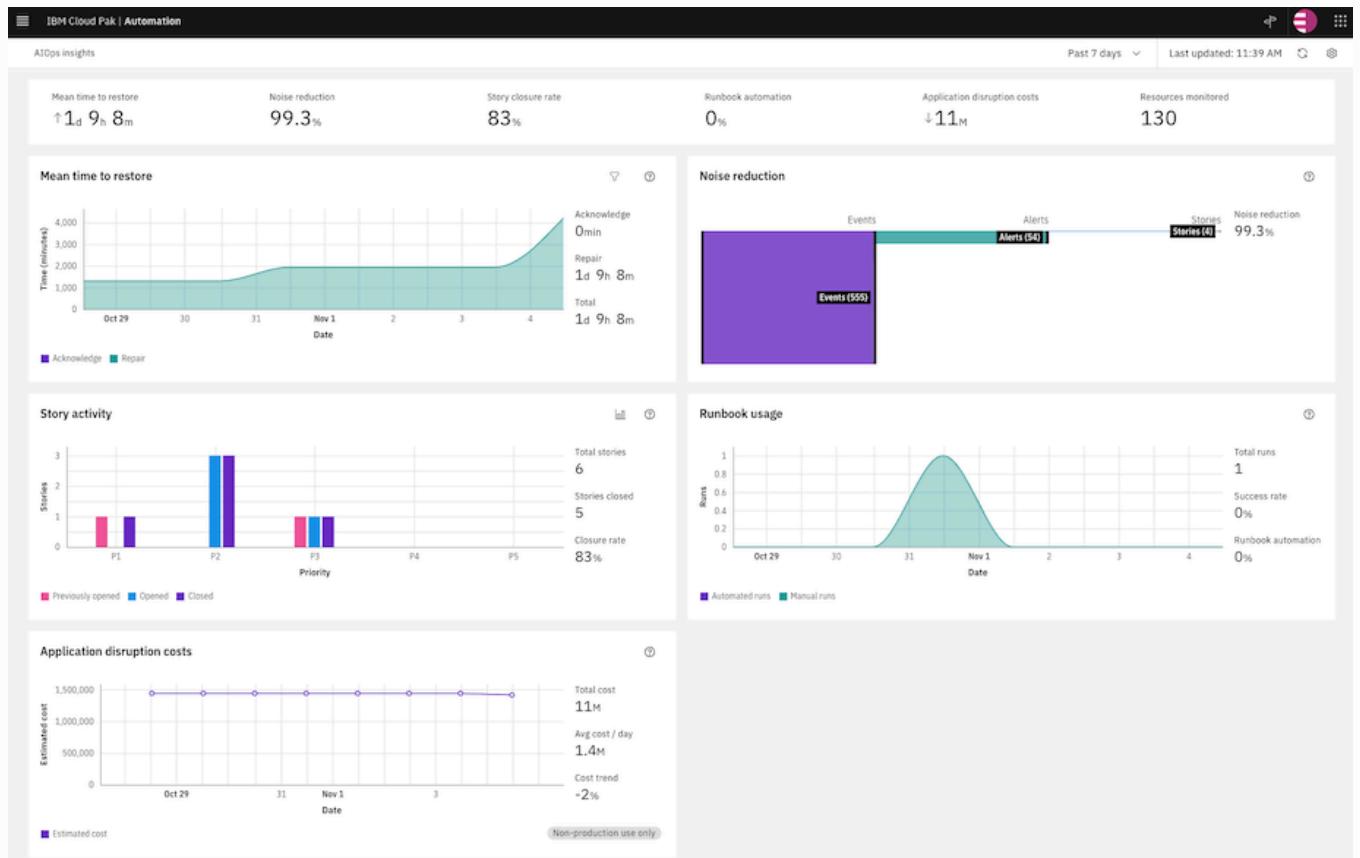


CLOUD PAK FOR WATSON AIOPS

Sample Demo Script for the live demo environment



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1. INTRODUCTION

This script is intended as a guide to demonstrate Cloud Pak for Watson AIOps using the live demo environment, running the Cloud Pak itself and the demo application. The script is presented in a few sections. You can utilize some or all sections depending upon your client's needs.

The script is intended to be used with live Cloud Pak for Watson AIOps 3.x demo environment that you can reserve via [TechZone](#) or [install yourself](#).

In the demo script,

- “ **Action**” denotes a setup step for the presenter.
- “ **Narration**” denotes what the presenter will say.
- “ **Note**” denotes where the presenter may need to deviate from this demo script or add supplemental comments.

1.1 Key Terminology

You should be familiar with the following terminology when discussing Cloud Pak for Watson AIOps:

- **Application:** IBM Cloud Pak for Watson AIOps brings together the capability to group resources from different data types into applications. Clients can flexibly define an application to meet their business needs. With applications, you can obtain an integrated view of resources to understand inter-dependencies.
- **Event:** A point-in-time statement in Cloud Pak for Watson AIOps that tells us that something happened somewhere in a client's environment. It tells us what happened, where it happened, and when it happened. An event does not have to be exceptional or actionable, it can simply tell us something has happened.
- **Alert:** An alert in Cloud Pak for Watson AIOps represents an abnormal condition somewhere in an environment that requires resolution. It tells us what is happening, where it is happening, and when it started to happen. It may be informed by one or more events. It has a start time and end time.
- **Story:** A story in Cloud Pak for Watson AIOps represents an outage or reduction in service which is currently impacting customers and requires rapid remediation. It is created based on one or more trigger alerts that indicate the outage or reduction in service. Any alert of severity Major or Critical will act as a trigger alert. Other alerts that share the same cause may add context to the story.
- **Incident:** An incident in ServiceNow is an event of interruption disruption or degradation in normal service operation. An open incident in ServiceNow implies that the customer is impacted, or it represents the business risk.
- **Topology:** A topology is a representation of how constituent parts are interrelated. In Cloud Pak for Watson AIOps, an algorithm analyzes how the event nodes are proximate to each other and groups them into a topology-based correlation.

1.2 Get access to a live demo environment

To get a demo environment you have two possibilities:

1.2.1 Reserved preconfigured Instances

To reserve a preconfigured demo environment, follow [this link](#) to TechZone to create a reservation and to request access credentials.

! Due to the nature of the product, Cloud Pak for Watson AIOps demo environments can be used effectively by a single user at a time. Because of that, provided environments are intended for enablement and practicing rather than for actual client demo!

⚠ Please don't create your own applications in the shared demo environments or modify it in any shape or form. If you need to customize the demo install your own instance.

1.2.2 Install your own environment

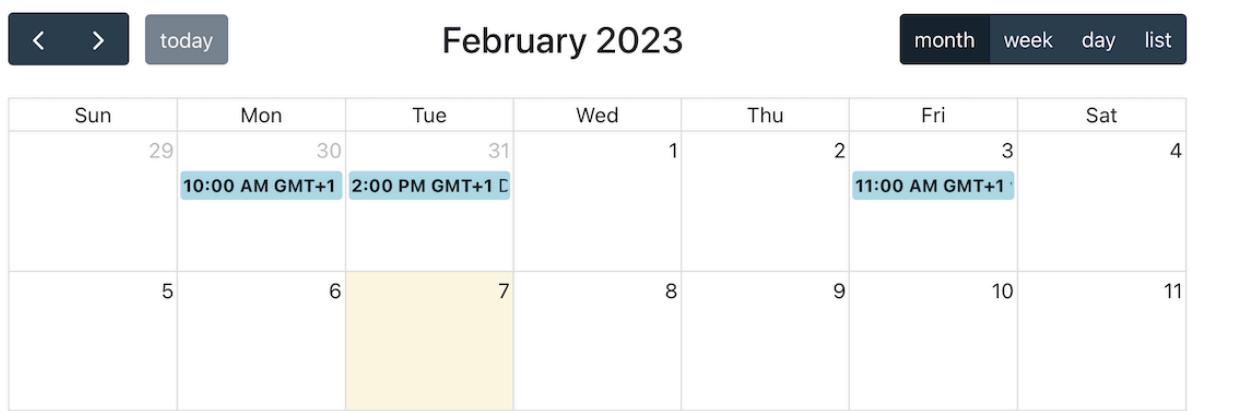
You can easily provision your own instance of the demo environment, as described in [Provisioning you own instance of CP4WAIOPS demo](#).

This takes about 15 minutes of your time and 2-3 hours for the installation to complete in the background.

2. GET STARTED

2.1 Connect to the Demo UI

1. Click on your reservation



2. Click on [Open environment details](#)

Account partner ×

Reservation for nikh@ch.ibm.com

Date: January 30th
Time: 10:00 am - 11:00 am (local time)

Delete Reservation Close

 [Open environment details](#) →

3. Click on **Open your demo environment**

The screenshot shows a web interface titled "Arya's Environment Details". At the top left is a logo with the text "Build. Show. Share.". On the top right, it says "User: partner". The main content area has a blue header bar with the text "Open your Demo environment" and a copy icon. Below this, there is a red box containing the text "Access Token: P4ssw0rd!". To the left, a sidebar lists "Top", "Access Details", "Description", "Features", "Notes", and "Environment". The "Access Details" section contains a URL and an access token. The "Description" section includes a note about Watson AIOps 3.6 and a pink callout box stating "UPDATED to 3.6 - with Instana and Event Manager".

Arya's Environment Details

User: partner

Home FAQ What's New

Open your Demo environment

Access Token: P4ssw0rd!

Access Details

URL: <https://cp4waiops-demo-ui-cp4waiops-demo-ui.itzroks-270003bu3k-mo2syp-4b4a324f027aea19c5cbc0c3275c4656-0000.eu-gb.containers.appdomain.cloud/login?token=P4ssw0rd%21>

Access Token: P4ssw0rd!

Description

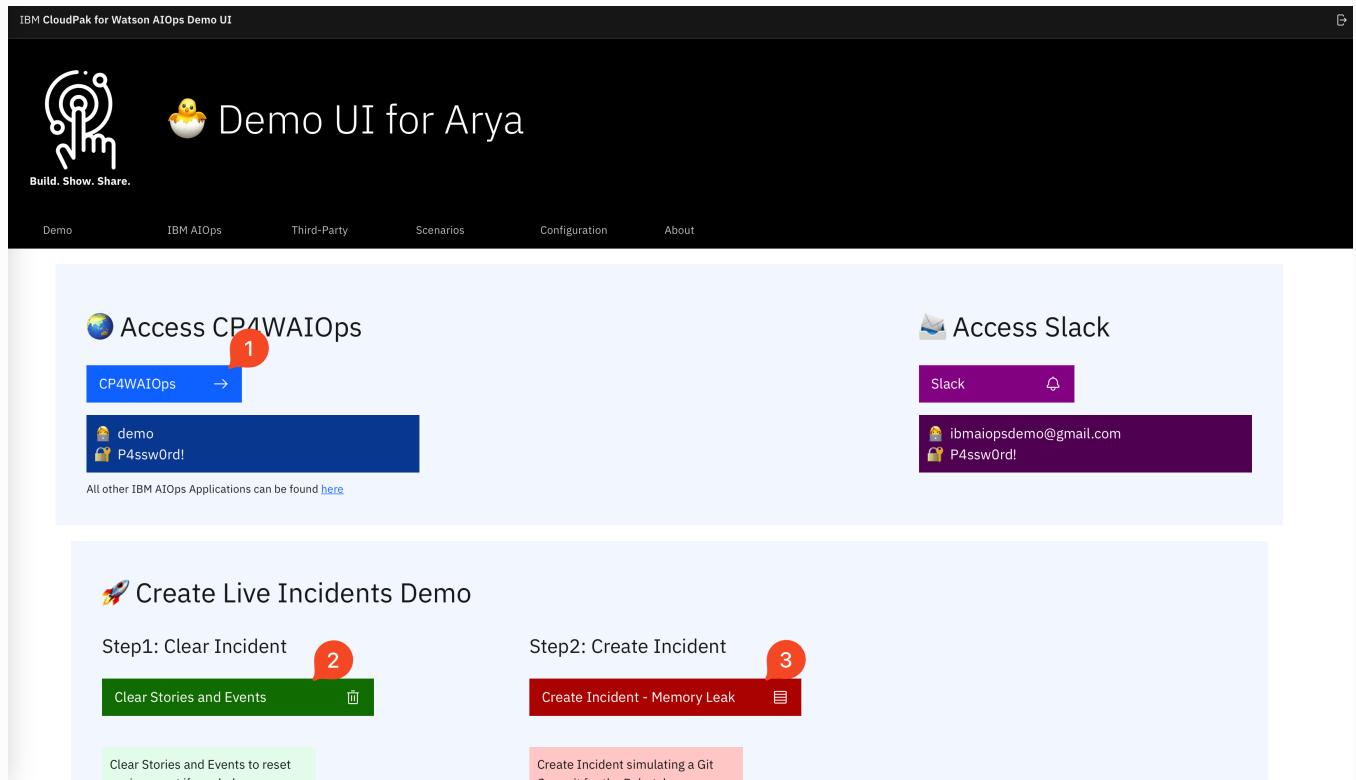
Watson AIOps 3.6 stable demo environment

UPDATED to 3.6 - with Instana and Event Manager

Top Access Details Description Features Notes Environment

2.2 Navigating The Demo UI

The Demo UI should open:



The most important functionalities are:

1. **Open AIManager (login with the provided credentials)**
2. **Clear all existing Stories and Alerts**
3. **Create an Incident/Story**

i If you are asked to login to the Demo UI, please use the token/password **P4ssw0rd!**

⚠ Before start, you should open the AIManager and check that there are no open stories and alerts pending. If there are some created few hours before (leftovers from somebody else not completing the demo) you can clean them up using AIManager Demo UI as shown below.

2.3 Demonstration scenario

2.3.1 Overview

This use case shows clients how IBM Cloud Pak for Watson AIOps proactively helps avoid application downtimes and incidents impacting end-users. You play the role of an SRE/Operations person who has received a Slack message indicating that the RobotShop application is not displaying customer ratings. This is an important feature of the RobotShop application since RobotShop is the main platform from which the fictional company sells its robots.

2.3.2 Use Case

The use case demonstrates how Cloud Pak for Watson AIOps can assist the SRE/Operations team as they identify, verify, and ultimately correct the issue. The demonstration shows integration with Instana, Turbonomic, ServiceNow, and Slack. Slack is the ChatOps environment used for working on this incident.

You will demonstrate the following major selling points around Cloud Pak for Watson AIOps:

1. **Pulls data from various IT platforms:** IBM Cloud Pak for Watson AIOps monitors incoming data feeds including logs, metrics, alerts, topologies, and tickets, highlighting potential problems across incoming data, based on trained machine learning models.
2. **Utilizes AI and natural language processing:** An insight layer connects the dots between structured and unstructured data, using AI and natural language processing technologies. This allows you to quickly understand the nature of the incident.
3. **Provides trust and transparency:** Using accurate and trustworthy recommendations, you can move forward with the diagnosis of IT system problems and the identification and prioritization of the best resolution path.
4. **Resolves rapidly:** Time and money are saved from out-of-the-box productivity that enables automation and utilizes pre-trained models. A “similar issue feature” from past incidents allows you to get services back online for customers and end-users.

2.4 Demonstration flow

1. Scenario introduction
2. Trigger problem situation (In the background)
3. Verify the status of the Robot Shop application.
4. Understanding and resolving the incident
 1. Login to AI Manager
 2. Open the Story
 3. Examining the Story
 4. Acknowledge the Story
 5. Similar Incidents
 6. Examine the Alerts
 7. Understand the Incident
 8. Examining the Topology
 9. (Optional) Topology in-depth
 10. Fixing the problem with runbook automation
 11. Resolve the Incident
5. Summary

3. DELIVER THE DEMO

3.1 Introduce the demo context

Narration

Welcome to this demonstration of the Cloud Pak for Watson AIOps platform. In this demo, I am going to show you how Watson AIOps can help your operations team proactively identify, diagnose, and resolve incidents across mission-critical workloads.

You'll see how:

- Watson AIOps intelligently correlates multiple disparate sources of information such as logs, metrics, events, tickets and topology
- All of this information is condensed and presented in actionable alerts instead of large quantities of unrelated alerts
- You can resolve a problem within seconds to minutes of being notified using Watson AIOps' automation capabilities

During the demonstration, we will be using the sample application called RobotShop, which serves as a proxy for any type of app. The application is built on a microservices architecture, and the services are running on Kubernetes cluster.

Action

Use demo [introductory PowerPoint presentation](#), to illustrate the narration. Adapt your details on Slide 1 and 13

Narration

Slide 2: Let's look at the environment that we have set up. Our sample application: "RobotShop" is running as a set of microservices in a Kubernetes cluster. Typically, the Operations team maintaining such application has a collection of tools through which they collect various data types.

Slide 3: Here we have several systems that are sending Events into WAIOPS (slide 3), like:

- GitHub
- Turbonomic
- Instana
- Selenium
- Falcon (Sysdig)

Those Events are being grouped into Alerts to massively reduce the number of signals that have to be treated. We usually observe a ratio of about 98-99% of reduction. This means that out of 20'000 events we get about 200-300 Alerts that can be further prioritised.

Slide 4: WAIOPS also ingests Logs from ElasticSearch (this could be Splunk or other Log Aggregators). The Log Anomaly detection is trained on a well running system and is able to detect anomalies and outliers. If an Anomaly is detected it will be grouped with the other Events.

Slide 5: WAIOPS also ingests Metrics from Instana (this could be Dynatrace, NewRelic or others). The Metric Anomaly detection is trained on a well running system and creates dynamic baselines. Through different algorithms it is able to detect anomalies and outliers. If an Anomaly is detected it will also be grouped with the other Events.

Slide 6: Alerts that are relevant for the same Incident are packaged into a so called Story. The Story will be enriched and updated with information as it gets available.

Slide 7: One example is the Topology information. Not only will WAIOPS tell me that I have a problem and present all relevant Events but it will also tell me where in the system topology the problem is situated.

Slide 8: Furthermore the Story is enriched with past resolution information coming from ServiceNow tickets. I'll explain this more in detail during the demo.

Slide 9: The Stories can either be examined in the WAIOPS web interface or can be pushed to Slack or Teams if your teams are using a ChatOps approach.

Slide 10: If Operations or SREs have created Runbooks, WAIOPS can automatically trigger a Runbook to mitigate the problem.

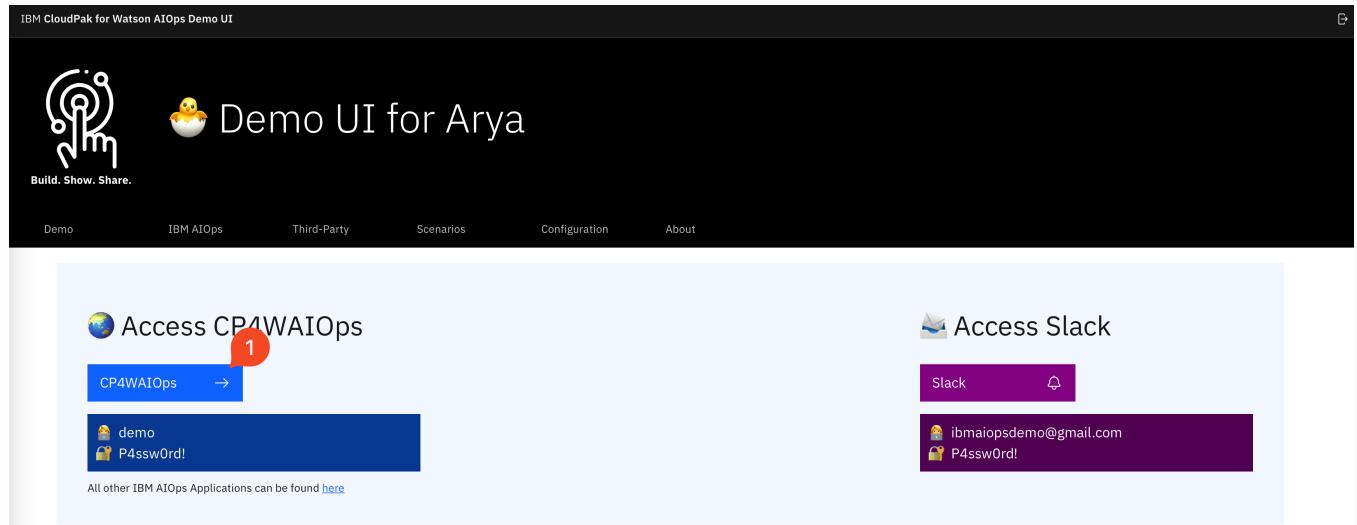
 **Note:** We are NOT using Slack in this demo.

Narration

Now let's start the demo.

3.2 Trigger the incident

Note: The following step does not have to be shown to the client – you may perform the action in the background if possible.



IBM CloudPak for Watson AIOps Demo UI

Demo UI for Arya

Build. Show. Share.

Demo IBM AIOps Third-Party Scenarios Configuration About

Access CP4WAIOPS 1

CP4WAIOPS →

demo P4ssw0rd!

All other IBM AIOps Applications can be found [here](#)

Access Slack

Slack

ibmaioptsdemo@gmail.com P4ssw0rd!

Create Live Incidents Demo

Step1: Clear Incident 2

Clear Stories and Events

Clear Stories and Events to reset

Step2: Create Incident 3

Create Incident - Memory Leak

Create Incident simulating a Git

🚀 Action

Open AIManager **Demo** UI, and trigger the incident

- Point your browser to the AIManager Demo UI,
- Login with the token “P4ssw0rd!” and
- Trigger the incident (3) you would like to use in your demo.

This action injects the stream of simulated events into the system, which replicates what could happen in a real life situation.

3.3 Verify the status of the Robot Shop application

3.3.1 Show the Application

The screenshot shows a dark-themed web application interface titled "Third-party Applications". At the top left is a logo with a stylized circular icon and the text "Build. Show. Share.". To the right of the logo is a camera icon. Below the title, there are five navigation links: Demo, IBM AIOps, Third-Party, Scenarios, Configuration, and About. The main content area displays three application cards:

- RobotShop**: Shows a purple button and a refresh icon.
- AWX**: Shows a purple button and a refresh icon. To the right, it lists a user named "admin" with the email "SesqrRr6AeGHpR6rUINqRBkI4ToimlhZ" and a file icon.
- Slack**: Shows a purple button and a bell icon. To the right, it lists a user with the email "ibmaiopsdemo@gmail.com" and a file icon, along with the password "P4ssw0rd!".

Action

Open the RobotShop application

The Link can be found in the **Demo UI** under **Third-Party**. Play with the application UI.

Narration

In this demo I am the application SRE (Site Reliability Engineer) responsible for an e-commerce website called RobotShop, an online store operated by my company. In the middle of the day (when clients make most of the purchases) I received a slack message on my mobile, alerting me that there is some problem with the site.

Let's verify what's going on with the RobotShop site. The application is up but displays an error that it cannot get any ratings.

3.3.2 Show ratings not working



Action

Open any robot details to show that there are no ratings displayed.

Narration

I know that there are many ratings for each of the products that we sell, so when none are displayed, it means that there is a likely problem with `Ratings` service withing application that may heavily impact client's purchasing decisions, as well as may be a sign of a wider outage.

3.4 Understanding and resolving the incident

3.4.1 Login to AI Manager

The screenshot shows the homepage of the IBM CloudPak for Watson AIOps Demo UI. At the top, there's a header with the text "IBM CloudPak for Watson AIOps Demo UI" and a small icon. Below the header, there's a logo featuring a stylized eye-like symbol and the text "Demo UI for Arya". Underneath the logo, it says "Build. Show. Share.". The main navigation bar includes links for "Demo", "IBM AIOps", "Third-Party", "Scenarios", "Configuration", and "About".

The main content area has three main sections:

- Access CP4WAIOPS**: This section shows a button labeled "CP4WAIOPS →" with a red notification badge containing the number "1". Below the button, there's a dark blue box containing two user profiles: "demo" and "P4ssw0rd!".
- Access Slack**: This section shows a purple button labeled "Slack" with a red notification badge containing the number "1". Below the button, there's a dark purple box containing a user profile for "ibmaiopsdemo@gmail.com" and the password "P4ssw0rd!".
- Create Live Incidents Demo**: This section is divided into two parts:
 - Step1: Clear Incident**: Shows a green button labeled "Clear Stories and Events" with a red notification badge containing the number "2". Below the button, there's a green box containing the text "Clear Stories and Events to reset".
 - Step2: Create Incident**: Shows a red button labeled "Create Incident - Memory Leak" with a red notification badge containing the number "3". Below the button, there's a red box containing the text "Create Incident simulating a Git Commit Error or Database".

At the bottom left, there's a sidebar with a blue border containing the text "Action" and "In the Demo UI, click AI Manager (1)".

IBM Cloud Pak | Automation

Welcome, demo!

Start connecting
Get started with a guided tour to see which connections to add first.

Manage users
Connect to your identity provider and specify who can access the platform.

Learn more
Explore documentation for the IBM Cloud Paks for Automation



Overview

Quick navigation

- AI model management
- AIOps insights
- Automations
- Data and tool connections
- Resource management
- Stories and alerts

Support

- IBM Cloud Pak for Watson AIOps
- Documentation
- Community
- IBM Support
- Share an idea

Getting Started	IBM Automation - AIOps	Demo Apps
👉 Welcome to the Arya Environment	→ Instana	→ RobotShop
👉 Get started with the DemoUI Token/Password: P4ssw0rd!	User: admin@instana.local - Password: P4ssw0rd!	→ LDAP
	→ EventManager	User: cn=admin,dc=ibm,dc=com - Password: P4ssw0rd!
Created with CP4WAIOps-Deployer Built with ❤️ by Niklaus Hint	User: smadmin - Password: KdSYKg3mVZlHIkw	→ Ansible Tower
	Select your IBM AIOps Application above.	User: admin - Password: SesqRr6AeGhpR6UINqRBkI4ToimhZ
👉 System Links	Connection status	Select your app above.
→ Flink Task Manager - Ingestion	Total data and tool connections found 5	Defined applications

📣 Narration

Let's take a closer look at the incident that has been created in Watson AIOps.

3.4.2 Open the Story

The screenshot shows the IBM Cloud Pak | Automation interface. On the left, there's a navigation sidebar with sections like Home, Define, Operate, Stories and alerts (which is currently selected), and Administration. The main area has a banner with the text "mo!" and a circular graphic of two people in a digital environment. Below the banner, there are several cards:

- Getting Started**: Welcome to the Arya Environment.
- IBM Automation - AIOps**: Connect to your identity provider and specify who can access the platform. It includes links to Instana, EventManager, and Ansible Tower.
- Demo Apps**: Includes links to RobotShop, LDAP, and Ansible Tower.
- System Links**: Includes a link to Flink Task Manager - Ingestion.
- Connection status**: Shows 5 total data and tool connections found.

Action

Click the "hamburger menu" on the upper left. Click **Stories and alerts**

The screenshot shows the "Stories and alerts" page. At the top, there's a search bar and a filter section. Below that is a table with columns: Priority, Status, Description, Time open, User group, and Owner. One row is visible in the table:

Priority	Status	Description	Time open	User group	Owner
P1	Assigned	Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory Limits	1 day	All users	demo

Narration

We can see that the simulation has created a **Story**. The **Story** includes grouped information related to the incident at hand. It equates to a classic War Room that are usually put in place in case of an outage.

The **Story** contains related log anomalies, topology, similar incidents, recommended actions based on past trouble tickets, relevant events, runbooks, and more.

3.4.3 Examining the Story

The screenshot shows the IBM Cloud Pak | Automation interface. On the left, there's a sidebar with a "hamburger menu" icon. The main area has a dark background with a central circular graphic featuring two people and various icons. The "Stories and alerts" section is highlighted in the sidebar. Below it, there are several cards:

- Getting Started**: Welcome to the Arya Environment.
- IBM Automation - AIOps**: Connect to your identity provider and specify who can access the platform. Includes links to Instana, EventManager, and Ansible Tower.
- Demo Apps**: Includes links to RobotShop, LDAP, and Ansible Tower.
- System Links**: Includes a link to Flink Task Manager - Ingestion.
- Connection status**: Shows 5 total data and tool connections found.

Action

Click the "hamburger menu" on the upper left. Click **Stories and alerts**

The screenshot shows the "Stories and alerts" page. At the top, there's a search bar and a filter icon. Below it is a table with columns: Priority, Status, Description, Time open, User group, and Owner. One row is visible:

Priority	Status	Description	Time open	User group	Owner
P1	Assigned	Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory Limits	1 day	All users	demo

Narration

Now let's have a look at the **Story**.

The screenshot shows the IBM Cloud Pak | Automation Story interface for a new story titled "Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml".

- Probable cause alerts (1):** A list of alerts identified by Watson AIOPs as probable causes. One alert is highlighted with a red circle containing the number 1.
- Topology (2):** A network diagram showing the relationships between various services: mysql, ratings, mysql-8...6-jwde5, worker-1...177.175, and robotshop...latest. Arrows indicate data flow or dependencies between them.
- Runbooks (3):** A list of recommended runbooks to mitigate the identified alerts. One runbook is highlighted with a red circle containing the number 3.
- Similar past resolution tickets (4):** A list of similar incidents from the past. Two entries are shown: "Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory Limits" and "MySQL memory peak usage anomaly". Both are highlighted with red circles containing the number 4.
- Story settings (5):** A red speech bubble icon indicating 5 notifications. The settings show the story is Opened 1 day ago, assigned to "demo", and has a Priority of 1.

As I said before, the Story regroups all relevant information concerning the incident at hand that have been identified by Watson AIOPs.

1. A list of Alerts that have been identified by Watson AIOPs to be the most probable cause
2. The localization of the problem related to the Topology
3. The suggested Runbooks to automatically mitigate the incident
4. Similar Incidents that resemble the incident at hand
5. Status of the Story - here I can change the status and priority of the story

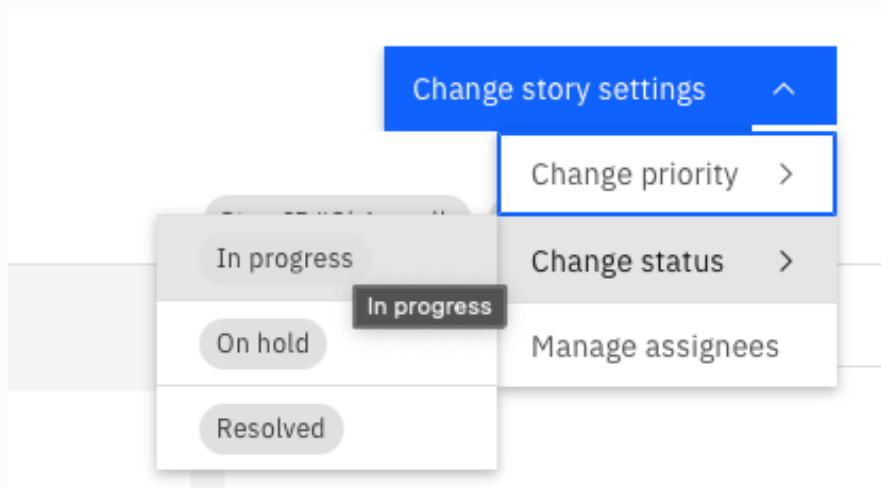
3.4.4 Acknowledge the Story

🚀 Action

Click on **Change Story Settings**.

Select **Change Status**.

Click on **In progress**



🔔 Narration

First and before I continue examining the Story I want to let my colleagues know that I'm working on the incident. So let me set it to In Progress.

3.4.5 Similar Incidents

Action

Click the first similar resolution ticket

The screenshot shows a ServiceNow incident detail page for ticket INC0099223. The top navigation bar includes Incident, INC0099223, Follow, Update, Resolve, and Delete. The main form fields include:

- Number: INC0099223
- * Caller: Carol Coughlin
- Category: Software
- Subcategory: -- None --
- Service: RobotShop
- Service offering:
- Configuration item: RobotShop
- * Short description: Ratings outage after GIT Commit
- Description: Ratings are not displayed anymore after a GIT Commit by DEV. Predictive Insights indicates an anomaly with MySQL memory peak usage. Could be memory leak or a code change in the GIT Commit?
- Contact type: -- None --
- State: Closed
- Impact: 1 - High
- Urgency: 1 - High
- Priority: 1 - Critical
- Assignment group: Software
- Assigned to: Niklaus Hirt

Below the form is a "Related Search Results" button. The Notes tab is selected, showing a "Work notes list" section with a single note:

Work notes

! Checked GIT Commit - a massive reduction in resource limits has been committed by DEV on the mysql Deployment
! Check with DEV to adapt GIT Commit

Additional comments (Customer visible) Post

Narration

Most large organizations use IT Service Management tools to govern processes around IT. Our organization is using ServiceNow for that purpose. Past incidents with resolution information are ingested and analysed by Watson AIOps.

The IBM Cloud Pak for Watson AIOps trains on existing tickets and it extracts the steps used to fix previous incidents (if documented) and recommend resolutions using natural language processing. This AI model helps you discover historical incidents to aid in the remediation of current problems.

So for the **Story**, your team is presented with the top-ranked similar incidents from the past. These relevant similar incidents help speed up incident resolution even if the I don't have access to ServiceNow. Without these features, your team must manually search for past incidents and resolutions, which is time-consuming.

In this particular example I can see that the problem was related to a GIT Commit that massively reduced the resource limits has been committed by DEV on the mysql Deployment.

Let me check how the problem was resolved for this incident.

! Note: In the Robot Shop demo scenario, the integration with ServiceNow is simulated with the static content.

Resolution Information

Action

Click on the **Resolution Information** Tab

The screenshot shows the ServiceNow Incident Detail page for incident INC0099223. The top navigation bar includes icons for back, forward, search, and various actions like Follow, Update, Resolve, and Delete. The main form fields include:

- Number:** INC0099223
- * Caller:** Carol Coughlin
- Category:** Software
- Subcategory:** -- None --
- Service:** RobotShop
- Service offering:** (empty)
- Configuration item:** RobotShop
- * Short description:** Ratings outage after GIT Commit
- Description:** Ratings are not displayed anymore after a GIT Commit by DEV. Predictive Insights indicates an anomaly with MySQL memory peak usage. Could be memory leak or a code change in the GIT Commit?
- Contact type:** -- None --
- State:** Closed
- Impact:** 1 - High
- Urgency:** 1 - High
- Priority:** 1 - Critical
- Assignment group:** Software
- Assigned to:** Niklaus Hirt

The **Resolution Information** tab is selected, showing:

- Knowledge:**
- Resolution code:** Solved (Work Around)
- Resolution notes:**
 - Cause:** GIT Commit set the MySQL Deployment Limits too low
 - MySQL Pod is restarting/killed with OutOfMemory status.
 - Ratings Pod is unable to access database.
 - After correction, ratings Pod is unable to pick up the restart and has to be restarted as well.
 - Resolved by:** System Administrator
 - Resolved:** 2021-05-22 04:24:38
 - Runbook:** Increase resource limits for mysql Deployment - check with DEV to correct GIT Commit
oc delete pod -n robot-shop \$(oc get po -n robot-shop|grep ratings|awk '{print\$1}')

At the bottom are buttons for **Update**, **Resolve**, and **Delete**. Below the main form is a section for **Related Links** with links to **Show SLA Timeline** and **Repair SLAs**.

Narration

It seems that it was resolved by changing the mysql deployment and a Runbook had been created to mitigate the problem.

To finish up, I will check if the incident was related to an official change.

Examine the Change

Incident INC0099223

Number	INC0099223	Contact type	None
* Caller	Carol Coughlin	State	Closed
Category	Software	Impact	1 - High
Subcategory	None	Urgency	1 - High
Service	RobotShop	Priority	1 - Critical
Service offering		Assignment group	Software
Configuration item	RobotShop	Assigned to	Niklaus Hirt
* Short description	Ratings outage after GIT Commit		
Description	Ratings are not displayed anymore after a GIT Commit by DEV. Predictive Insights indicates an anomaly with MySQL memory peak usage. Could be memory leak or a code change in the GIT Commit?		
Related Search Results >			
Notes	Related Records	Resolution Information	
Parent Incident		Change Request	
Problem		Caused by Change	CHG0030991
Update	Resolve	Delete	



Click on the Related Records Tab

Click on the i Button next to Caused by Change

Change Request CHG0030991

New	Assess	Authorize	Scheduled	Implement	Review	Closed	Canceled
Number	CHG0030991	Type	Normal				
Requested by	Abel Tuter	State	Implement				
Category	Applications Software	Conflict status	Not Run				
Service	RobotShop	Conflict last run					
Service offering		Assignment group	Software				
Configuration item		Assigned to	Demo User				
Priority	2 - High						
Risk	Moderate						
Impact	2 - Medium						
Short description	Reduce Footprint for MySQL Service in RobotShop Backend						
Description	Reduce Footprint for MySQL Service in RobotShop Backend - https://github.com/pirsoscom/robot-shop						
Planning	Schedule	Conflicts	Notes	Closure information			
Justification	Overall Application Memory Footprint is too big						
Implementation plan	Modify YAML						
Risk and impact analysis	Should be minimal						

Narration

Ok, so now I can see that the problem is related to a Change that aims to reduce the footprint of the mysql database.

As it's still ongoing, chances are high, that the development team recreated a similar problem.

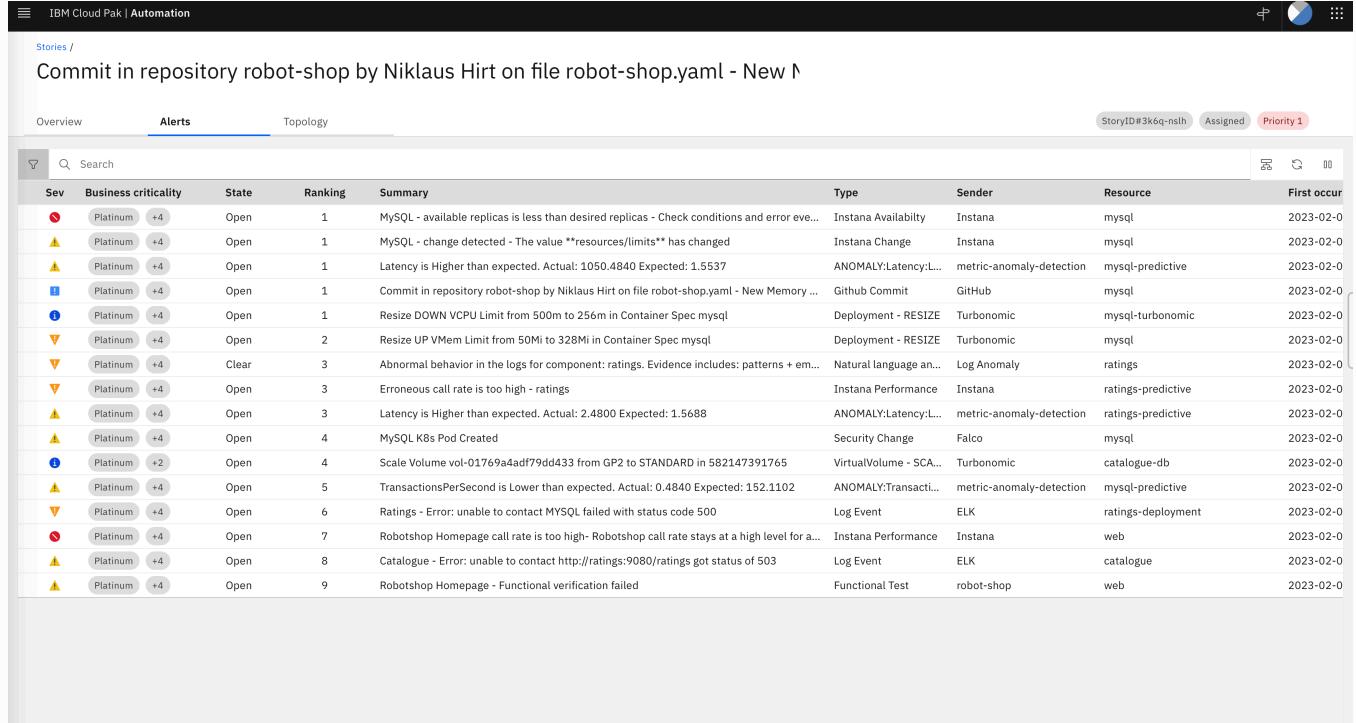
Obviously, in real life I would now start the Runbook to see if it resolves the problem.

But for the sake of the demo, let's dig a little deeper first.

3.4.6 Examine the Alerts

Action

Close the ServiceNow page and click the **Alerts** Tab.



Sev	Business criticality	State	Ranking	Summary	Type	Sender	Resource	First occur
🔴	Platinum +4	Open	1	MySQL - available replicas is less than desired replicas - Check conditions and error eve...	Instana Availability	Instana	mysql	2023-02-0
⚠️	Platinum +4	Open	1	MySQL - change detected - The value **resources/limits** has changed	Instana Change	Instana	mysql	2023-02-0
⚠️	Platinum +4	Open	1	Latency is Higher than expected. Actual: 1050.4840 Expected: 1.5537	ANOMALY:Latency:L...	metric-anomaly-detection	mysql-predictive	2023-02-0
ℹ️	Platinum +4	Open	1	Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory ...	Github Commit	GitHub	mysql	2023-02-0
ℹ️	Platinum +4	Open	1	Resize DOWN VCPU Limit from 500m to 256m in Container Spec mysql	Deployment - RESIZE	Turbonomic	mysql-turbonomic	2023-02-0
⚠️	Platinum +4	Open	2	Resize UP VMem Limit from 50Mi to 328Mi in Container Spec mysql	Deployment - RESIZE	Turbonomic	mysql	2023-02-0
⚠️	Platinum +4	Clear	3	Abnormal behavior in the logs for component: ratings. Evidence includes: patterns + em...	Natural language an...	Log Anomaly	ratings	2023-02-0
⚠️	Platinum +4	Open	3	Erroneous call rate is too high - ratings	Instana Performance	Instana	ratings-predictive	2023-02-0
⚠️	Platinum +4	Open	3	Latency is Higher than expected. Actual: 2.4800 Expected: 1.5688	ANOMALY:Latency:L...	metric-anomaly-detection	ratings-predictive	2023-02-0
⚠️	Platinum +4	Open	4	MySQL K8s Pod Created	Security Change	Falco	mysql	2023-02-0
ℹ️	Platinum +2	Open	4	Scale Volume vol-01769a4adf79dd433 from GP2 to STANDARD in 582147391765	VirtualVolume - SCA...	Turbonomic	catalogue-db	2023-02-0
⚠️	Platinum +4	Open	5	TransactionsPerSecond is Lower than expected. Actual: 0.4840 Expected: 152.1102	ANOMALY:Transacti...	metric-anomaly-detection	mysql-predictive	2023-02-0
⚠️	Platinum +4	Open	6	Ratings - Error: unable to contact MYSQL failed with status code 500	Log Event	ELK	ratings-deployment	2023-02-0
🔴	Platinum +4	Open	7	Robotshop Homepage call rate is too high- Robotshop call rate stays at a high level for a...	Instana Performance	Instana	web	2023-02-0
⚠️	Platinum +4	Open	8	Catalogue - Error: unable to contact http://ratings:9080/ratings got status of 503	Log Event	ELK	catalogue	2023-02-0
⚠️	Platinum +4	Open	9	Robotshop Homepage - Functional verification failed	Functional Test	robot-shop	web	2023-02-0

Narration

Notice, that alerts are not sorted by severity, but the AI engine ranked them by relevance. The ones that are likely related to the root cause are at the top. Let's look at the first row for some more details.

Action

Click on the first Alert in the list.

Narration

In the **Alert details**, you can see different types of groupings explaining why the specific alert was added to the story.

Scope based grouping



Click **Scope-based grouping**.

The screenshot shows a sidebar with several tabs: Information, Runbook, Topology, Temporal correlation, Scope-based grouping (which is highlighted with a blue border), and Topological grouping. Below the tabs, there is a descriptive text: "These alerts were found to share a cause as they all occurred within the same scope and period of time. The scope defines the properties that alerts must share in order to be grouped. It can be set in a scope-based grouping policy or by the scope-based grouping AI algorithms." The "Topological grouping" tab is also visible at the bottom.



Some alerts were added to the story because they occurred on the same resource within a short period (default is 15 minutes)

Topological grouping



Click **Topological grouping**.

The screenshot shows a sidebar with tabs: Information, Runbook, Topology, Temporal correlation, Scope-based grouping, and Topological grouping (which is highlighted with a blue border). Below the tabs, there is a "Resource group name" field containing "robot-shop". Underneath it is a network graph with various nodes represented by circles and squares, connected by lines, illustrating the topology of the resources.

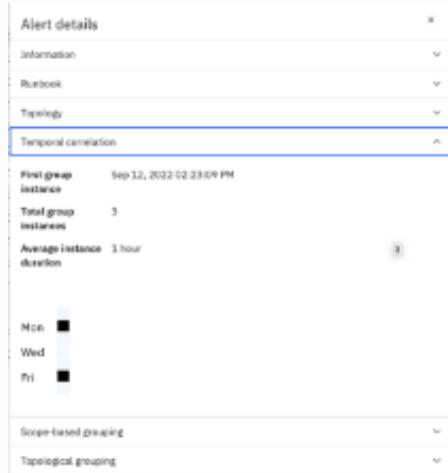


Other alerts were grouped because they occurred on the logically or physically related resources. This correlation is using the application topology service that stitches topology information from different sources.

Temporal grouping

Action

Click **Temporal correlation**.



The screenshot shows the 'Alert details' window with the 'Temporal correlation' tab selected. The window displays the following information:

First group instance	Sep 12, 2022 02:33:09 PM
Total group instances	3
Average instance duration	3 hour

Below this, there is a section for days of the week, with checkboxes for Mon, Wed, and Fri, all of which are checked.

At the bottom of the window, there are two collapsed sections: 'Scope-based grouping' and 'Topological grouping'.

Narration

Finally, the temporal correlation adds to the story events that previously, in history, are known to occur close to each other in the short time window. What is most important here is the fact that all these correlations happen automatically – there is no need to define any rules or program anything. In highly dynamic and distributed cloud-native applications this is a huge advantage that saves a lot of time and effort.

Action

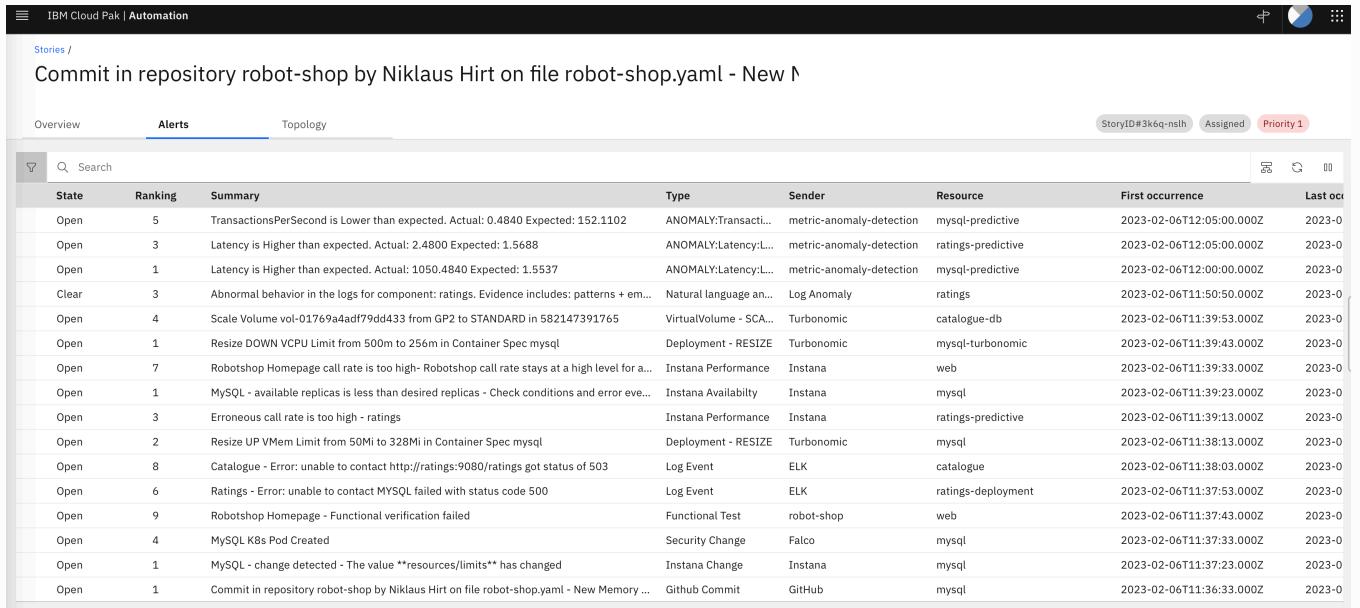
Close the Alert details window.

3.4.7 Understand the Incident

Action

Click twice on the **Last occurrence** Header.

Result: The "Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml" should be at the bottom



The screenshot shows the IBM Cloud Pak | Automation interface with the 'Alerts' tab selected. The page title is 'Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New'. The table has columns: State, Ranking, Summary, Type, Sender, Resource, First occurrence, and Last occurrence. The 'Last occurrence' column is highlighted with a blue border. The table lists various alerts, including MySQL anomalies, log anomalies, and functional test failures, with the most recent alert at the top.

State	Ranking	Summary	Type	Sender	Resource	First occurrence	Last occurrence
Open	5	TransactionsPerSecond is Lower than expected. Actual: 0.4840 Expected: 152.1102	ANOMALY:Transacti...	metric-anomaly-detection	mysql-predictive	2023-02-06T12:05:00.000Z	2023-0
Open	3	Latency is Higher than expected. Actual: 2.4800 Expected: 1.5688	ANOMALY:Latency:L...	metric-anomaly-detection	ratings-predictive	2023-02-06T12:05:00.000Z	2023-0
Open	1	Latency is Higher than expected. Actual: 1050.4840 Expected: 1.5537	ANOMALY:Latency:L...	metric-anomaly-detection	mysql-predictive	2023-02-06T12:00:00.000Z	2023-0
Clear	3	Abnormal behavior in the logs for component: ratings. Evidence includes: patterns + em...	Natural language an...	Log Anomaly	ratings	2023-02-06T11:50:50.000Z	2023-0
Open	4	Scale Volume vol-01769a4ad79dd433 from GP2 to STANDARD in 82147391765	VirtualVolume - SCA...	Turbonomic	catalogue-db	2023-02-06T11:39:53.000Z	2023-0
Open	1	Resize DOWN VCPU Limit from 500m to 256m in Container Spec mysql	Deployment - RESIZE	Turbonomic	mysql-turbonomic	2023-02-06T11:39:43.000Z	2023-0
Open	7	Robotshop Homepage call rate is too high- Robotshop call rate stays at a high level for a...	Instana Performance	Instana	web	2023-02-06T11:39:33.000Z	2023-0
Open	1	MySQL - available replicas is less than desired replicas - Check conditions and error eve...	Instana Availability	Instana	mysql	2023-02-06T11:39:23.000Z	2023-0
Open	3	Erroneous call rate is too high - ratings	Instana Performance	Instana	ratings-predictive	2023-02-06T11:39:13.000Z	2023-0
Open	2	Resize UP VMem Limit from 50Mi to 328Mi in Container Spec mysql	Deployment - RESIZE	Turbonomic	mysql	2023-02-06T11:38:13.000Z	2023-0
Open	8	Catalogue - Error: unable to contact http://ratings:9080/ratings got status of 503	Log Event	ELK	catalogue	2023-02-06T11:38:03.000Z	2023-0
Open	6	Ratings - Error: unable to contact MYSQL failed with status code 500	Log Event	ELK	ratings-deployment	2023-02-06T11:37:53.000Z	2023-0
Open	9	Robotshop Homepage - Functional verification failed	Functional Test	robot-shop	web	2023-02-06T11:37:43.000Z	2023-0
Open	4	MySQL K8s Pod Created	Security Change	Falco	mysql	2023-02-06T11:37:33.000Z	2023-0
Open	1	MySQL - change detected - The value **resources/limits** has changed	Instana Change	Instana	mysql	2023-02-06T11:37:23.000Z	2023-0
Open	1	Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory ...	Github Commit	GitHub	mysql	2023-02-06T11:36:33.000Z	2023-0

Narration

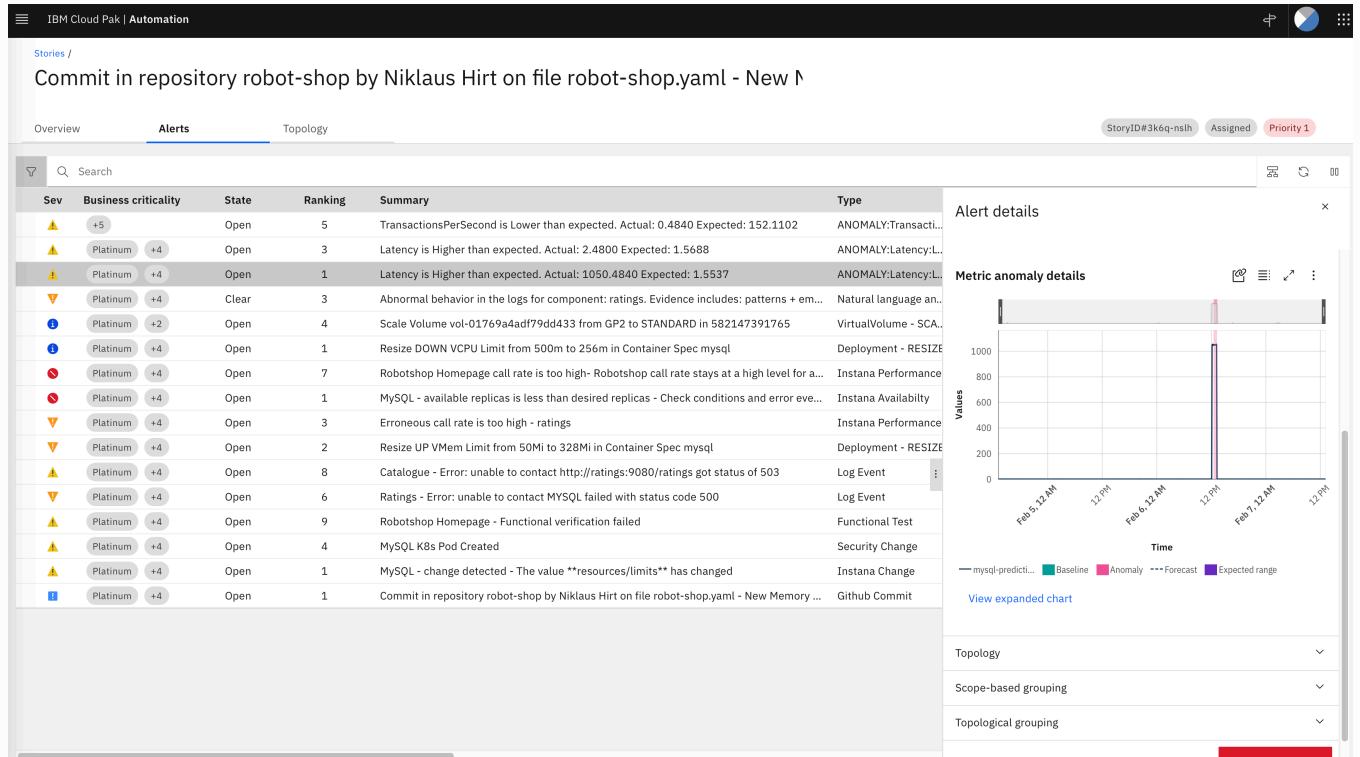
When trying to understand what happened during the incident, I sort the Alerts by occurrence. This allows you to understand the chain of events.

- I can see that the first event was a code change that had been committed to **GitHub**. When I hover over the description I get the full text.
So it seems that the Development Team has reduced the available memory for the mysql database.

Other events are confirming the hypothesis.

- I can then see the CI/CD process kick in and deploys the code change to the system detected by the Security tool and
- Instana** has detected the memory size change.
- Then **Functional Selenium Tests** start failing and
- Turbonomic** tries to scale-up the mysql database.
- Instana** tells me that the mysql Pod is not running anymore, the replicas are not matching the desired state.

- Cloud Pak for Watson AIOps has learned the normal, good patterns for logs coming from the applications. The Story contains a **Log Anomaly** that has been detected in the ratings service that cannot access the mysql database.



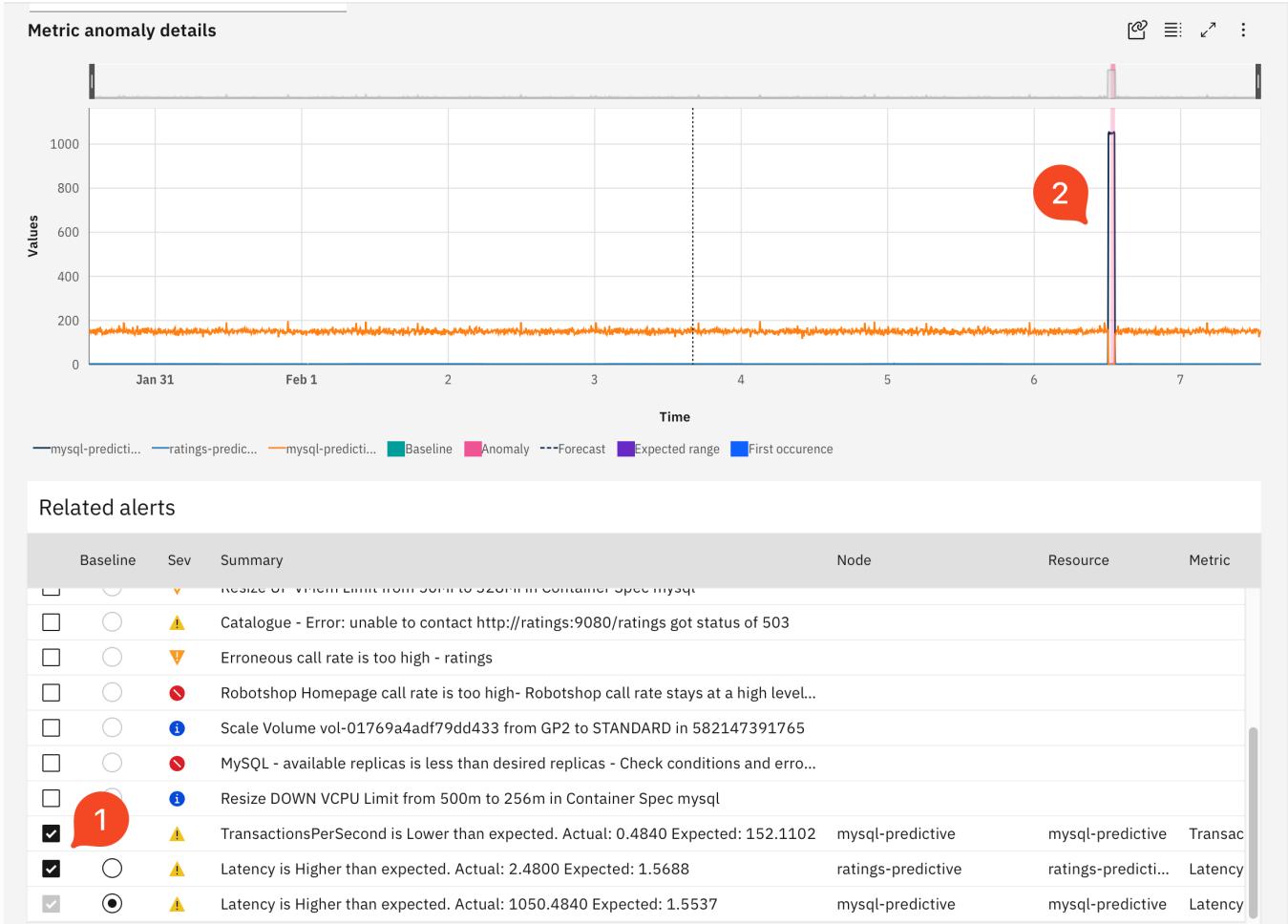
Action

Click on a Alert line that has **ANOMALY:** in the Type column. Then open the **Metric Anomaly Details** accordion.

Narration

- Cloud Pak for Watson AIOps is also capable of collecting metrics from multiple sources and detecting **Metric Anomalies**. It was trained on hundreds or thousands of metrics from the environment and constructs a dynamic baseline (shown in green). The graphic suddenly turns red which relates to detected anomaly when the database is consuming a higher amount of memory than usual.

Metric anomaly details



Action

(1) In **Related Alerts** select some additional alerts.

Narration

You can display several alerts at the same time to better understand the temporal dependencies

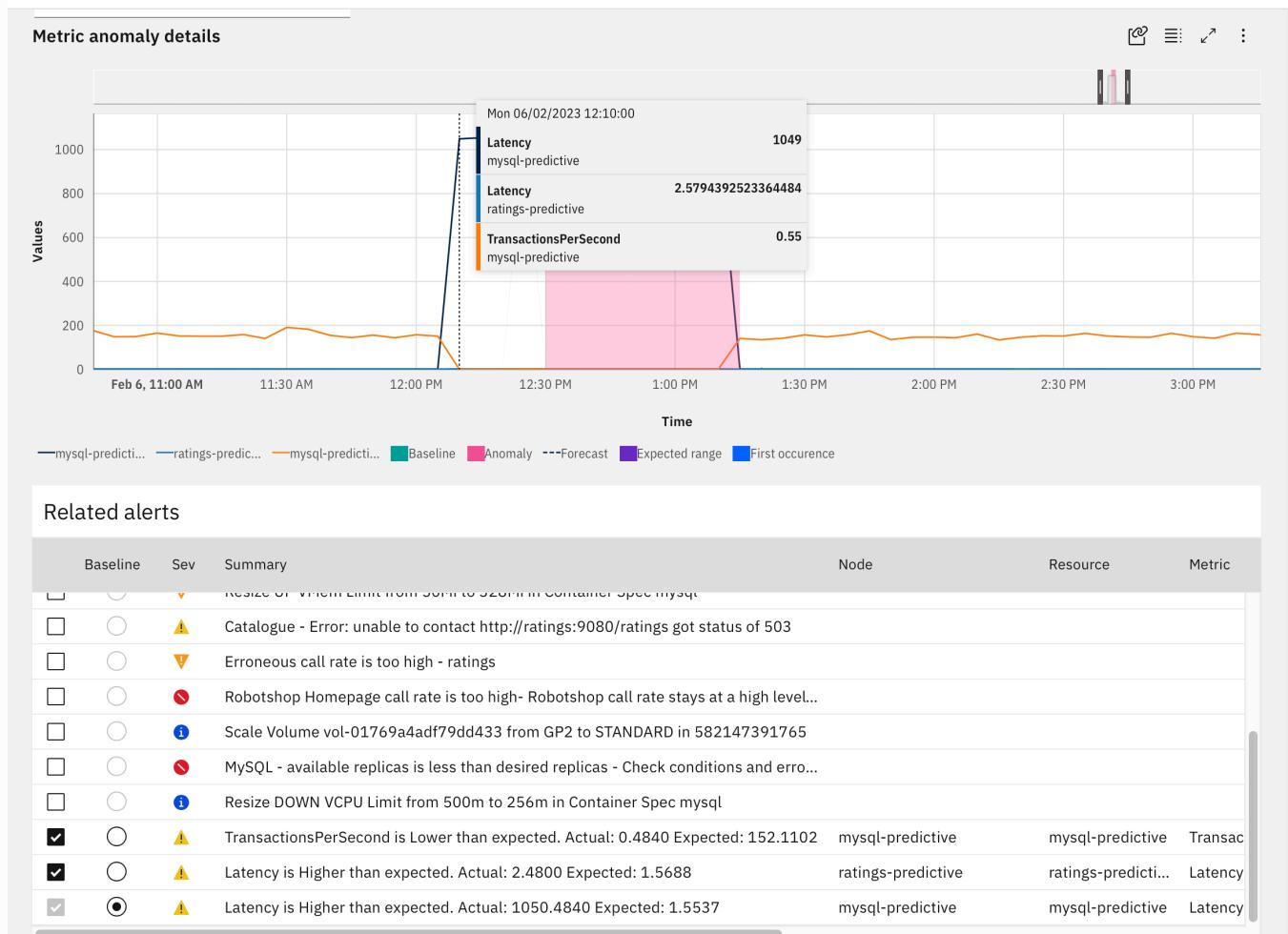
Action

(2) Select a portion of the graph with your mouse to zoom in

Narration

Now let's zoom in to better see the anomalies

Metric anomaly details



Action

Hover over a datapoint to show the before/after values.

Narration

I can clearly see that the incident caused the **Latencies** to skyrocket and the **Transactions per Seconds** are almost zero. This is yet another confirmation of the source of the problem.

Action

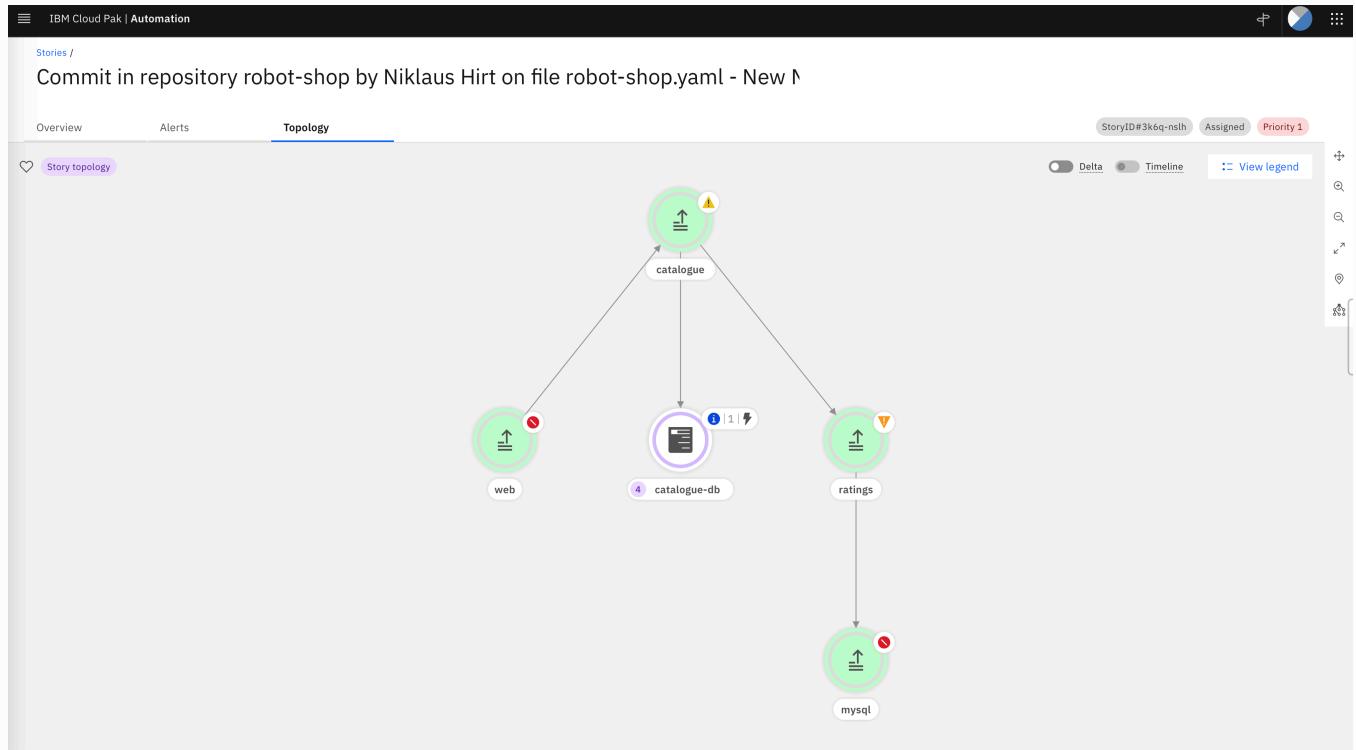
Close the Metric anomaly details view.

3.4.8 Examining the Topology

Action

Click the **Topology** Tab.

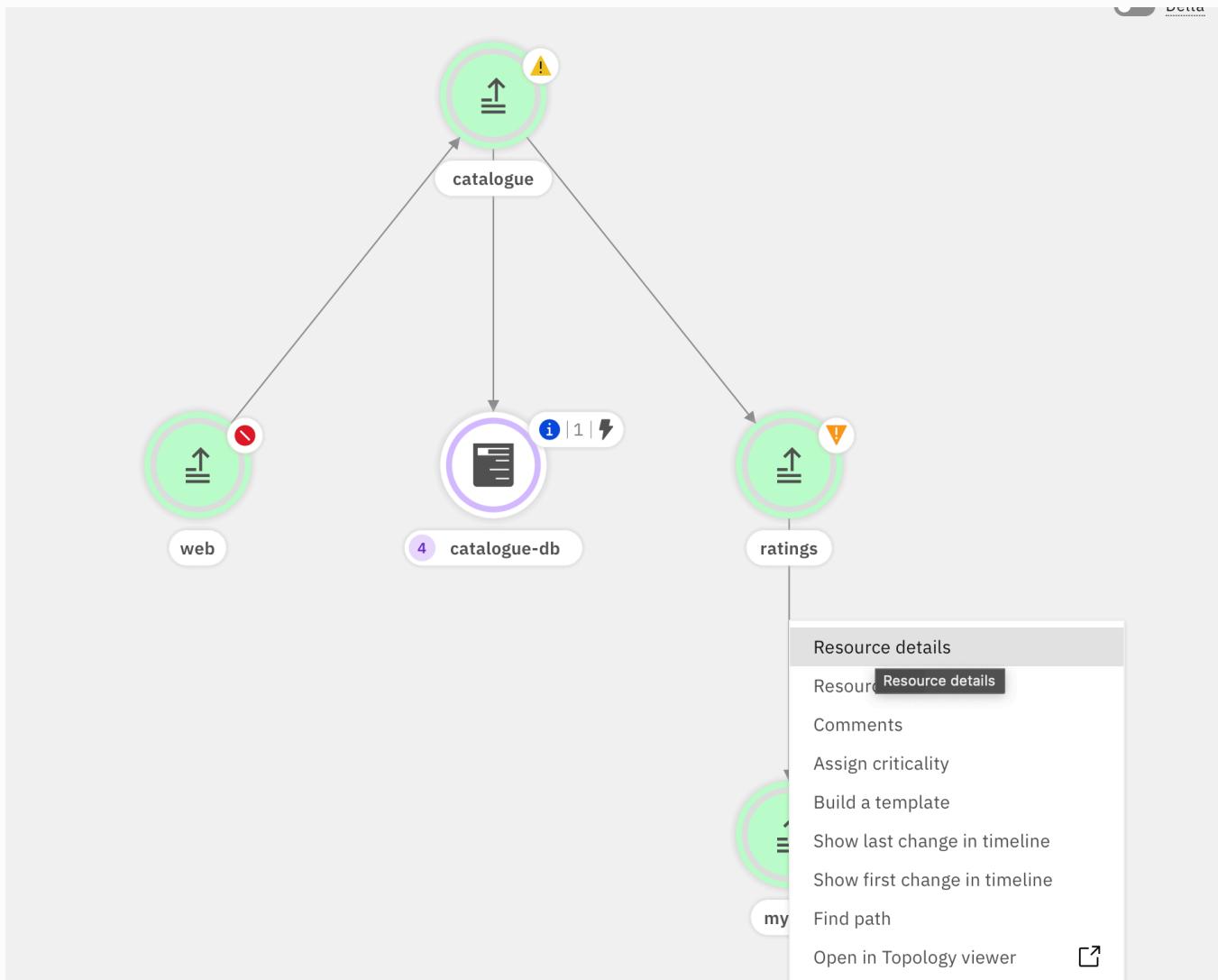
Result: The topology is displayed.



Narration

The interface shows the **topology** of the application that is relevant to the incident. IBM Cloud Pak for Watson AIOps' topology service delivers a working understanding of the resources that you have in your environment, how the resources relate to each other, and how the environment has changed over time.

You can see that there are some statuses attached to the different resources, marked with colorful dots. Let's view the details and status of the **mysql** resource with red status.



Action

Find the resource which displays resource name “mysql”. Then, right-click and select **Resource details**.

Result: Detailed view displays.

Action

Click on Tab **Alerts**

Result: Detailed view of the Alerts specific for this resource.

Resource details

The screenshot shows the 'Alerts' tab of the 'Resource details' interface for a 'mysql' resource. The resource is categorized as 'Platinum'. The 'Alerts' tab is selected, showing a list of recent events:

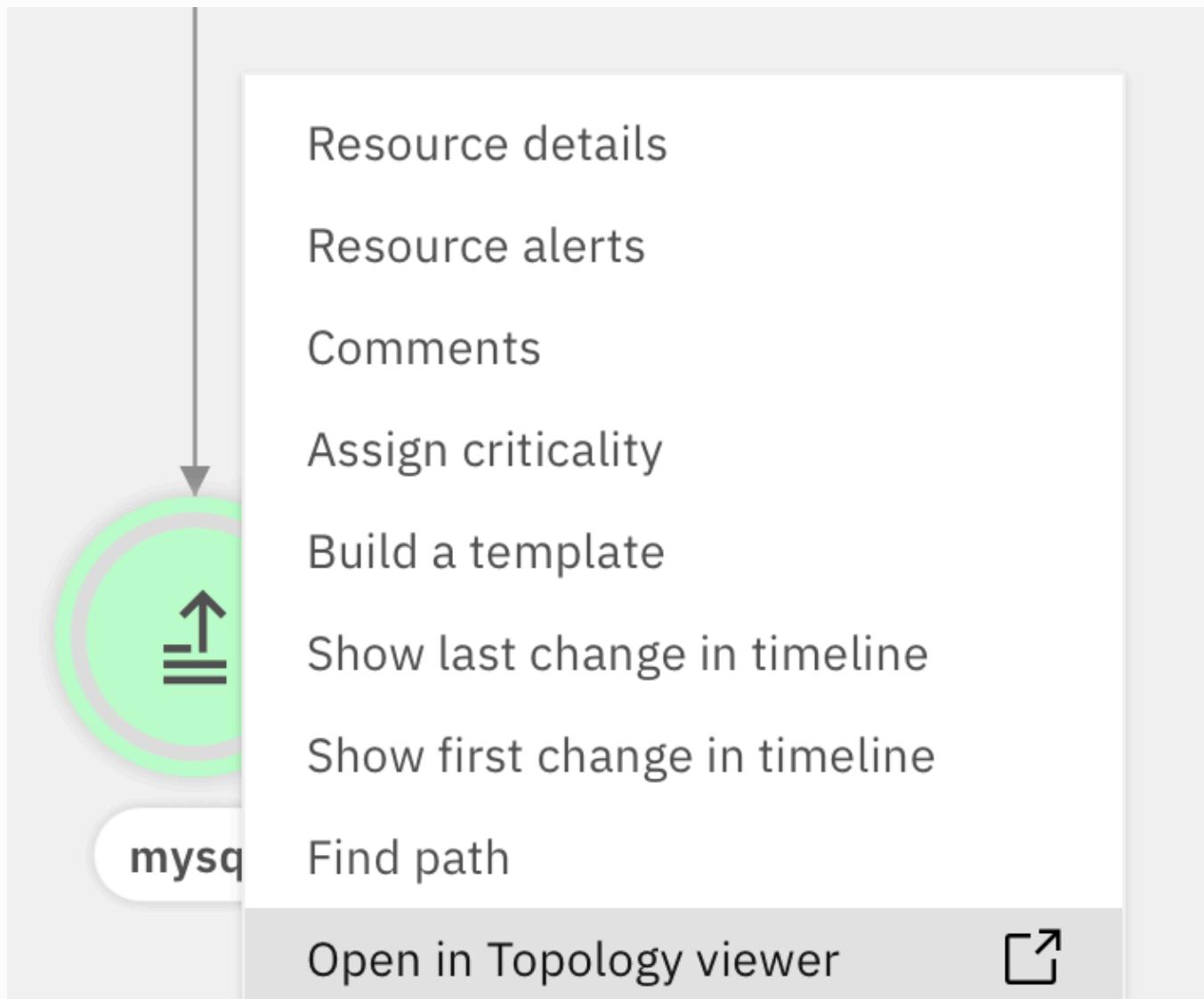
Summary	Severity	Last change
TransactionsPerSecond is Lower than expected. Actual: 0.4840 Expected: 152.1102	⚠ Minor	06/02/2023, 13:10:00
Latency is Higher than expected. Actual: 1050.4840 Expected: 1.5537	⚠ Minor	06/02/2023, 13:10:00
Resize DOWN VCPU Limit from 500m to 256m in Container Spec mysql	ℹ Information	06/02/2023, 12:39:52
MySQL - available replicas is less than desired replicas - Check conditions and error events	🔴 Critical	06/02/2023, 12:39:32
Resize UP VMem Limit from 50Mi to 328Mi in Container Spec mysql	⚠ Major	06/02/2023, 12:39:12
MySQL K8s Pod Created	⚠ Minor	06/02/2023, 12:37:42
MySQL - change detected - The value **resources/limits** has changed	⚠ Minor	06/02/2023, 12:37:32
Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory Limits	⚠ Warning	06/02/2023, 12:37:22

At the top right, there is a 'Show active only' toggle switch.

Narration

The topology service provides operations teams with complete up-to-date visibility over dynamic infrastructure, resources, and services. The topology service lets you query a specific resource for details, and other relevant information. Here I can see all Alerts for the mysql database resource for example.

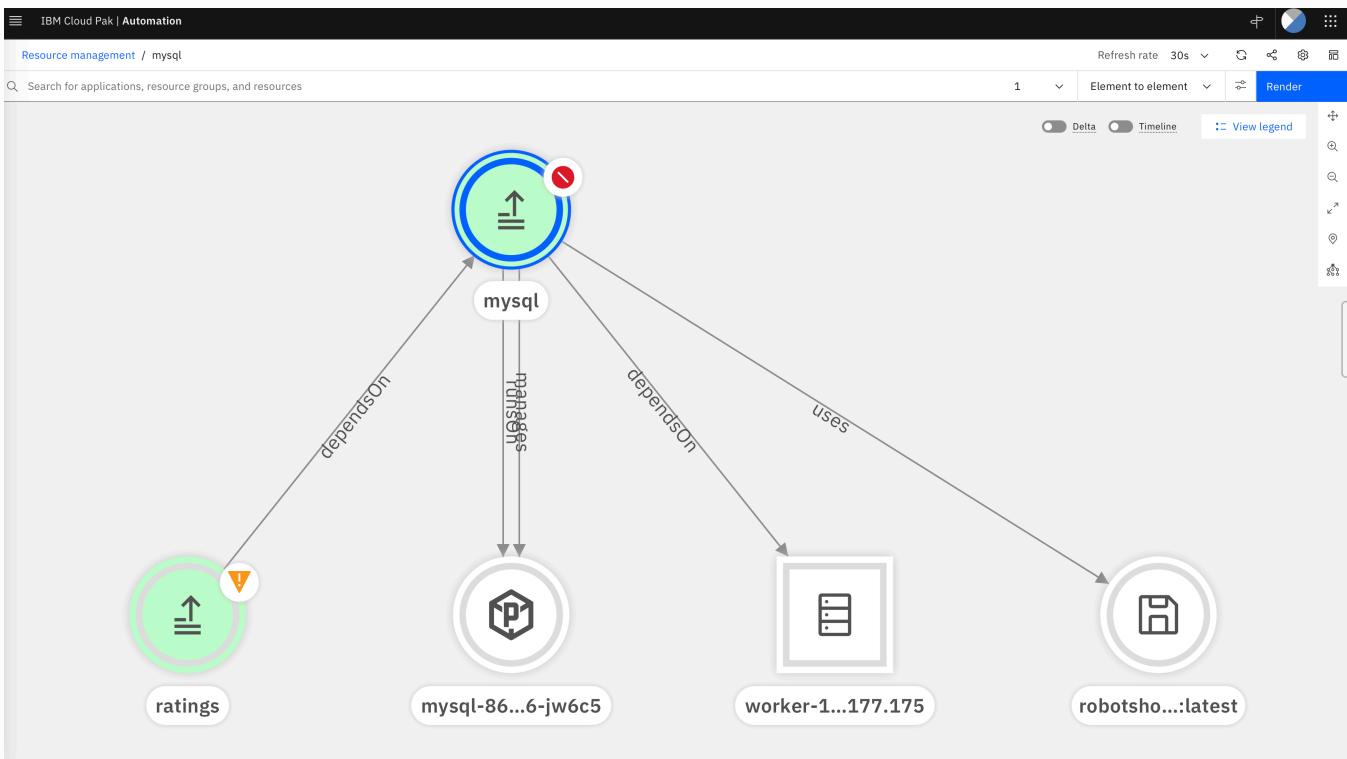
3.4.9 (Optional) Topology in-depth



Action

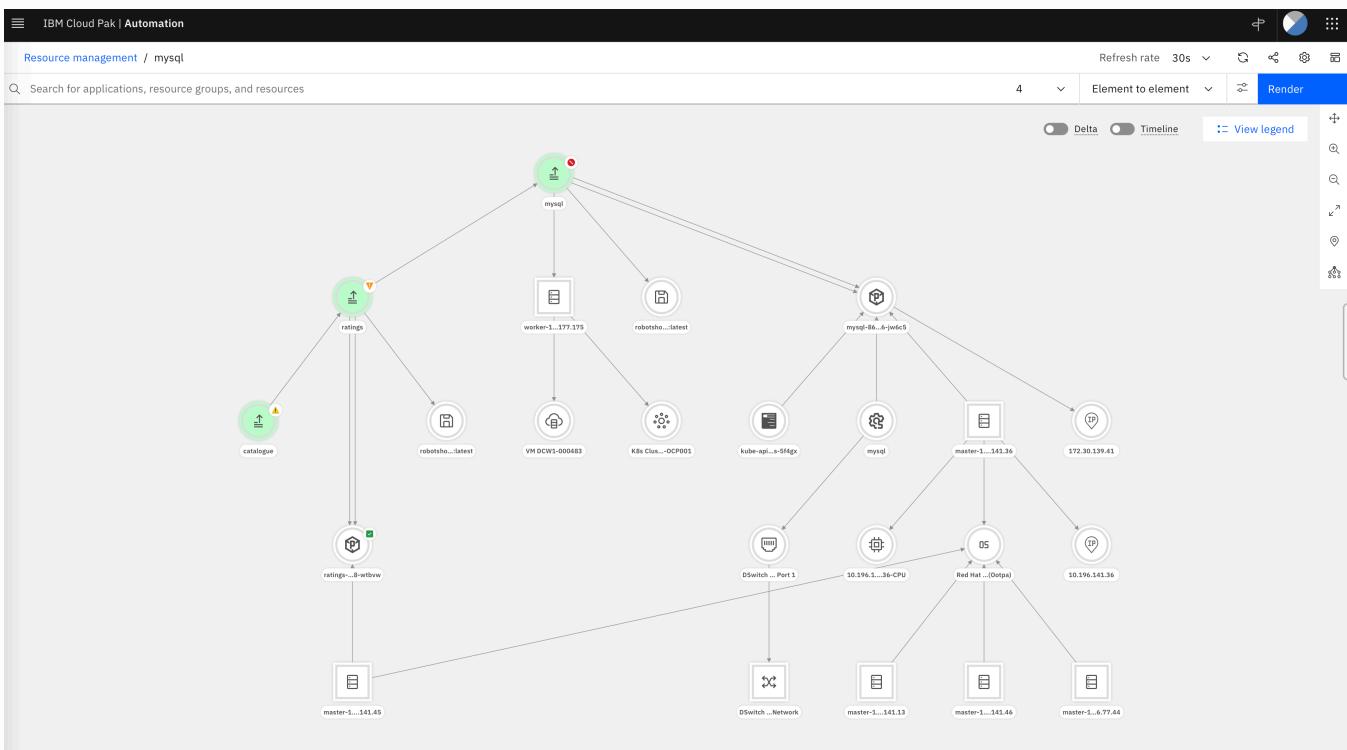
Find the resource which displays resource name "mysql". Then, right-click and select **Open in Topology Viewer**.

Result: Topology Viewer displays.



📣 Narration

The interface shows the topology surrounding the mysql resource. I can see that the **mysql** deployment is being called by the **ratings** service and that it runs on a certain worker node.



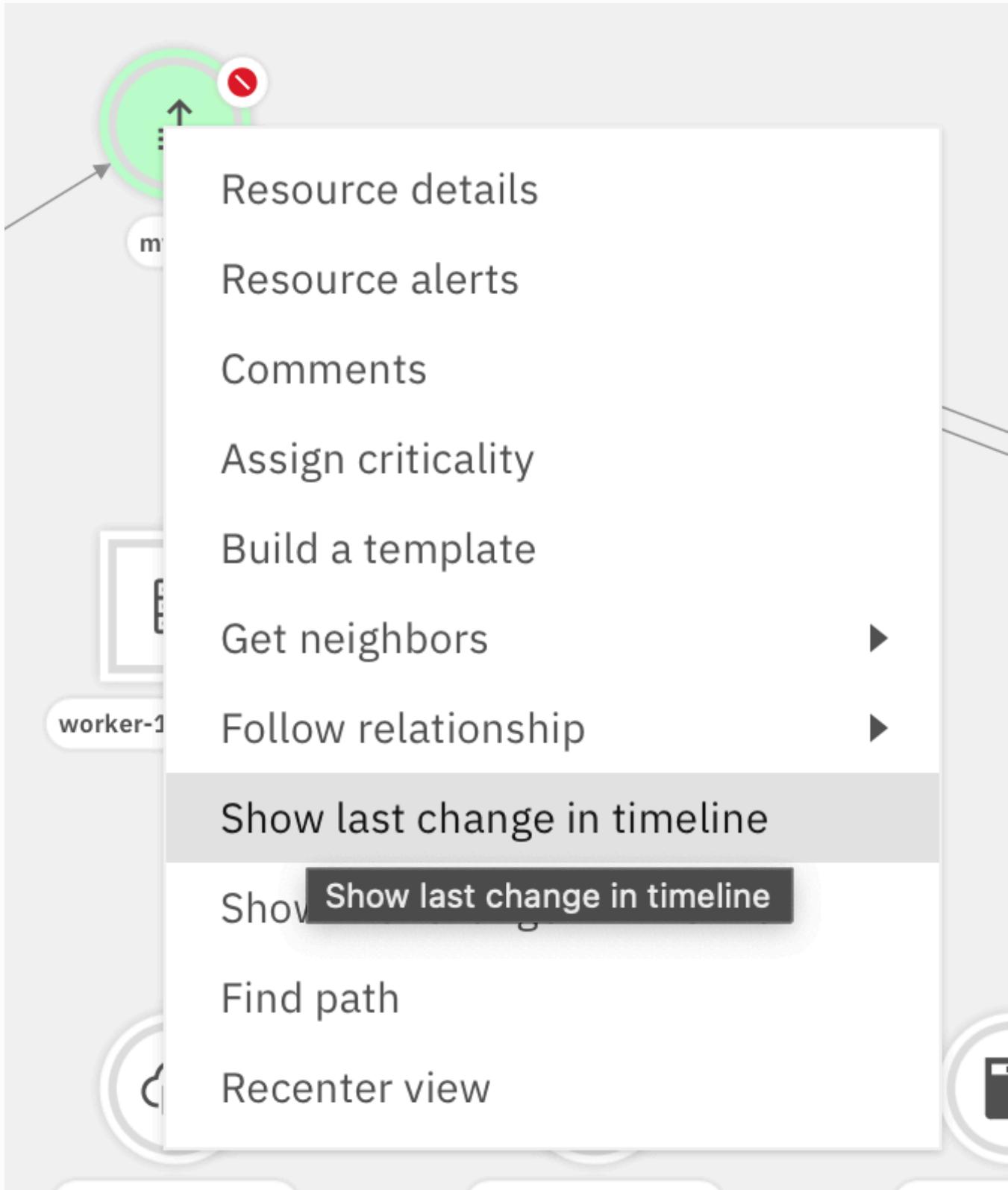
 **Action**

Change the number of hops to and click **Render**.**

Result: Topology Viewer refreshes with bigger topology.

 **Narration**

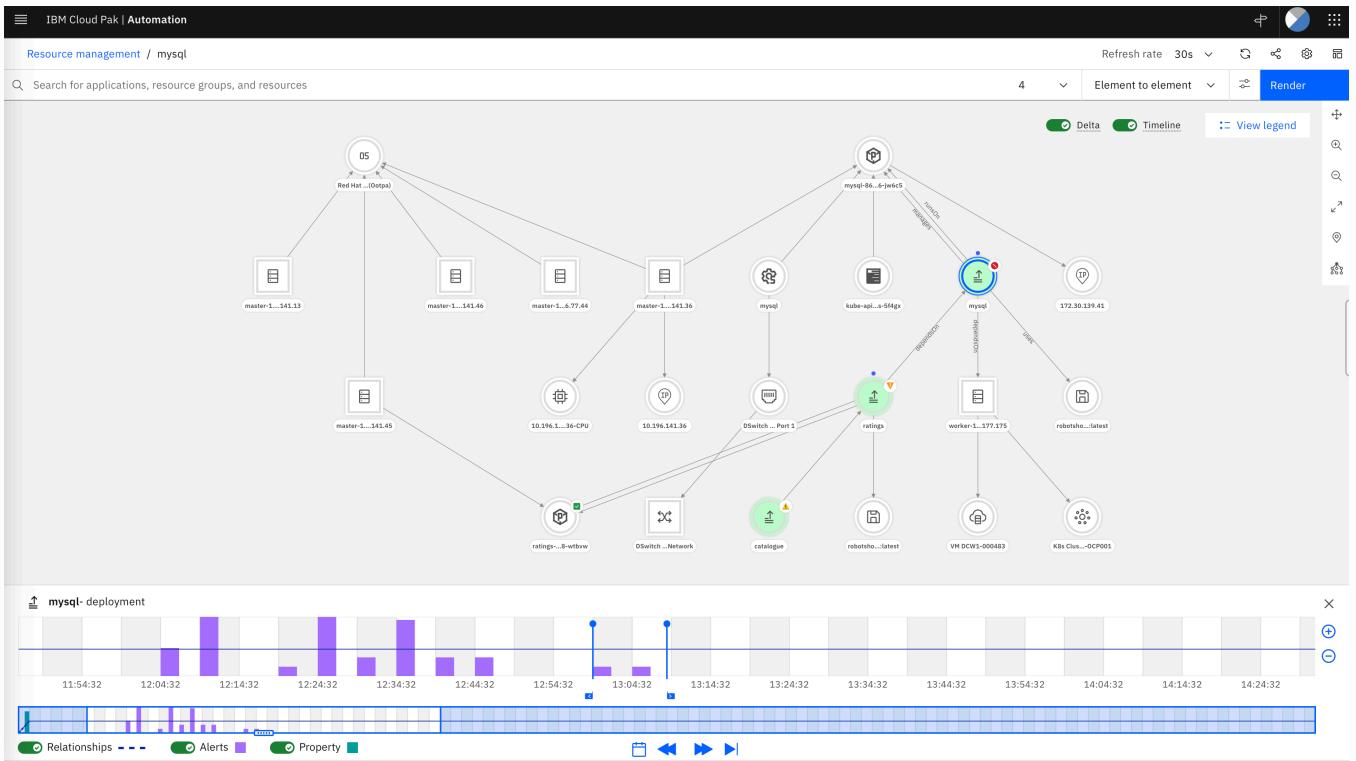
I can also increase the size of the graph, still based on the **mysql** deployment.



Action

Right-click on mysql and select **Show last change in timeline** and check **Delta**

Result: Topology Viewer refreshes and shows the events over time.



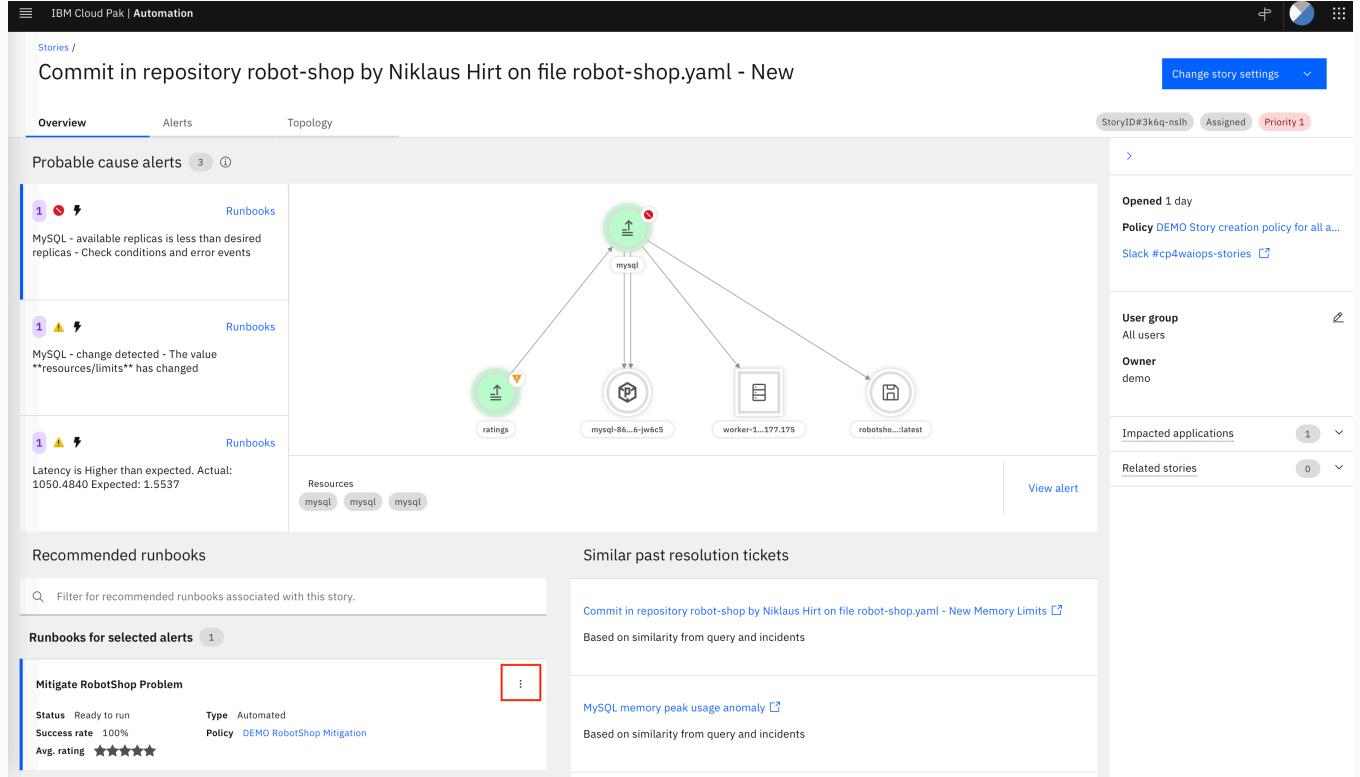
Narration

Now I will examine the historical events for the **mysql** component. I can see the **Alerts** that have been raised on the **mysql** resource over time.

3.4.10 Fixing the problem with runbook automation

Action

Click on the **Overview** Tab.



The screenshot shows the IBM Cloud Pak for Watson AIOps interface. In the top navigation bar, 'IBM Cloud Pak | Automation' is selected. Below it, the 'Stories /' path is shown, followed by 'Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New'. On the right, there are buttons for 'Change story settings', 'StoryID#3k6q-nshh', 'Assigned', and 'Priority 1'. The main content area has tabs for 'Overview' (which is selected), 'Alerts', and 'Topology'. The 'Probable cause alerts' section contains three entries under the 'Runbooks' category: 'MySQL - available replicas is less than desired replicas - Check conditions and error events', 'MySQL - change detected - The value **resources/limits** has changed', and 'Latency is Higher than expected. Actual: 1050.4840 Expected: 1.5537'. To the right of these is a 'Topology' diagram showing nodes like 'mysql', 'ratings', 'mysql-86...-6-jw6c5', 'worker-1...:177.175', and 'robotshop:latest' connected by arrows. Below the alerts is a 'Resources' section with three 'mysql' tags. The 'Recommended runbooks' section features a 'Mitigate RobotShop Problem' runbook with a status of 'Ready to run', success rate of '100%', and an average rating of '★★★★★'. The 'Similar past resolution tickets' section lists two items: 'Commit in repository robot-shop by Niklaus Hirt on file robot-shop.yaml - New Memory Limits' and 'MySQL memory peak usage anomaly', both based on similarity from query and incidents.

Narration

Now that we know what the problem is, let's correct what has happened. A runbook has been automatically identified but have not been executed. Runbooks are guided steps that IT operations teams use to troubleshoot and resolve problems. Some organizations might call these standard operating procedures or playbooks. When an incident occurs, IBM Cloud Pak for Watson AIOps matches an appropriate runbook to the problem. The runbook can be set to run automatically when it is matched to an incident, or it can run with user approval and participation.

Let's execute the Runbook.

Action

Click on the three dots and click **Run**

Click **Start Runbook**.

Run runbook

Mitigate RobotShop Problem (Version 1)

Step 1

Automated step

CP4WAIOPS Mitigate Robotshop Ratings Outage

[More info](#) [Run](#)

Provide feedback

Rate this runbook

☆☆☆☆☆

Help improve this runbook with your feedback [X](#)

Action

Click **Run** in Step 1.

Step 1

Automated step

CP4WAIOPS Mitigate Robotshop Ratings Outage

```
[WARNING]: provided hosts list is empty, only localhost is available. Note that the implicit localhost does not match 'all'  
PLAY [localhost] ****  
TASK [Gathering Facts] ****
```

Run time: 00:00:09
Started: 08/02/2023, 10:09:30
Status: In progress

[Complete](#)

! Note: The execution of the runbook can take few minutes.

Narration

The Runbook that I just started kicks off a Playbook on Ansible Tower. I can follow the execution as it connects to the cluster and then scales up memory for the MySQL deployment.

 Step 1

Automated step

CP4WAIOPS Mitigate Robotshop Ratings Outage

```
hY2NvdW50Iiwi3ViZXJuZXRLcy5pbv9zZKJ2aWN1YWNNjb3VudC9uW1lc3BhY2U1oiJKZWZhdWx0Iiwi3ViZXJuZXRLcy5pbv9zZKJ2aWN1YWNNjb3VudC9zZwNyZXQubmFtZSi6ImRlbW8tYWRtaW4tdG9iZW4ta2i5dDciLC1rdWJlcm51dGVzLmlvL3NlcnZpY2VhY2NvdW50L3NlenZpY2UtYWNNjb3VudC5uYW1ljoizGVtby1hZG1pbii5Imt1YmVybmv0ZXMua8vc2VydmljZWfjY291bnQvc2VydmljZSihtY2NvdW50LnVpZC16ImJhY23NWYwLTQwZmEtNDIzzii1MTRkLWRkMWE4ZDiyMmI22iIsInN1Yi16InNSc3R1bTpzZXJ2aWN1YWNNjb3VudDokZWZhdwx0OmRlbW8tYWRtaW4if0.AcE69qinkk6Z9mR5dvZ3AhRCg-cyl-grjTwa_6SV_zNgaYYUMZ8eIp5U08Yv0LXjsuZWTuU20GsxRDxh8cWuNbni9j0BKa-ek_Sz4n8W7BdCe0Zgy74Tisf_B2c5iRDI5BnRcq502JbAJGOEfhwPP3Y0fe4xb9hX4XvkkCKoVilRmY1iR1RkGo4tbRi-zlagf0tq18G08JVBu_IYtGg017uvJggXEn2gUpS#crejHwzjivejsib0sXYcekTdK6YvGOPe6HDqaJUVzMZMvgldihe51bwErRecI-0isYc16YCrE52av9s7ZqmIbAaZrYGB7a0Gg2BuwR61P2mQ"
```

TASK [start-ratings : OCP Login] ****
changed: [localhost]
TASK [start-ratings : Mitigate MySQL Problem] ****
changed: [localhost]
TASK [start-ratings : Increase MySQL Memory] ****
changed: [localhost]
TASK [start-ratings : Rollback GIT Commit] ****
changed: [localhost]
PLAY RECAP ****
localhost : ok=10 changed=4 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0

Run time: 00:00:18
Started: 08/02/2023, 10:09:30
Status:  Successful

[Complete](#)

Action

When finished, click **Complete**.

Open the RobotShop application. Verify that ratings are correctly shown

Stan's Robot Shop

Login /

Register

Cart

Empty

Categories

- Artificial Intelligence
- Robot
 - Cybernated Neutralization Android
 - Exceptional Medical Machine
 - Extreme Probe Emulator
 - High-Powered Travel Droid
 - Responsive Enforcer Droid
 - Robotic Mining Cyborg
 - Stan
 - Strategic Human Control Emulator
 - Ultimate Harvesting Juggernaut

Exceptional Medical Machine



Rating 3.2 from 178 votes



Fully automatic surgery droid with exceptional bedside manner

Price €1024.00 Quantity 1 Add to cart



💡 Narration

Before confirming that the runbook worked as expected, I should check the RobotShop application to see if it is working as expected.

Provide feedback

Rate this runbook



Comments

Runbook did not work

Runbook worked

🚀 Action

Rate the Runbook

Then click **Runbook Worked**.

💡 Narration

So the runbook has resolved the problem. When I tell Watson AIOps that the Runbook worked, it will learn over time to prioritize and suggest more relevant Runbooks.

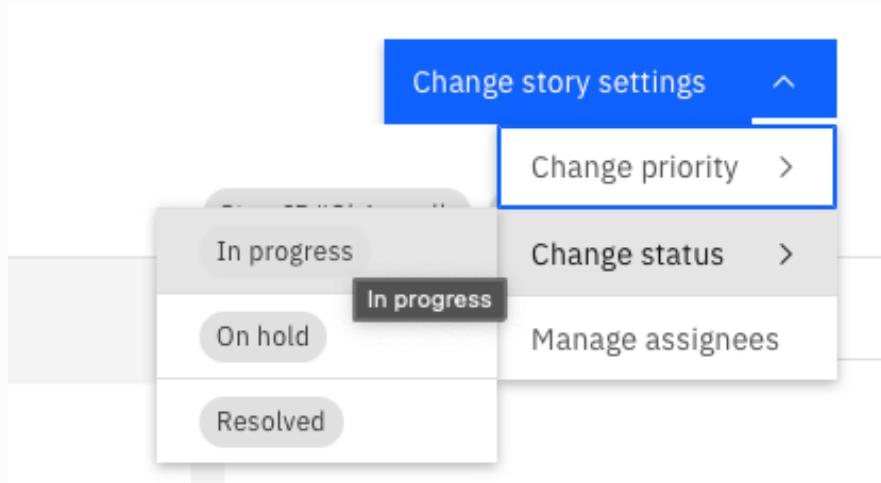
3.4.11 Resolve the Incident

Action

Click on **Change Story Settings**.

Select **Change Status**.

Click on **Resolved**



Narration

So now as we have resolved the problem, I will inform the development team of the problem by reopening the ServiceNow ticket and by closing the Story.

DEMONSTRATION SUMMARY

Today, I have shown you how Cloud Pak for Watson AIOps can assist the SRE/Operations team to identify, verify, and ultimately correct an issue with a modern, distributed application running in a cloud-native environment. The presented solution provides automatic application topology discovery, anomaly detection both with metrics and logs, and sophisticated methods of correlation of events coming from different sources.