Observing Cloud Resources

SRE Project Template

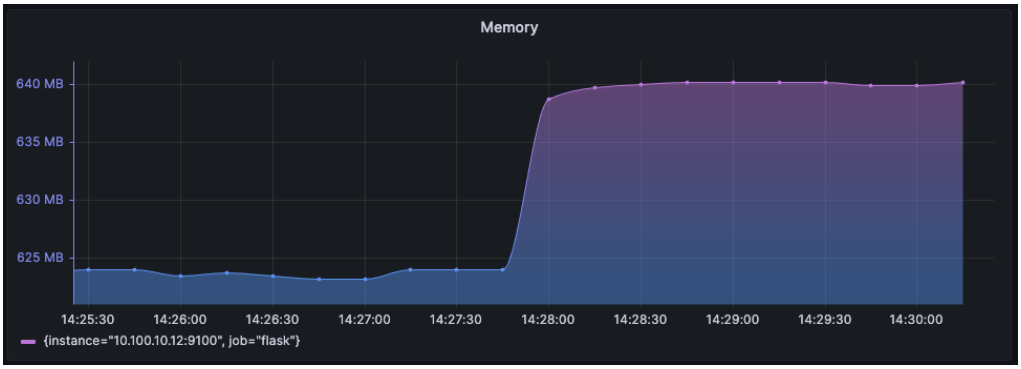
Categorize Responsibilities

Prometheus and Grafana Screenshots

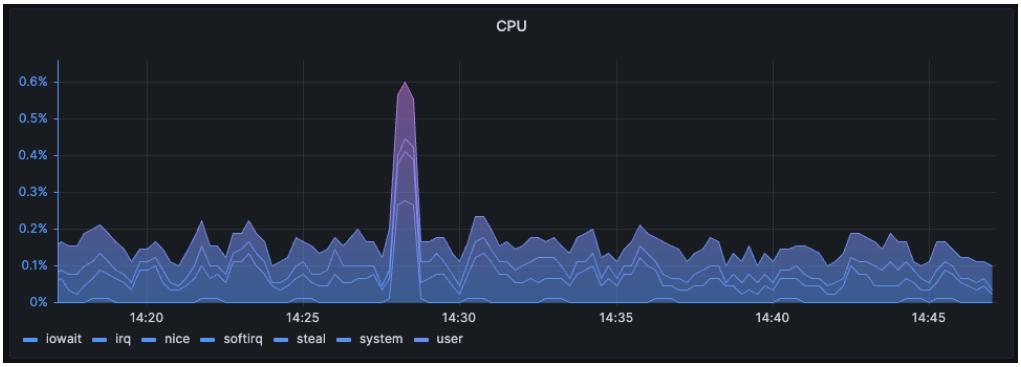
Provide a screenshot of the Prometheus node_exporter service running on the EC2 instance. Use the following command to show that the system is running: `sudo systemctl status node_exporter`

```
ubuntu@ip-10-100-12-169:~$ sudo systemctl status node_exporter
● node_exporter.service - Node Exporter
   Loaded: loaded (/etc/systemd/system/node_exporter.service; enabled; vendor preset: enabled)
   Active: active (running) since Wed 2023-03-22 16:05:07 UTC; 1min 26s ago
 Main PID: 11702 (node_exporter)
    Tasks: 3 (limit: 1140)
   CGroup: /system.slice/node_exporter.service
           └─11702 /usr/local/bin/node_exporter

Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=thermal_zone
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=time
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=timex
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=udp_queues
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=uname
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=vmstat
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=xfs
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:115 collector=zfs
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.368Z caller=node_exporter.go:199 msg="Listening on" address=:9100
Mar 22 16:05:07 ip-10-100-12-169 node_exporter[11702]: level=info ts=2023-03-22T16:05:07.373Z caller=tls_config.go:191 msg="TLS is disabled." http2=false
ubuntu@ip-10-100-12-169:~$
```

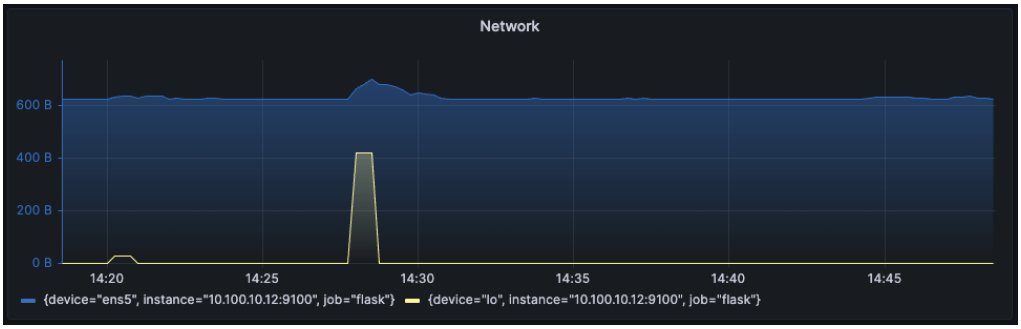
Host Metric (CPU, RAM, Disk, Network)	Dashboard
`node_memory_MemTotal_bytes{job="flask"} - node_memory_MemAvailable_bytes{job="flask"}`	

```
avg(rate(node_cpu_seconds_total{job="flask",mode!='idle'}[1m])) by (mode) * 100
```




```
node_disk_io_now{job="flask"}
```


```
rate(node_network_transmit_bytes_total{job="flask"}[1m])
```



Responsibilities

1. The development team wants to release an emergency hotfix to production. Identify two roles of the SRE team who would be involved in this and why.

***Release Manager**: To make sure the change satisfies all dependencies and criteria, prepare a rollback procedure, then execute the release.*
***Monitoring Engineer:** To keep an eye on the system metrics and alerts during the release so any possible problems are caught ASAP.*

2. The development team is in the early stages of planning to build a new product. Identify two roles of the SRE team that should be invited to the meeting and why.

***System Architect**: To plan necessary infrastructure changes, discuss technology options, prepare documentation for the Developer team.*
***Team Lead:** To provide high level contribution to architectural discussions and collect necessary information for the SRE team for further tasks related to the new product.*

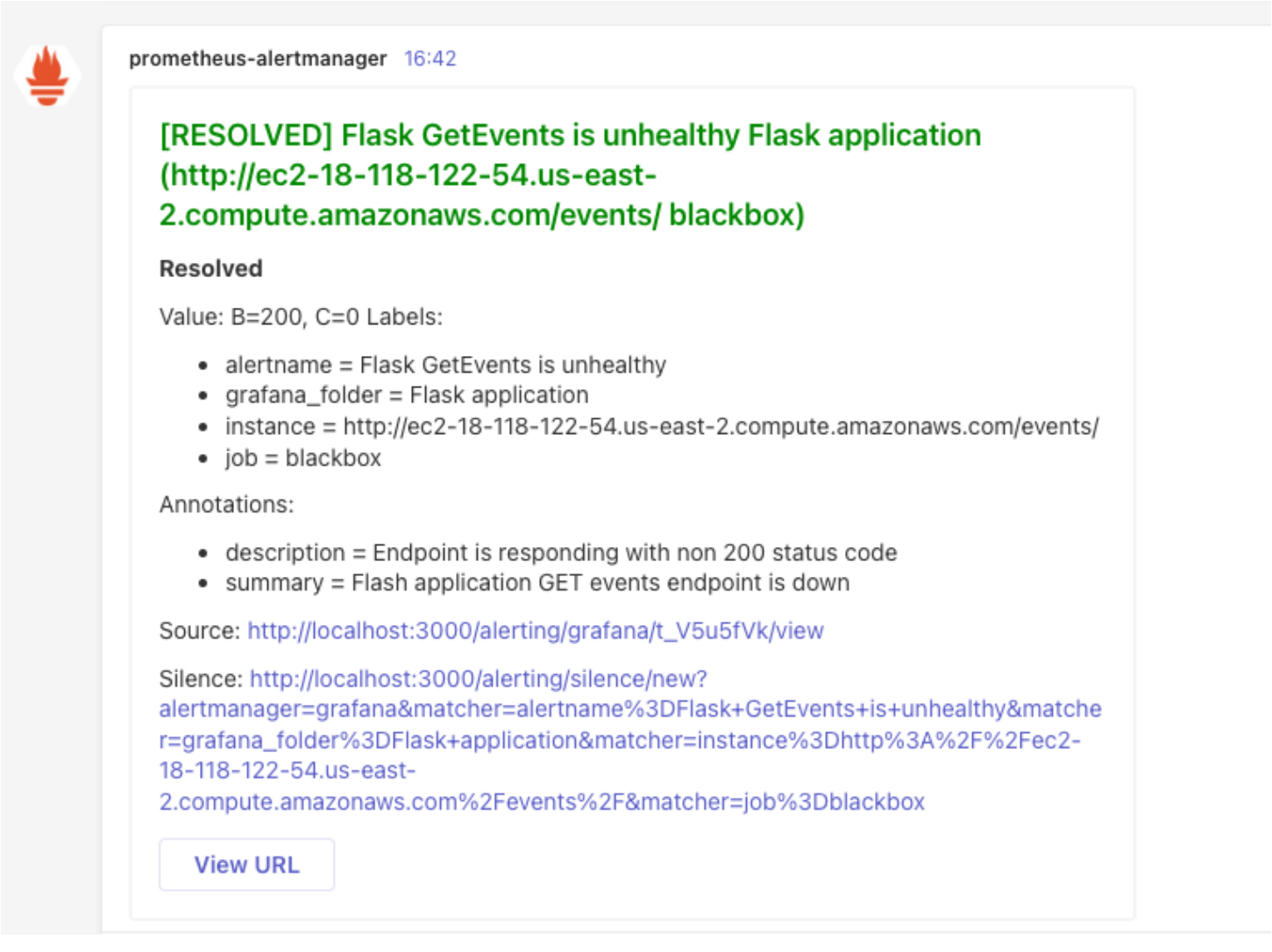
3. The emergency hotfix from question 1 was applied and is causing major issues in production. Which SRE role would primarily be involved in mitigating these issues?
*The prepared rollback plan should be executed by the **Release Manager**.*

Team Formation and Workflow Identification

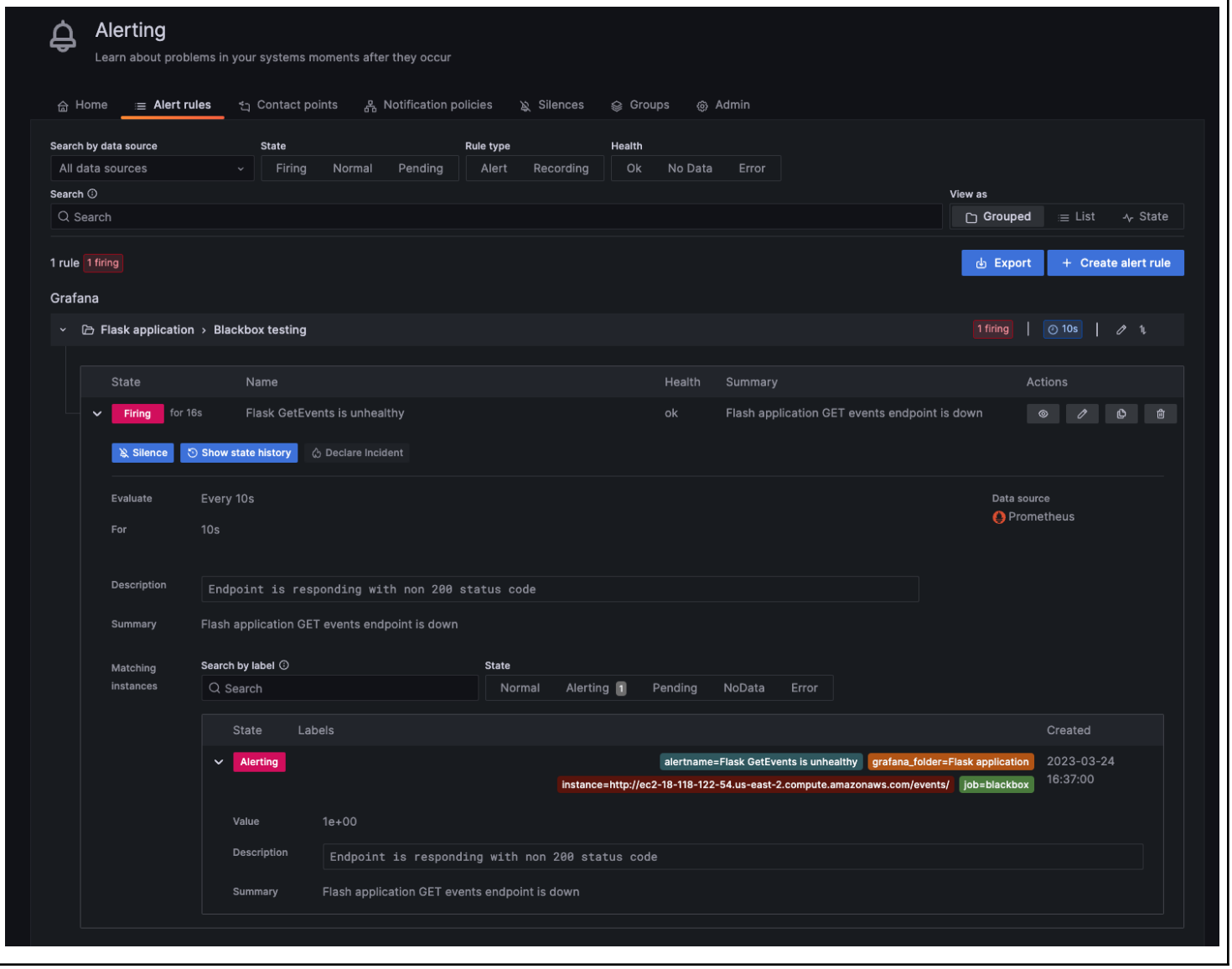
API Monitoring and Notifications

Display the status of an API endpoint: Provide a screenshot of the Grafana dashboard that will show at which point the API is unhealthy (non-200 HTTP code), and when it becomes healthy again (200 HTTP code).

Create a notification channel: Provide a screenshot of the Grafana notification which shows the summary of the issue and when it occurred.

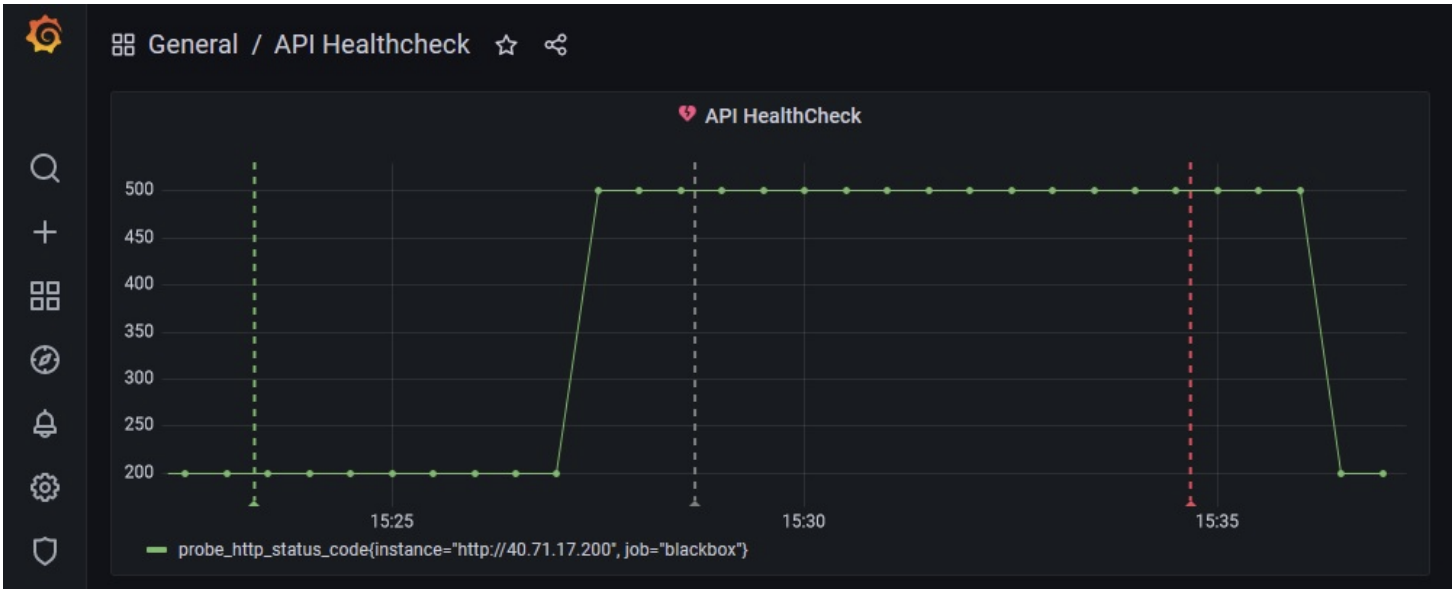


Configure alert rules: Provide a screenshot of the alert rules list in Grafana.


Alerting
Learn about problems in your systems moments after they occur
Home
Alert rules
Contact points
Notification policies
Silences
Groups
Admin
Search by data source
All data sources
State
Firing
Normal
Pending
Rule type
Alert
Recording
Health
Ok
No Data
Error
Search
Search
View as
Grouped
List
State
1 rule
1 firing
Export
Create alert rule
Grafana
Flask application › Blackbox testing
1 firing
10s
State
Name
Health
Summary
Actions
Firing
for 16s
Flask GetEvents is unhealthy
ok
Flash application GET events endpoint is down
Silence
Show state history
Declare Incident
Evaluate
Every 10s
For
10s
Data source
Prometheus
Description
Endpoint is responding with non 200 status code
Summary
Flash application GET events endpoint is down
Matching instances
Search by label
Search
State
Normal
Alerting 1
Pending
NoData
Error
State
Labels
Created
Alerting
alertname=Flask GetEvents is unhealthy
grafana_folder=Flask application
instance=http://ec2-18-118-122-54.us-east-2.compute.amazonaws.com/events/
job=blackbox
2023-03-24 16:37:00
Value
1e+00
Description
Endpoint is responding with non 200 status code
Summary
Flash application GET events endpoint is down

Applying the Concepts

Graph 1



4a. Given the above graph, where does it show that the API endpoint is down? Where on the graph does this show that the API is healthy again?

This seems like a synthetic test checking the endpoint under http://40.71.17.200 , running in 30s frequency. The graph displayed the returned http status code by the endpoint. In the example at 15:27 the endpoint stated to return 500 , Server Error. I lasted for 9 minutes, ending at 15:36, where the received response code went back to 200, OK again.

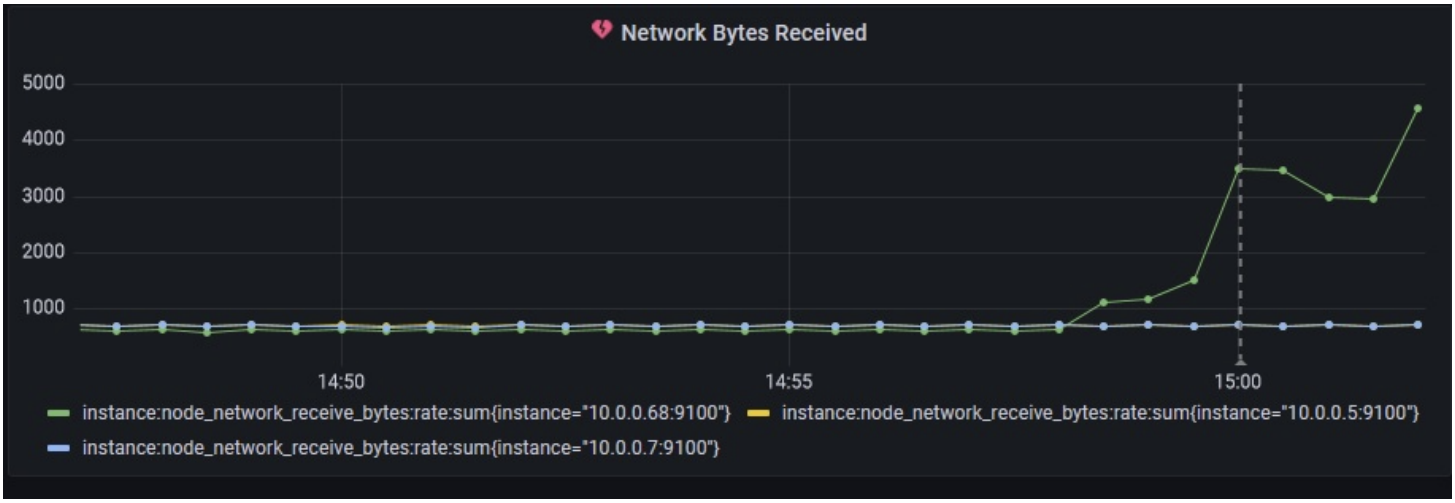
4b. If there was no SRE team, how would this outage affect customers?

Most possibly some of the system functionalities were affected. From the GET request and 200 status code, I suppose this endpoint might be used to serve some kind of information to the end user. The SRE team hopefully previously set up some kind of redundant configuration for this API so this outage did not affect the users. Otherwise the outage must be followed up with the Post Incident procedures.

4c. What could be put in place so that the SRE team could know of the outage before the customer does?

In my view the following things can be done:
System level monitoring can help to catch the root case of the issue even before the symptom occurs.
Synthetic tests with alerting, as in the example, can be configured in order to know about the issue as soon as the symptom is present.
Infrastructure configuration with redundancy can help to reduce the scale of the outage.

Graph 2



5a. Given the above graph, which instance had the increase in traffic, and approximately how many bytes did it receive (feel free to round)?

*The instance with IP 10.0.0.68 on port 9100 has the increased traffic. It experienced around 3000 bytes / second for the visible 2 minutes (120s) so the overall traffic must be around: 120 * 3000 = 360000 bytes = 360k*

5b. Which team members on the SRE team would be interested in this graph and why?

Probably the Monitoring Engineer would be interested to consider whether setting up an alerting rule would make sense.