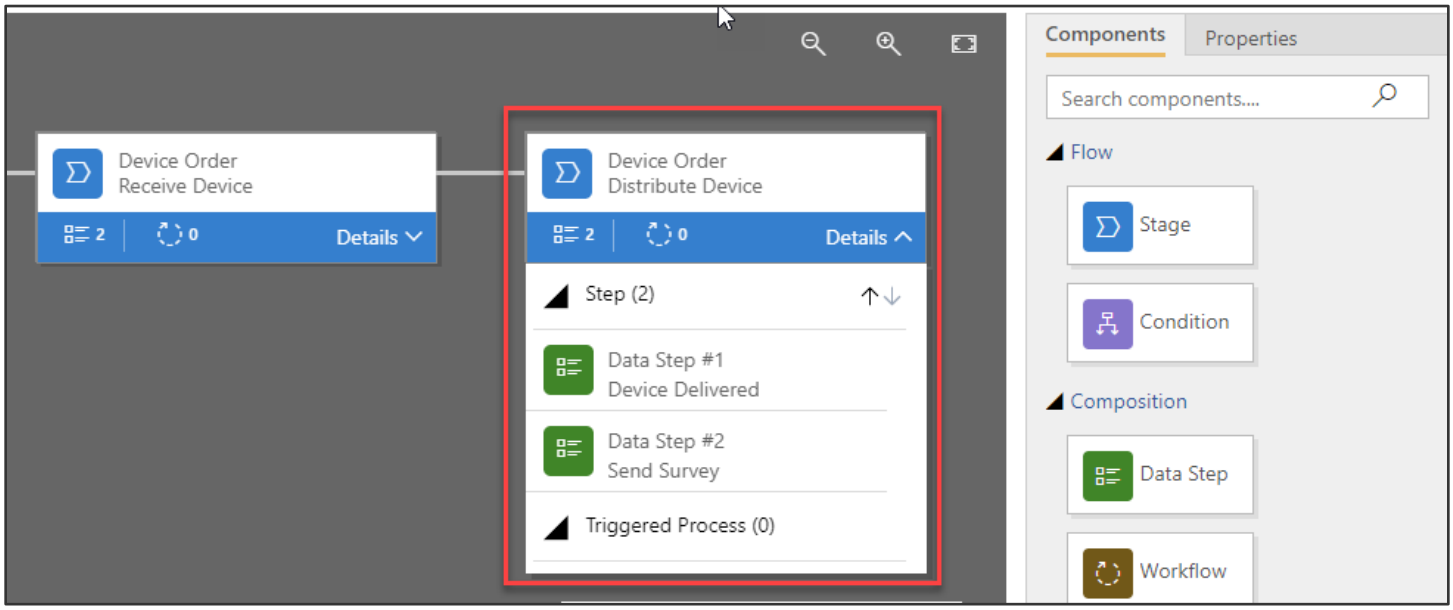


27. Select **Device Configured** for Data Filed and click **Apply**.



28. Add another stage and name it **Distribute Device**.

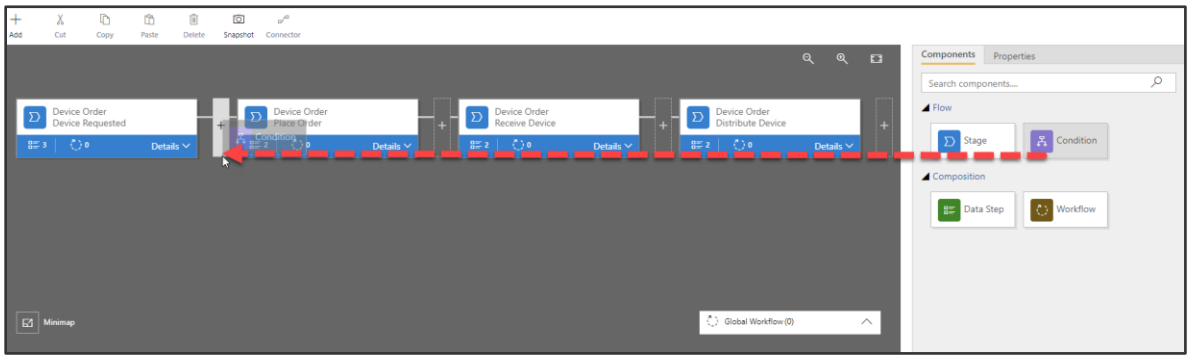
29. Add two data steps **Device Delivered** and **Send Survey**.



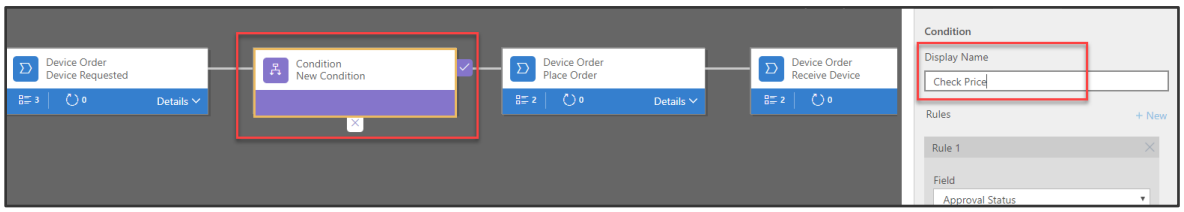
Task 2: Add a branch condition

In this task, we are going to add a conditional branch to our Business Process Flow. When we did the discovery, we learned that if the price was greater than $1K, they had extra work they had to do to get capital approval prior to placing the order. In this task, you will see how we can modify the flow we built to accommodate this.

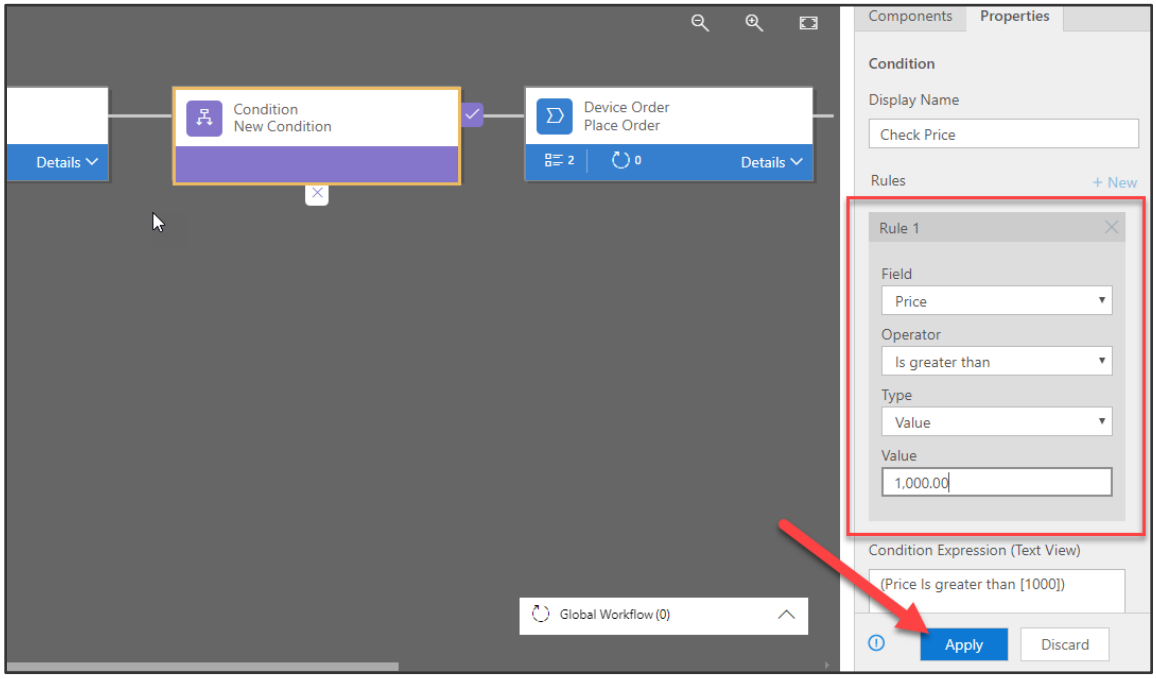
1. Select the **Components** tab, drag **Condition** and place it between **Device Requested** and **Place Order**.



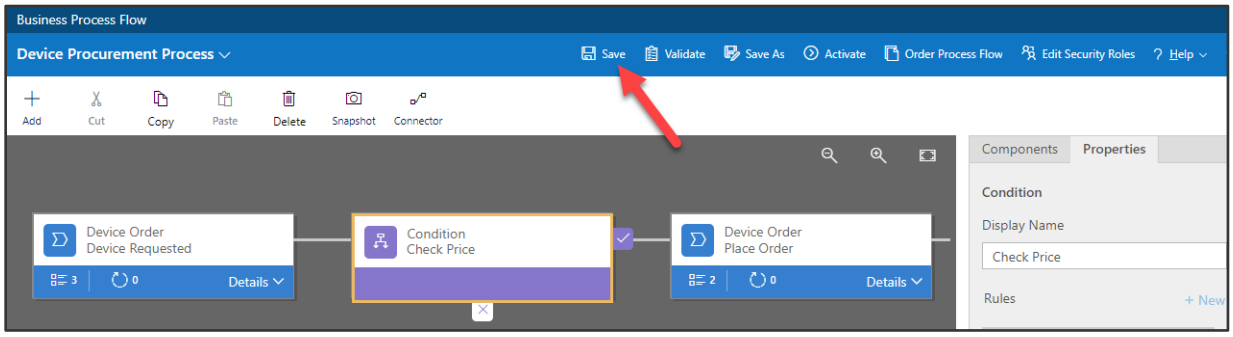
2. Select the **Condition** and change the Display Name to **Check Price.**



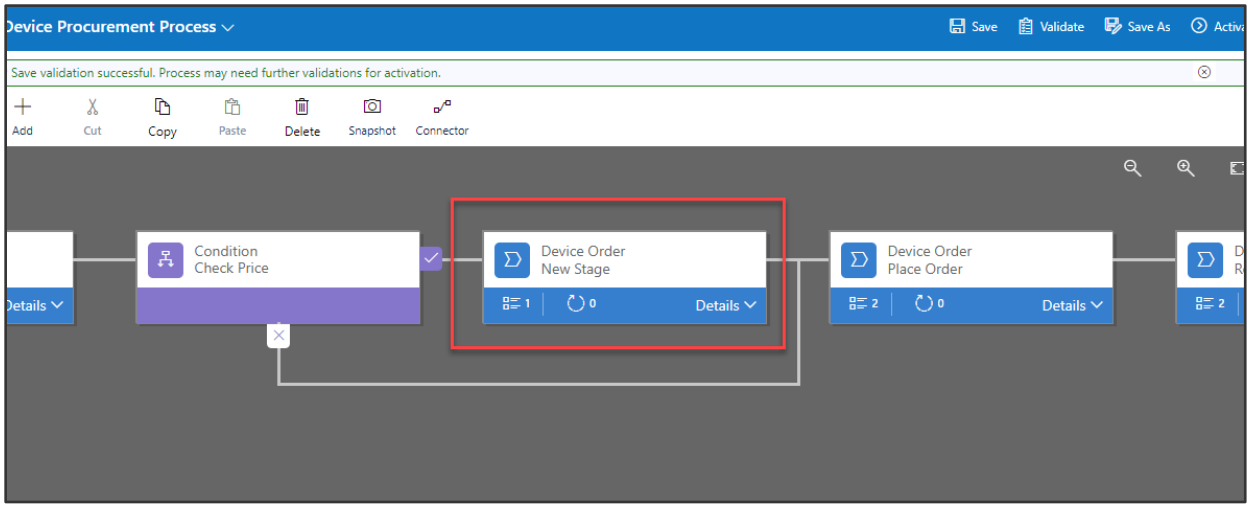
3. In the **Rule 1** section, select **Price** for Field, **is greater than** for Operator, **Value** for Type, **1000** for Value, and click **Apply**. It's important to note that fields you use in the rules on the condition must be in the prior Stages steps. That is one of the reasons we put the price in there previously.



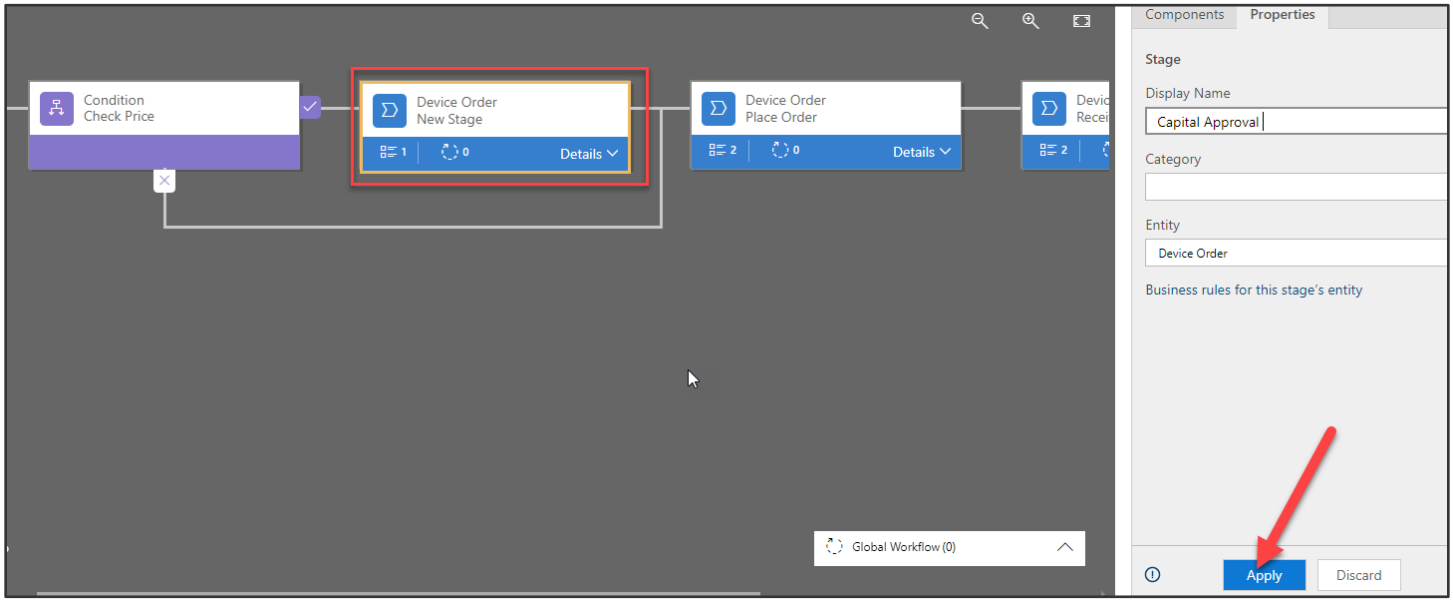
4. Click **Save**.



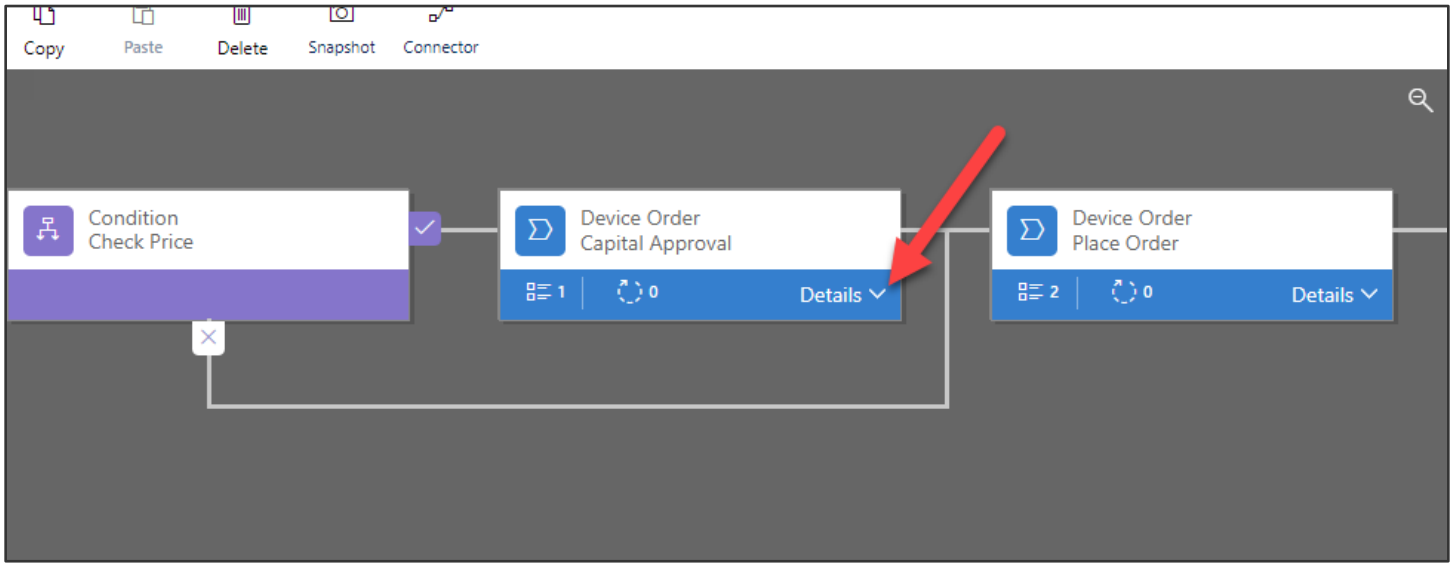
5. A new stage will be added for you.



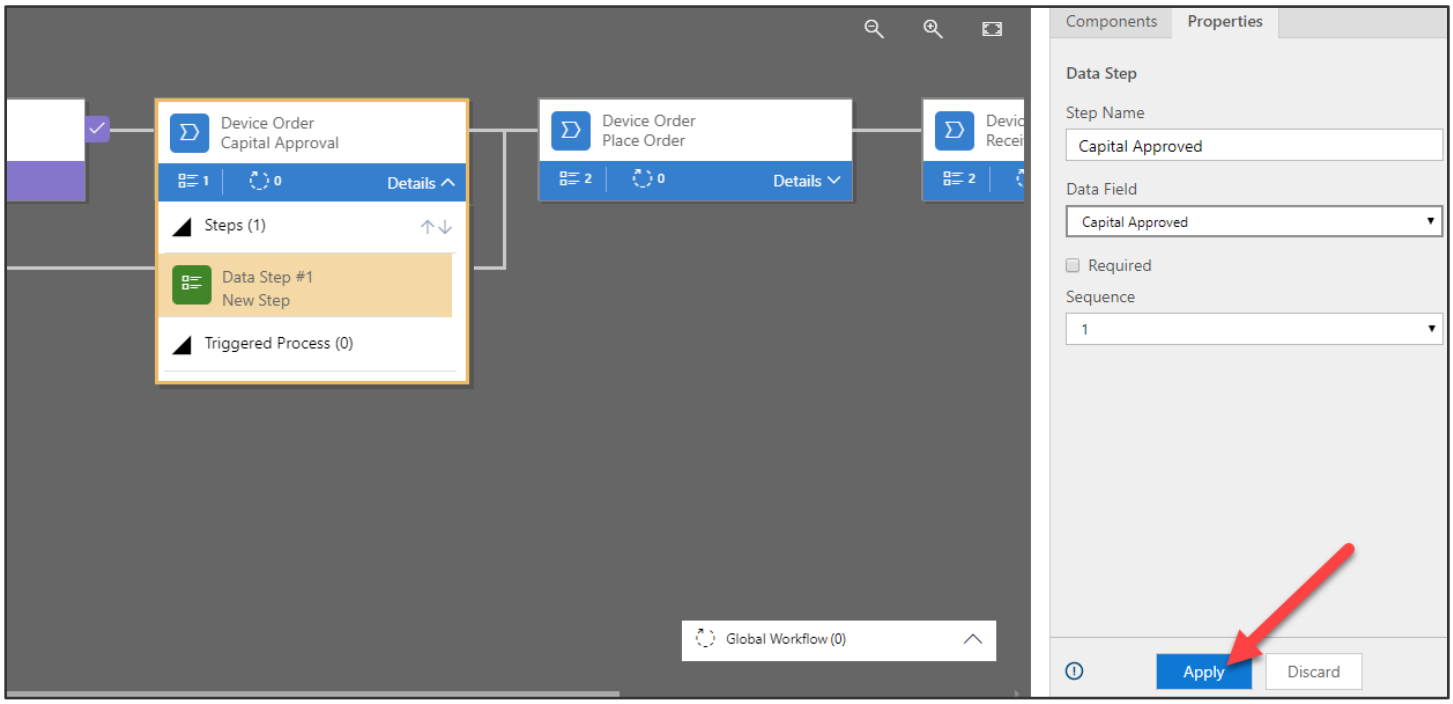
6. Select the new stage, change the Display Name to **Capital Approval** and click **Apply**.



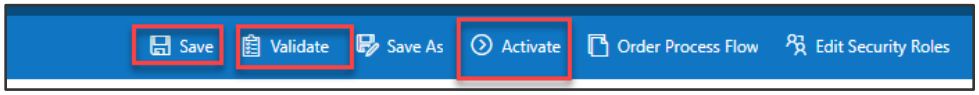
7. Click **Details**.



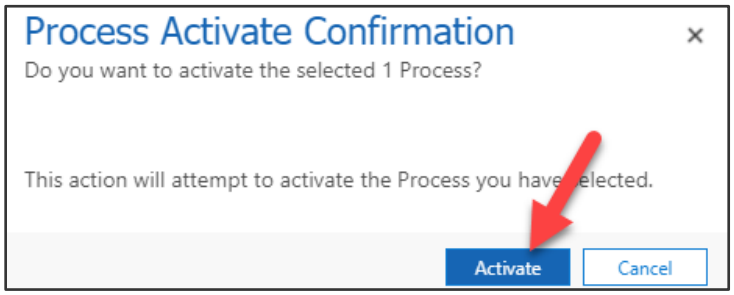
8. Select the existing Data Step, select **Capital Approved** for Data Field and click **Apply**.



9. **Save**, **Validate** and **Activate** the Business Process Flow.



10. Confirm the activation.



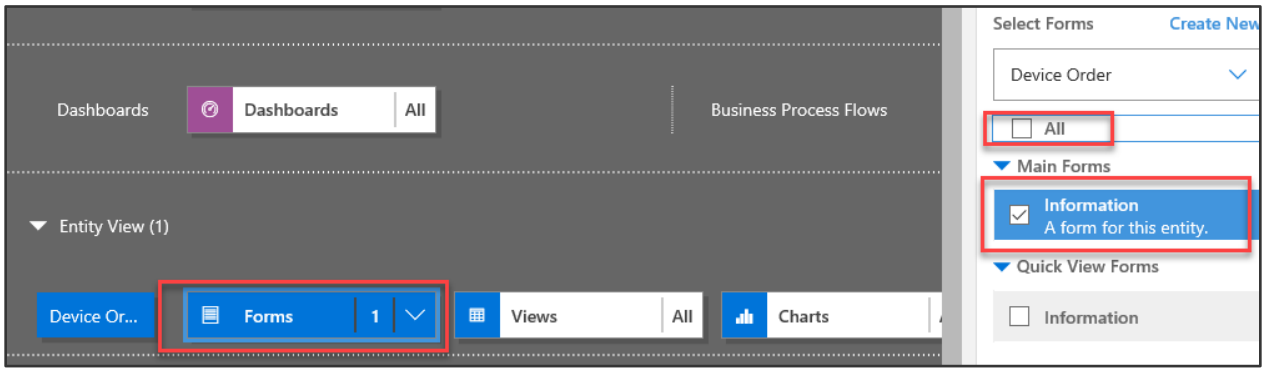
11. Close the process editor window.

Exercise 3: Form and View Modification

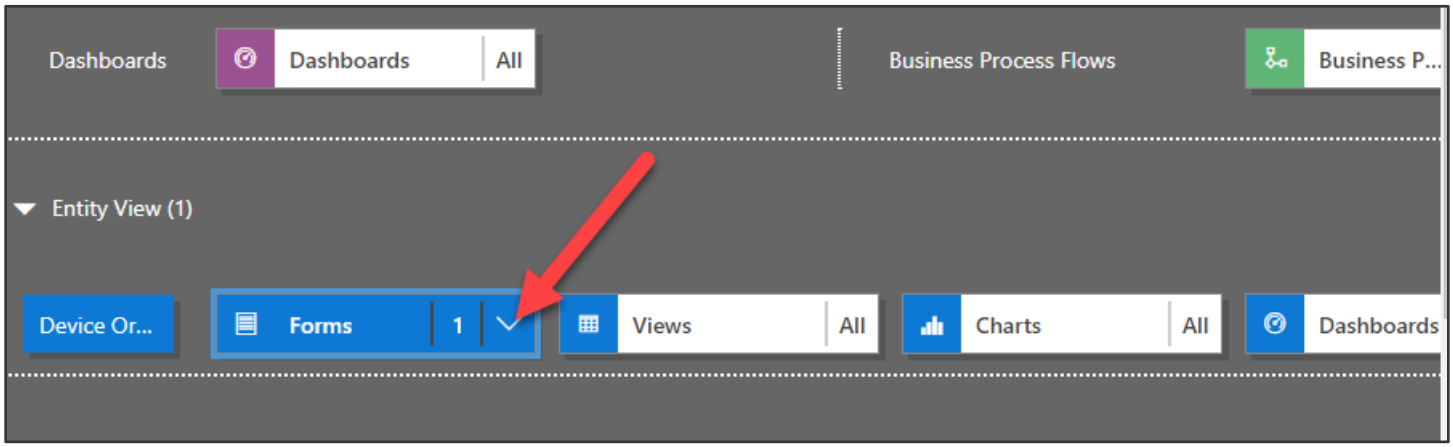
In this exercise, we are going to modify the form for the Device Order to add additional fields. When you create an entity in the Common Data Service, it also creates a main form for that entity with a few basic fields on it. In addition to the form, views are created for the entity. Views are used in a Model-Driven app anytime a list of the entity records are displayed. You would modify the view to add additional fields or change the placement. You can also create additional views, for example, you might provide a few to show all device requests that are waiting to be received.

Task 1: Modify the form

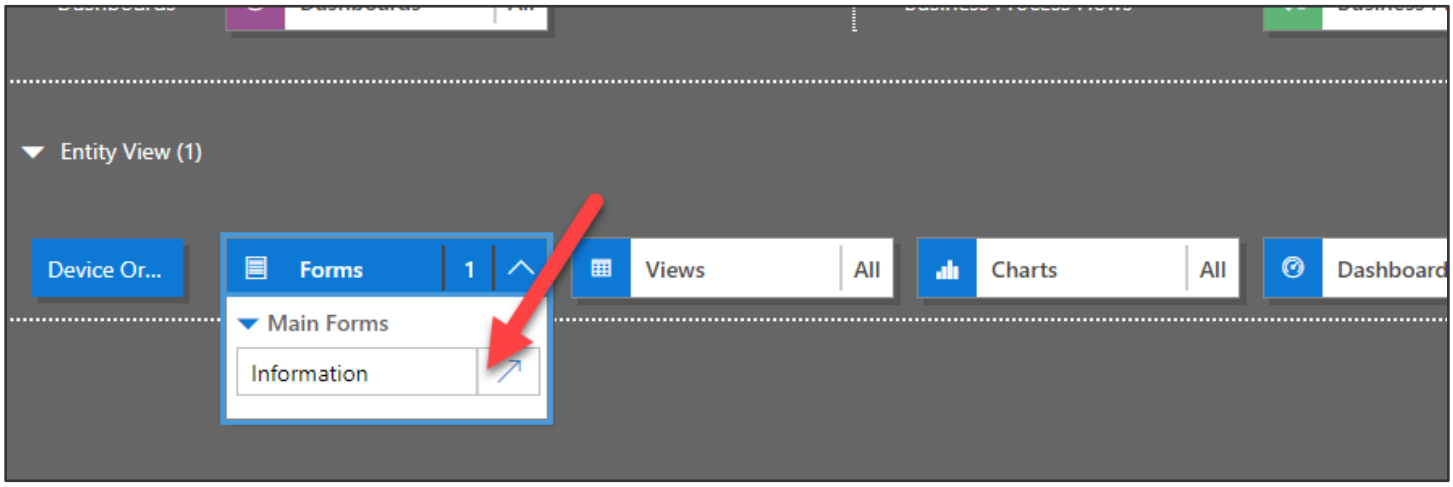
1. Select **Forms** and select the **Main** Information form.



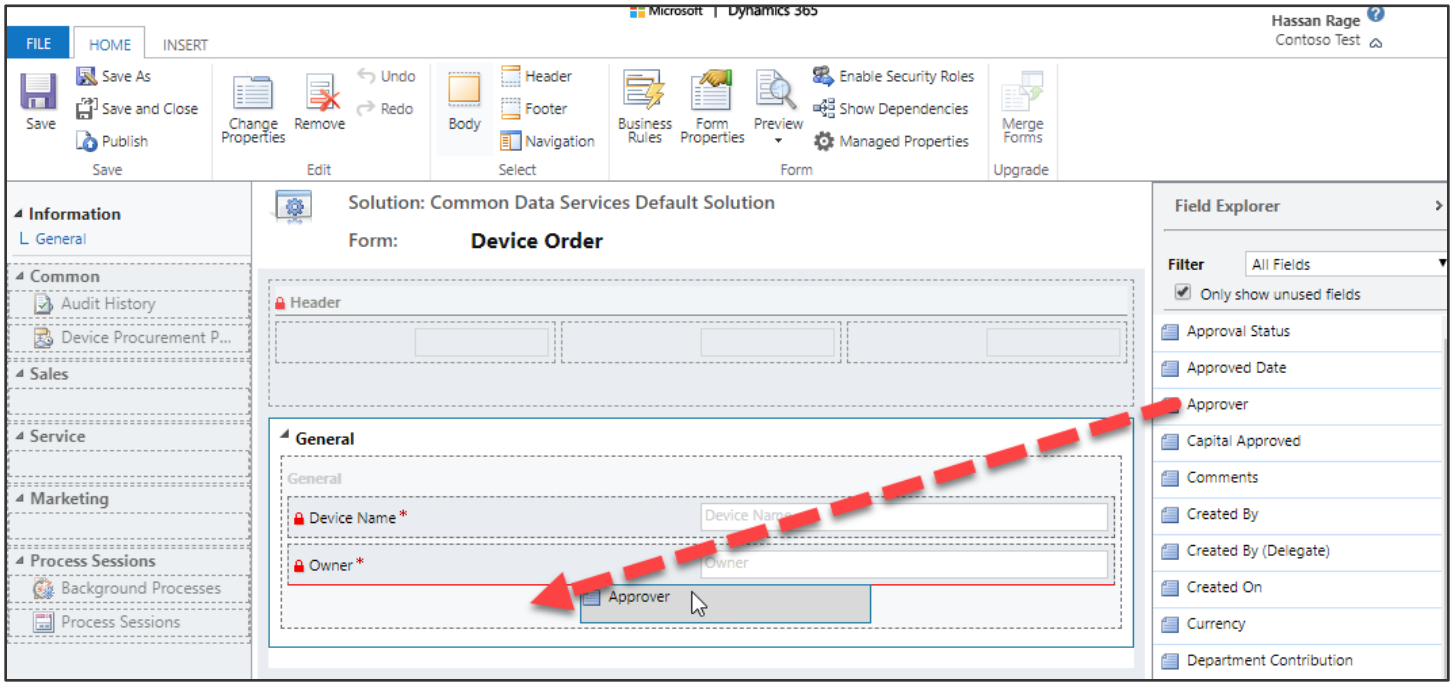
2. Click **Show List of References**.



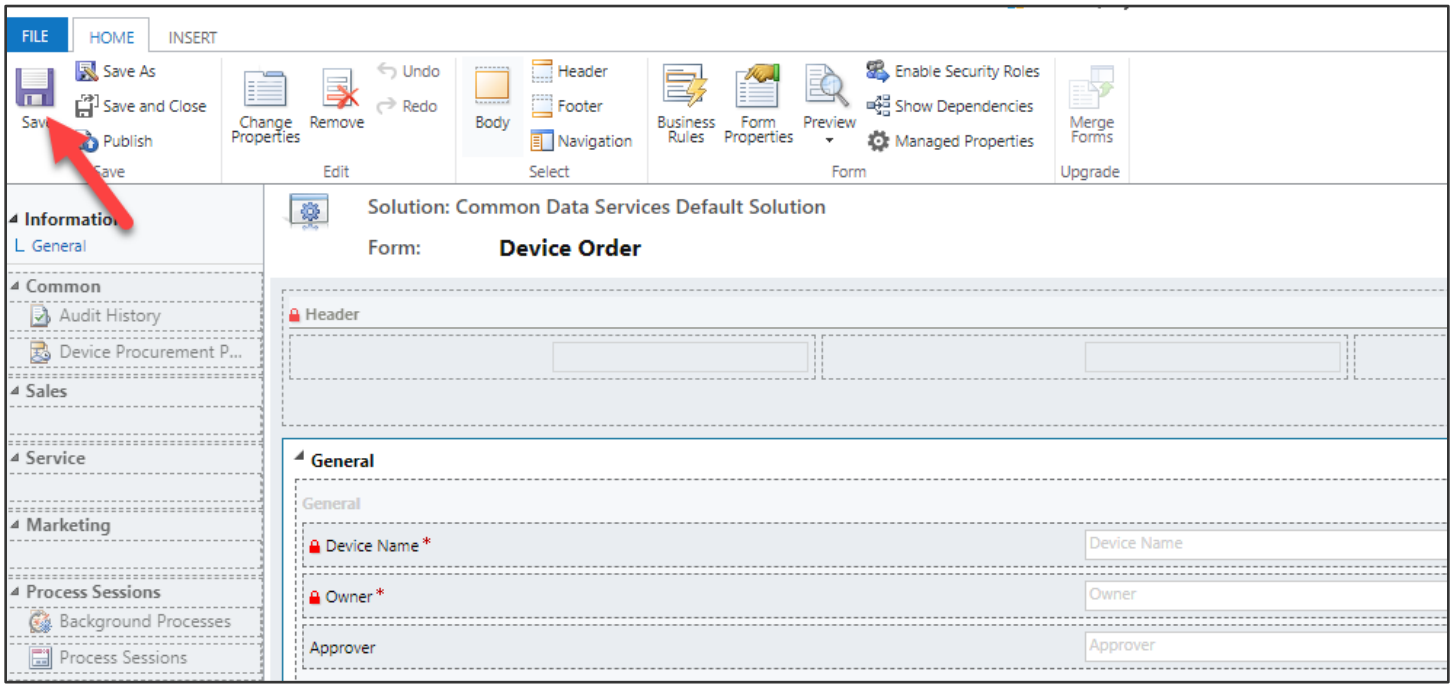
3. Open the **Form Designer**.



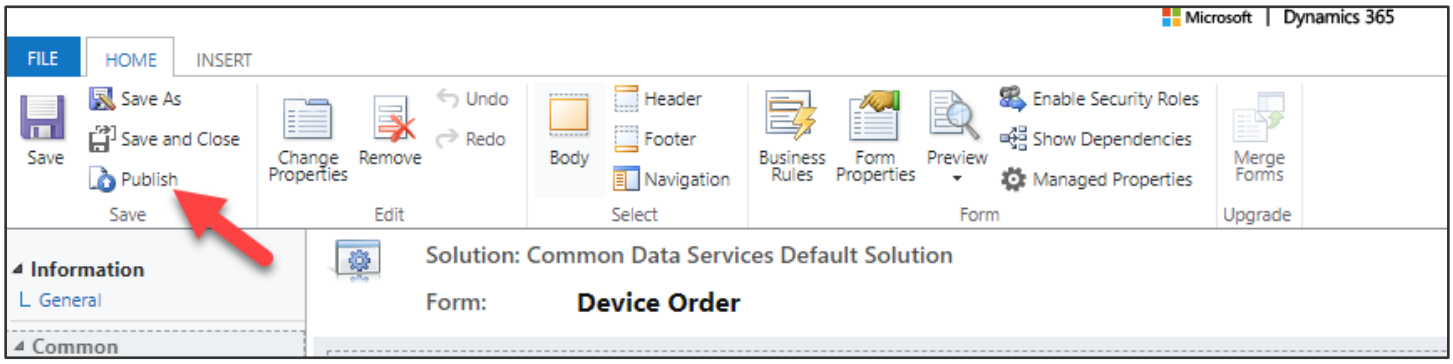
4. Drag the **Approver** field to the form.



5. Click **Save**.



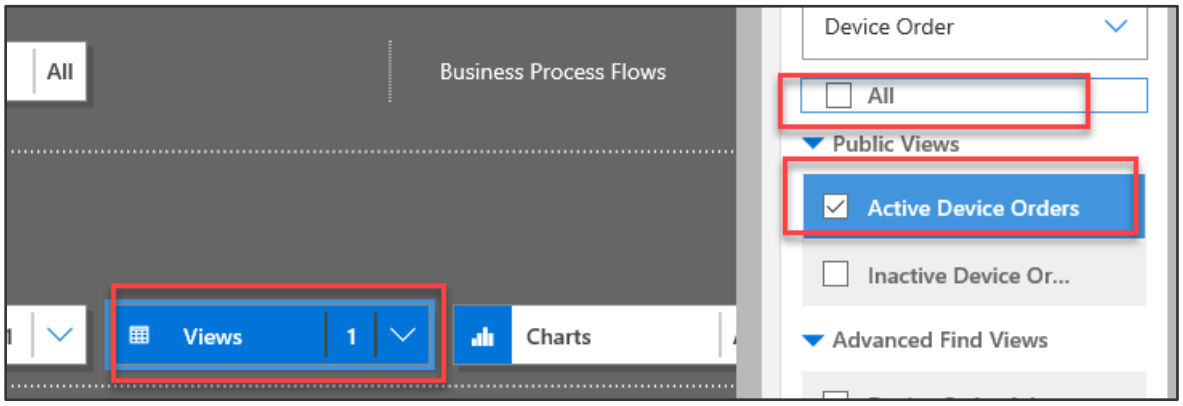
6. Click **Publish**.



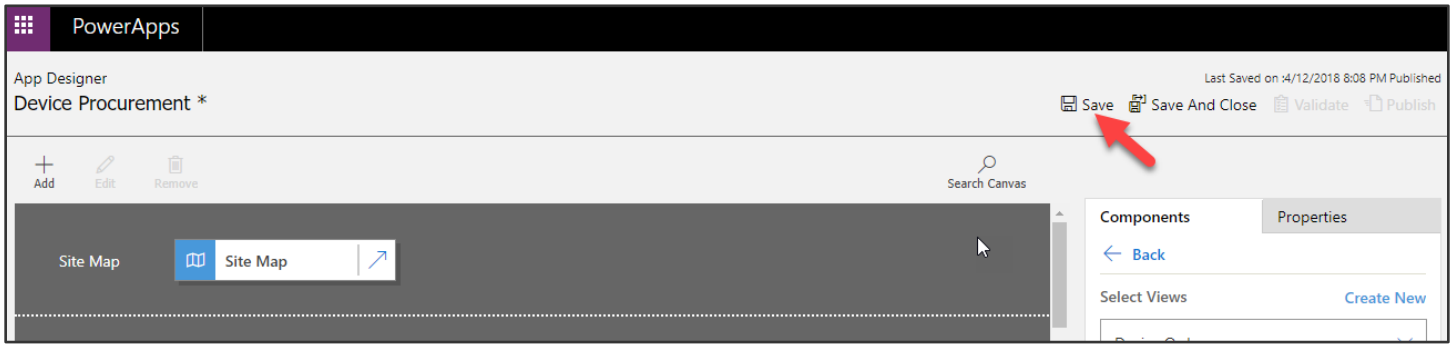
7. Close the **Form Designer**.

Task 2: Modify the view

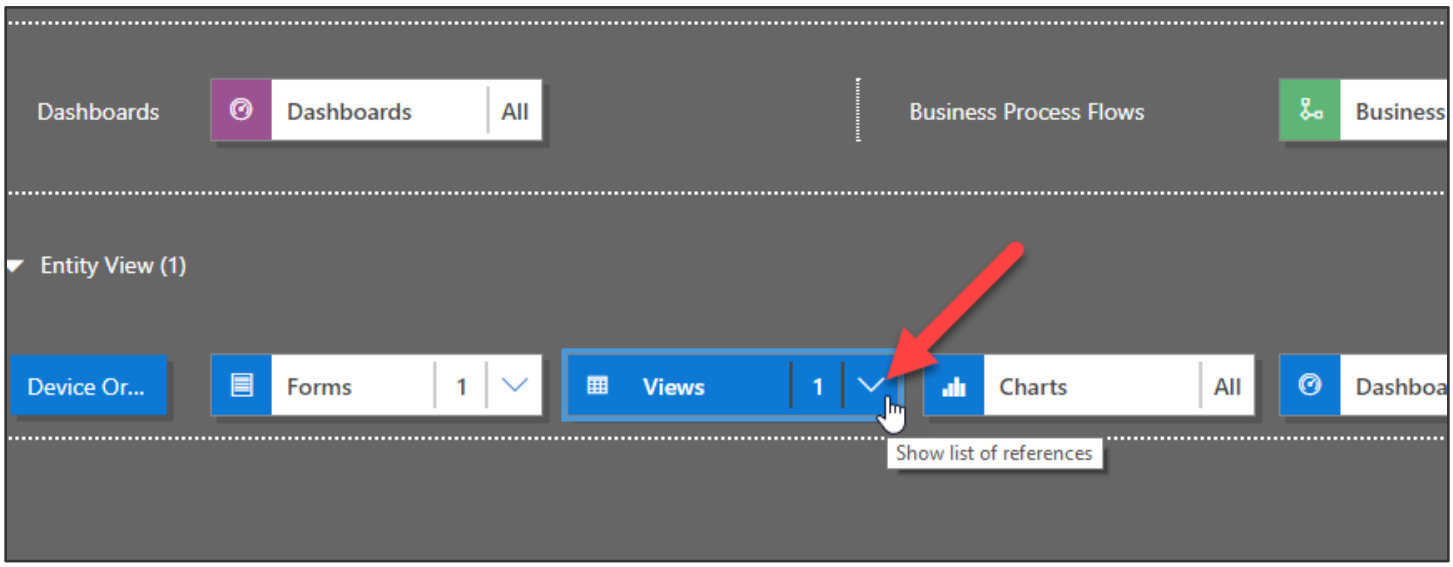
1. Select **Views** and select the **Active Device Orders** view.



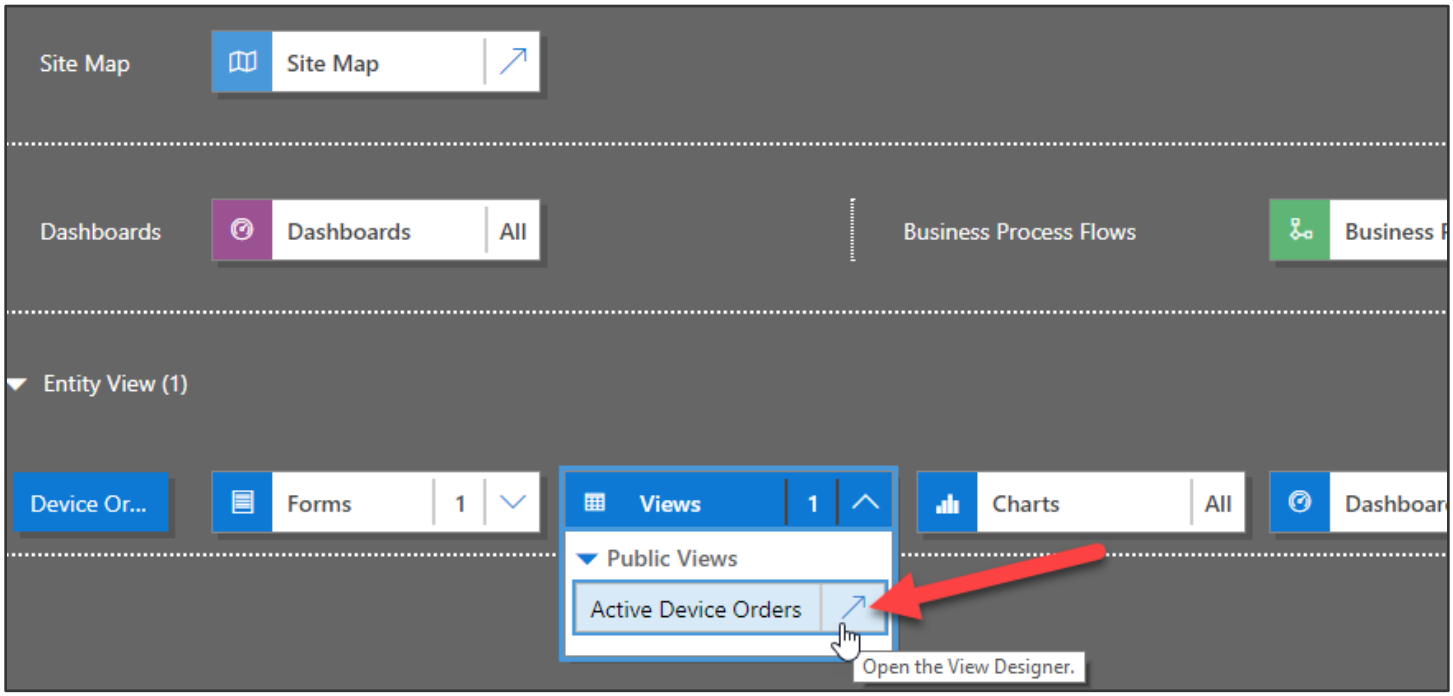
2. Save the Application.



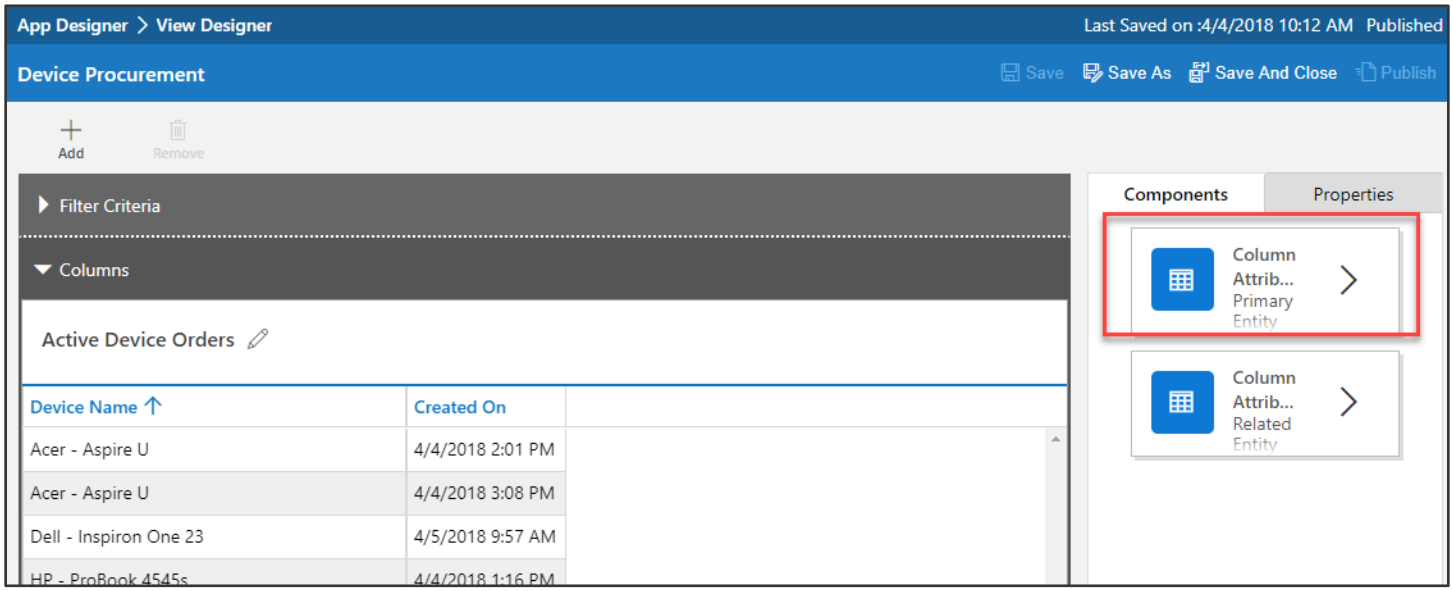
3. Click **Show List of References**.



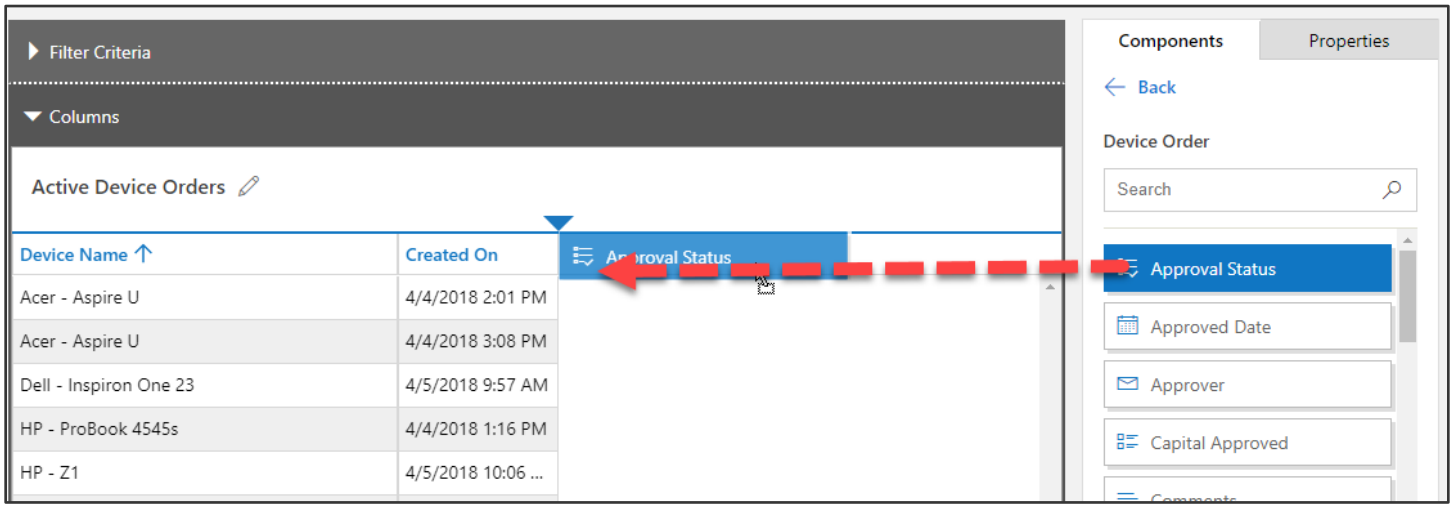
4. Open the **View Designer**.



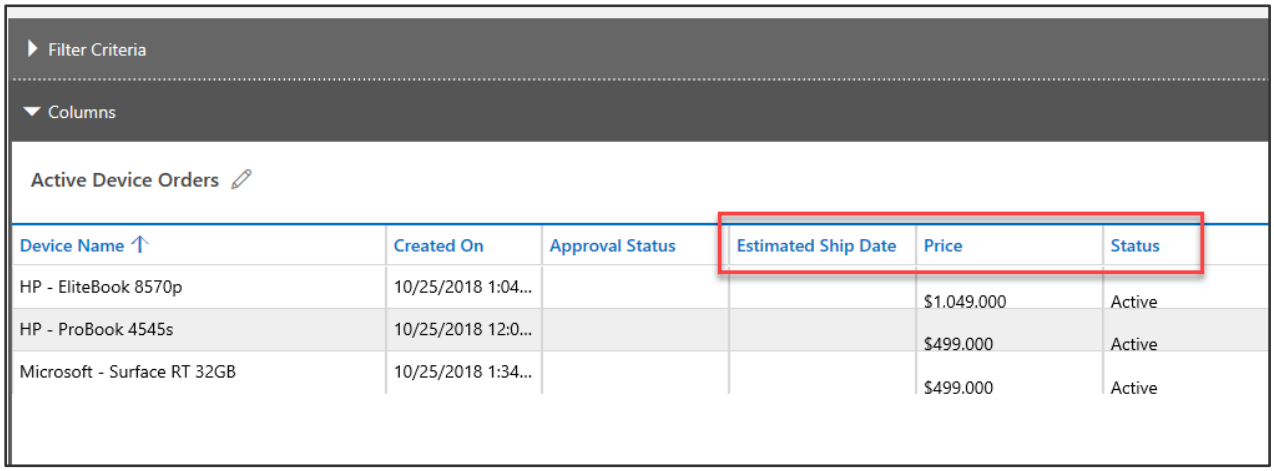
5. Click **Column Attributes Primary Entity**.



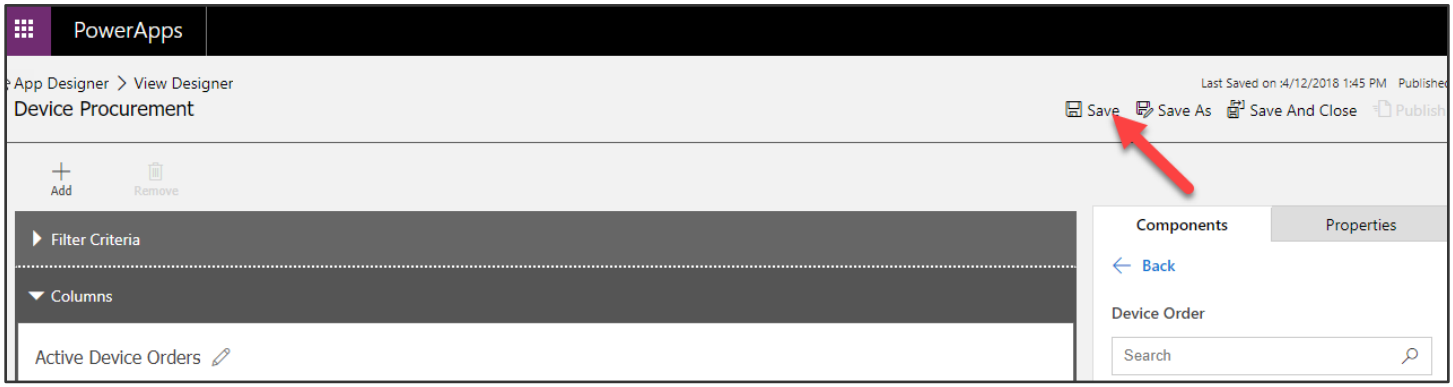
6. Drag **Approval Status** and place to the right of the Created On column.



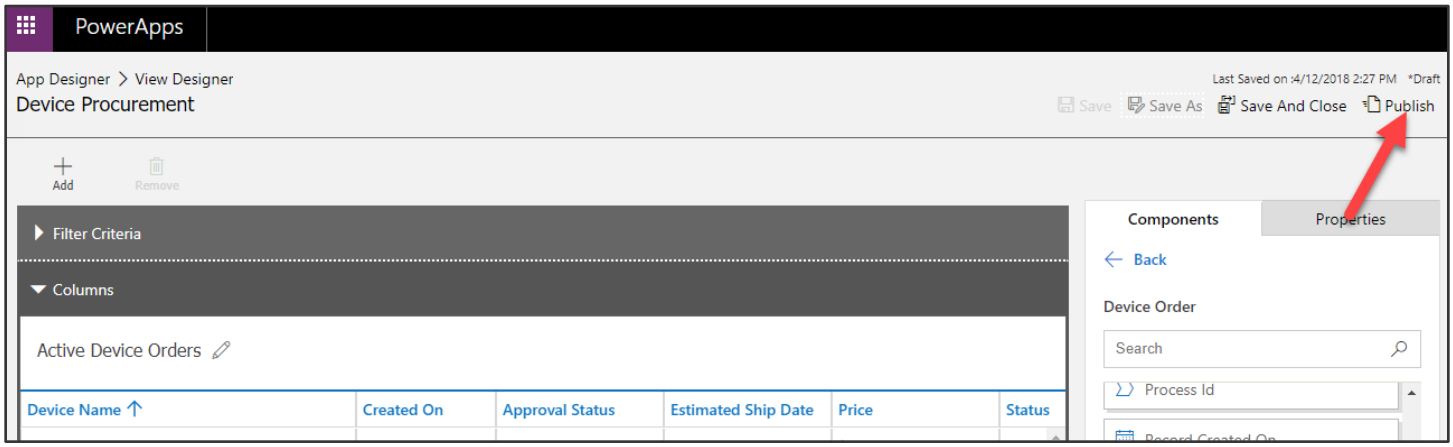
7. Add **Estimated Ship date, Price,** and **Status** columns to the View. You can also add columns by double clicking.



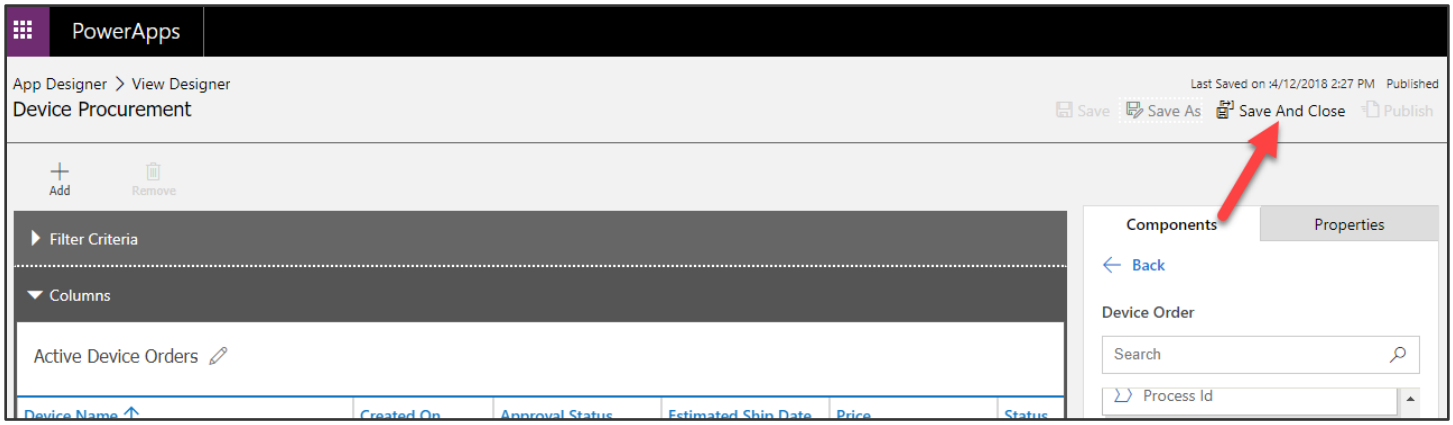
8. Click **Save.**



9. **Publish** the View Designer.



10. **Save and Close** the View Designer.



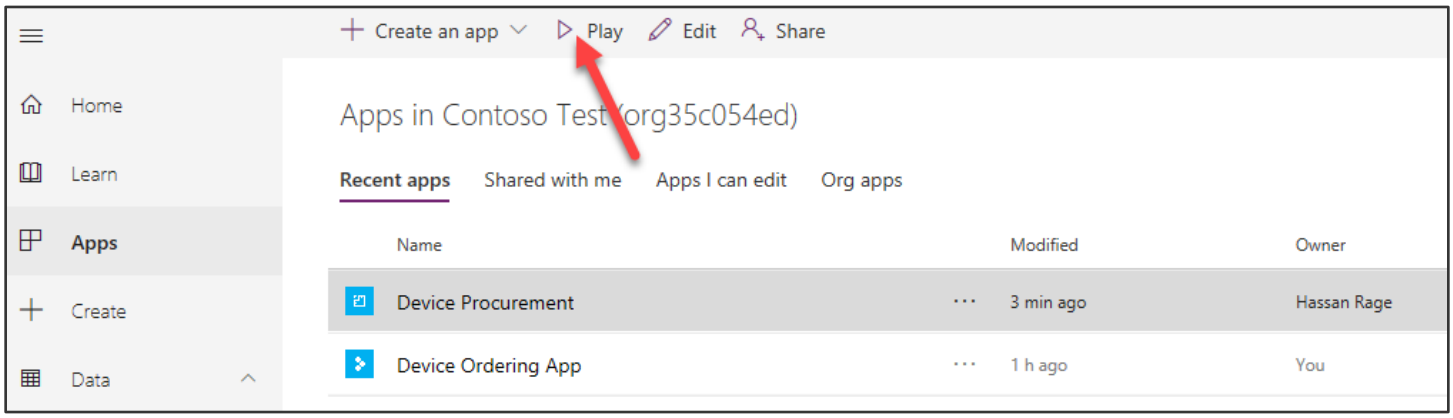
11. Save and Close the App Designer.

Exercise 4: Test the application

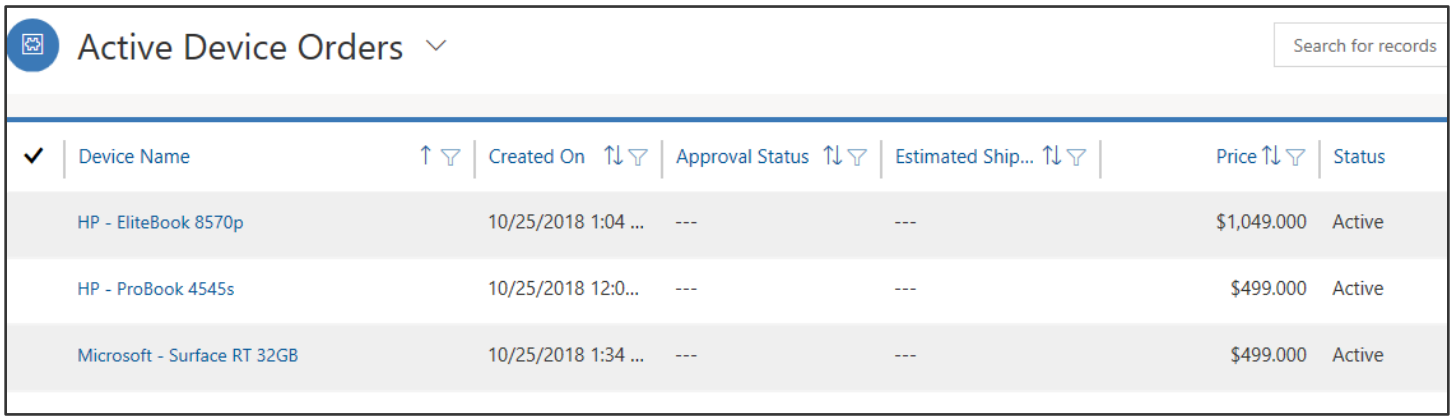
In this exercise, we are going to test the application you just built.

Task 1: Test the application

1. Select **Apps**, select the Device Procurement application and click **Play**.

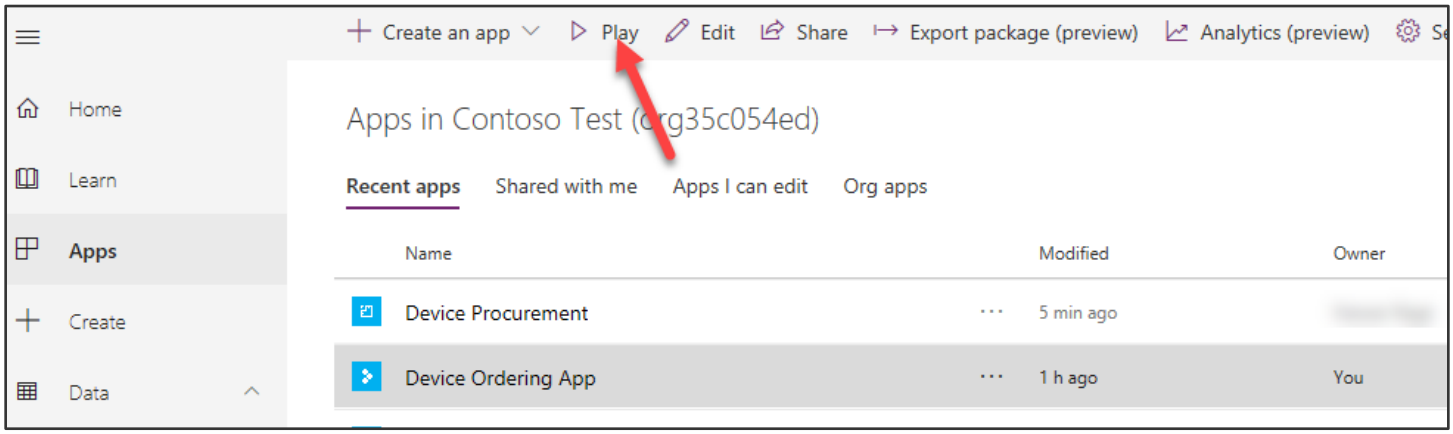


2. The application will start. The **Active Device Orders** view will load.

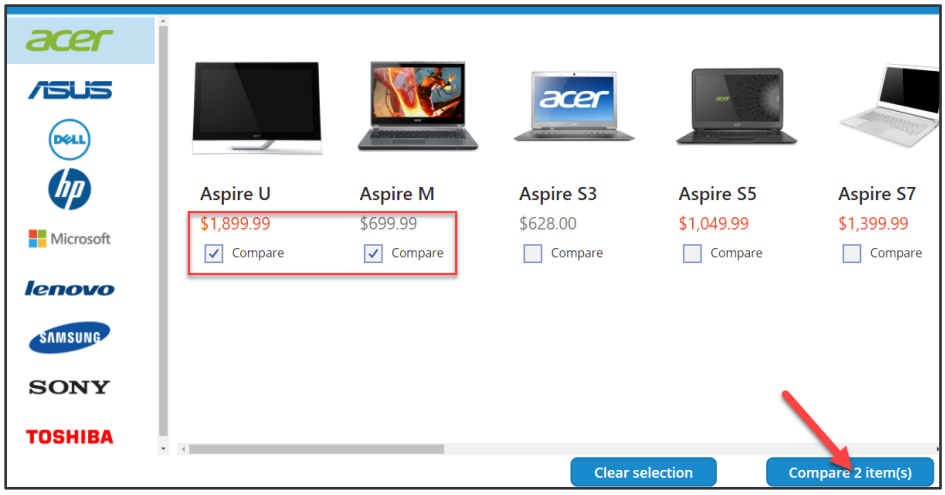


3. Start a new web browser instance and navigate to https://web.powerapps.com. Do not close the Model-driven application.

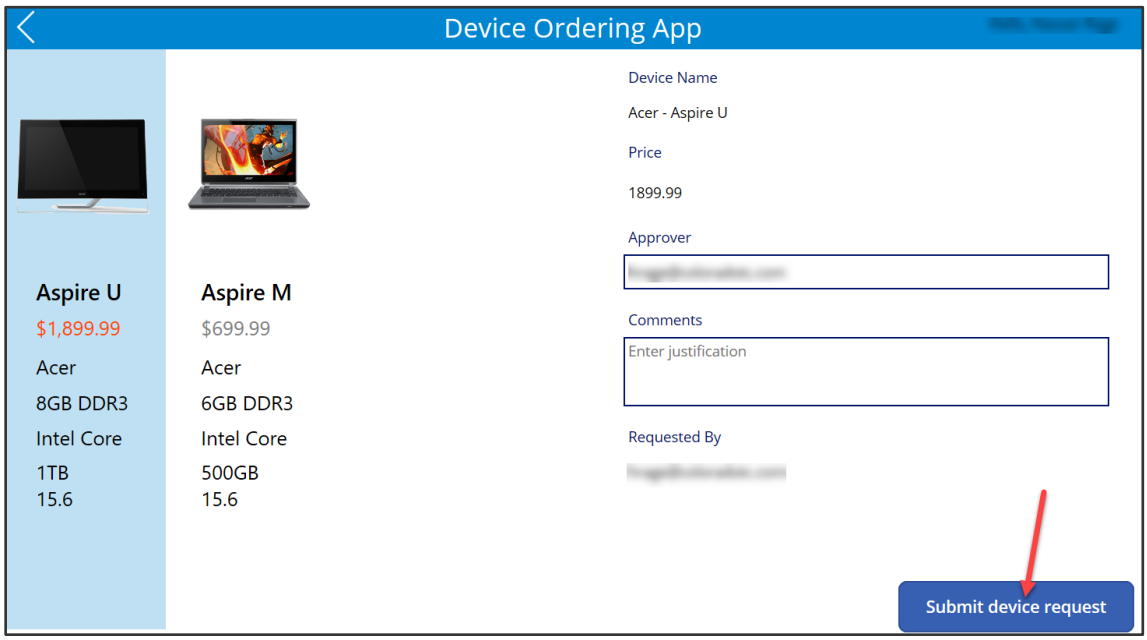
4. Select **Apps**, select the Device Ordering application you created in module 2, and click **Play**.



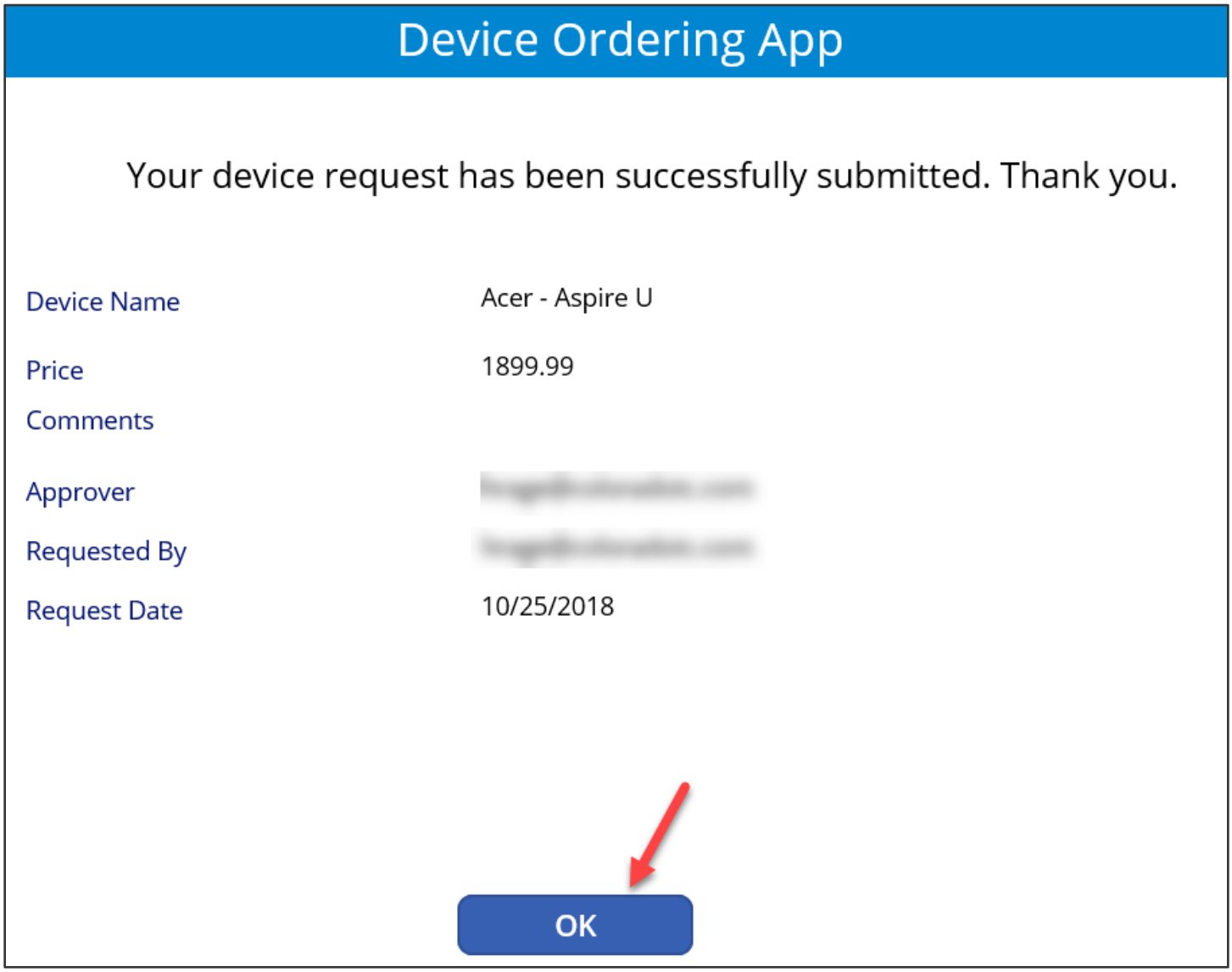
5. Select two devices, make sure one of the devices is priced over $1,000 and click **Compare**.



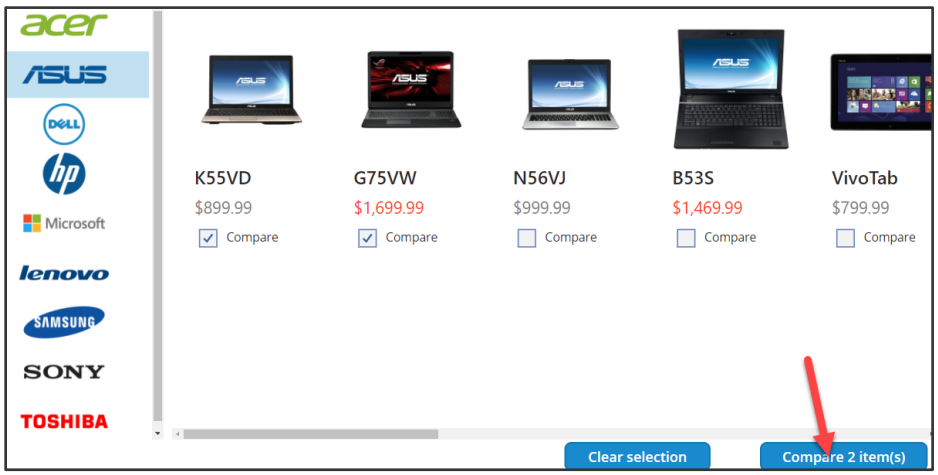
6. Select the device with the price over $1k, provide approver email and click **Submit**.



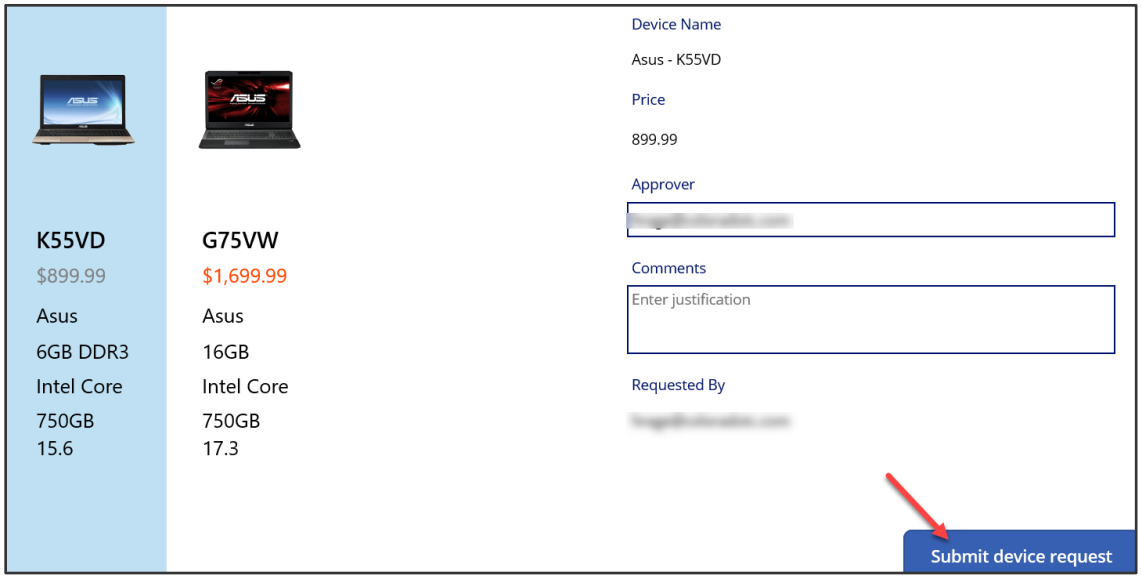
7. Click OK.



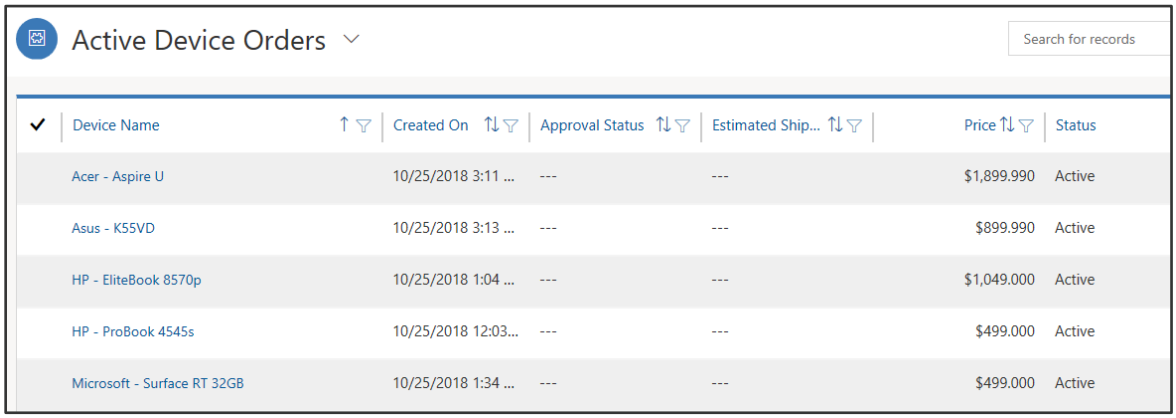
8. Select two more devices and click Compare.



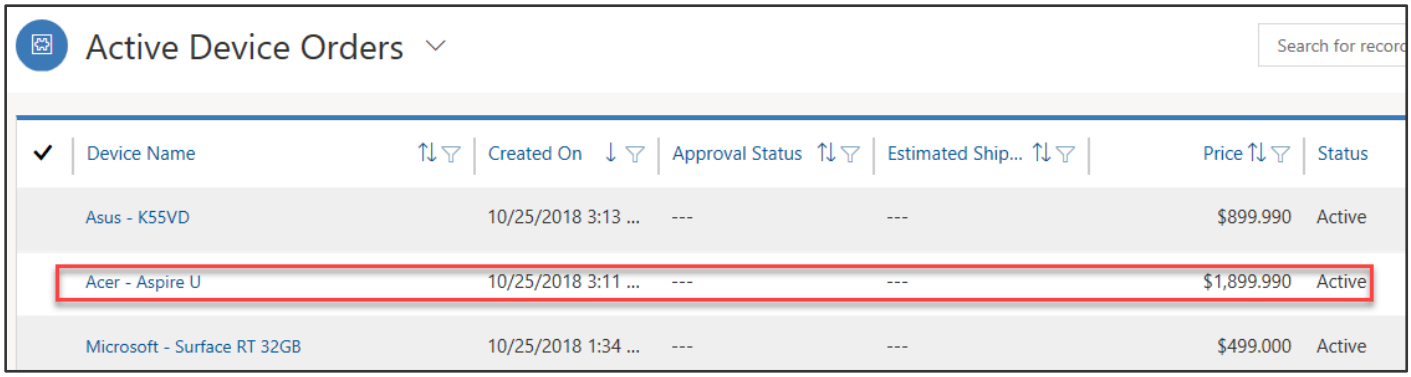
9. Select a device with a price under $1k, provide approver email (or leave in the auto-populated manager email) and click **Submit**.



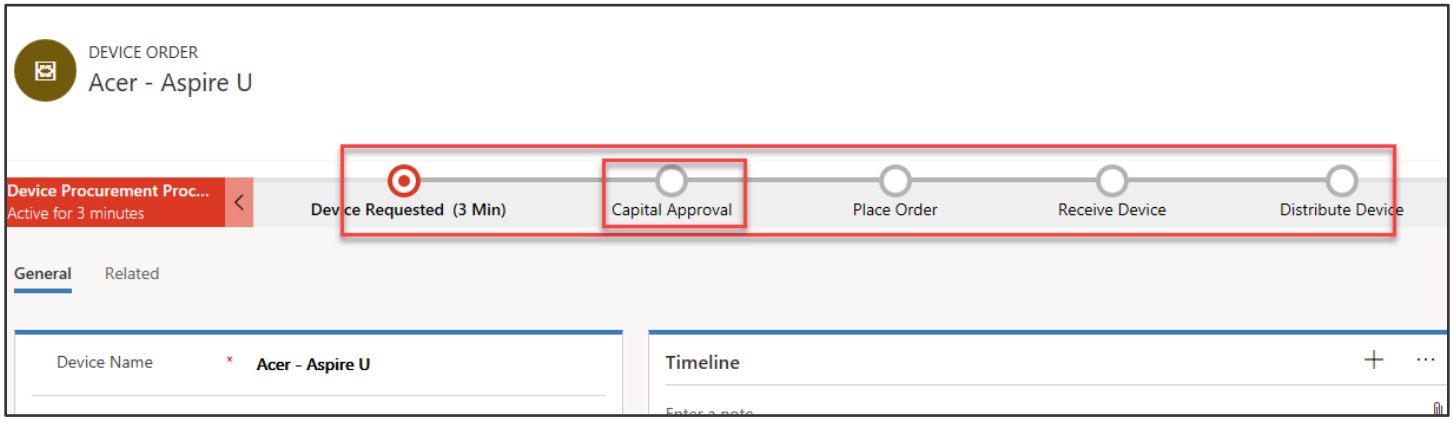
10. Click OK.
11. Go back to the Model-driven application you created, sort the orders by **Created On** column, and you should see the two devices you ordered using the PowerApps Canvas App.



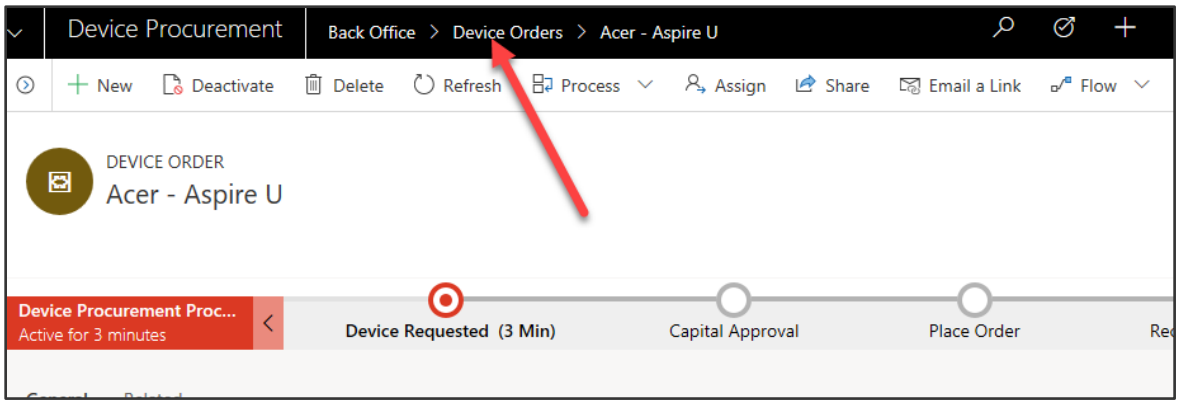
12. Open the one priced over $1k.



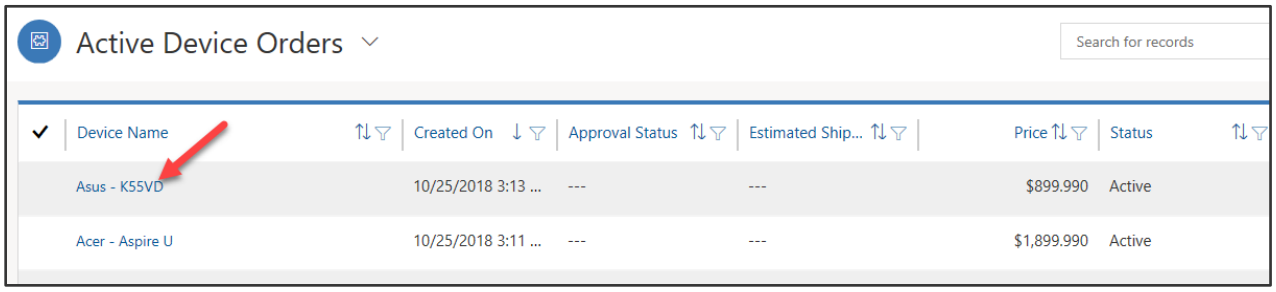
13. The **Business Process Flow** will now have **5** stages. This is because this order costs more than $1k and needs **Capital Approval**.



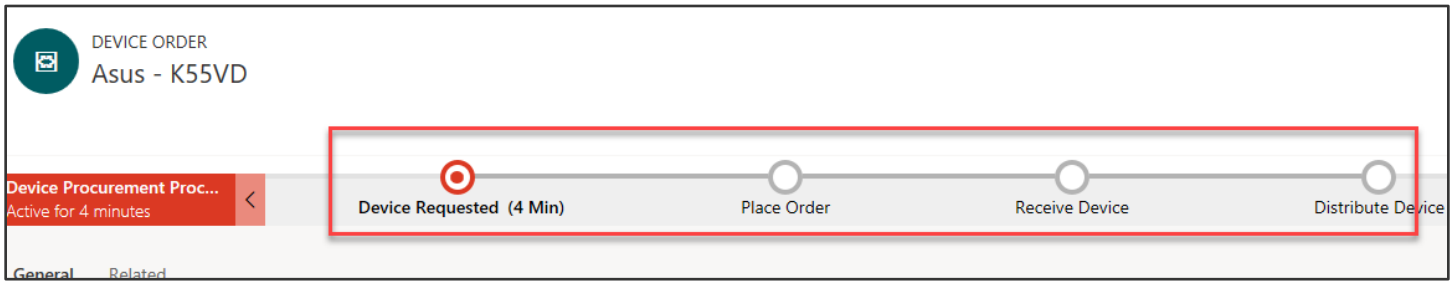
14. Click **Device Orders**.



15. Click on the other order you created.



16. The **Business Process Flow** for this order will have **4** stages; this is because this order does not require **Capital Approval**.



Lab survey

We would appreciate your feedback on the Business Application Platform technologies and on this hands-on-lab, such as the quality of documentation and the usefulness of the learning experience.

Please use the survey at **http://aka.ms/appinadayLabSurvey** to share your feedback.

You may provide feedback for each module as you complete it or at the end once you've completed all the modules. Thank you!

References

App in a Day introduces some of the key functionalities available in PowerApps, Microsoft Flow, Power BI and the Common Data Service. For an up to date list of learning references, see http://aka.ms/powerapps-resources and http://aka.ms/flow-resources and http://powerbi.com.

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DISCLAIMER

This demo/lab contains only a portion of new features and enhancements in Microsoft PowerApps. Some of the features might change in future releases of the product. In this demo/lab, you will learn about some, but not all, new features.