# Hands-on Lab: Observability in Action with Instana

Estimated time needed: **60 minutes**

Welcome to the hands-on lab on Observability in Action with Instana.

## Introduction to Application Performance Management (APM)

Application Performance Management (APM) refers to the practices, tools, and strategies used to monitor, manage, and optimize the performance and availability of software applications.

The primary goal of APM is to proactively identify and address performance issues, bottlenecks, and inefficiencies within an application's infrastructure, codebase, or dependencies.

By monitoring key performance indicators (KPIs) and collecting relevant data, APM enables organizations to understand how their applications are performing. It helps them detect anomalies or deviations from normal behavior, take corrective actions to improve performance, and thus enhance customer satisfaction, reduce downtime, and improve overall business productivity.

## Instana Overview

Instana is a modern application performance management (APM) solution designed for monitoring and observability in cloud-native and microservices environments. Instana collects and analyzes data from various sources within an application stack to provide real-time visibility into the application's health and performance.

Where modern-day application stacks can be a complex mixture of technologies and infrastructure with many dependencies and interactions, Instana provides a full stack observability solution.

In this lab, you will learn about the Instana observability solution. You will explore the **Play with Instana**, a sandbox with a pre-configured e-commerce application and services running in it. Using Play with Instana, you will examine its features and understand how it is used in a pre-configured live application performance monitoring sandbox. Furthermore, you will explore various microservice applications used in the Instana sandbox to learn various Monitoring techniques.

## Objectives

After completing this lab, you will be able to:

1. Use Play with Instana sandbox to learn about the Instana observability solution.
2. Explore and analyze the features of Play with Instana.
3. Explore different monitoring capabilities that Instana offers.
4. Analyze the performance of the pre-configured applications and infrastructure components.
5. Use various microservice applications and apply various monitoring techniques available in the Instana sandbox.

You will practice through seven various exercises to learn about the Instana observability solution in detail. So, let's get started!

## About the Robotshop Application

To test and learn various monitoring techniques in the Instana sandbox, you will use Robotshop, a sample microservice application.

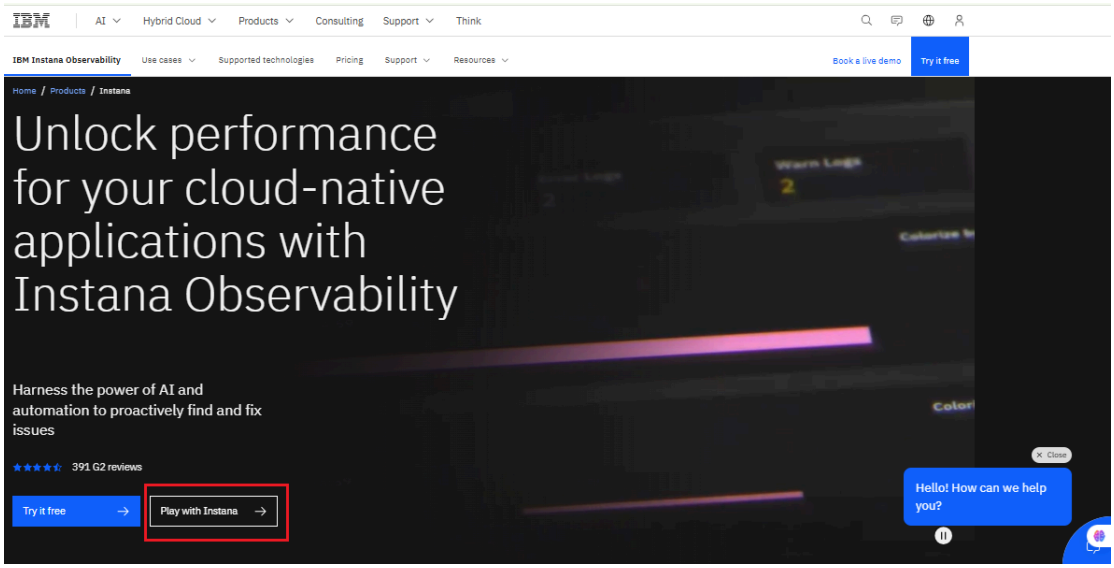
The various services in the sample application already include all required Instana components installed and configured. The Instana components provide automatic instrumentation for complete end-to-end tracing and complete visibility into metrics and analytics for all the technologies.

To see the application performance results in the Instana dashboard, you will first need an Instana account.

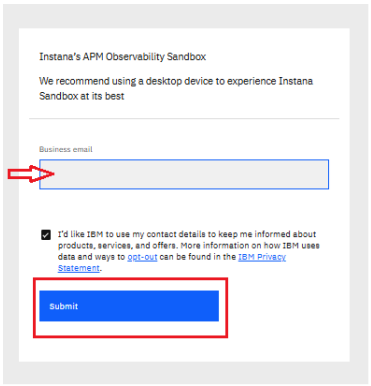
## Exercise 1: Create a free Instana account

1. As a first step, click Instana to launch it.

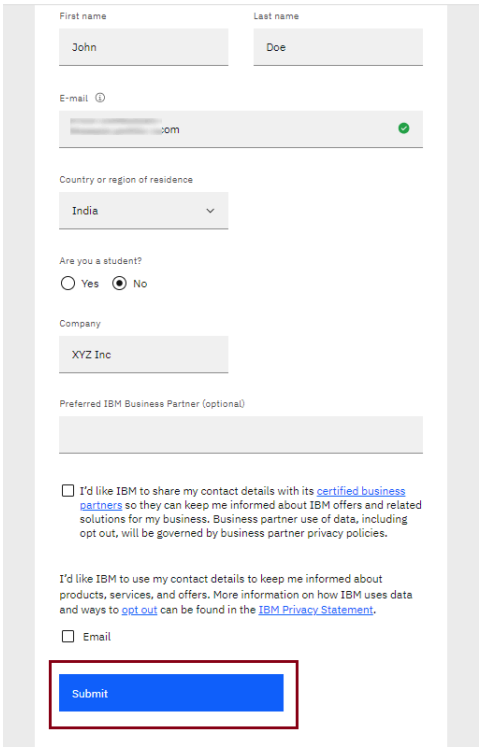
2. Click on `Play with Instana`




5. Enter your email in the space provided and click `Continue`.



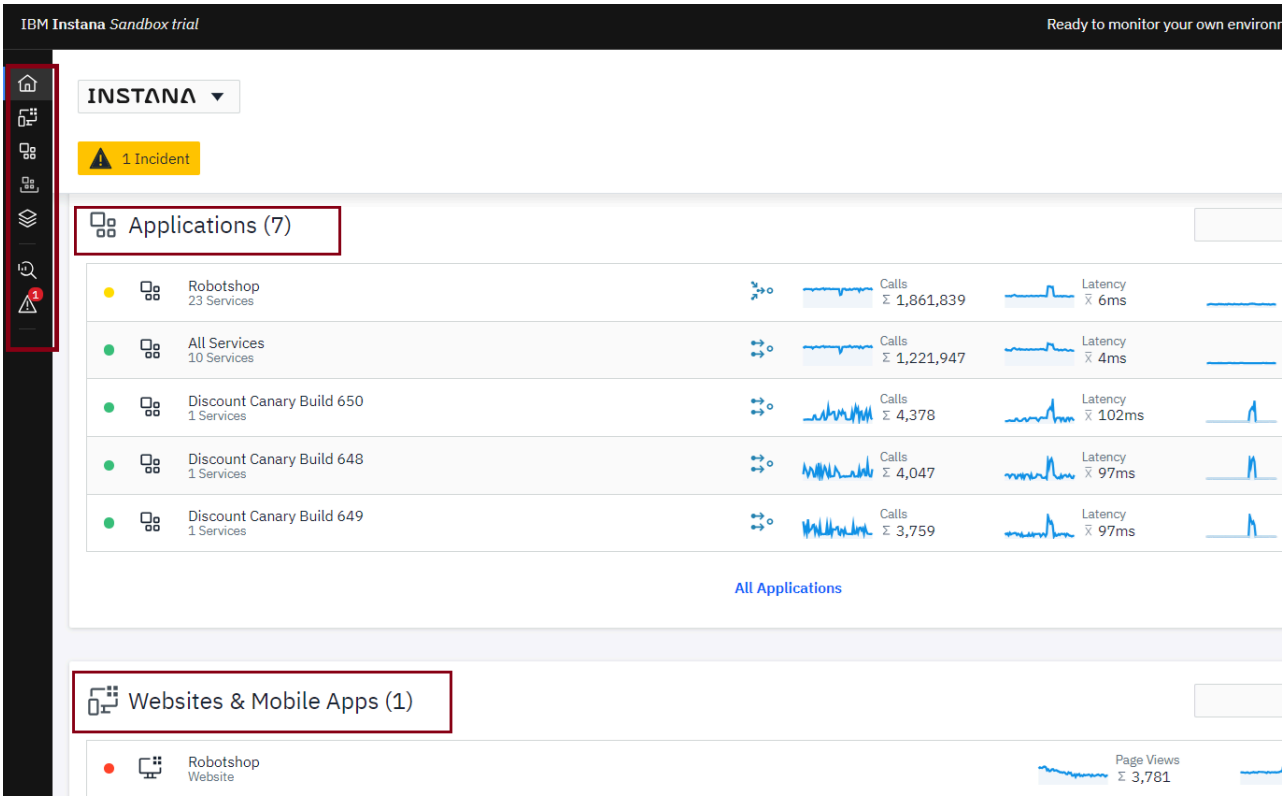

6. Fill in the further details, and click on `Submit`.




7. You will now be redirected to the `Instana Sandbox Trial` page.

## Exercise 2: Explore Play with Instana Dashboard

1. Observe the annotations highlighted in the screenshot below:

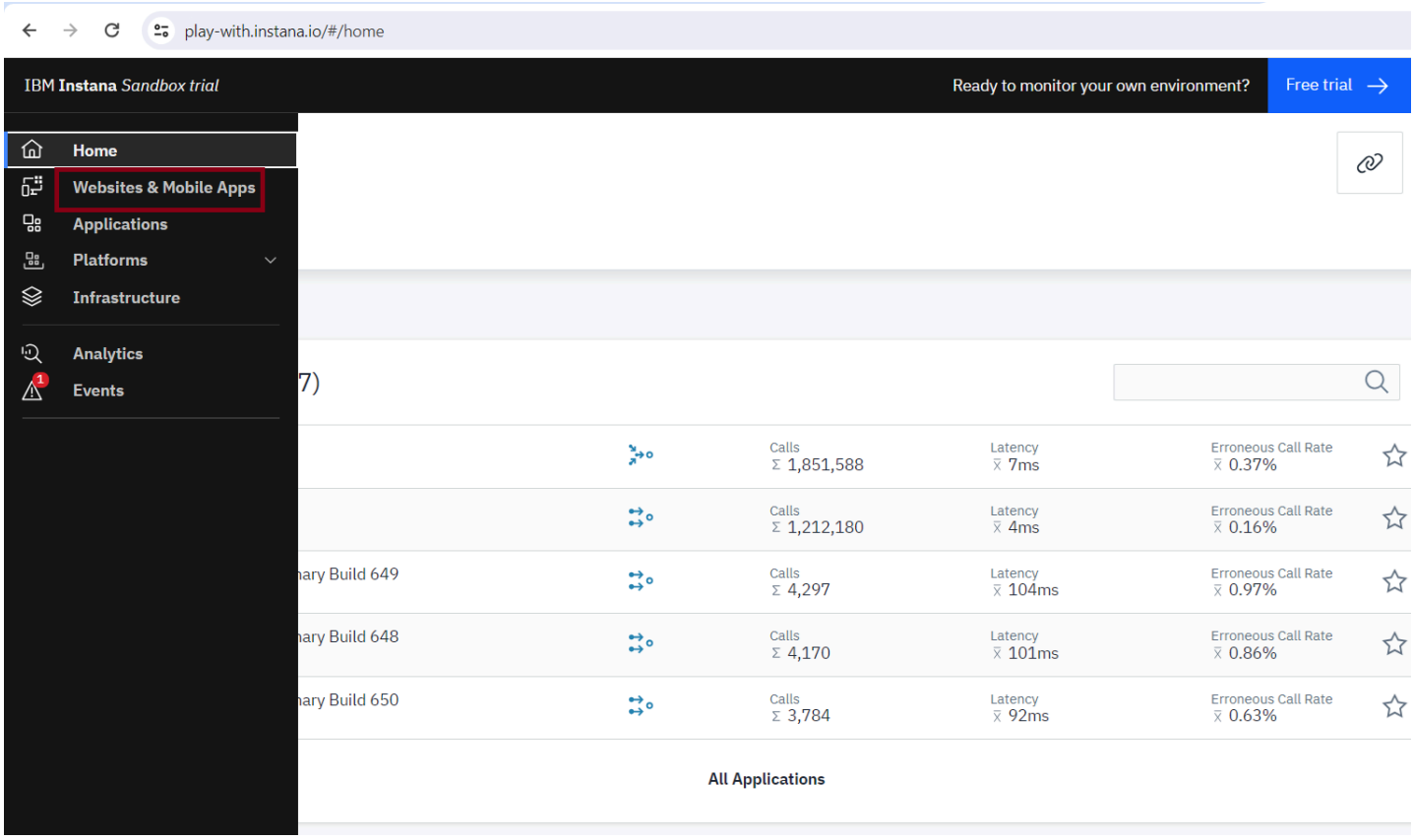



2. You will find the following on the Instana dashboard:

a. **Play with Instana:** The landing page gives a summary of everything that is being monitored.
b. **Website and Mobile Apps:** This section helps you monitor the data coming from end-user web browsers and native mobile apps
c. **Applications:** This section lists all apps and services monitored by Instana.
d. **Navigation Panel:** You can find the lists of various monitoring applications in this section.

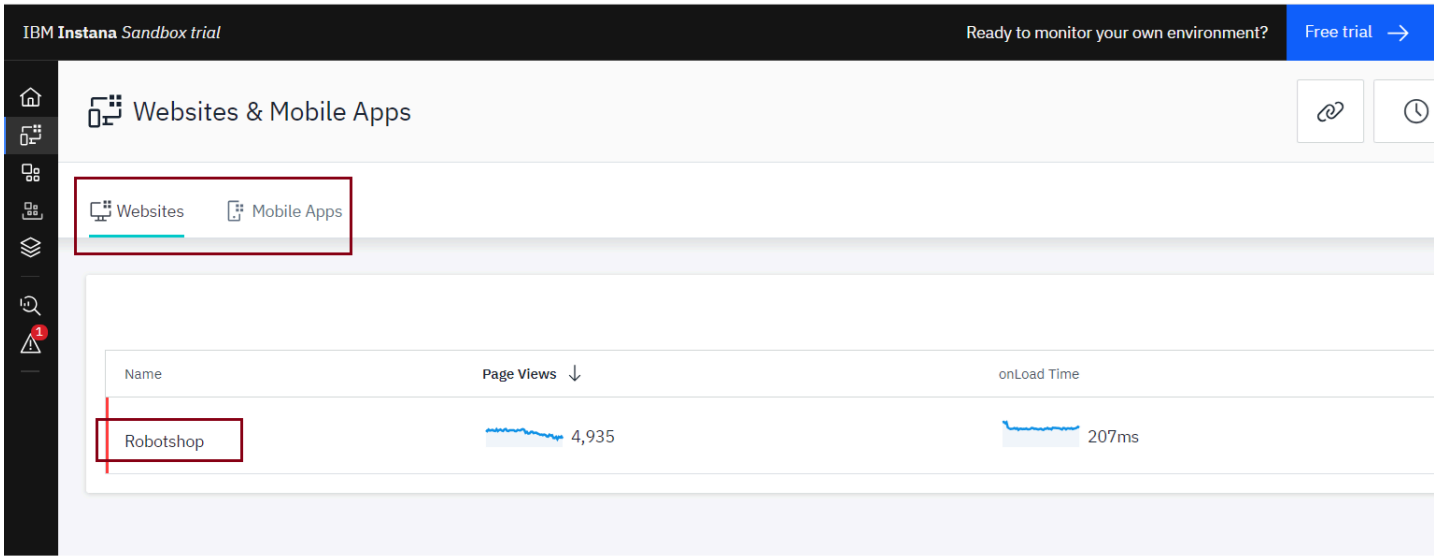
## Exercise 3: Monitor Websites and Mobile App

1. Click the navigation menu and select **Websites and Mobile App**
2. Through this, Instana enables you to monitor data coming from end-user web browsers and native mobile apps.
3. On the dashboard, you can check the performance of the websites and the mobile applications and dive into analytics to analyze specific end-user data.
4. Instana monitors every request from every server and correlates that with server activity.

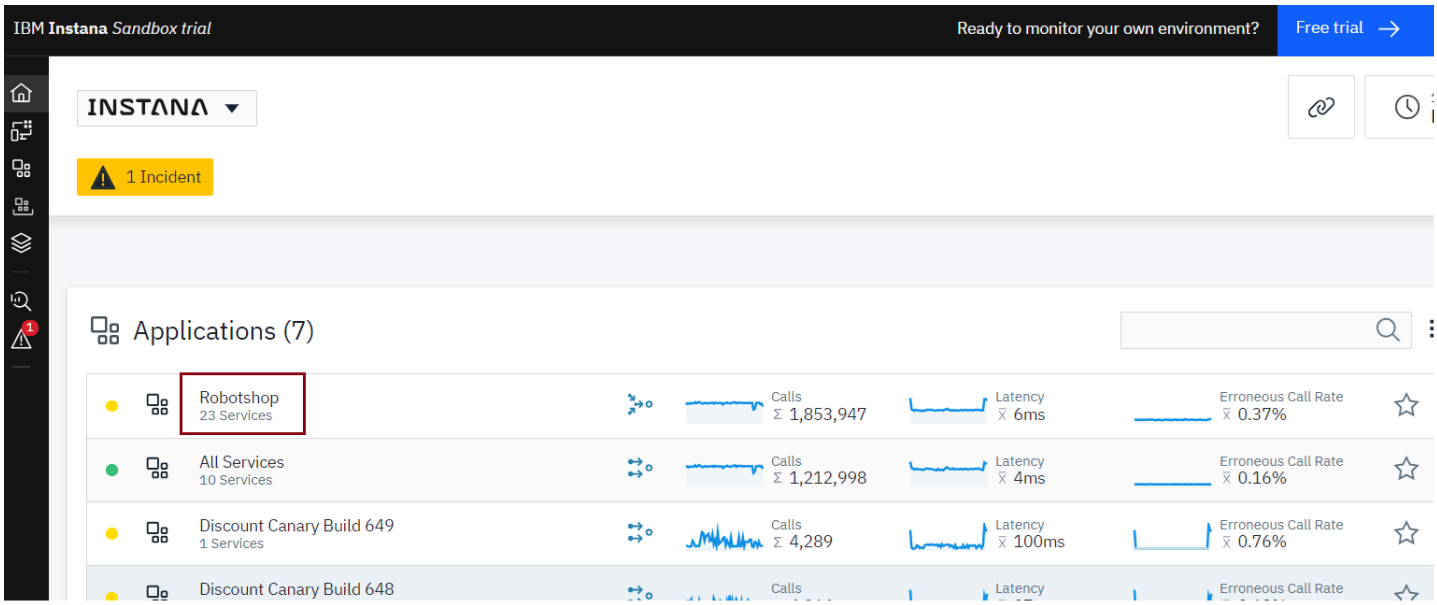



5. On the dashboard of the **Websites and Mobile App**, you can see the **Robotshop** application running.

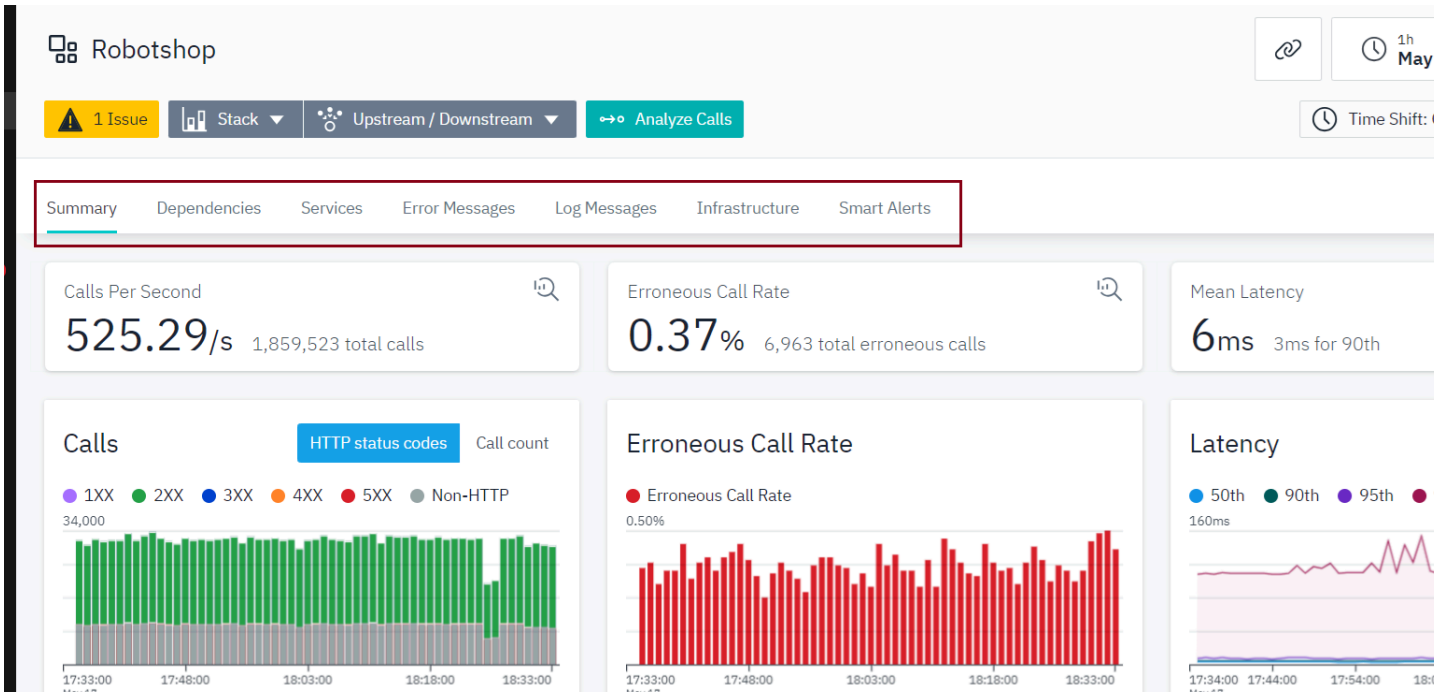
- Robotshop is a sample microservice application that you can use in the Instana sandbox to test and learn various monitoring techniques.
- The various services in the sample application already include all required Instana components installed and configured. The Instana components provide automatic instrumentation for complete end-to-end tracing and complete visibility into metrics and analytics for all the technologies.




6. Alternatively, you can also access the **Robotshop** application availableunder **Website and Mobile Apps** from the main dashboard.

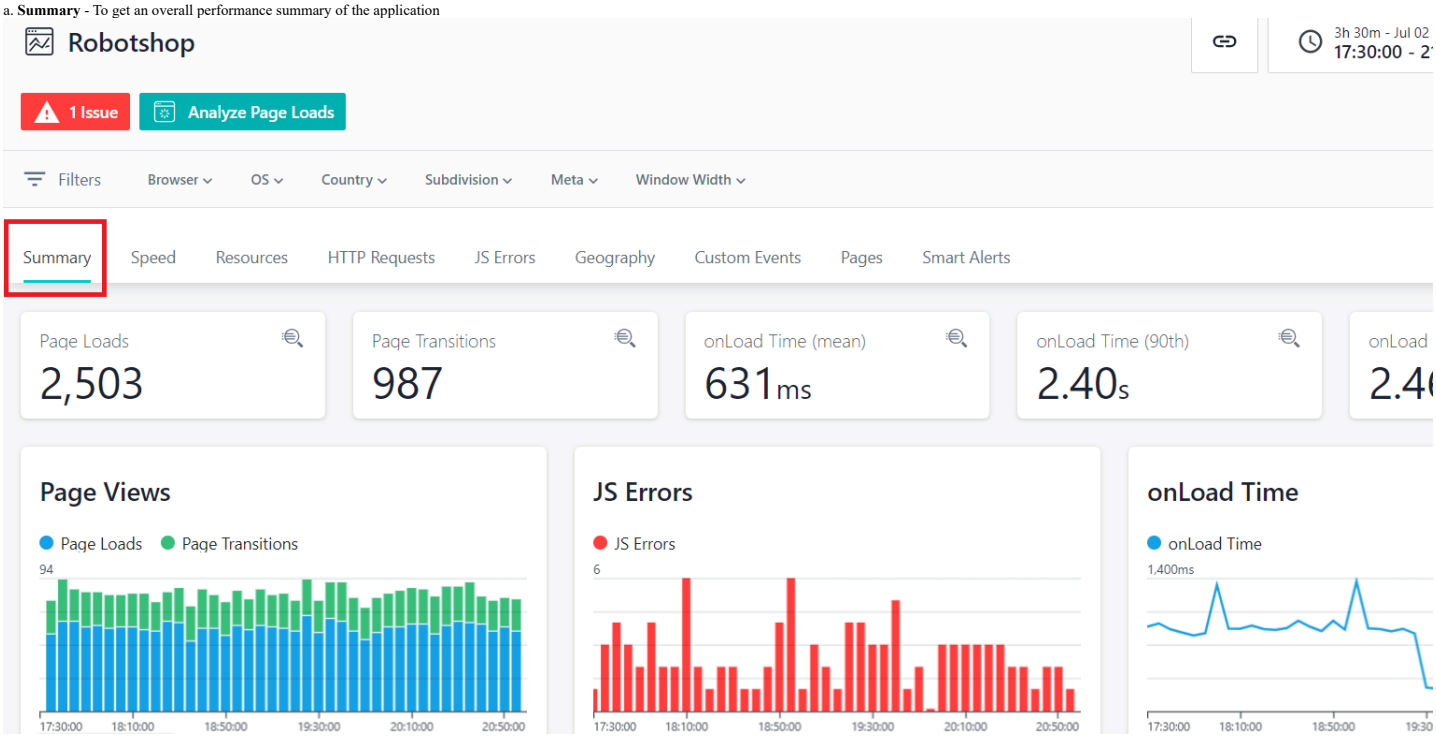



7. To determine the health of the **Robotshop** application, click Robotshop to view the various options for monitoring the health and performance of the application.

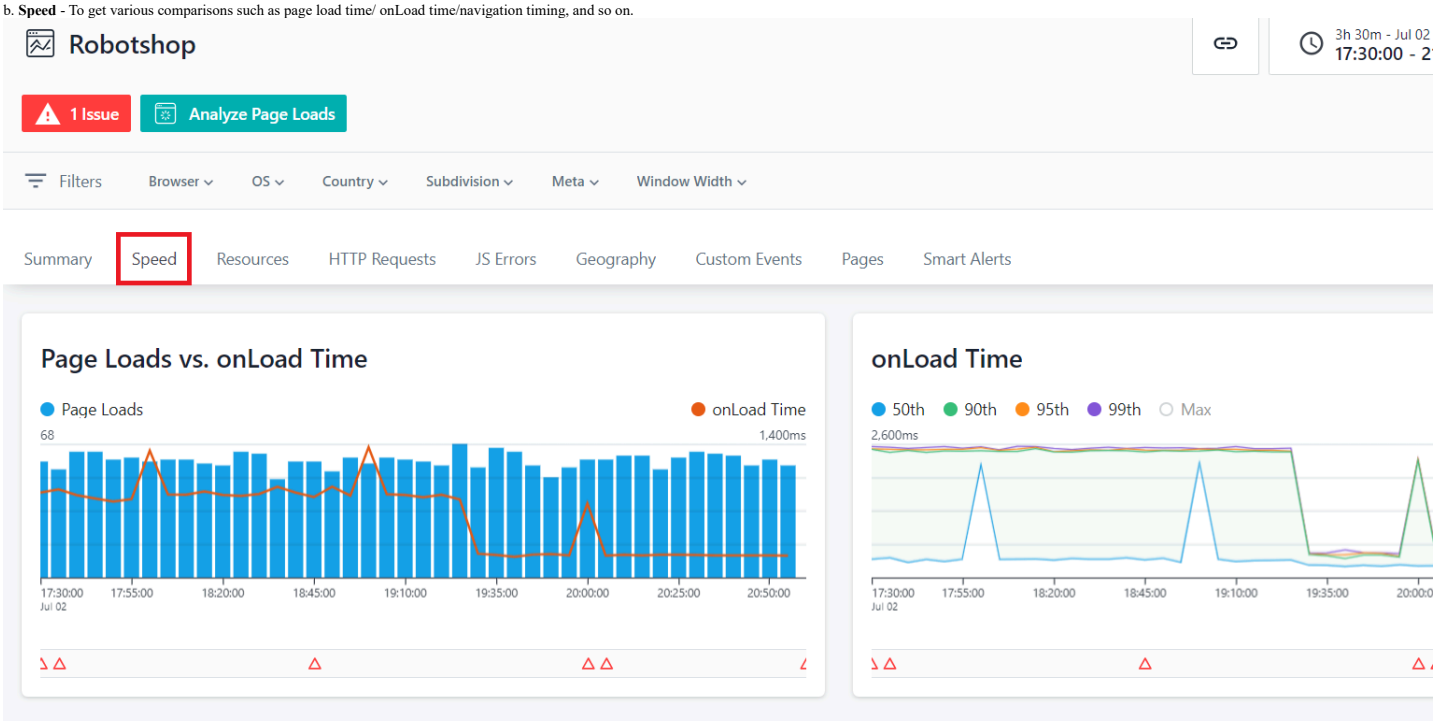



8. Let's look at the various monitoring options available in the Robotshop. You can select the specific option to delve deeper into analytics.

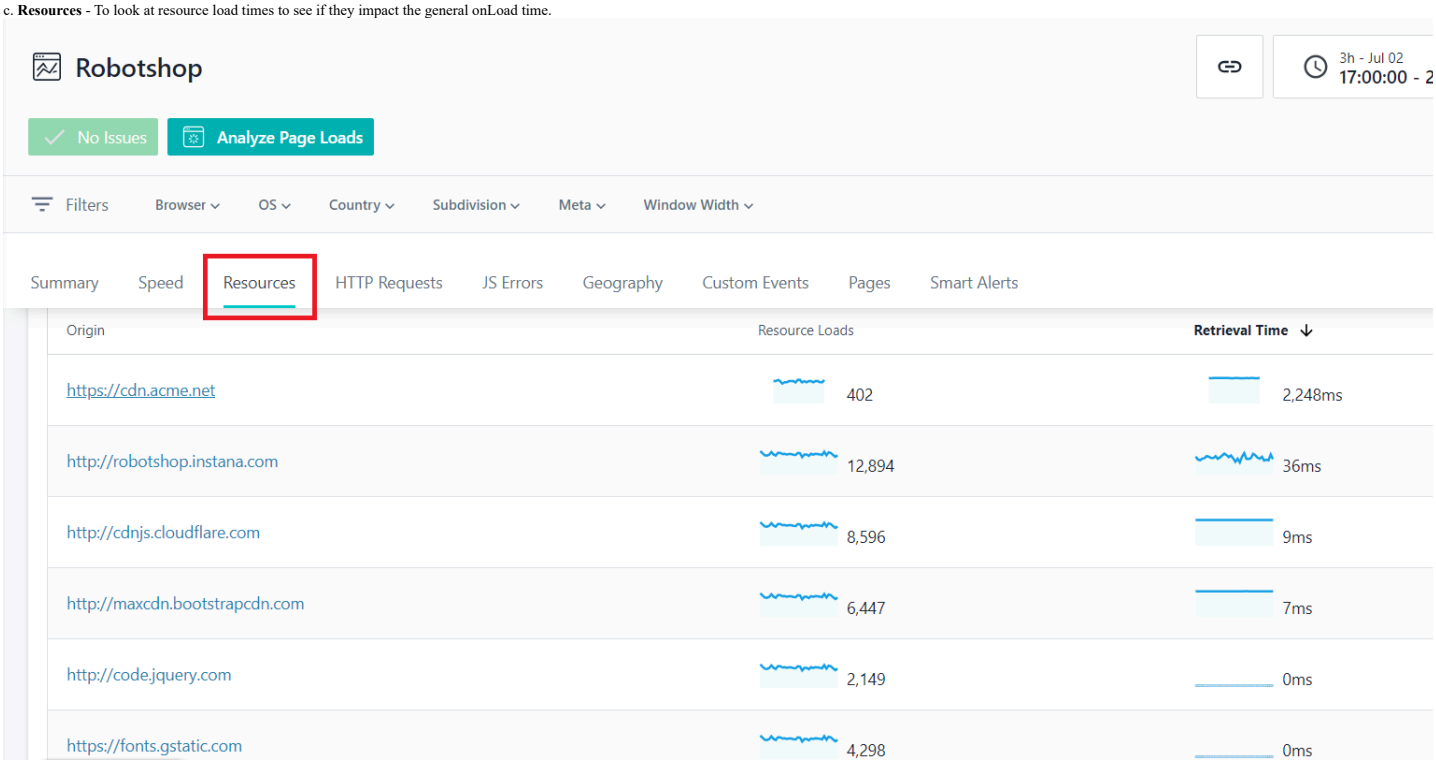
a. **Summary** - To get an overall performance summary of the application




b. **Speed** - To get various comparisons such as page load time/ onLoad time/navigation timing, and so on.



c. **Resources** - To look at resource load times to see if they impact the general onLoad time.

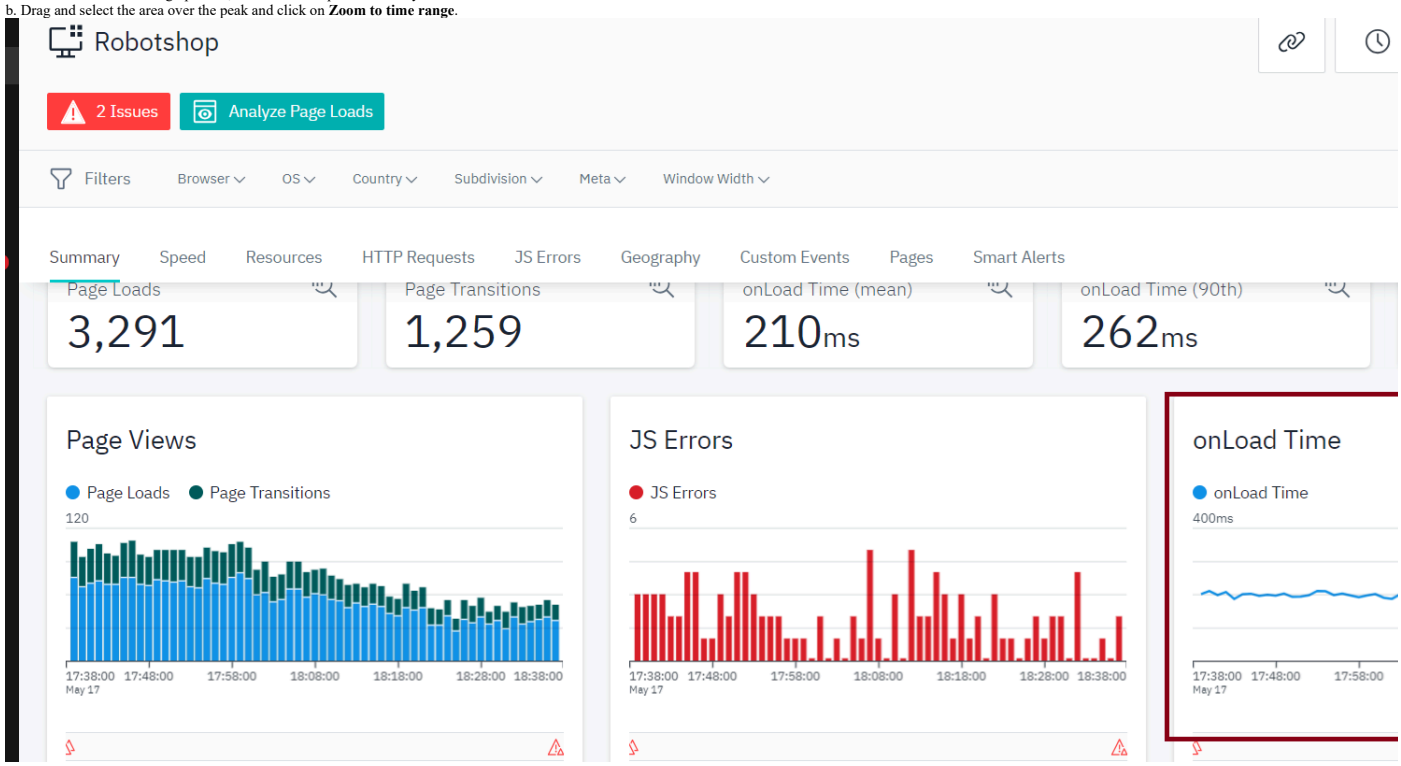



## Exercise 3.1: Check for LoadTime Latency

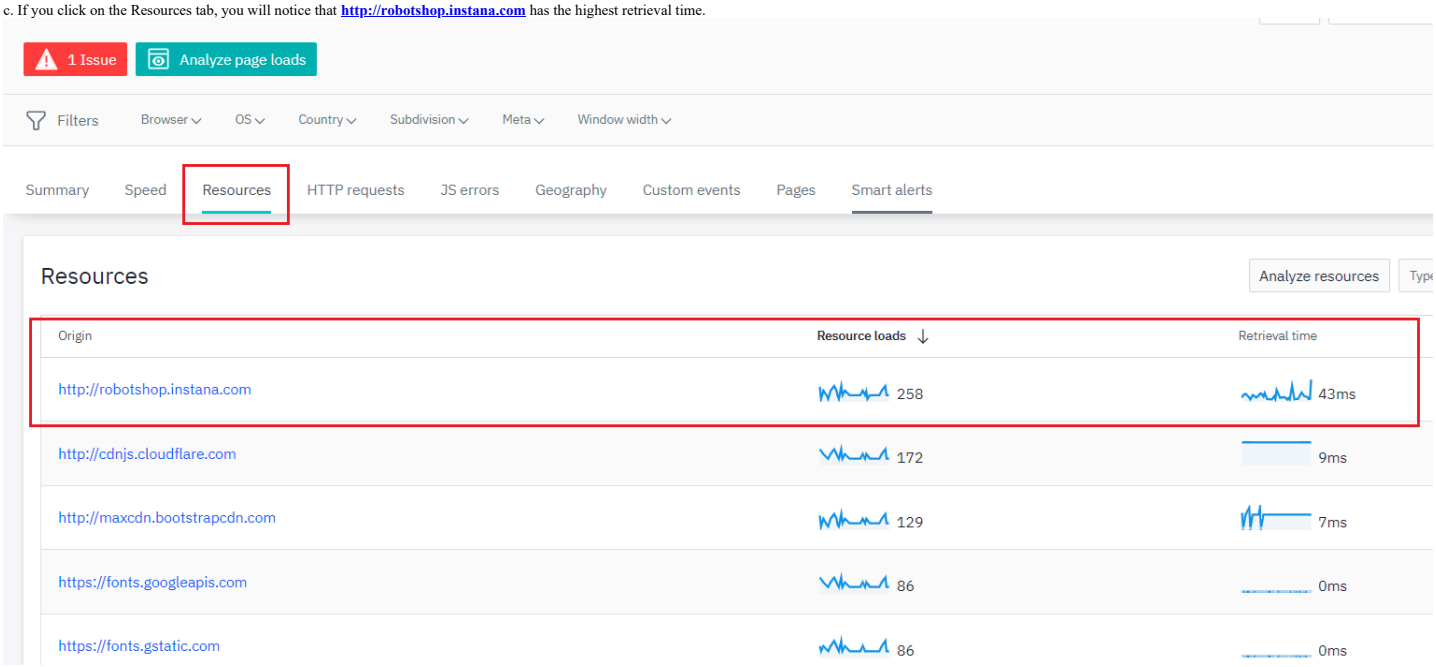
Load time latency is checked to measure the time it takes for a web page or application to load and become interactive for the user fully. It is an important metric because it directly impacts user experience and can significantly affect user satisfaction & engagement.

By regularly monitoring load time latency, you can identify performance bottlenecks,
optimize infrastructure, and improve the overall user experience, leading to higher customer satisfaction.

1. Let's check the onLoad time graph to see where/what components show latency.
   a. Select the onLoad Time graph area, which shows a peak in activity.
   b. Drag and select the area over the peak and click on **Zoom to time range**.

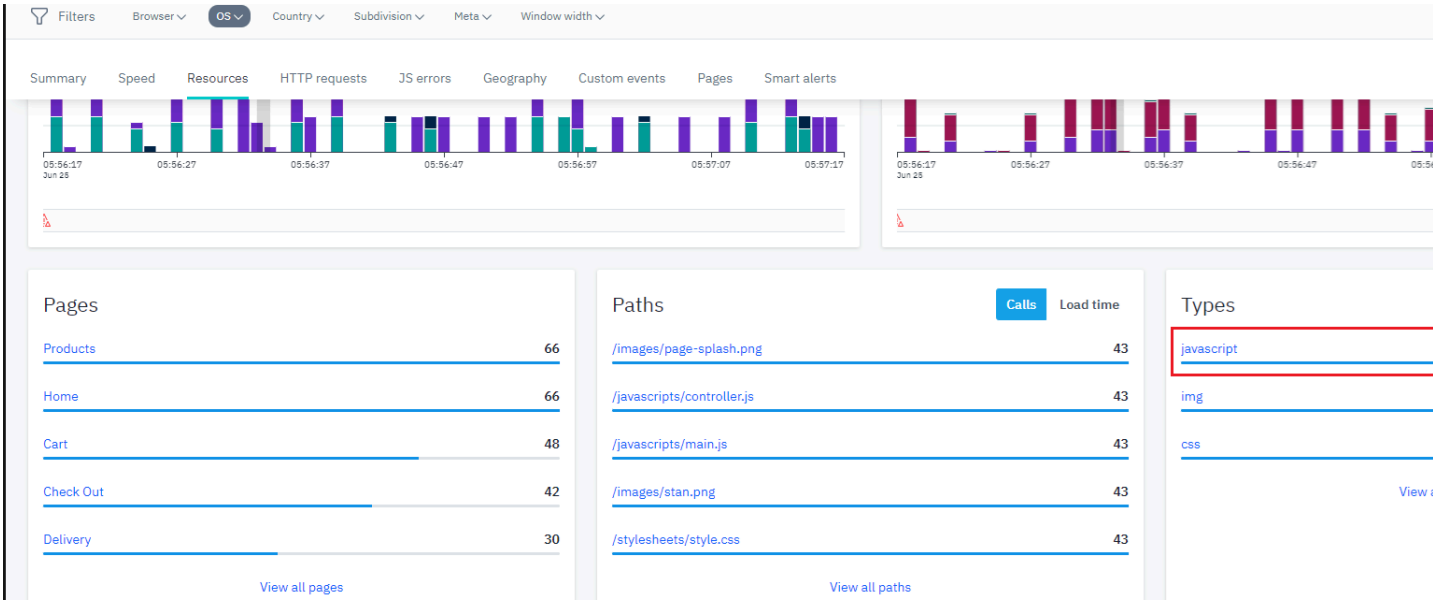


c. If you click on the Resources tab, you will notice that **http://robotshop.instana.com** has the highest retrieval time.

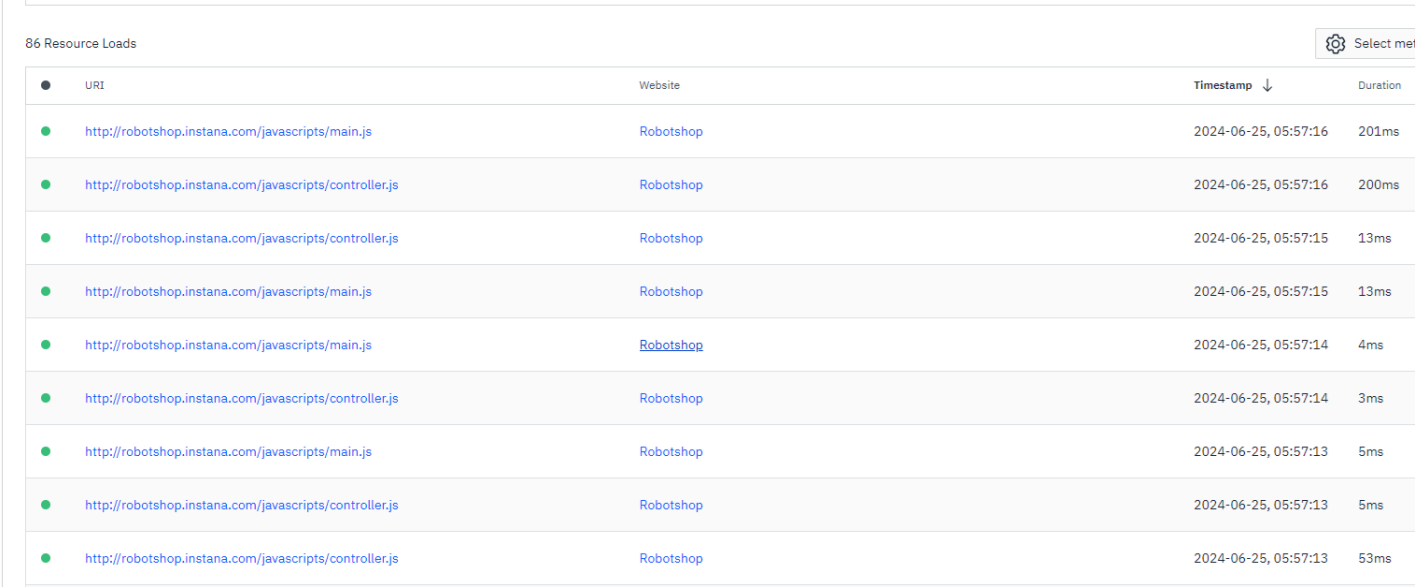



d. To review details about the resources loaded from this resource, click on the **http://robotshop.instana.com** link under the **Origin** column.

e. To determine which resource which is causing the Load time latency, you can review details in the **Load Time** tab. You will observe the Javascript related content takes maximum time to load.

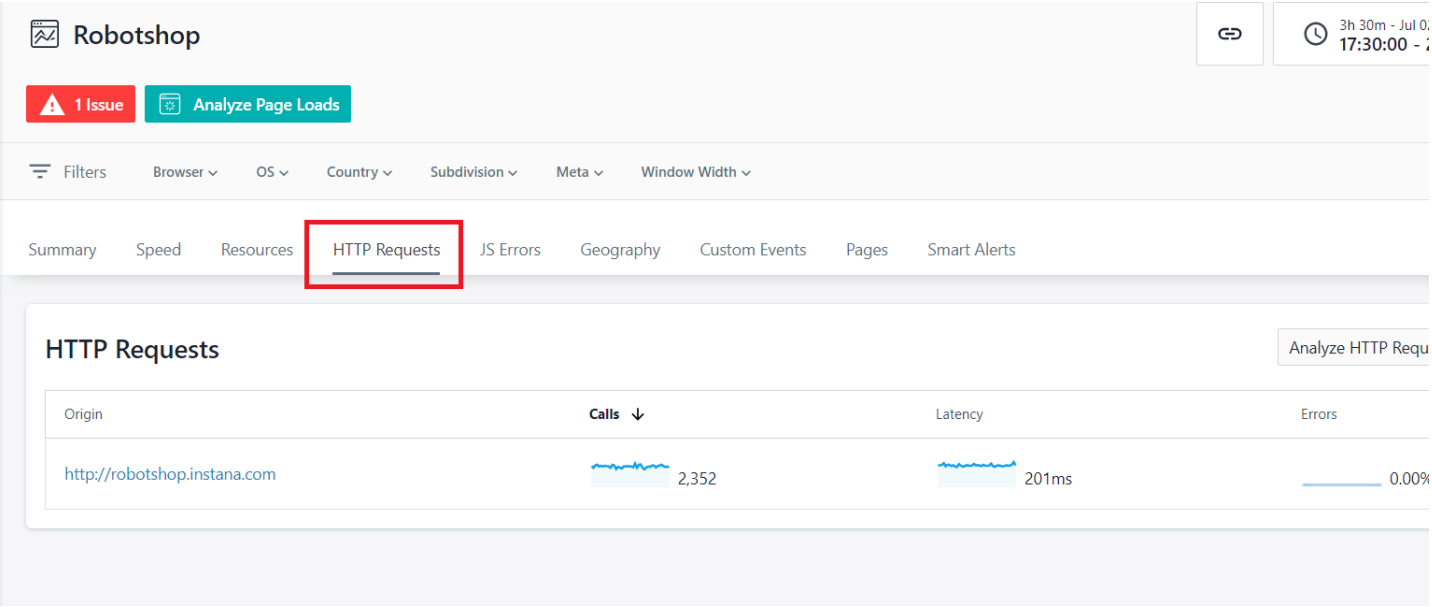



f. Click on **javascript**. It will take you to the below page having the list of URLs based on loading time.

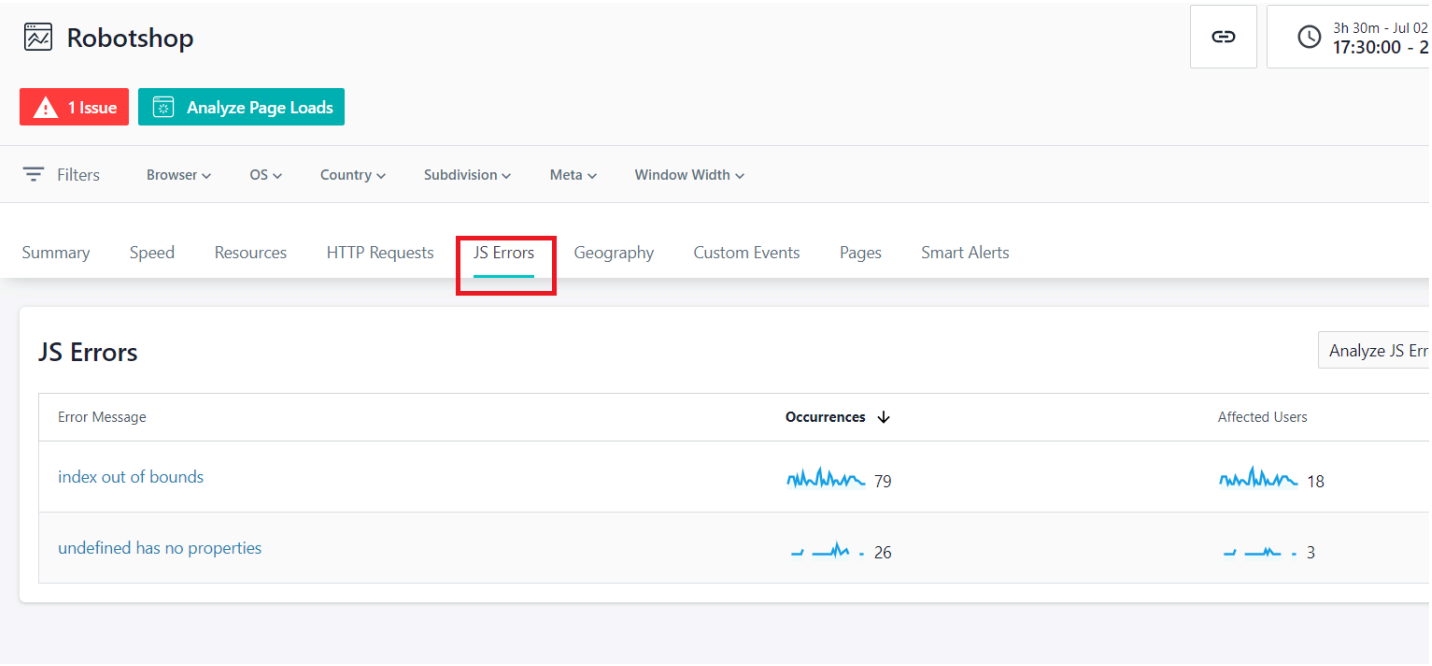



g. You can click on each URL to view its details and address the issues accordingly.

2. **HTTP Requests** - To get insights into the HTTP requests made by the application.
It offers detailed information about each request's performance, status, and timing, which helps analyze and optimize the interactions between the application and external services.

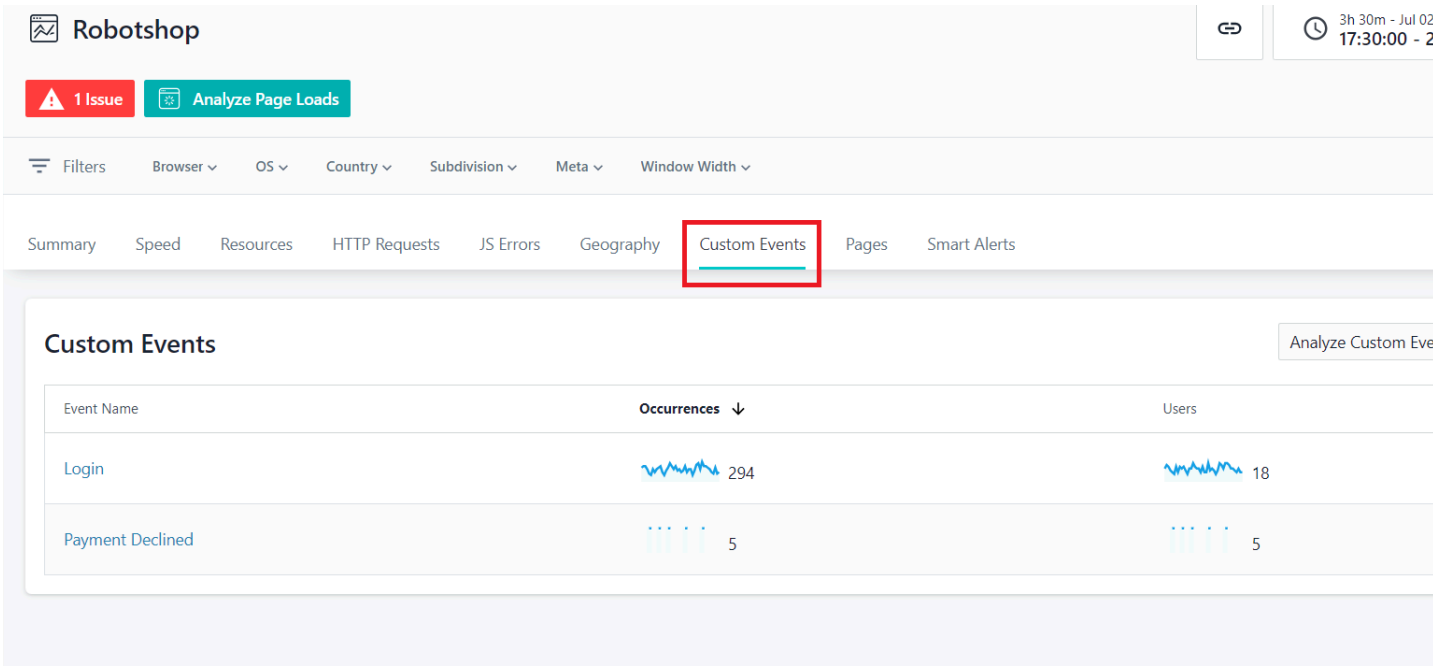



3. **JS Errors** - To get insights into JavaScript errors that occur within the application. It helps identify, monitor, and troubleshoot errors, which can improve the user experience, ensure application stability, and enhance overall performance.

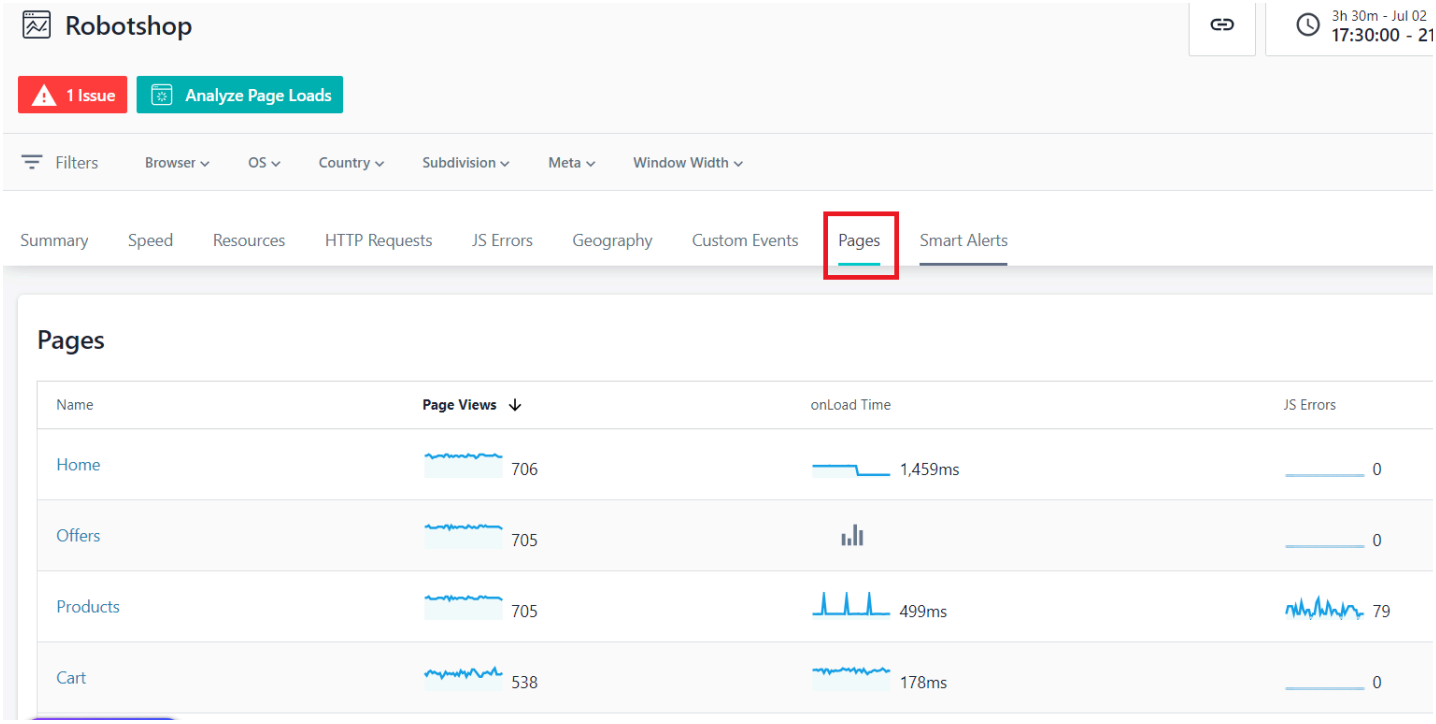



4. **Geography** - To get geographical insights into the distribution and performance of your application across different regions or locations. It allows you to understand where your users are located, how your application is performing in different regions, and identify potential performance issues or variations based on geographic locations.

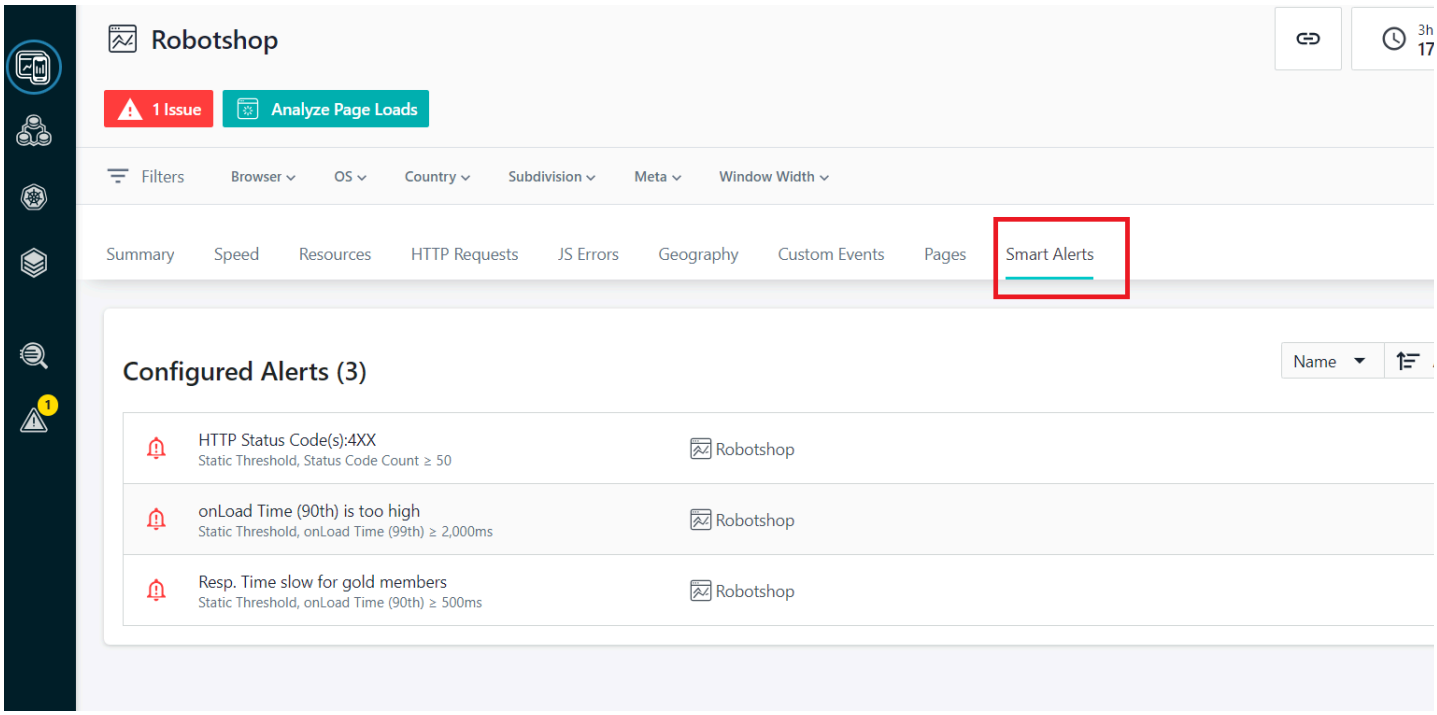
5. **Custom Events** - To track and monitor the application's custom or business-specific events. It provides a way to define and capture events relevant to the application's specific use cases, workflows, or business logic.




6. **Pages** - To get insights into the performance and behavior of the web pages within the application. It helps monitor and analyze key metrics related to page load times, user experience, and dependencies.

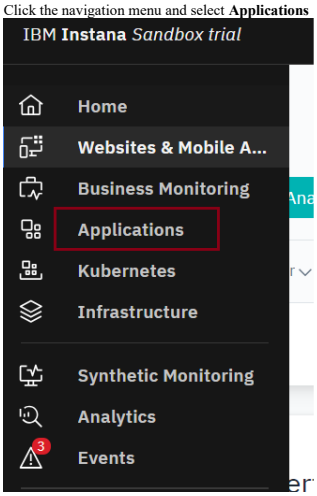



7. **Smart Alerts** - To know the details on custom alerts configured based on specific conditions. They help notify users of important events or issues within their monitored environments.

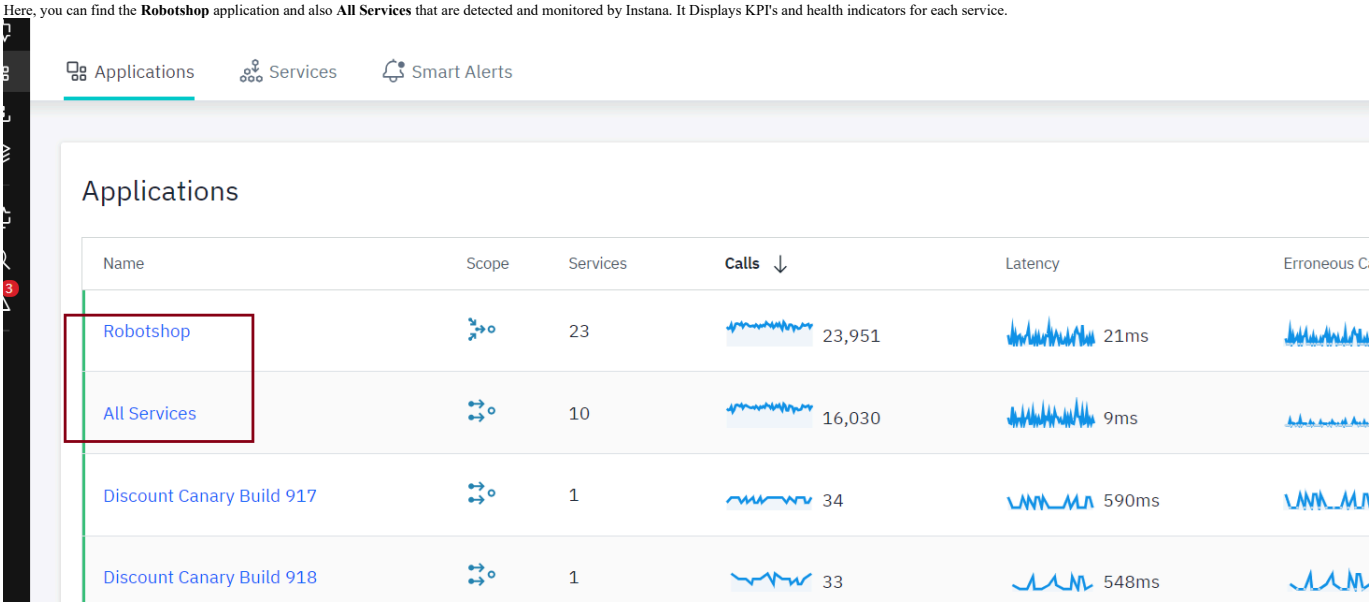



**Exercise 4: Monitor Applications and Services**

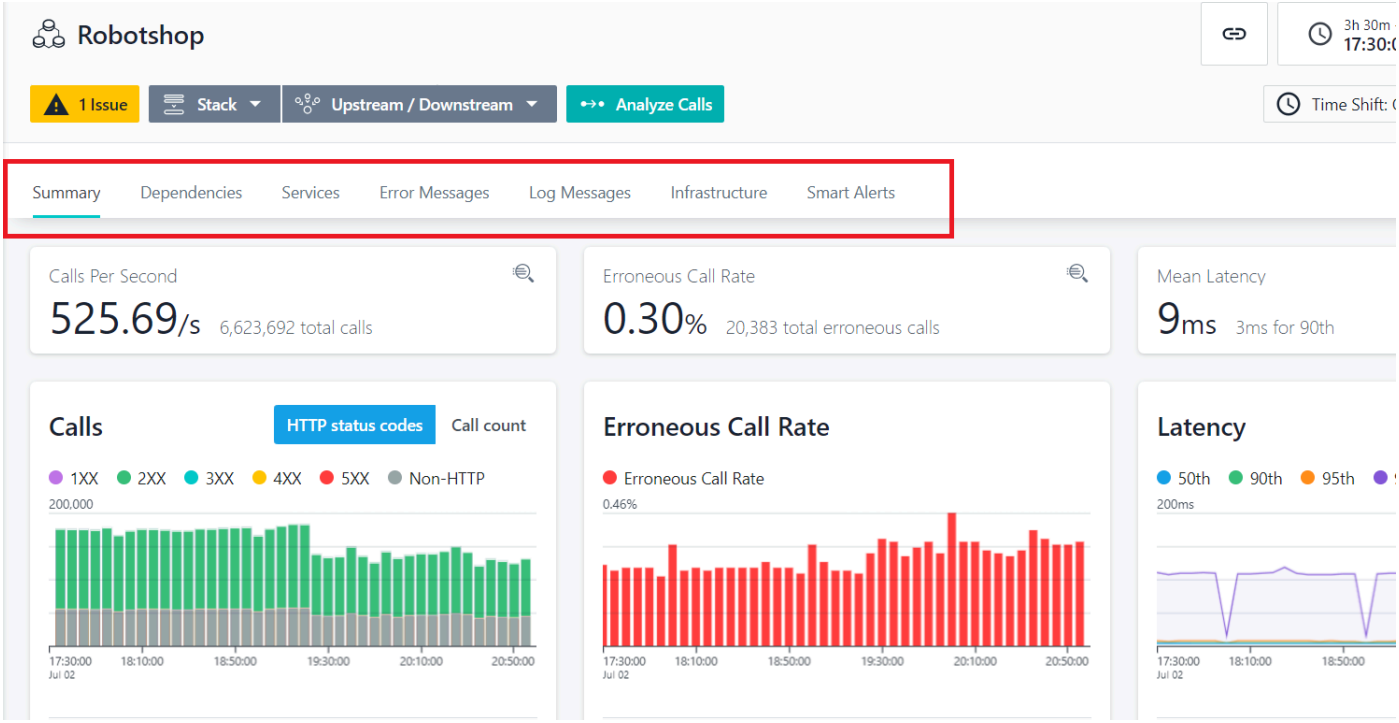
1. Click the navigation menu and select **Applications**




2. Here, you can find the **Robotshop** application and also **All Services** that are detected and monitored by Instana. It Displays KPI's and health indicators for each service.

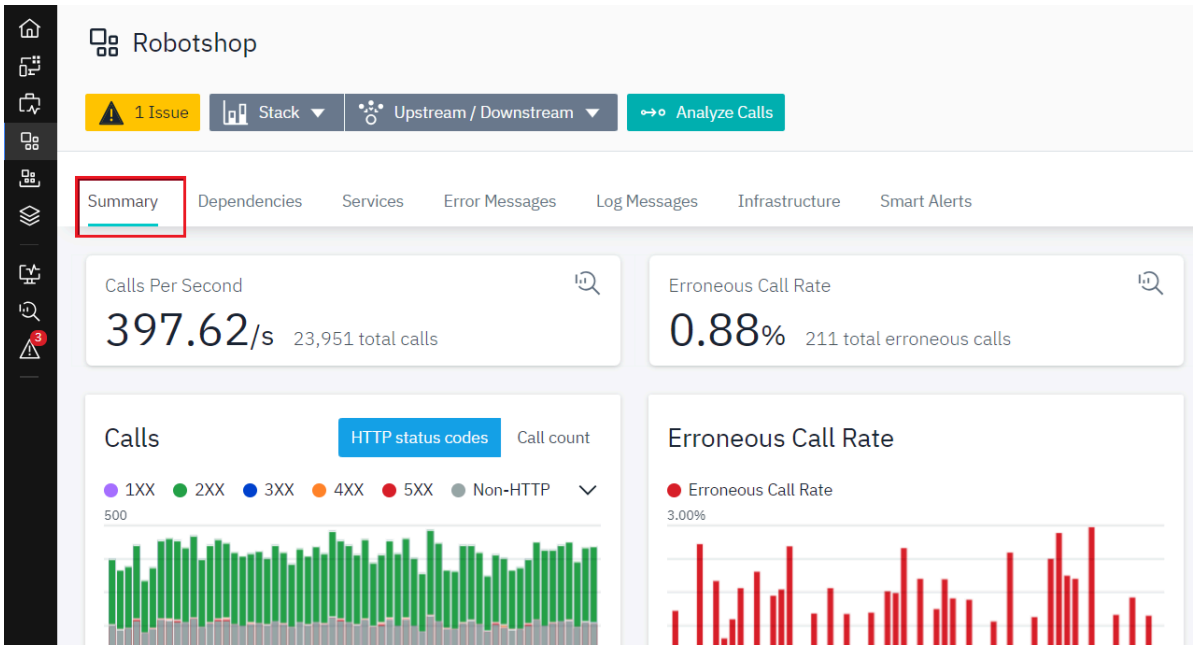



3. By clicking the "Robotshop" application, you can drill into the summary dashboard, where a lot of metrics & information are captured by tracing. It reveals how the application is running and performing and how well the services are interacting with each other.

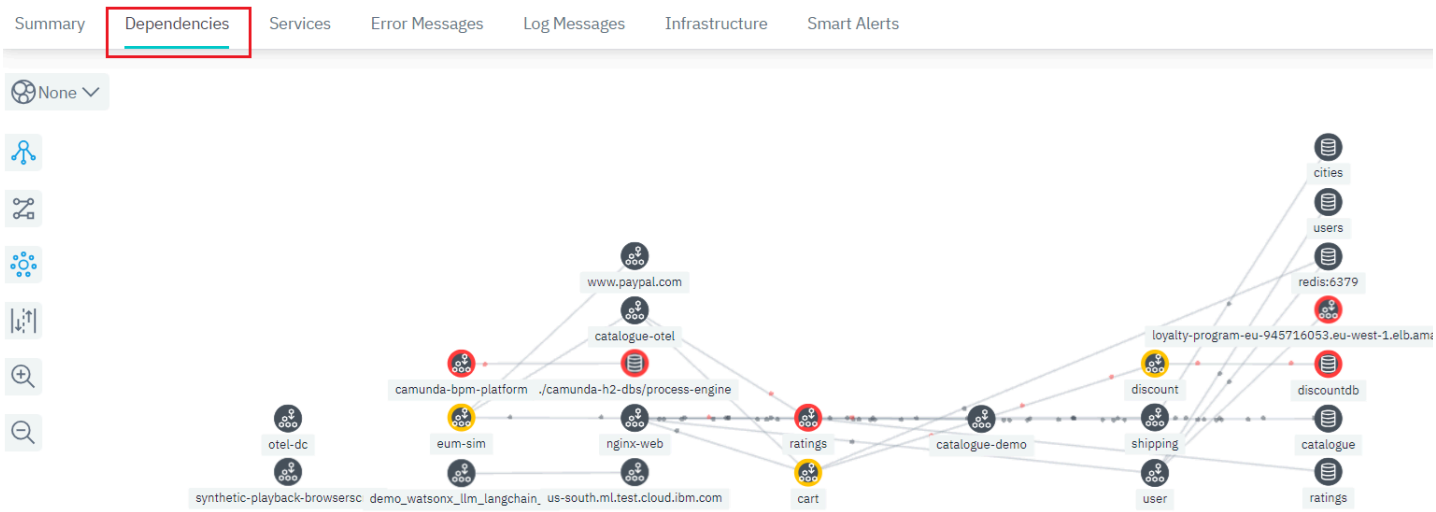



4. Let's look at the options available in the Robotshop dashboard. You can select the specific option to delve deeper into analytics.

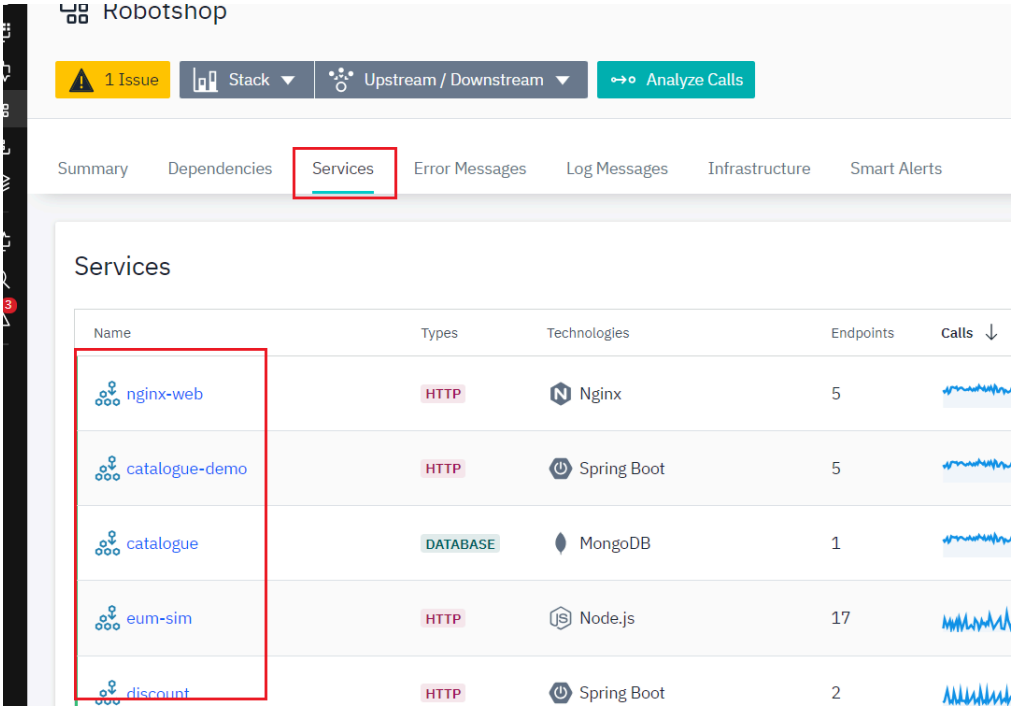
a. **Summary** - To get an overall performance summary of the monitored applications. It offers key information about the health, performance, and other relevant metrics.



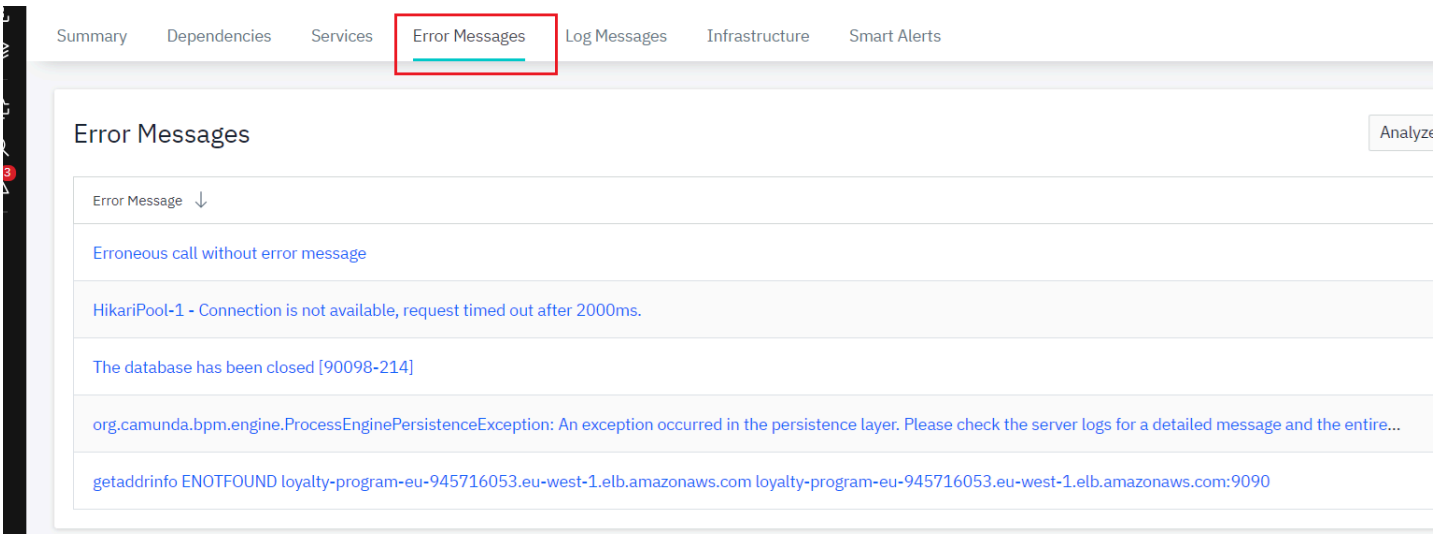

b. **Dependencies** - To get insights into the various dependencies of the application that is being monitored. It allows you to visualize and understand the relationships between various components, services, APIs, databases, and external resources that your application relies on.




c. **Services** - To get insights into the individual services or components that make up the monitored application. It helps analyze the performance, health, and dependencies of each service within the application stack.

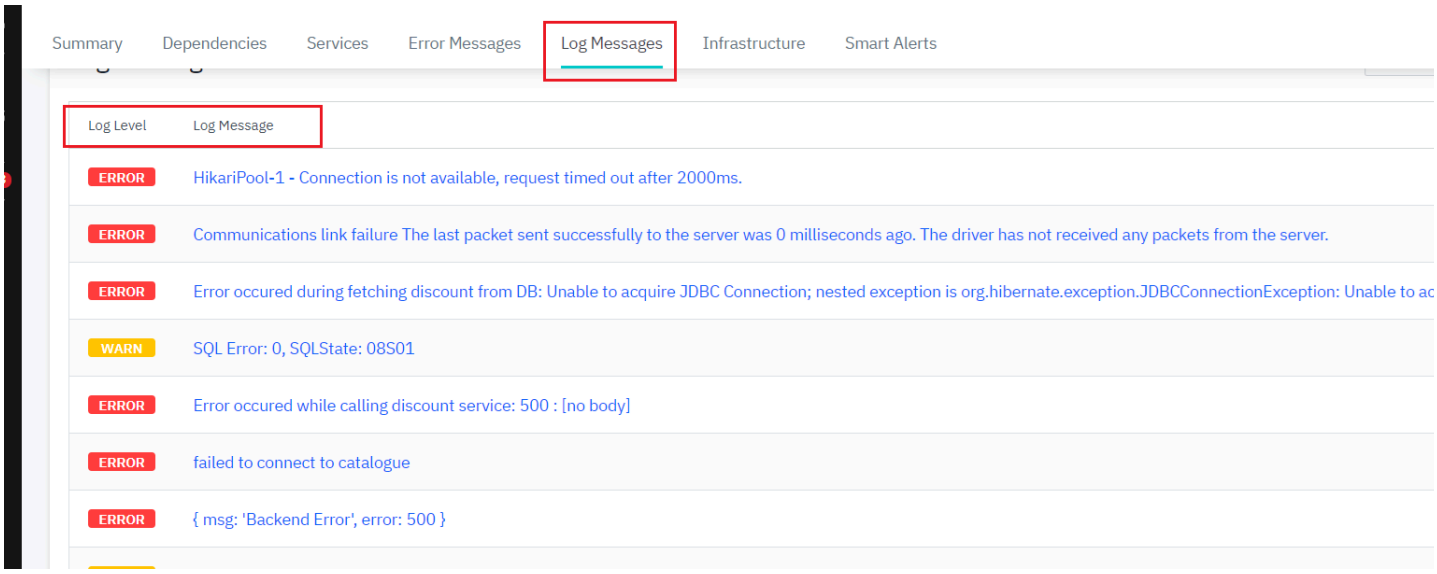



d. **Error Messages** - To get insights into the specific error messages and exceptions that occur within the monitored application. It helps track, analyze, and troubleshoot errors or exceptions that affect the performance and reliability of the application.



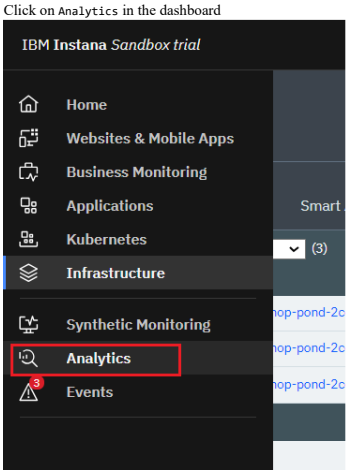

e. **Log Messages**

- To see and analyze log messages generated by the applications and infrastructure.

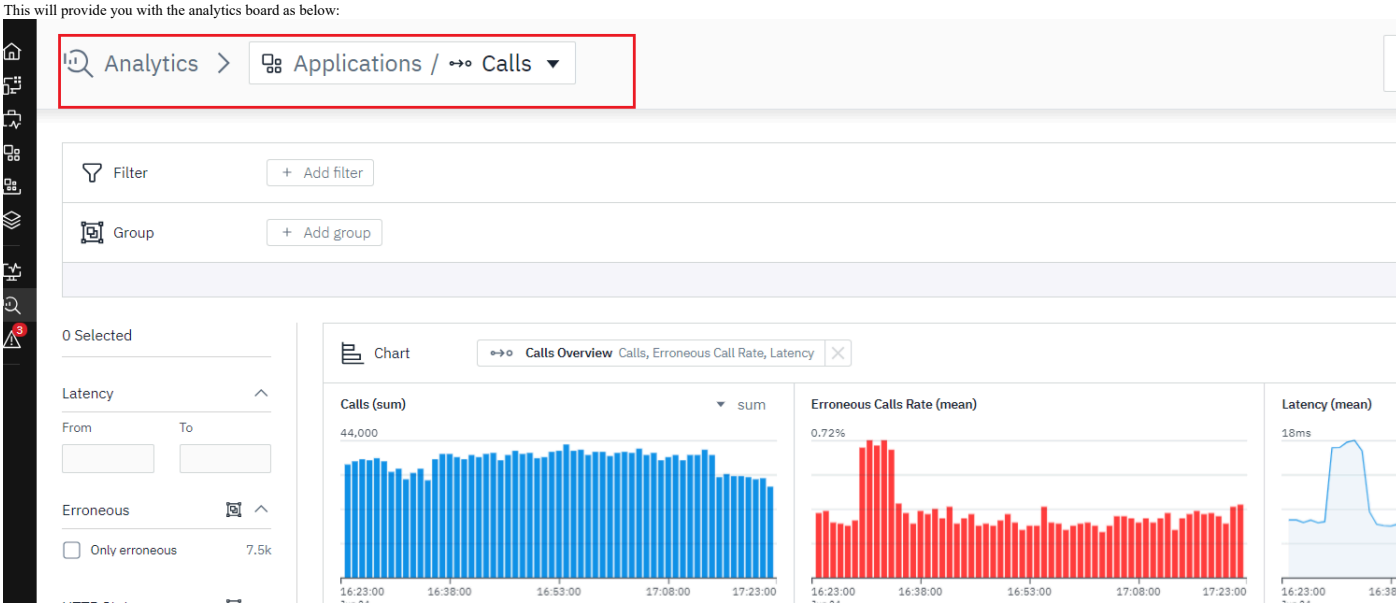



- To analyze the log further, you can click the log and delve deeper into the analytics board.

1. Click on `Analytics` in the dashboard

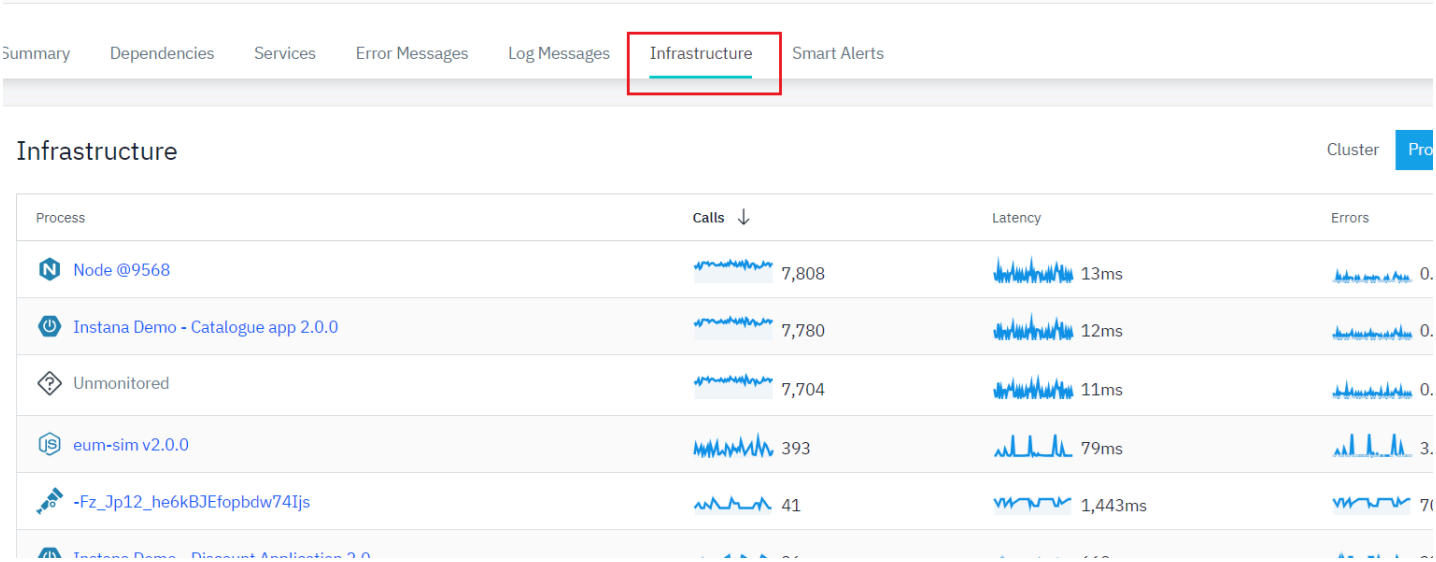



2. This will provide you with the analytics board as below:

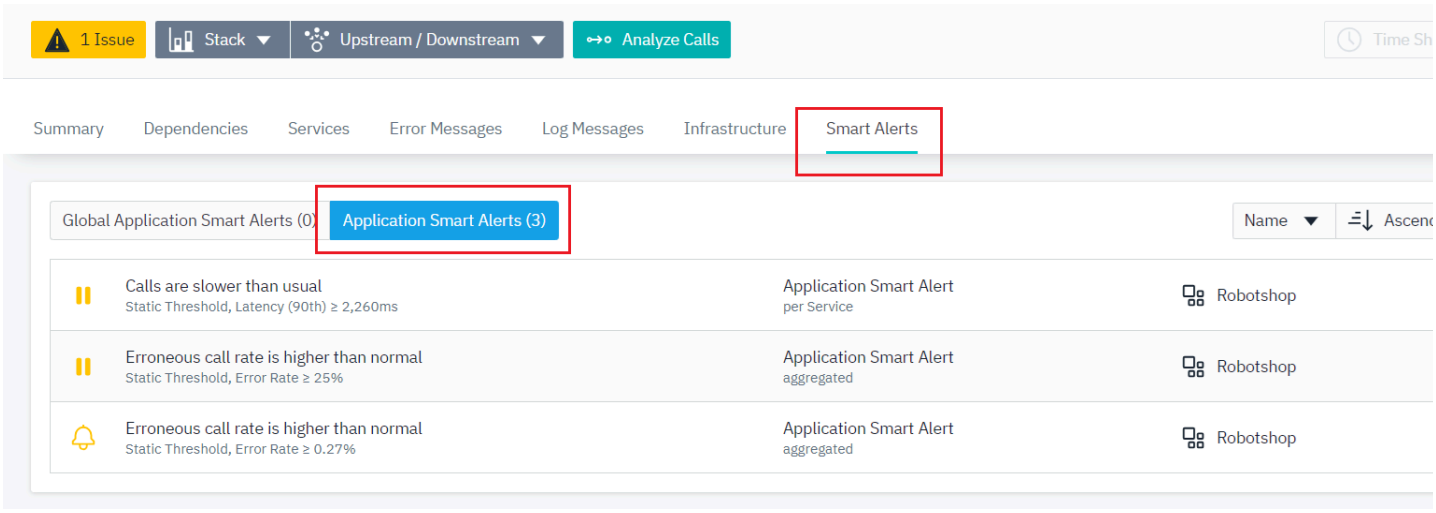



f. **Infrastructure** - To get insights into the health and performance of the underlying infrastructure that supports the monitored application.

If you have containerized or virtualized environments, Instana often provides visibility into the containers, virtual machines, or other virtualization technologies in use. It helps you monitor their health, resource consumption, and performance.

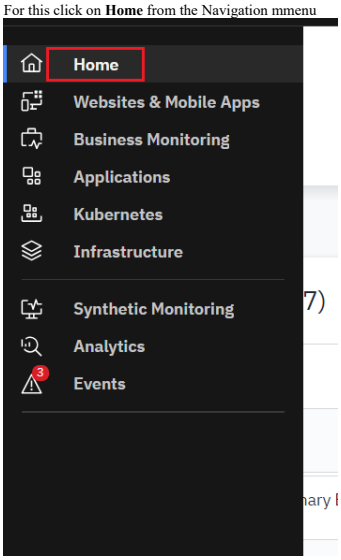



g. **Smart Alerts** - To configure and manage intelligent alerts for the monitored applications. It enables setting up custom alert rules based on specific conditions, thresholds, or patterns related to your applications' performance, health, or behavior.

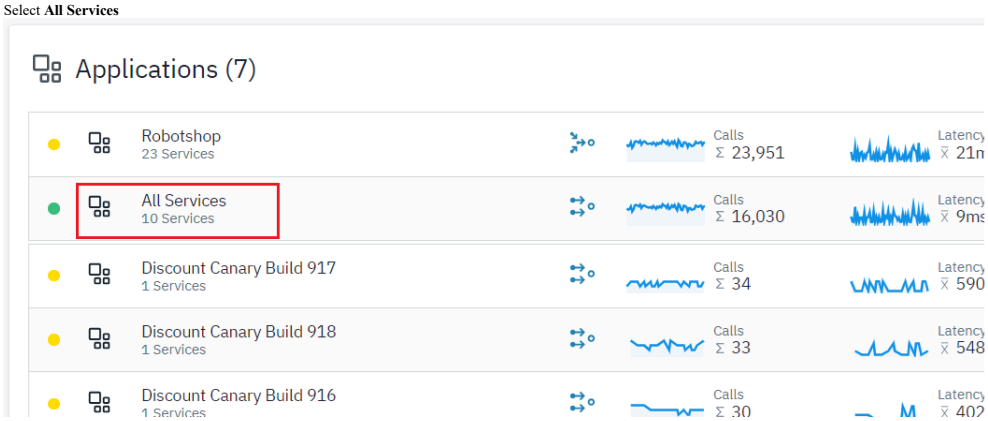



5. Clicking **All Services** will launch the dashboard, showing the summary of the various analytics or metrics of the Services monitored by Instana.

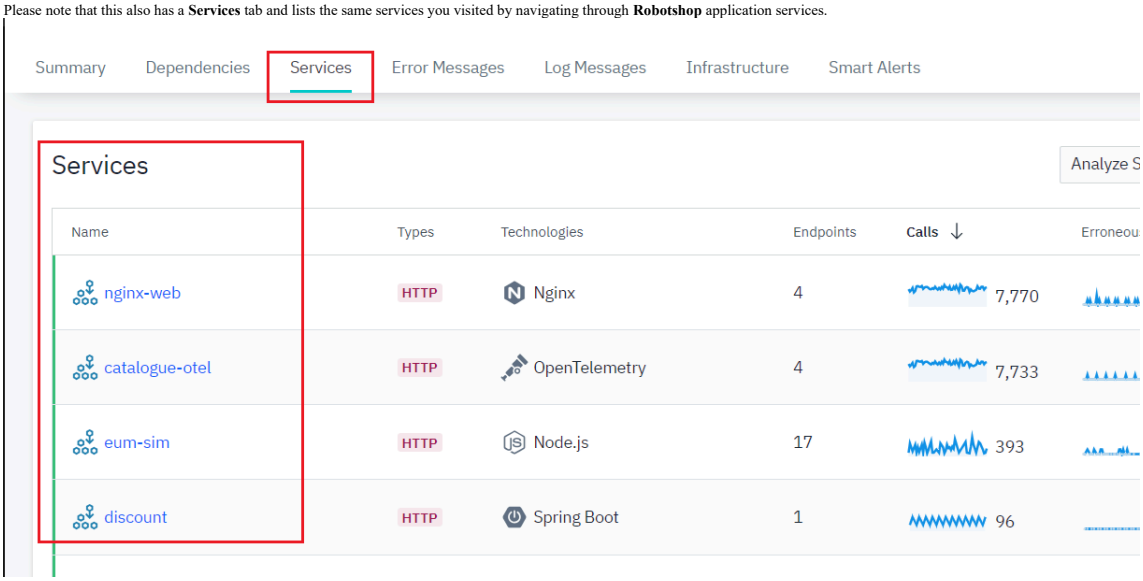
- For this click on **Home** from the Navigation mmenu



- Select **All Services**



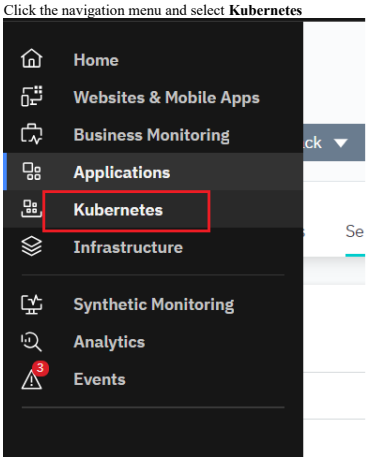

- Please note that this also has a **Services** tab and lists the same services you visited by navigating through **Robotshop** application services.



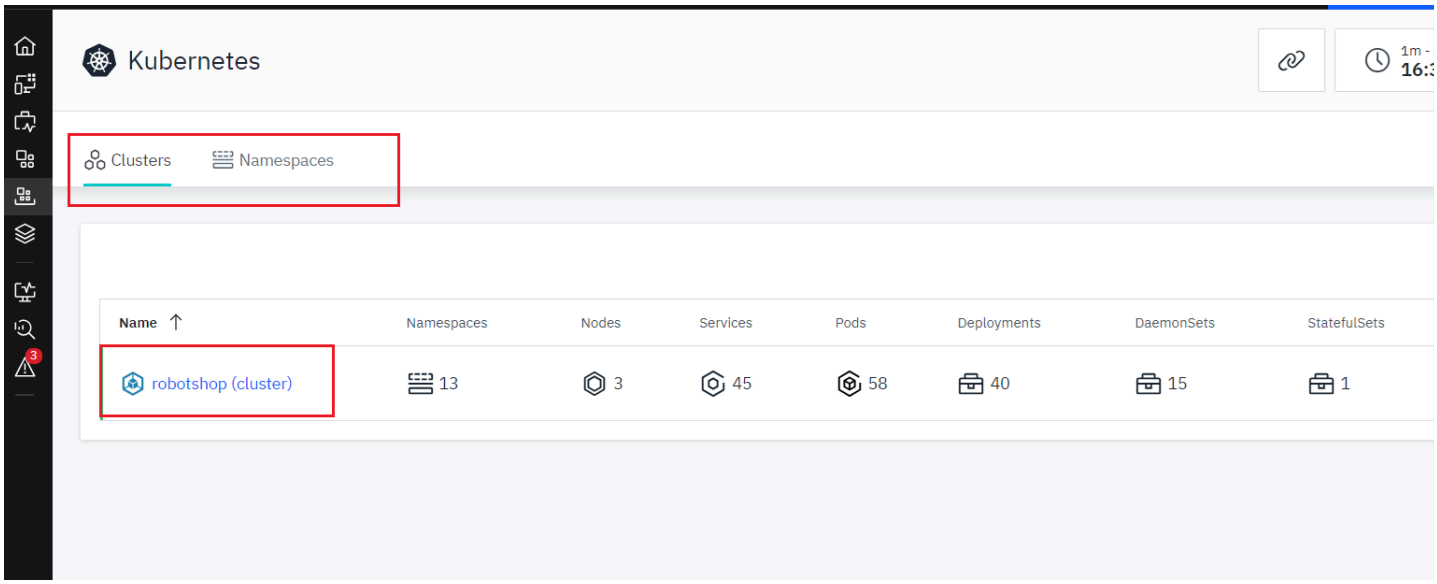

**Note:** The other tabs provide similar meaning/analytics as mentioned above for the Robotshop application.

## Exercise 5: Kubernetes

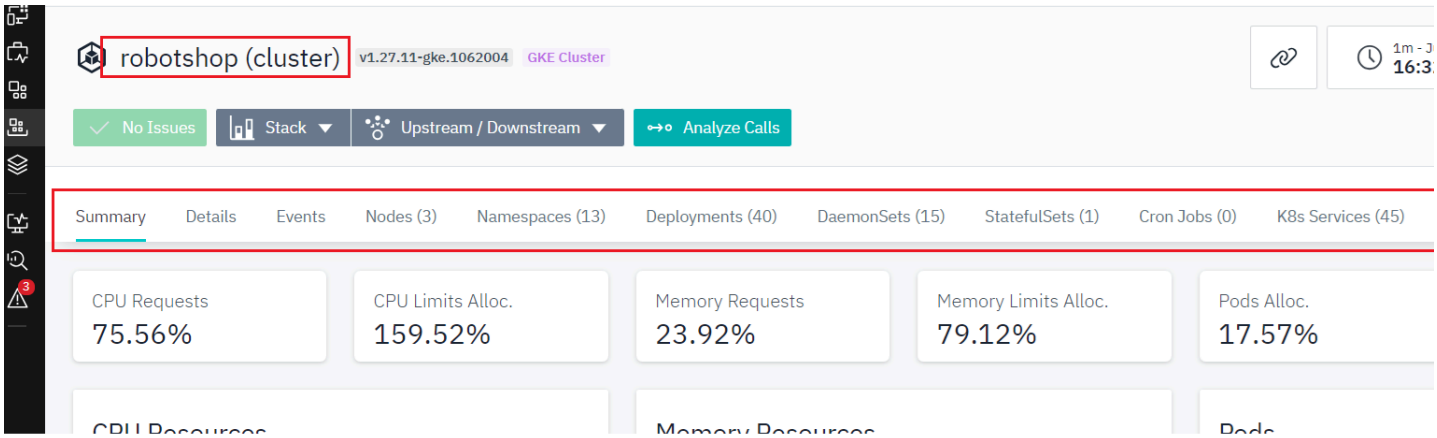
1. Click the navigation menu and select **Kubernetes**




2. The Kubernetes tab in the Navigation menu of Instana provides insights and monitoring capabilities specifically tailored for Kubernetes environments.
3. It allows you to gain visibility into your Kubernetes clusters, monitor their health and performance, and analyze the behavior of your containerized applications.
4. It aids in giving a Cluster Overview, monitors nodes and pods, and gives detailed container visibility.
5. Cluster topology and visualization are key features of Instana, which provides a visual representation of your Kubernetes cluster topology, showcasing the relationships and dependencies between nodes, pods, and containers which helps to understand the overall structure of your cluster and the interactions between its components.
6. Select the **Robotshop** cluster, which will take you to the analytics dashboard of the cluster. Various details/analytics and metrics related to Events, Nodes, Namespaces, Deployments, CronJobs, Pods, Infrastructure, and so on can be found here.

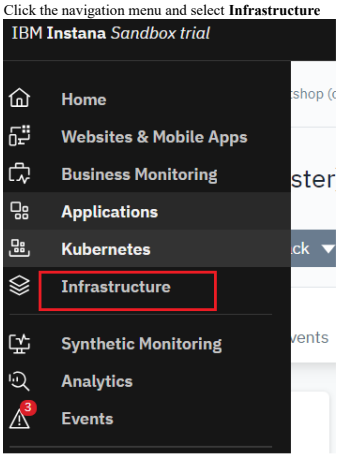



7. You can click each of them and drill down to get further Analysis and Metrics.




## Exercise 6: Infrastructure

1. Click the navigation menu and select **Infrastructure**

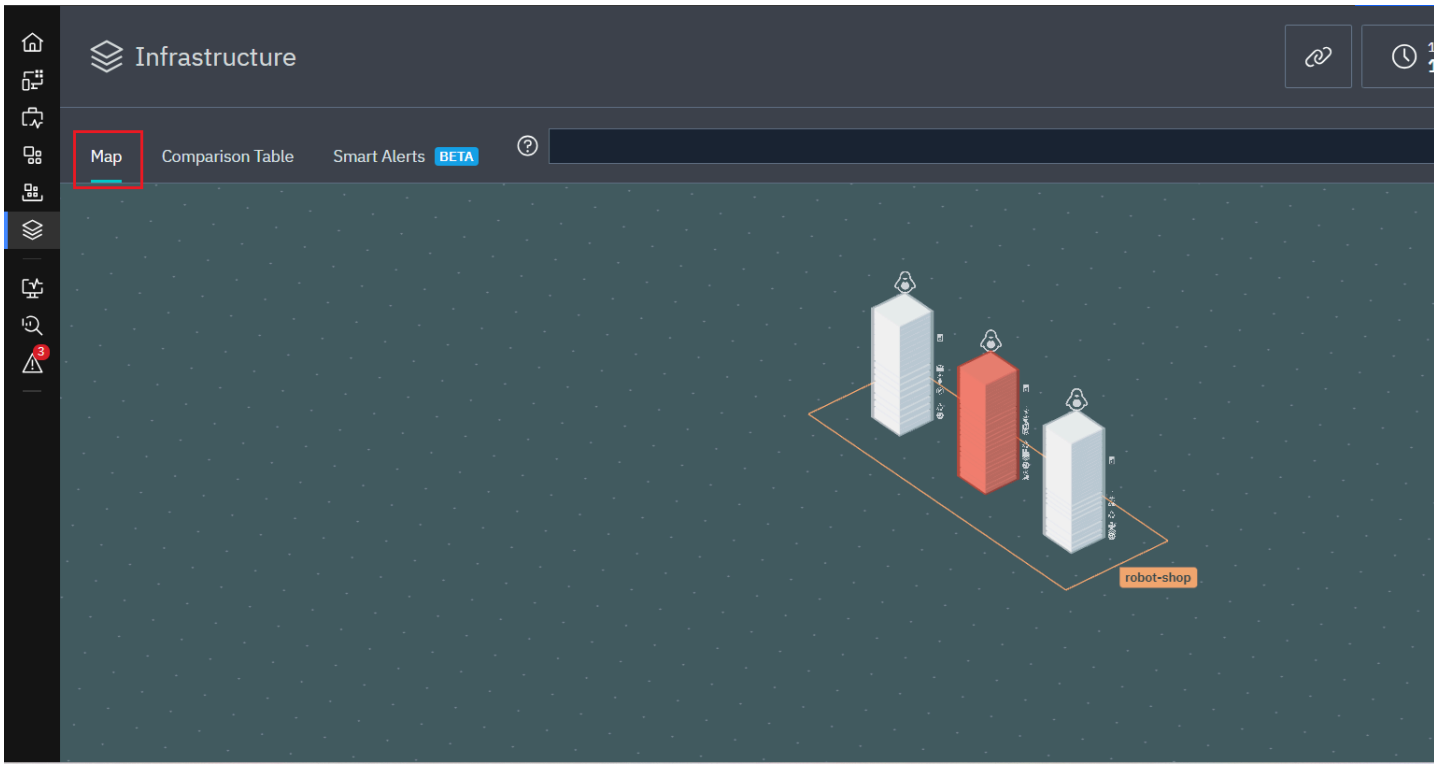



2. Instana provides visibility into the underlying infrastructure components that support the applications as part of its application monitoring capabilities.

3. This includes monitoring the performance and health of hosts, servers, containers, and other infrastructure elements. The information related to infrastructure can be found within the specific application or service views.

4. **Infrastructure Map**

a. Instana's infrastructure map gives you a summarized view of all monitored systems that help you visualize every aspect of your application infrastructure easily.
b. The infrastructure pillar's block represents the software components running on that system, changing color to reflect any incidents, events, or changes.

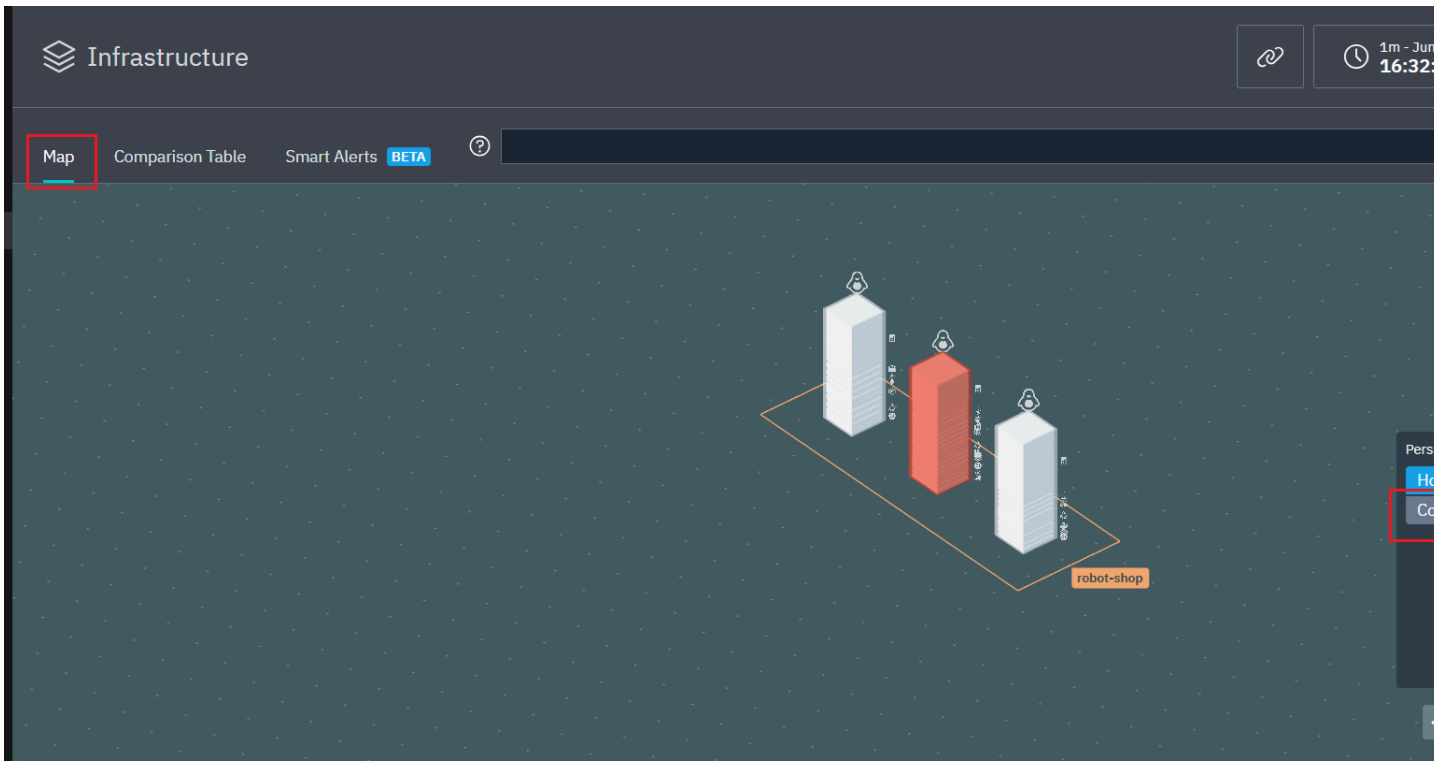



## Exercise 6.1: Configuring and Grouping Containers:

Configuring and grouping containers serve several purposes in container-based environments, some of them being Application Isolation, Resource Management, Load Balancing, and so on.

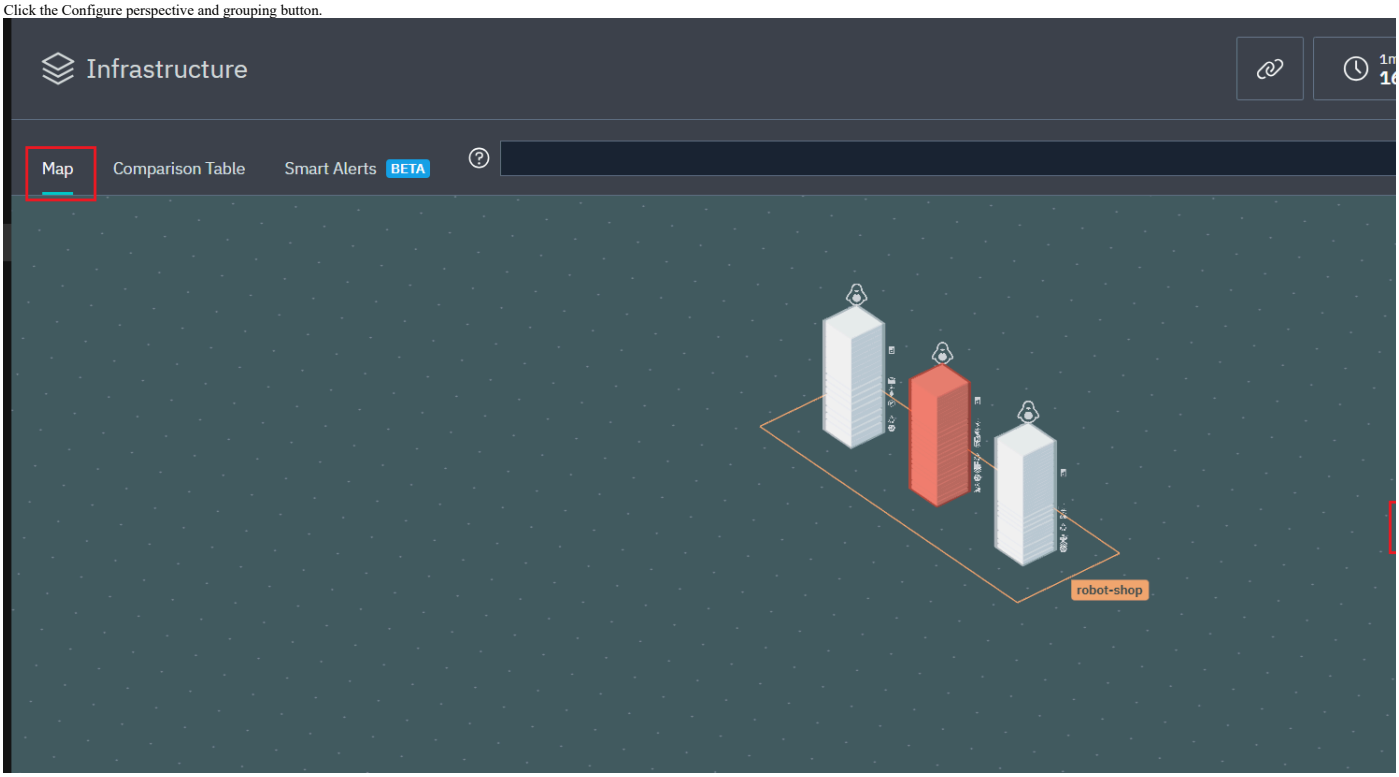
Container visibility is challenging, but with Instana, you can toggle between hosts and containers to pick the angle you prefer.

1. Click the Configure perspective and grouping button.

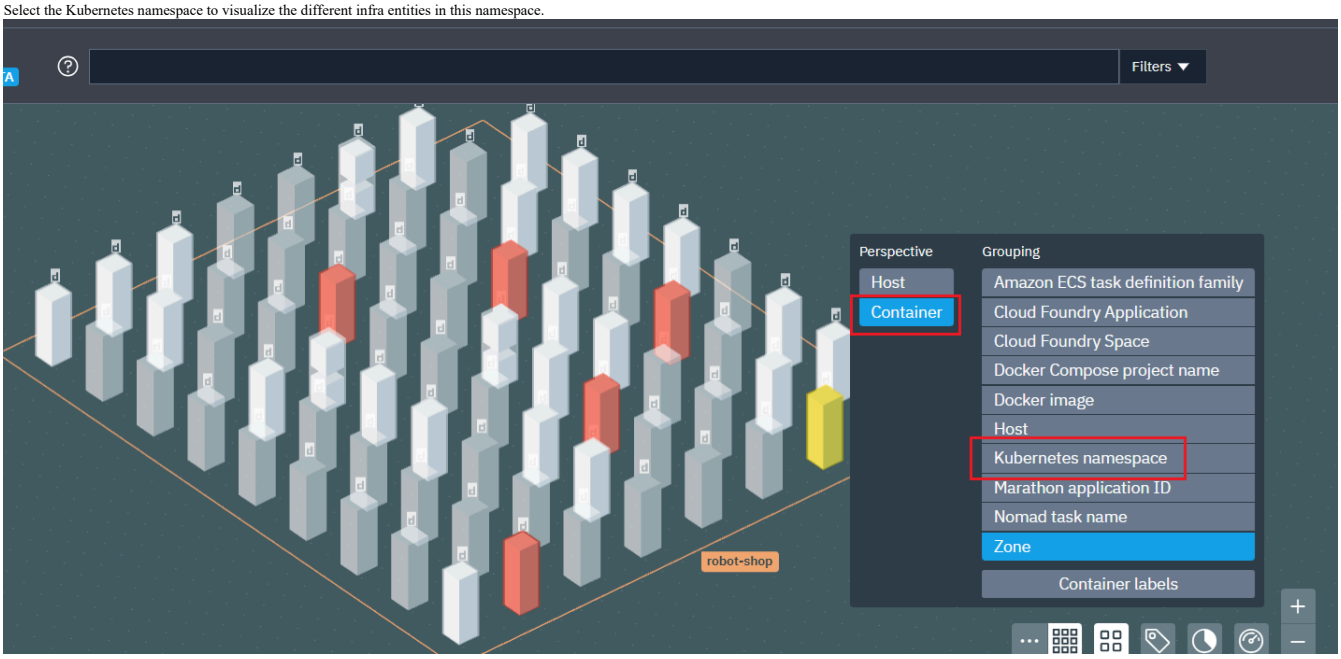



2. You can use filtering to enhance visibility by changing the grouping of your containers according to the filter you want to use.

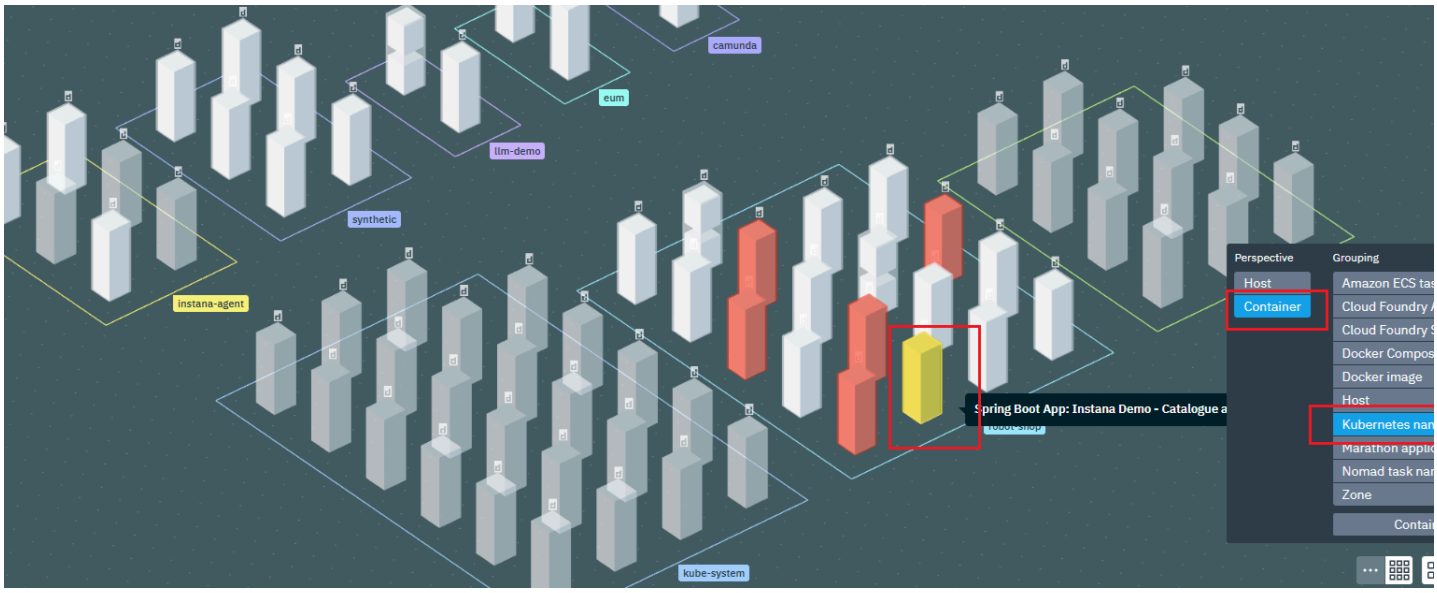
3. Click the Configure perspective and grouping button.



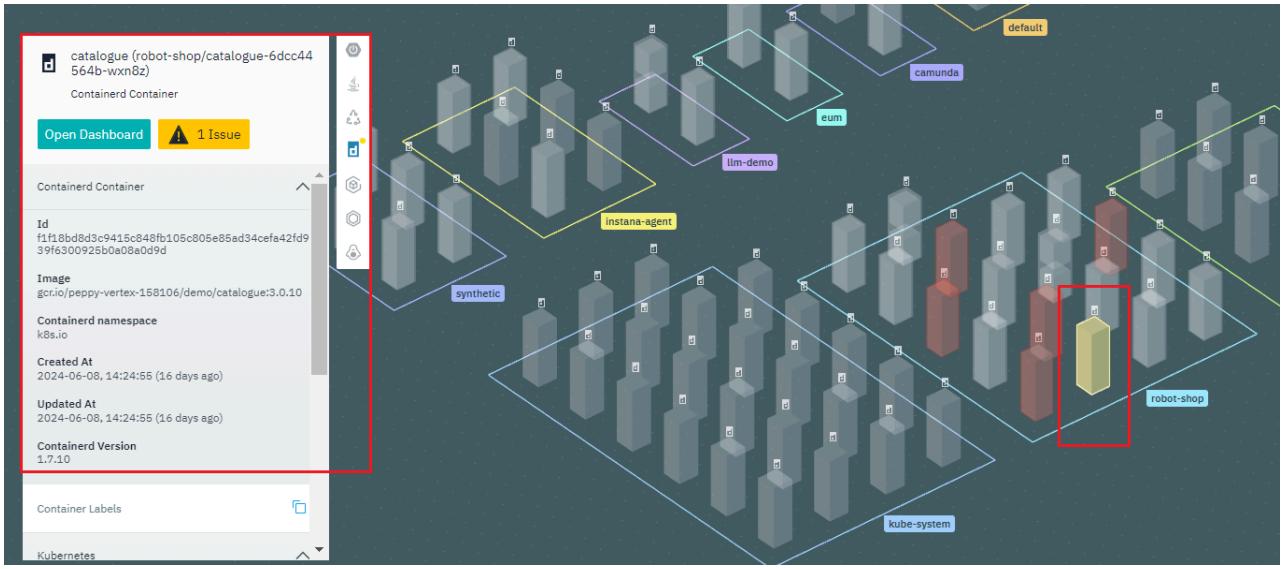

4. Select the Kubernetes namespace to visualize the different infra entities in this namespace.




5. Click the yellow hosts to see what is problematic for a host.



6. A dashboard view shows you how each container fits within the stack.

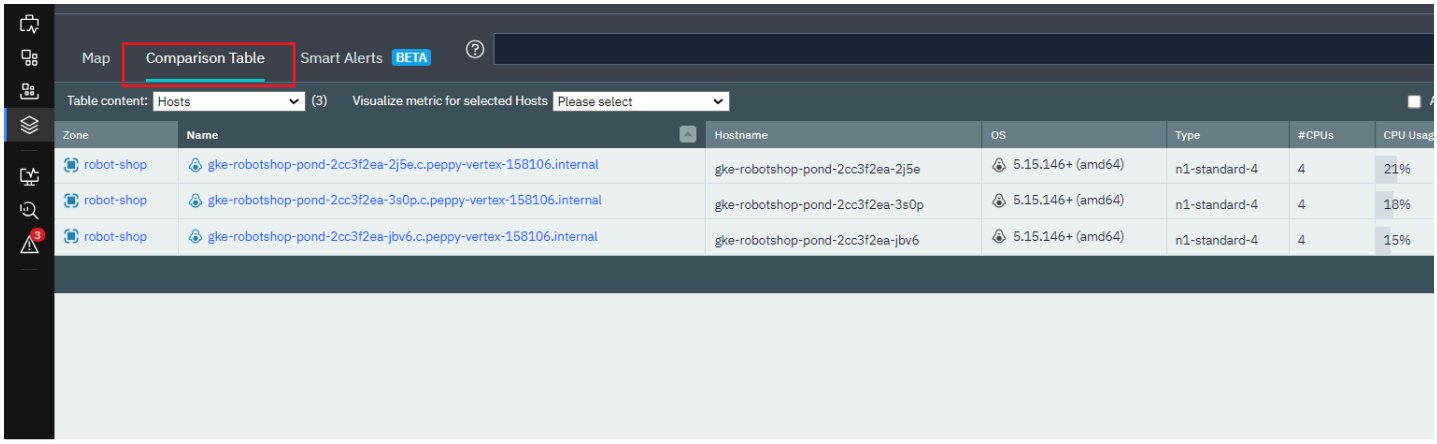



Every infra entity in Instana has its own dashboard. You can explore and understand the performance metrics for that entity and the relationship between that entity and other entities within the infra/platform and the application.

7. **Infrastructure Comparison Table**

a. The comparison table makes it simple to identify application components that are critical to the performance of an application or service.

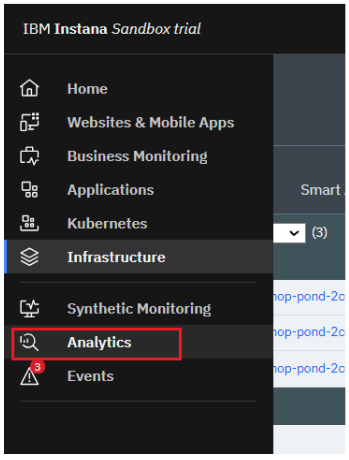
b. To see if new changes or deployments are improving or degrading performance, you can sort by metrics, including CPU usage, memory consumption, and compare metrics over time.



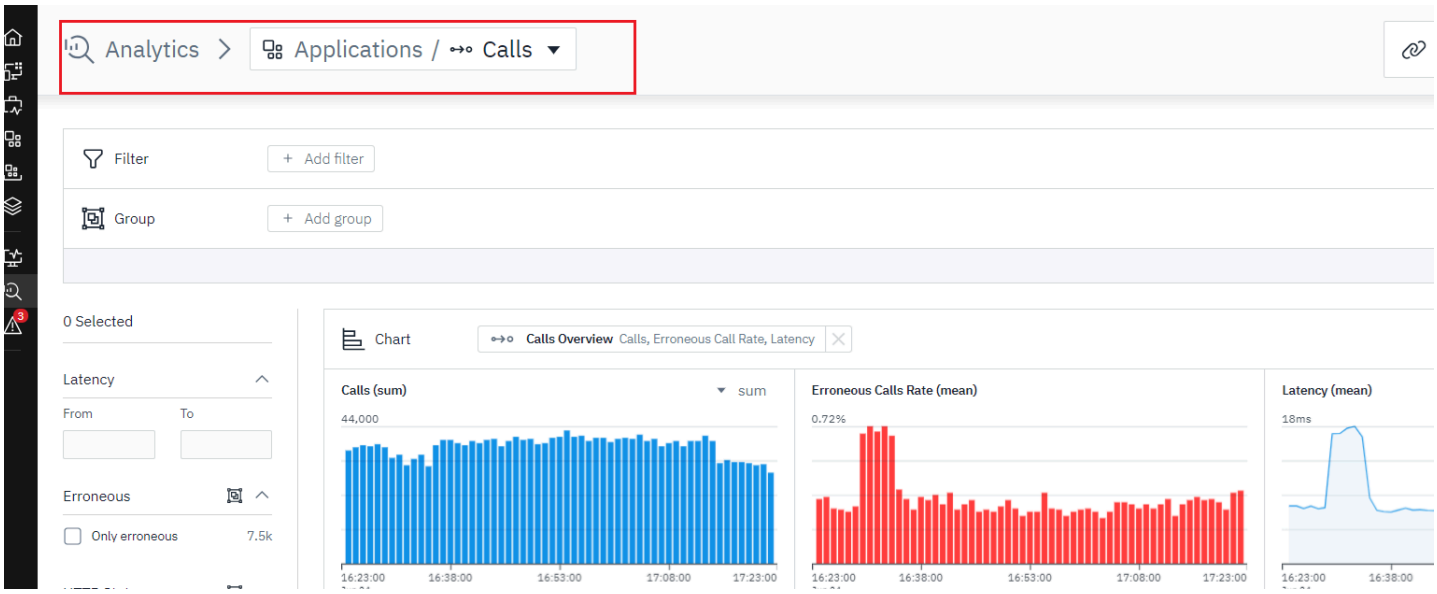

## Exercise 6: Analytics and Events

Instana's analytics features enable us to gain deep insights into the performance and behavior of the applications, infrastructure, and services.

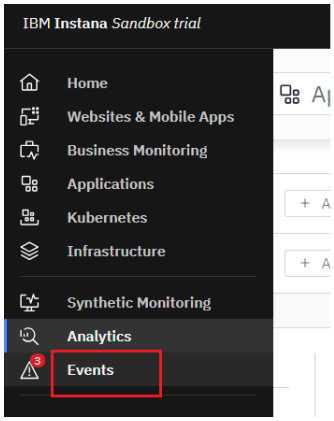
1. Click the navigation menu and select **Analytics**




2. This dashboard presents a deeper view of Analytics, including the various services' different calls.
3. You can also use filters and groups to customize the searches and drill down the Analytics
4. You can access this area through the other dashboards and thus access all tracing data.

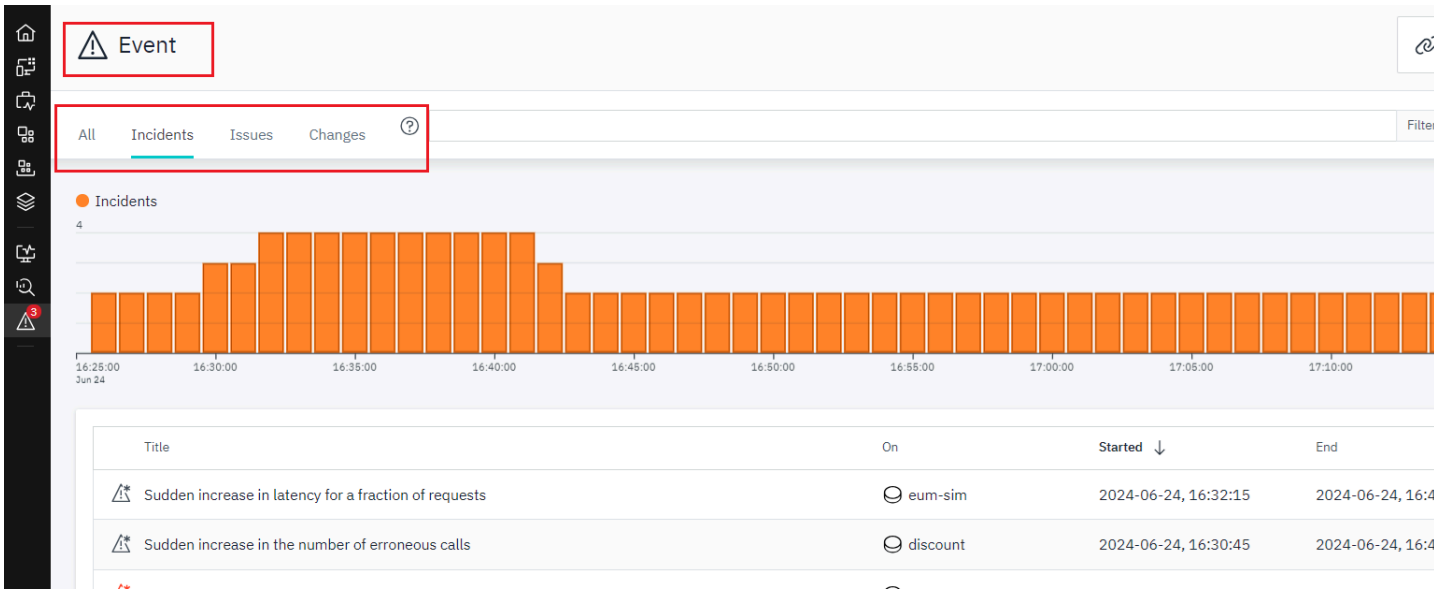



5. Click the navigation menu and select **Events**




6. The Events dashboard presents the details of all events, such as Incidents, Issues, and Changes that have occurred.

7. This data is based on a combination of Instana health rules and any custom events that have been created and can be viewed to see what triggered the issues and can drill into analytics for further analysis.




## Summary

Congratulations! You have completed the hands-on lab on Observability in Action with Instana.

In this lab, you have used Play with Instana, a sandbox with a pre-configured e-commerce application Robotshop and its services. You explored the sandbox to experiment with the tool's features and the different monitoring capabilities of Instana. You gained insights into the health and performance of the pre-configured application and its Infrastructure Components.

## Author(s)

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