

IBM Cloud Pak for Business Automation

Demos and Labs

IBM Process Mining

From Insight to Action

IBM Process Mining v1.14

Lab Version 1.2

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Table of Contents

Table of Contents

1 Introduction.....	4
1.1 About Process Mining	4
1.2 Process Mining Use Case Used in this Lab	4
1.2.1 Procure to Pay (P2P) Process	4
1.2.2 P2P Process – Process Improvement Areas	4
1.3 Lab Overview	5
2 Lab Setup	6
2.1 Provision Process Mining Environment	6
2.2 Set RDP Session to DBA VM	6
2.2.1 Option 1	6
2.2.2 Option 2	6
3 Lab Instructions.....	7
3.1 Access DBA VM.....	7
3.2 Start Business Automation Workflow Process Center Server.....	7
3.3 Open Procure to Pay Process	7
3.4 Examine the Dashabord used for Alert Generation.....	8
3.5 Create Action Services and Monitors	10
3.5.1 Create Services	11
3.5.2 Create Monitors	13
3.6 Generate New Process Events	19
3.7 Examine the Alerts	20
3.7.1 Examine New Alert Process Instances.....	21
3.7.2 Examine New Alert Email	26
3.8 Lab Summary	27
Appendix A. Implementation Details of the Alert Endpoints	28

1 Introduction

1.1 About Process Mining

Process mining is a family of techniques in process management that support the analysis of actual business processes based on event logs. During process mining, specialized data mining algorithms are applied to identify trends, patterns, and details in event logs recorded by an information system. Process mining aims to improve process efficiency and understanding of processes.

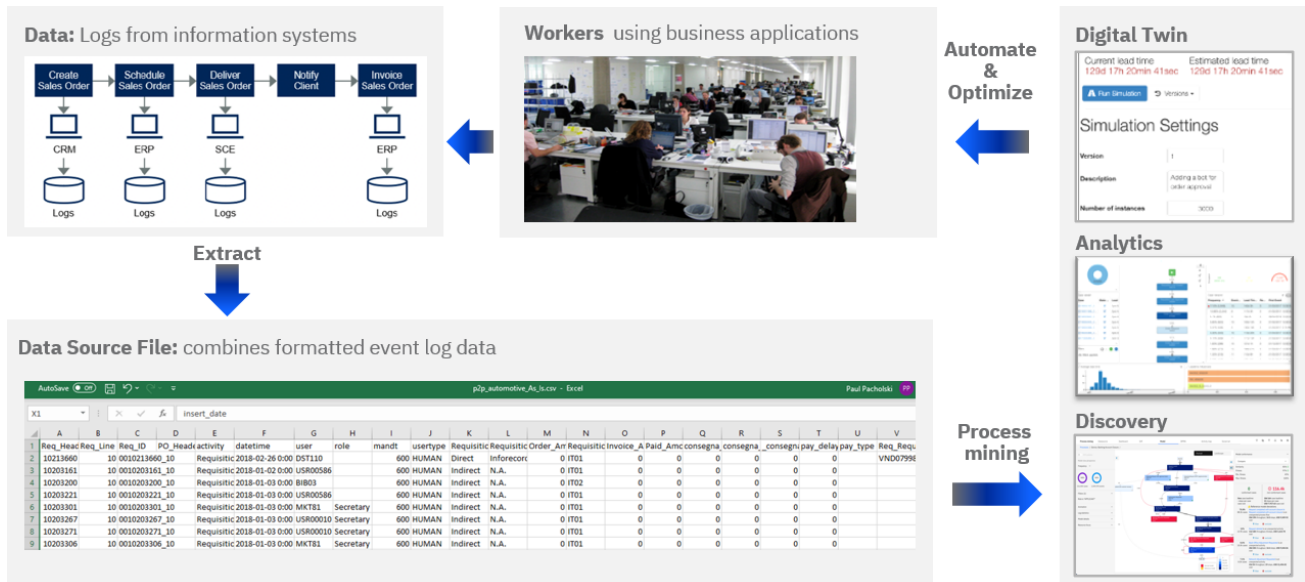


Figure 1. Process Mining

1.2 Process Mining Use Case Used in this Lab

1.2.1 Procure to Pay (P2P) Process

The Procure to Pay Process connects a company's procurement and entire supply chain processes through the goods receipt process and the payment issued to the vendor.

In recent years, companies have carefully looked at their Procure to Pay processes to:

- Reduce overall supply chain and inventory costs
- Free up needed cash
- Improve operational performance
- Make improved financial decisions

In addition to reducing overall supply chain and inventory costs, improving the Procure to Pay Process can add visibility that allows management to better communicate with the vendor about where the items are in the delivery process and payment to the vendor.

1.2.2 P2P Process – Process Improvement Areas

This lab is a case study showing the quick wins businesses can get when they apply process mining to the procure-to-pay (P2P) process. IBM Process Mining uses a standard approach with well-defined insights, including a business dashboard for procure-to-pay process analysis.

There are five areas of P2P processes where process analyses can derive the most significant value. The figure below shows a high-level P2P process and highlights critical improvement areas.

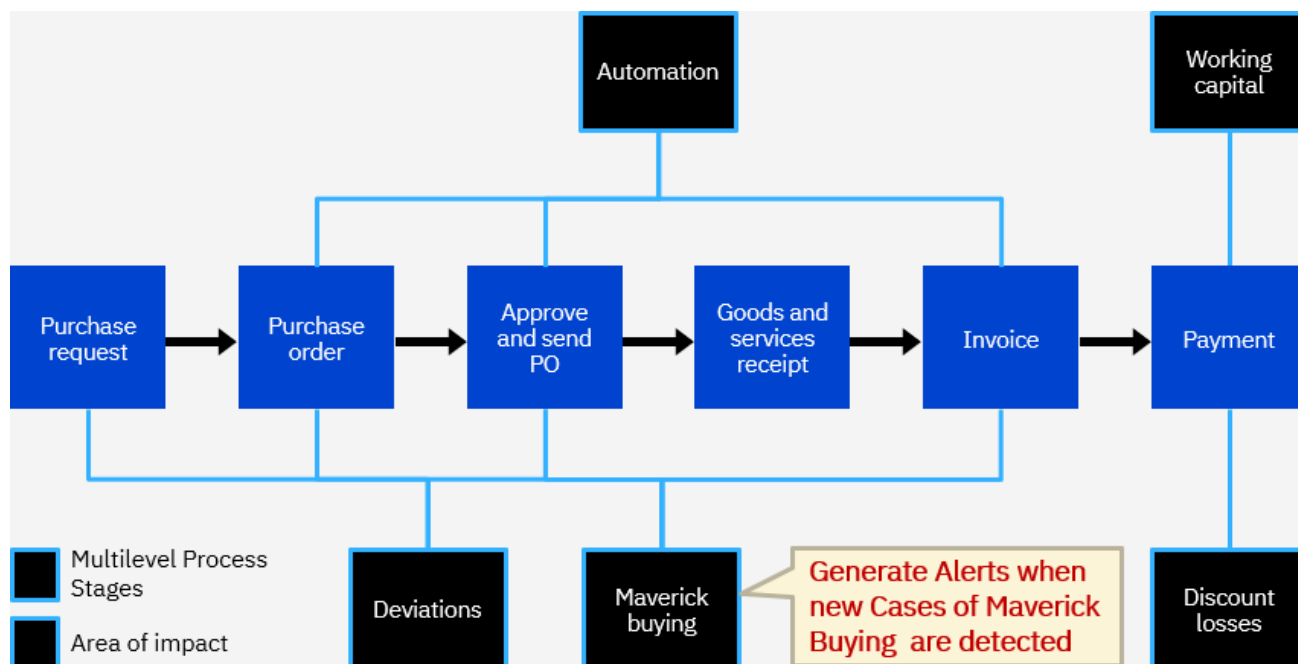


Figure 2. P2P Process Improvement and Automation Opportunities

In this lab, we will focus on Maverick Buying. We will focus on the type of Maverick Buying when the purchase has been made through pre-approved suppliers but outside the correct purchasing process. The specific process violation we will look for is where a **purchase order is changed after the invoice is registered**.

1.3 Lab Overview

In this lab, you will follow these high-level steps:

- **Examine the Dashboard used for Alert Generation.** The Alerts are generated when new Cases that match this criterion, "**purchase order is changed after the invoice is registered**," are added.
- **Create Action Services and Monitors.**
 - **Create Services.** You will create the Action Services, which define what REST endpoints to call when an alert occurs.
 - **Create Monitors.** You will create Monitors which define the criteria for generating an Alert and define what Action Service to call and what parameters to pass to the REST endpoint.
- **Generate New Process Events.** You will simulate the generation of new events in P2P Process by uploading a CVS file with the new events that also include Cases where the "**purchase order is changed after the invoice is registered**,"
- **Examine the Alerts.** You examine the two types of alerts that were generated: (i) a new BPMN process instance and an email. The Alert information will include a link to the Alerts Dashboard.
 - **Examine New Alert Process Instances.** You will use IBM Process Portal to claim and examine the Human Tasks in the Process instance that the Alert started. The Human Task includes a link to the Alert Dashboard. You will use this link to navigate to the Alert Dashboard and examine the new Maverick Buying Cases.
 - **Examine New Alert Email.** You will examine the new Email that includes the Alert information.
- **Implementation Details of the Alert Endpoints.** Optionally, you can examine how the Alert Endpoints were implemented in IBM Business Automation Workflow.

2 Lab Setup

2.1 Provision Process Mining Environment

_1. Download [this](#) document and follow the instruction for reserving Tech Zone Environment

2.2 Set RDP Session to DBA VM

2.2.1 Option 1

Use the IP address of the DBA VM provided by VPN.

_1. Follow the instructions in "**3.3 Using VM's IP via VPN**" to set up the VPN

_2. Follow the instructions in "**3.3.2 VPN - Accessing TM Client and DBA VM Using Remote desktop**" to create RDP access for the DBA VM.

2.2.2 Option 2

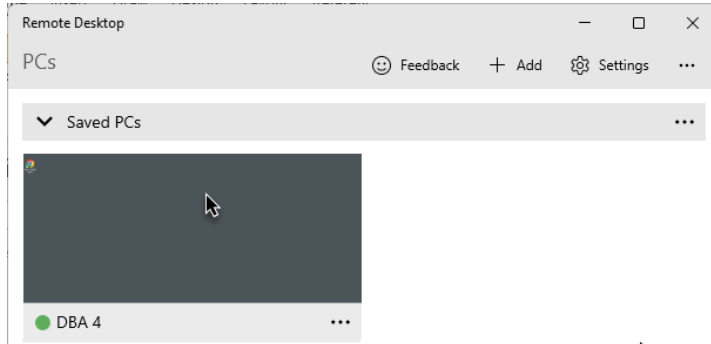
Use the RPD endpoint provided by the Published Services

_1. Follow the instructions in "**3.4.2 3.4.2 Accessing Task Mining Client VM Using RDP**"

3 Lab Instructions

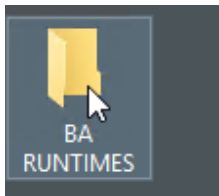
3.1 Access DBA VM

_1. Start DBA VM RDP session.

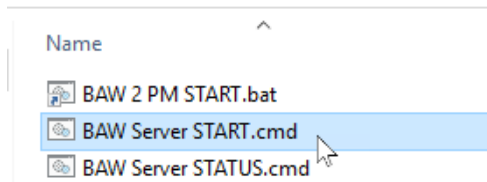


3.2 Start Business Automation Workflow Process Center Server

_1. Open **BA RUNTIMES** Desktop folder



_2. Double click **BAW Server Start.cmd**

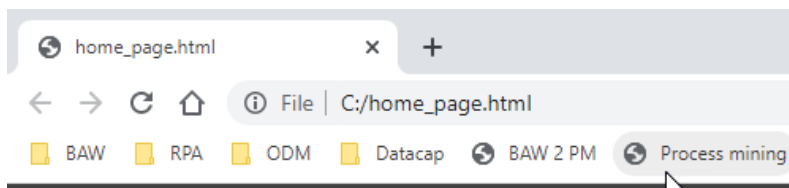


3.3 Open Procure to Pay Process

_1. Start **Google Chrome** web browser

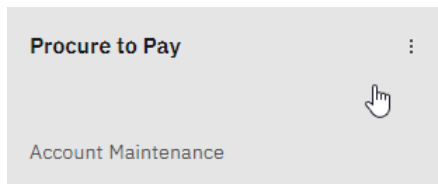


_2. Click **Process mining** bookmark



_3. Login with **maintenance.admin / IBMDem0s!**

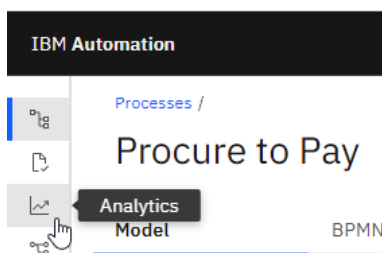
_4. Click the **Procure to Pay** tile



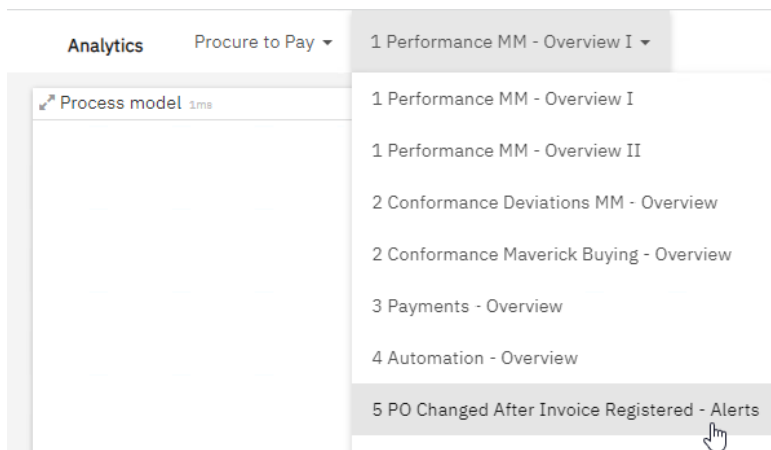
3.4 Examine the Dashabord used for Alert Generation

This Dashboard shows the cases that represent the Maverick Buying deviations. Later on, in this lab, we will create a Monitor that monitors changes to the data in this Dashboard. If new cases representing Maverick Buying are added, the Monitor will create alert actions such as email notifications and new BAW process instances.

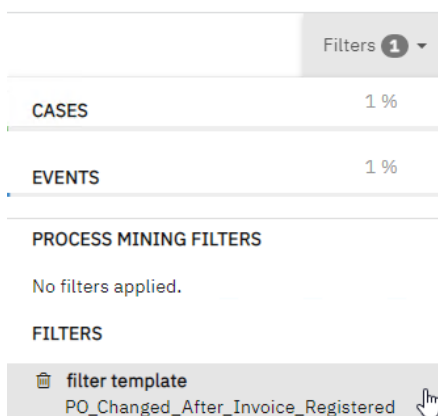
_1. Click **Analytics**



_2. Select **5 PO Changed After Invoice Registered – Alerts** dashboard



_3. Open **Filters** and note that a Filter that was applied to this dashboard



Let's examine the dashboard filter. The PO_Changed_After_Invoice_Registered is a composite filter (it includes several sub-filters).

PO_Changed_After_Invoice_Registered

maintenance.admin (you)

Included filters 4

1

Activity is not "Invoice Cleared"

2

Activity is "Invoice Registered"

3

PO_Changed

4

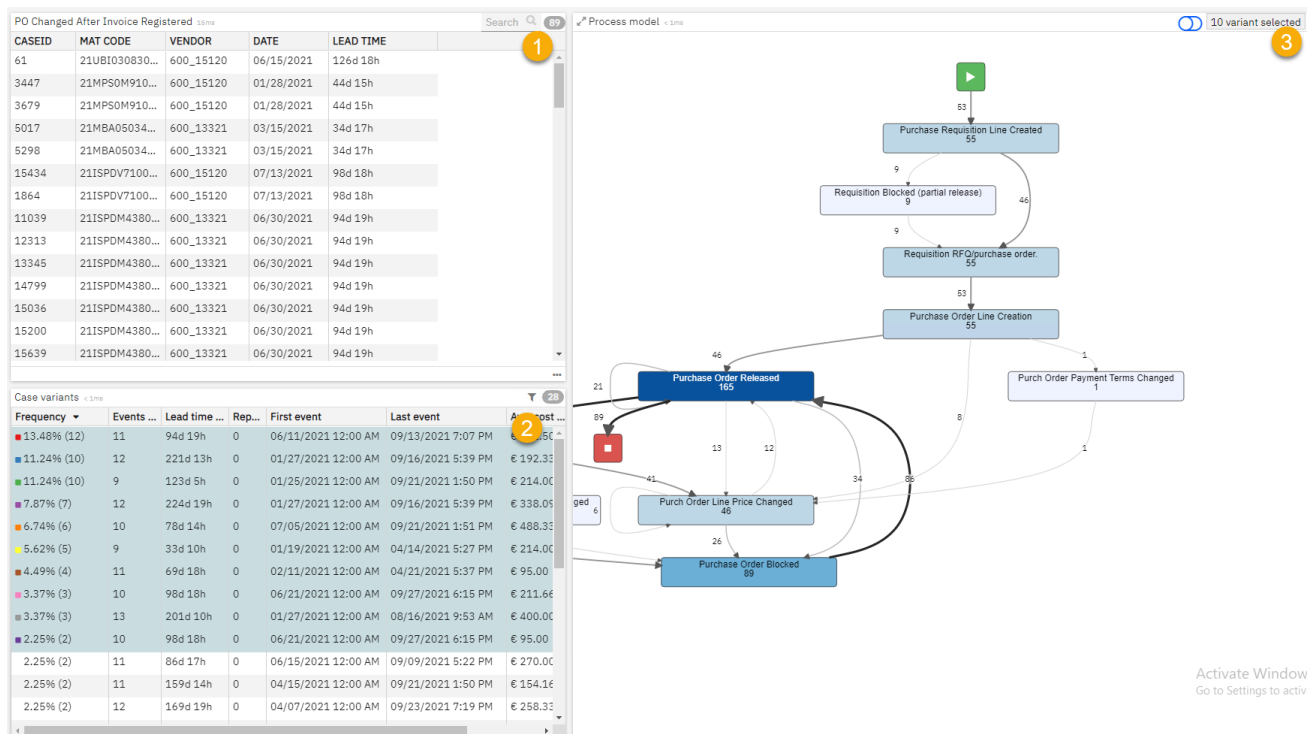
Last Activity is not "Invoice Registered"

This composite Filter includes 4 filters.

1. The Case must not include the "Invoice Cleared" Activity
2. The Case must include the "Invoice Registered" Activity
3. The Case must include one of the activities that change a Purchase order. This is a custom filter (implemented using Java Script).
4. The PO change activities occur before the "Invoice Registered" Activity

This Filter has the effect of including only the cases where a Purchase Order has changed after the Invoice Registered Activity was invoked.

_4. Let's examine the dashboard

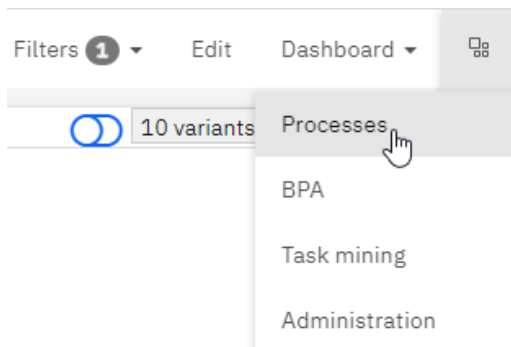


1. The **PO Changed After Invoice Registered** widget includes all Cases representing Maverick Buying based on the PO_Changed_After_Invoice_Registered Filter. This widget is linked to the other two widgets. Selecting a row representing a Case in this widget will update the other two widgets. We will use this feature later on in this lab after we upload new Cases and receive an alert.
2. The **Case variants** widget shows the variants.
3. The **Process model** widget shows the combined flows based on the selection in the **Case variants** widget

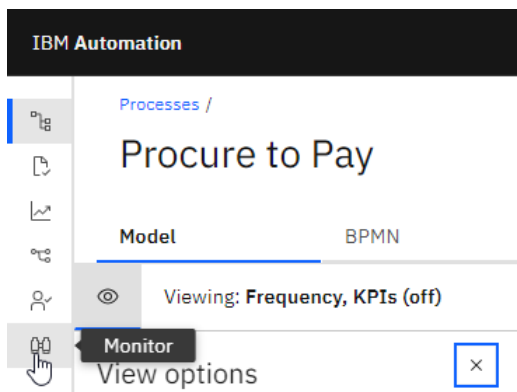
3.5 Create Action Services and Monitors

You will now create the Action Services: Email and start a business Automation Workflow process. Next, you will develop Monitors to monitor the Alert dashboard you just examined and associate Action Services with the Monitors.

_1. Click **Processes** to switch back to the Model View.



_2. Click **Monitor**

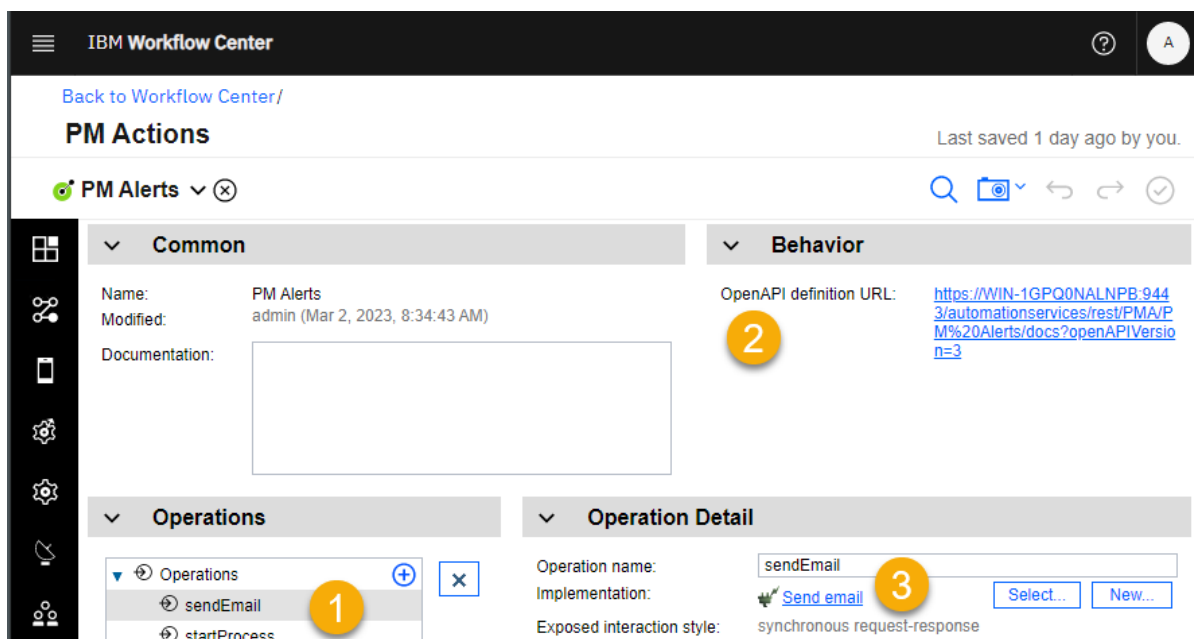


3.5.1 Create Services

Before creating a Monitor for a process, we must create a Service. In IBM Process Mining, Service is an API. Monitors invoke Services when they detect an actionable insight. In this lab, actionable insights are new Cases that are classified as Marick Buying.

We have created the two OpenAPI service operations for you: sendEmail and startPorcess.

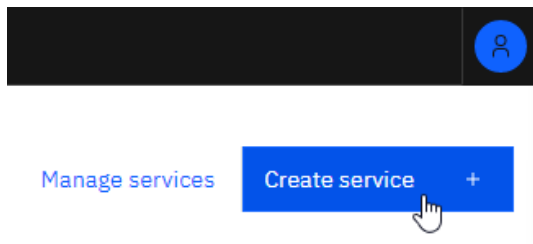
As shown below, we have used IBM Business Automation Workflow to implement these Service operations.



1. The PM Alerts REST Service provides two operations; sendEmail and startProcess.
2. The OpenAPI definition URL contains the endpoint we will use to define an Action Service in Process Mining.
3. The PM Alerts REST services operations were implemented as Service Flows. We will examine the details of the implementation later on in this lab.

3.5.1.1 Create sendEmail Service

_1. Click **Crete services +**



_2. In the *Create a new service* window, enter the following:

- Service title: **Send Email**
- Url: <https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail>
- Allow self-signed certificates (option): **True**
- Authentication type: **Basic Auth**
- Username: **admin**
- Password: **admin**

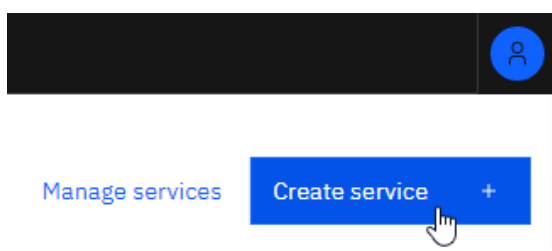
Create a new service

A screenshot of the 'Create a new service' form. The form is divided into two main sections: 'Connection' on the left and 'Authentication' on the right. In the 'Connection' section, there are fields for 'Service title' (containing 'Send Email'), 'Description' (with a placeholder 'Describe your service'), and 'Url' (containing 'https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail'). Below these fields are two toggle switches: 'Allow self-signed certificates (optional)' which is set to 'True', and 'Share with others' which is set to 'False'. The 'Authentication' section has a radio button group for 'Authentication type' with 'Basic Auth' selected, and fields for 'Username' (containing 'admin') and 'Password' (containing masked characters).

_3. Click **Create**

3.5.1.2 Create startProcess Service

_1. Click **Crete services +**



_2. In the *Create a new service* window, enter the following:

- Service title: **Start Process**
- Url: <https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess>
- Allow self-signed certificates (option): **True**
- Authentication type: **Basic Auth**
- Username: **admin**
- Password: **admin**

Create a new service

Connection

Service title

Start Process

Give your service a unique title to easily identify it.

Description

Describe your service

Url

<https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess>

Allow self-signed certificates (optional)

☒ True

Share with others

☐ False

Authentication

Authentication type

☐ API key ☒ Basic Auth ☐ No Auth

Username

admin

Password

.....

_3. Click **Create**

_4. Click **Close** to close the *Manage services* window

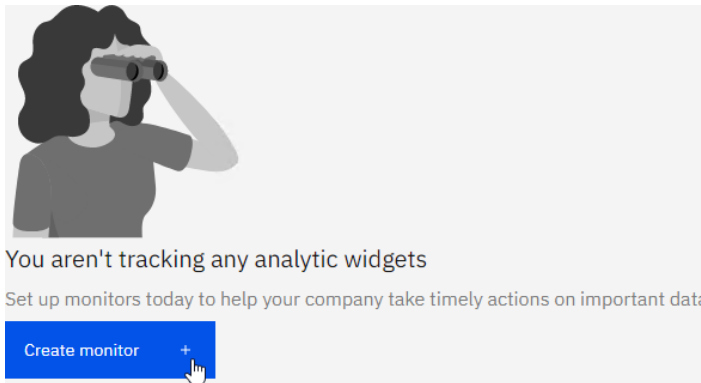
3.5.2 Create Monitors

Monitors in IBM Process Mining help you monitor a business process using custom criteria that can give insights into the Process's changes: Key Performance Indicators (KPIs), activity KPIs, analytic widgets, process activities, and transitions. In this lab, we will monitor changes in the Analytics Widget **PO Changed After Invoice Registered**. Specifically, when new cases classified as instances of maverick Buying arrive, the Monitor will generate alerts, send emails, and start a BPMN process.

PO Changed After Invoice Registered 14ms				
CASEID	MAT CODE	VENDOR	DATE	LEAD TIME
61	21UBI030830...	600_15120	06/15/2021	126d 18h
3447	21MPS0M910...	600_15120	01/28/2021	44d 15h
3679	21MPS0M910...	600_15120	01/28/2021	44d 15h
5017	21MBA05034...	600_13321	03/15/2021	34d 17h
5298	21MBA05034...	600_13321	03/15/2021	34d 17h
15434	21ISPDV7100...	600_15120	07/13/2021	98d 18h
1864	21ISPDV7100...	600_15120	07/13/2021	98d 18h

3.5.2.1 Create a Monitor to Send Email

_1. Click **Crete monitor +**



_2. In Details, for *Title*, enter **PO Changed After Invoice Registered - Send Email** and click **Next**

A screenshot of a web form titled "Create Analytics widget monitor". Below the title is a subtitle: "Set up an automatic action that triggers an alert when an analytics widget generates results." On the left side of the form is a vertical sidebar with five radio button options: "Details" (which is selected), "Monitor", "Schedule", "Service", and "Parameters". The main area of the form contains two input fields. The first is labeled "Title" and contains the text "PO Changed After Invoice Registered - Send Email". Below this field is a small instruction: "Give your monitor a unique title to easily identify it." The second field is labeled "Description" and contains the placeholder text "Describe your monitor and the automatic action you have set". At the bottom of the form are three buttons: "Cancel" on the left, "Back" in the center, and "Next" on the right. The "Next" button is blue and has a mouse cursor pointing at it. There is also a faint watermark in the background that says "Goto Settings to activate Windows."

_3. On the *Monitor* page, enter the following and then click **Next**:

- Selected dashboard: **5 PO Changed After Invoice Registered - Alerts**
- Select what widget to monitor: **PO Changed After Invoice Registered**
- Recurring outputs: **Send all results every execution.**

Create Analytics widget monitor
Set up an automatic action that triggers an alert when an analytics widget generates results.

Details
Monitor
Schedule
Service
Parameters

Define monitor
Select dashboard:
5 PO Changed After Invoice Registered - Alerts
Select what widget to monitor:
PO Changed After Invoice Registered

Filter monitor
Apply a filter template to narrow the scope of your monitor
Add filter template +

Recurring outputs
Filter recurring outputs
☒ Send all results every execution
☐ Avoid sending duplicate results
☐ Avoid sending duplicate results within interval

Cancel Back **Next**

_4. On the *Schedule* page, leave **Data Upload** (we will generate alerts when a new data set is uploaded) and click **Next**

Select schedule type

☒ Data Upload ☐ Frequency ☐ Calendar

_5. On *Service*, enter the following and then click **Next**:

- **Basic Auth**
- Select **Send Email** Service tile

Select a service you wish to assign to this monitor

Search previously created services Basic Auth x v

Service	Description	URL	Authentication	Package
Send Email	Not yet specified	https://10.0.0.5:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail	Basic Auth	Default package
Start Process	Not yet specified	https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess	Basic Auth	Default package

Cancel Back **Next**

_6. On *Parameters*, expand *Body parameters* dropdown and select **Customized Body**.

Body parameters

☐ Default Body ☒ Customised Body

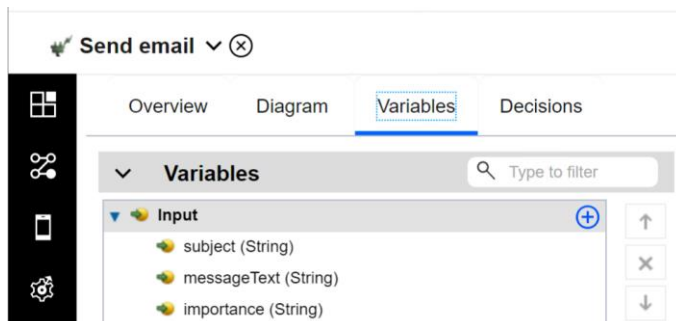
_7. For *Customised Body* enter:

```
{ "subject": "Alert: PO Changed After Invoice Registered", "messageText": " <body><p>1. Click <a href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-pay/dashboard/63e6577e13afec065ed80897/\">link</a> to open the <b>PO Changed After Invoice Registered - Alerts</b> <p>2. To locate the cases that caused this alert use the <b>DATE </b>column in the <b>PO Changed After Invoice Registered</b> widget.</body>", "importance": "high" }
```

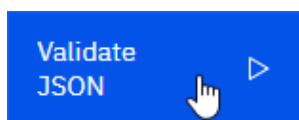
☐ Default Body ☒ Customised Body

```
{ "subject": "Alert: PO Changed After Invoice Registered", "messageText": " <body><p>1. Click <a href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-pay/dashboard/63e6577e13afec065ed80897/\">link</a> to open the <b>PO Changed After Invoice Registered - Alerts</b> <p>2. To locate the cases that caused this alert use the <b>DATE </b>column in the <b>PO Changed After Invoice Registered</b> widget.</body>", "importance": "high" }
```

The body parameter in JSON format represents the input to the Send email Service Flow.

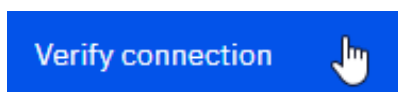


_8. Click **Validate JSON** and make sure you see "Valid JSON body".



✓ Valid JSON body

_9. Click **Verify Connection** and make sure you see "Connected successfully."

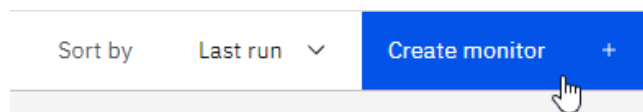


✓ Connected successfully

_10. Click **Create**

3.5.2.2 Create a Monitor to Start a Process

_1. Click **Crete monitor +**



_2. In *Details*, for *Title*, enter **PO Changed After Invoice Registered – Start Process** and click **Next**.

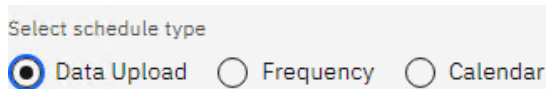
A screenshot of the 'Create Analytics widget monitor' form. The 'Details' tab is selected in the left sidebar. The 'Title' field contains the text 'PO Changed After Invoice Registered - Send Email'. The 'Description' field is empty. At the bottom, there are 'Cancel', 'Back', and 'Next' buttons. A mouse cursor is pointing at the 'Next' button.

_3. On *Monitor*, enter the following and then click **Next**:

- Selected dashboard: **5 PO Changed After Invoice Registered - Alerts**
- Select what widget to monitor: **PO Changed After Invoice Registered**
- Recurring outputs: **Send all results every execution.**

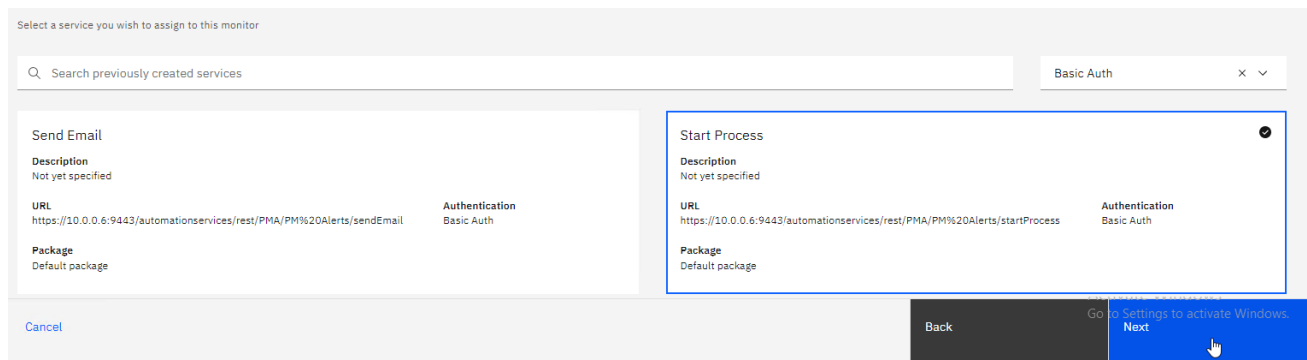
A screenshot of the 'Create Analytics widget monitor' form, now in the 'Monitor' tab. The 'Define monitor' section has two dropdown menus: 'Select dashboard' set to '5 PO Changed After Invoice Registered - Alerts' and 'Select what widget to monitor' set to 'PO Changed After Invoice Registered'. The 'Filter monitor' section has an 'Add filter template +' button. The 'Recurring outputs' section has three radio buttons, with 'Send all results every execution' selected. At the bottom, there are 'Cancel', 'Back', and 'Next' buttons. A mouse cursor is pointing at the 'Next' button.

_4. On *Schedule*, leave **Data Upload** (we will generate alerts when a new data set is uploaded) and click **Next**.

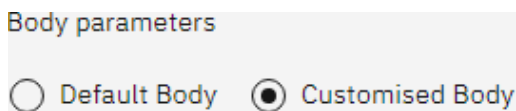


_5. On *Service*, enter the following and then click **Next**:

- **Basic Auth**
- Select **Start Process** Service tile

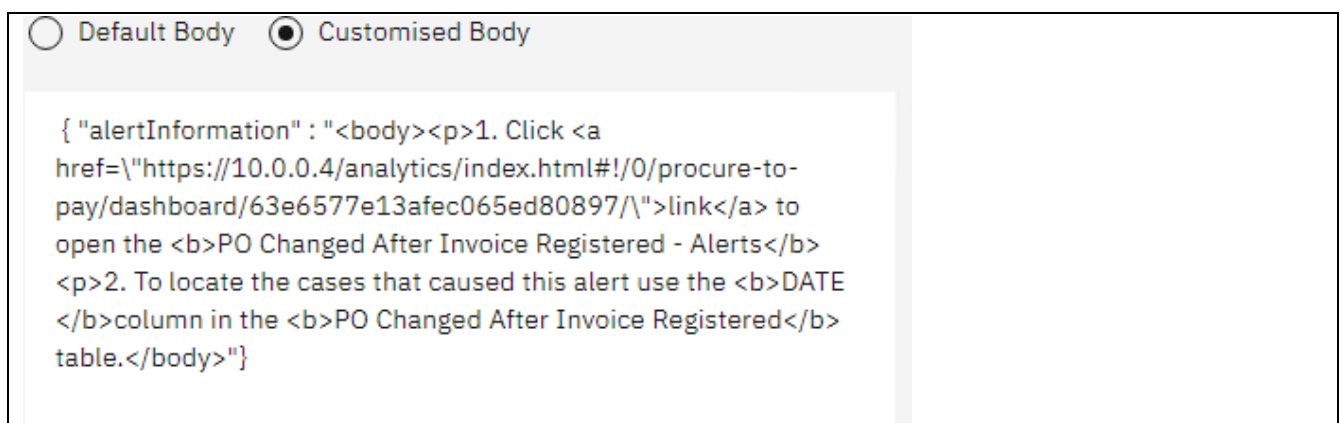


_6. On *Parameters*, expand **Body parameters** dropdown and select **Customized Body**

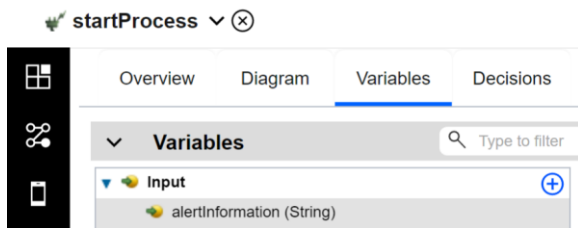


_7. For *Customised Body* enter:

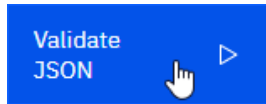
{ "alertInformation" : "<body><p>1. Click link to open the PO Changed After Invoice Registered - Alerts<p>2. To locate the cases that caused this alert use the DATE column in the PO Changed After Invoice Registered table.</body>"}



The body parameter in JSON format represents the input to the startProcess Service Flow.



_8. Click **Validate JSON** and make sure you see "Valid JSON body".



✓ Valid JSON body

_9. Click **Verify Connection** and make sure you see "Connected successfully."



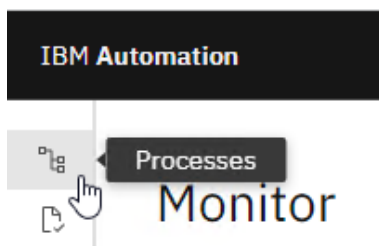
✓ Connected successfully

_10. Click **Create**

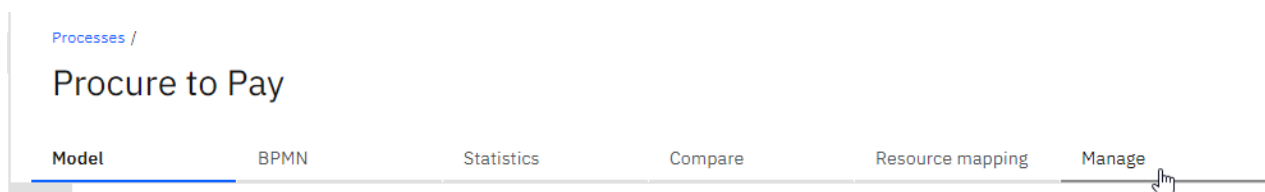
3.6 Generate New Process Events

We will now import a dataset that contains new cases containing instances of Maverick Buying. This will result in the Monitors generating alerts that send emails and start BPMN processes.

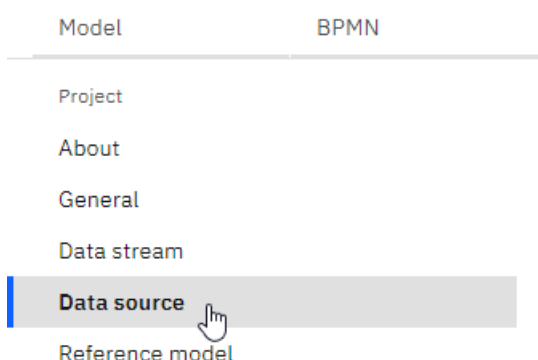
_1. Click **Processes** to switch back to the Model View.



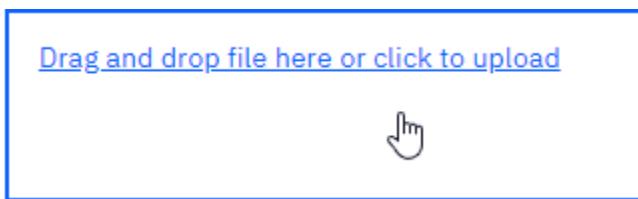
_2. Click **Manage** tab



_3. Click the **Data source** tab

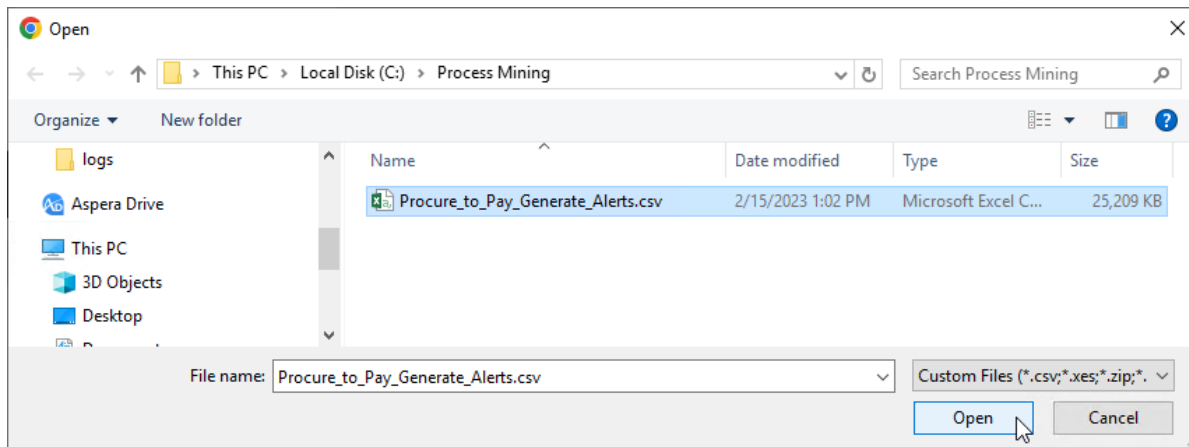


_4. Click **Drag and drop file here or click to upload**

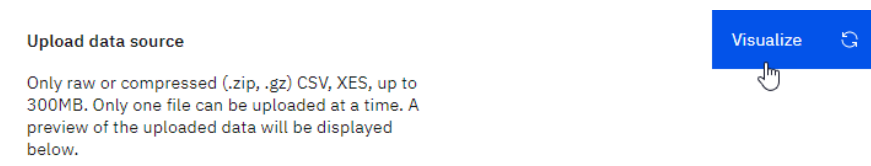


_5. Navigate to **C:\Process Mining** directory.

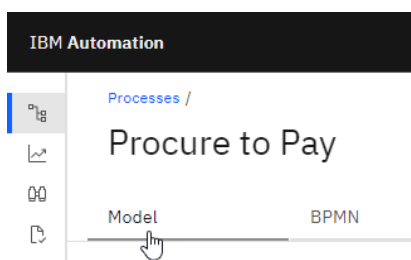
_6. Select **Procure_to_Pay_Generate_Alerts.csv** and click **Open**.



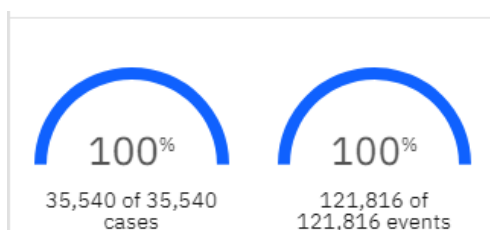
_7. Click **Visualize** to analyze the new data set.



_8. Click the **Model** tab



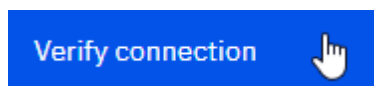
You should now see more Cases and Events!



3.7 Examine the Alerts

You will now examine the generated Alerts. You should now see two Email Alerts and two Process Instances.

The first set of alerts was generated when you clicked the Verify Connection button while creating the Alert Monitors.



The Monitors generated the second set of alerts when you uploaded a new data set containing Cases (Maverick Buying instances). The new cases included instances where the PO was changed after an invoice was registered. As a result, they were added to the **PO Changed After Invoice Registered** widget

PO Changed After Invoice Registered 14ms				
CASEID	MAT CODE	VENDOR	DATE	LEAD TIME
61	21UBI030830...	600_15120	06/15/2021	126d 18h
3447	21MPS0M910...	600_15120	01/28/2021	44d 15h
3679	21MPS0M910...	600_15120	01/28/2021	44d 15h
5017	21MBA05034...	600_13321	03/15/2021	34d 17h
5298	21MBA05034...	600_13321	03/15/2021	34d 17h
15434	21ISPDV7100...	600_15120	07/13/2021	98d 18h
1864	21ISPDV7100...	600_15120	07/13/2021	98d 18h

Recall that the Monitors you have created were designed to monitor this widget for changes.

Create Analytics widget monitor

Set up an automatic action that triggers an alert when an analytics widget generates results.

☒ Details
 ☒ Monitor
 ☐ Schedule
 ☐ Service

Define monitor

Select dashboard

5 PO Changed After Invoice Registered - Alerts

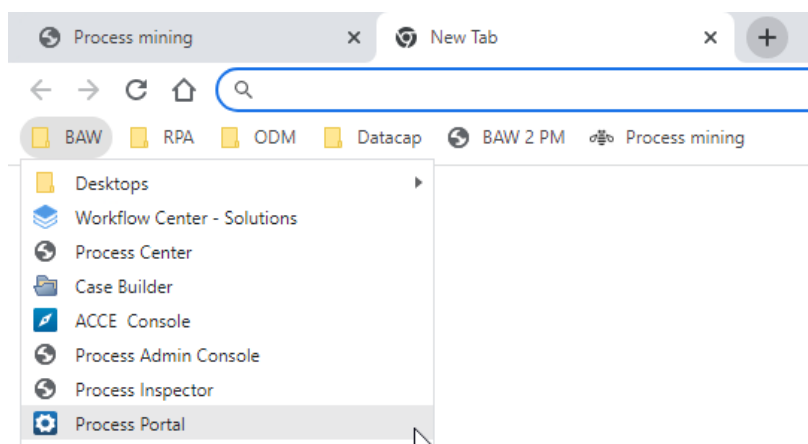
Select what widget to monitor

PO Changed After Invoice Registered

3.7.1 Examine New Alert Process Instances

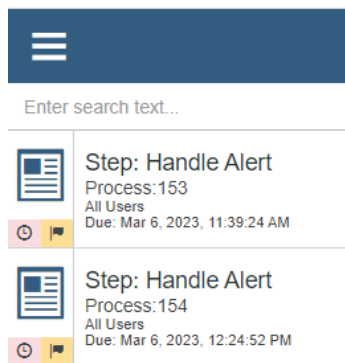
3.7.1.1 Open Handle Alert Task

_1. In the Chrome Web Browser, **add a new tab**, and from the Bookmarks, select **BAW > Process Portal**

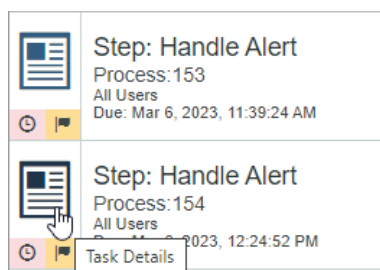


_1. In the Sign in page, enter **admin / admin** and click **Continue**

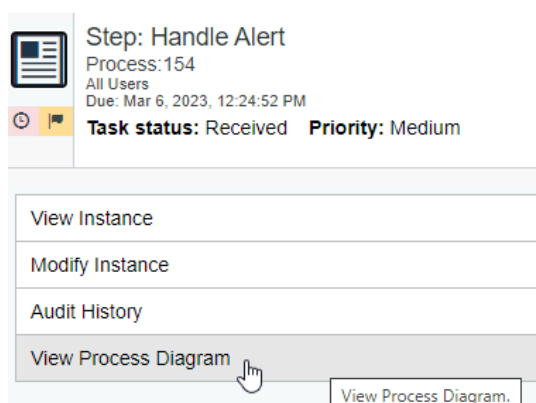
You should now see two Tasks



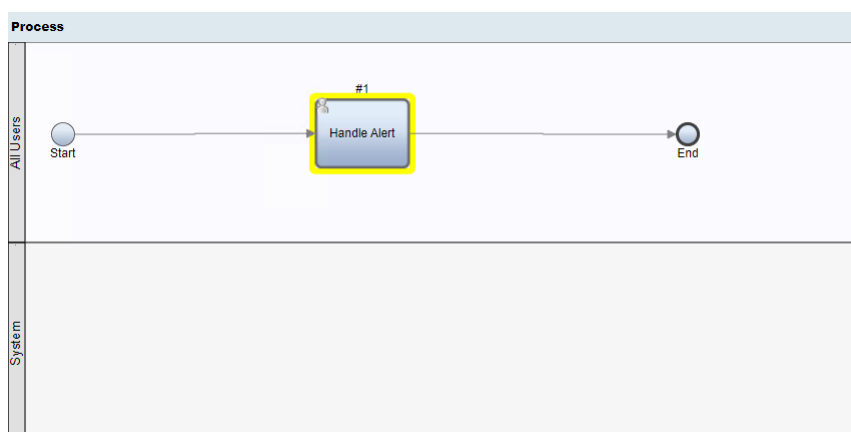
_2. Click **Task Details**



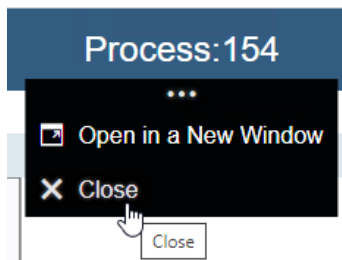
_3. Click **View Process Diagram**



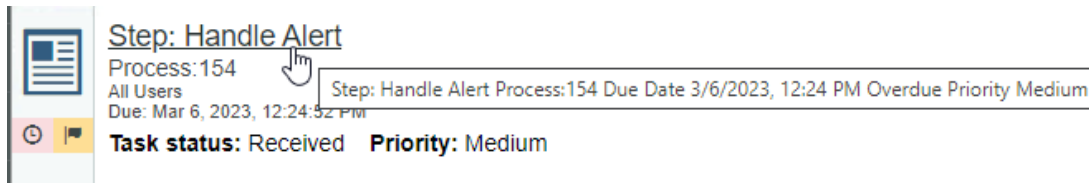
Note that the process instance contains one Human Task ready to be claimed. This Task includes information about the Process Mining Alert.



_4. Click ... > Close

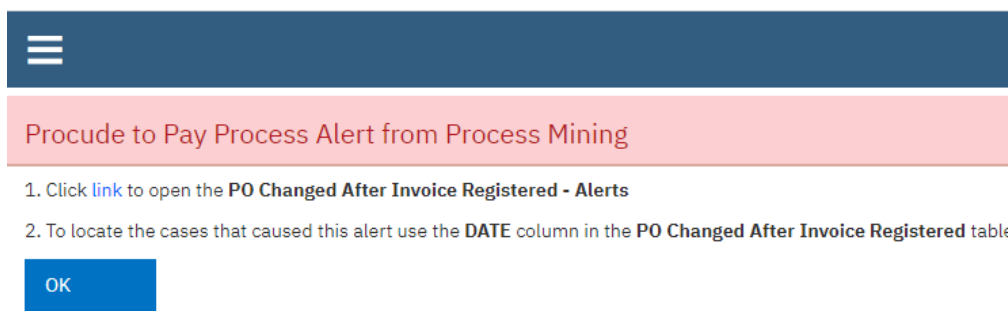


_5. Click **Step: Handle Alert**



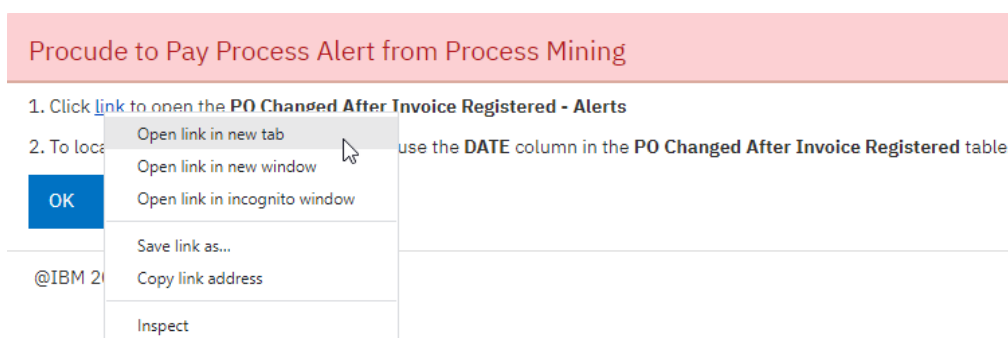
Note that the Task includes

1. The link to the Process Mining Alert Dashboard and
2. The instructions on what to do to investigate the Maverik Buying cases

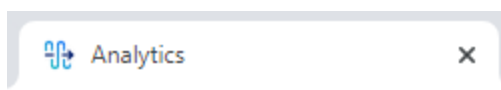


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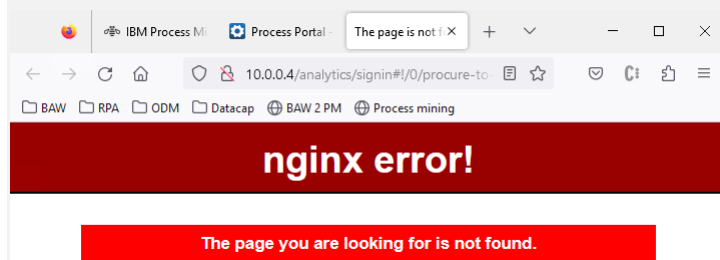
_6. Right-click the **link**, and from the pop-up menu, select **Open link in a new tab**



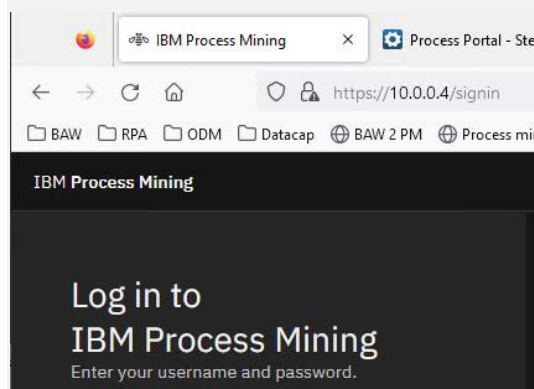
A New Analytics tab should now appear in the Chrome Web Browser.



You may encounter the "The page is not found" issue.

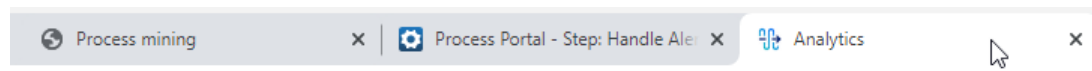


This error occurs when the Process Mining session expires. You will need to log in. Please switch to the IBM Process Mining tab and log in to fix it.

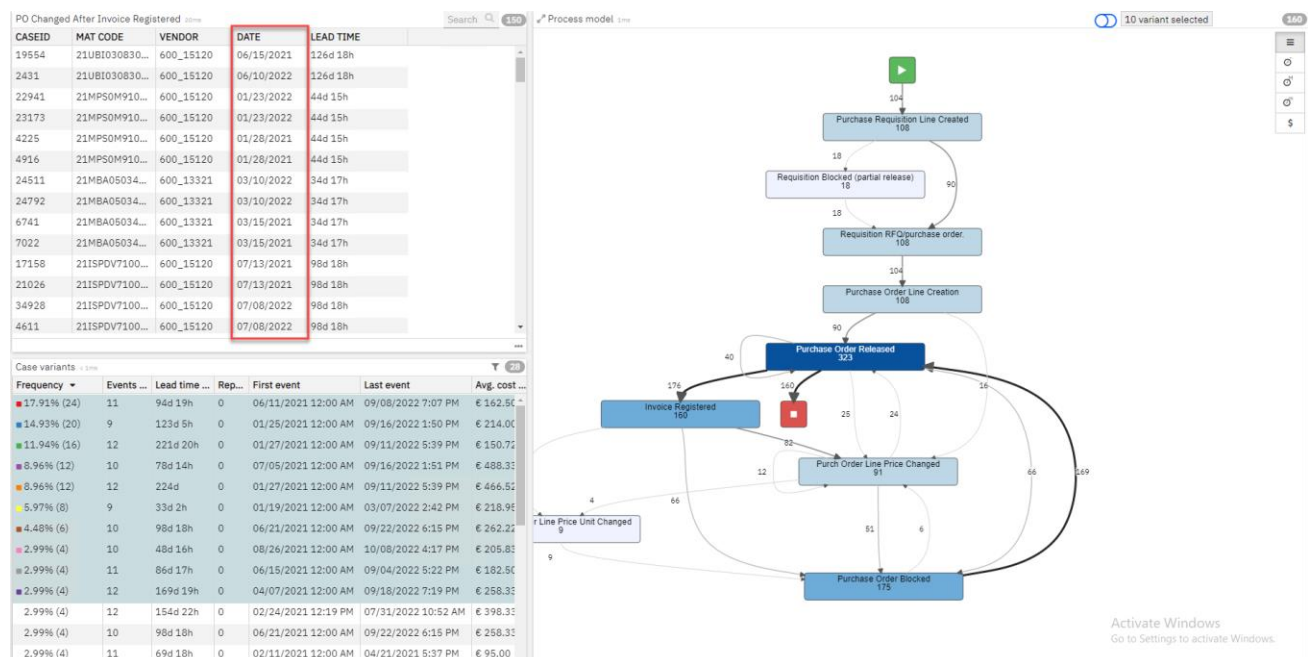


3.7.1.2 Analyze the New Maverick Buying Cases

_1. Click the **Analytics** tab



You should now see the **5 PO Changed After Invoice Registrerd – Alerts** dashboard



Note that the DATE column now shows new cases. The new cases have the date with the year set to 2022.

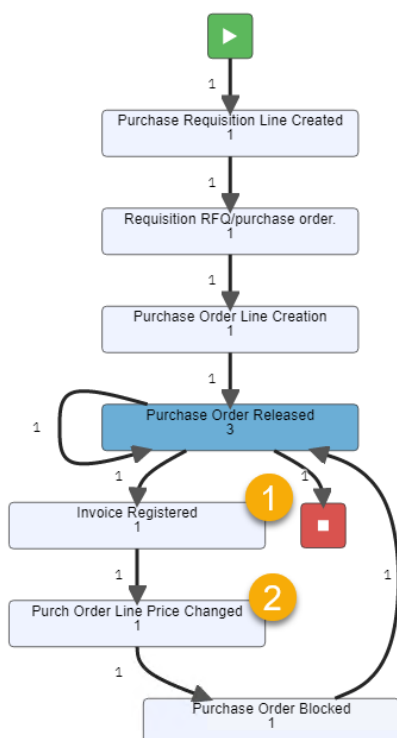
_2. Click the **DATE** column **twice to** sort the Cases in the *PO Changed After Invoice Registered* widget by date

PO Changed After Invoice Registered 23ms				
CASEID	MAT CODE	VENDOR	DATE	LEAD TIME
19554	21UBI030830...	600_15120	06/15/2021	126d 18h
2431	21UBI030830...	600_15120	06/10/2022	126d 18h

_3. Click any **row** in the *PO Changed After Invoice Registered* widget that continues the new Cases (the year is 2022), for example, row one.

PO Changed After Invoice Registered 20ms				
CASEID	MAT CODE	VENDOR	DATE ▼	LEAD TIME
1543	215696V000X...	600_15120	09/09/2022	48d 16h
1309	215696V000X...	600_15120	09/09/2022	48d 16h

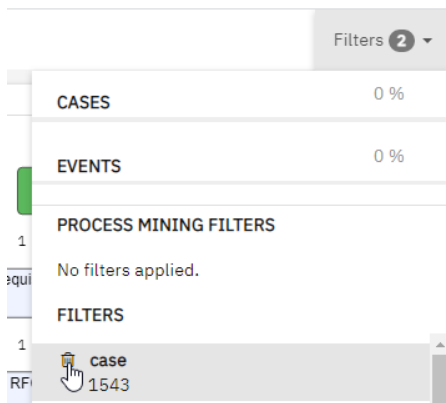
Note that the Dashboard now contains the Case Variant information for your selected Case.



You can now see the Maverick Buying violation:

- (2) the purchase order was changed after
- (1) the invoice was registered.

_4. Click **Filters 2 > Case** to remove the selection.

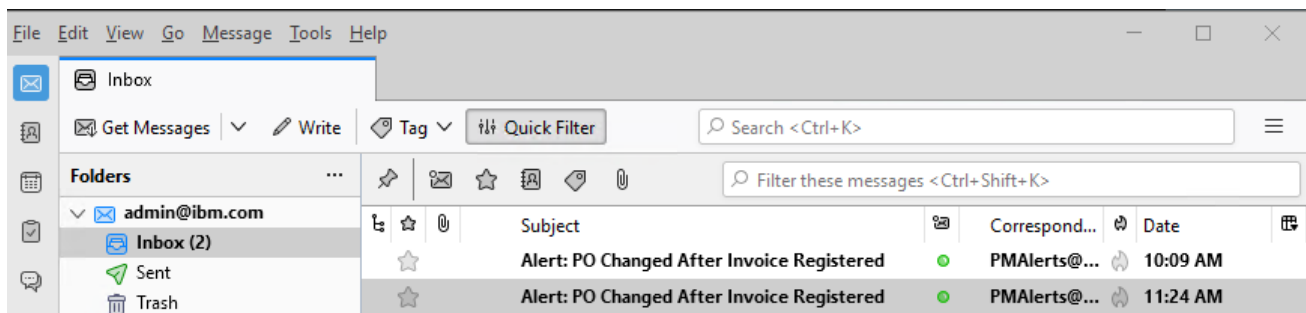


3.7.2 Examine New Alert Email

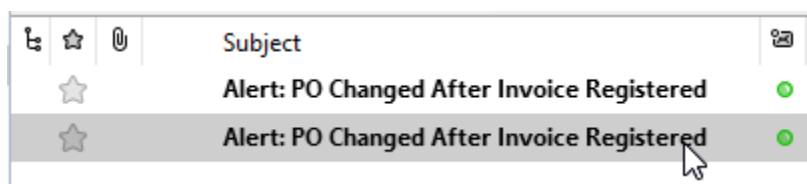
_1. In the Taskbar, click **Thunderbird**



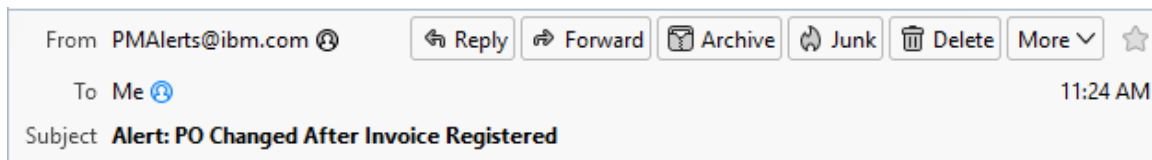
You should now see two new emails with the Subject Alert: PO Changed After Invoice Registered



_2. In the Taskbar, click **the second email**



_3. Click the **link**.



1. Click [link](#) to open the **PO Changed After Invoice Registered - Alerts**

2. To locate the cases that caused this alert use the **DATE** column in the **PO Changed After Invoice Registered** widget.

A new Analytics tab should now appear in the Chrome Web Browser



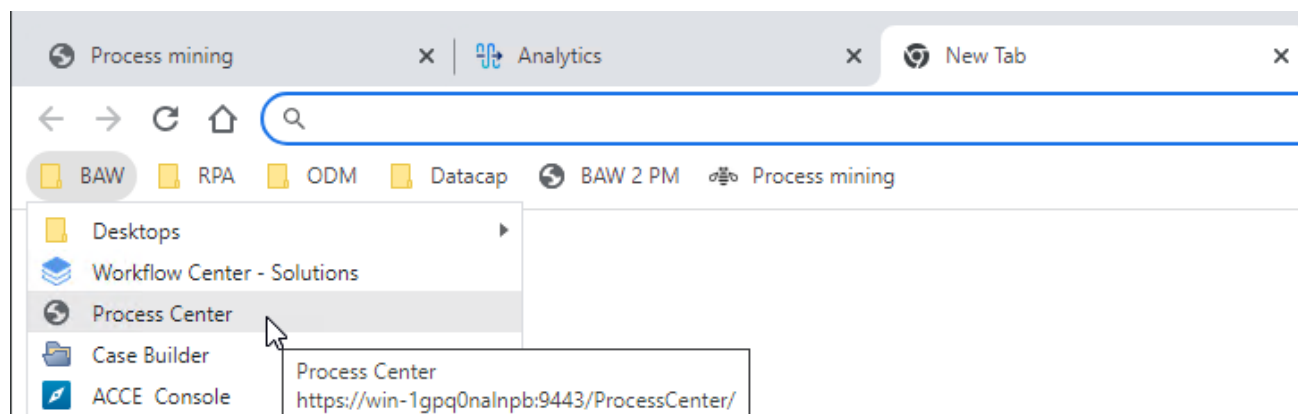
3.8 Lab Summary

In this lab, you completed these high-level steps:

- **Examine the Dashboard used for Alert Generation.** The Alerts are generated when new Cases that match this criterion, "**purchase order is changed after the invoice is registered,**" are added.
- **Create Action Services and Monitors.**
 - **Create Services.** You will create the Action Services, which define what REST endpoints to call when an alert occurs.
 - **Create Monitors.** You will create Monitors which define the criteria for generating an Alert and define what Action Service to call and what parameters to pass to the REST endpoint.
- **Generate New Process Events.** You will simulate the generation of new events in P2P Process by uploading a CVS file with the new events that also include Cases where the "**purchase order is changed after the invoice is registered,**"
- **Examine the Alerts.** You examine the two types of alerts that were generated: (i) a new BPMN process instance and an email. The Alert information will include a link to the Alerts Dashboard.
 - **Examine New Alert Process Instances.** You will use IBM Process Portal to claim and examine the Human Tasks in the Process instance that the Alert started. The Human Task includes a link to the Alert Dashboard. You will use this link to navigate to the Alert Dashboard and examine the new Maverick Buying Cases.
 - **Examine New Alert Email.** You will examine the new Email that includes the Alert information.
- **Implementation Details of the Alert Endpoints.** Optionally, you can examine how the Alert Endpoints were implemented in IBM Business Automation Workflow. See Appendix A at the end of this document.

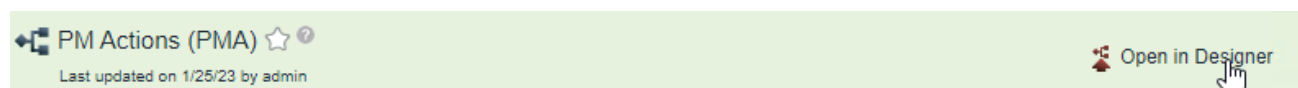
Appendix A. Implementation Details of the Alert Endpoints

_1. Add a **new tab** in the Chrome Web Browser, and select **BAW > Process Center** from the Bookmarks.



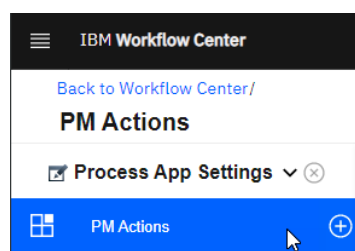
_2. Enter credentials of **admin / admin** and click **Log In**

_3. For **PM Actions (PMA)**, click **Open in Designer**



PM Actions is the Process App where the Action Services are implemented and exposed as Open API REST endpoints.

_4. Click **PM Actions** to get a list of all artifacts in the Process App.



You should now see the list of the artifacts.

Type	All	
<input type="text"/>		
Process		1
Process		
Client-Side Human Service		1
Handle Alert		
Deployment Service Flow		1
Deployment Service Flow		
External Service		1
Mail		
REST Service		1
PM Alerts		
Service Flow		2
Send email		
startProcess		

Let's examine the artifacts' dependency

