



Monitoring

Level 100

Safe Harbor Statement

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Objectives

After completing this lesson, you should be able to:

- Describe the OCI Monitoring Service
- Understand Metrics, Alarms, monitoring query language
- Create a query in the Metrics Explorer and trigger an alarm

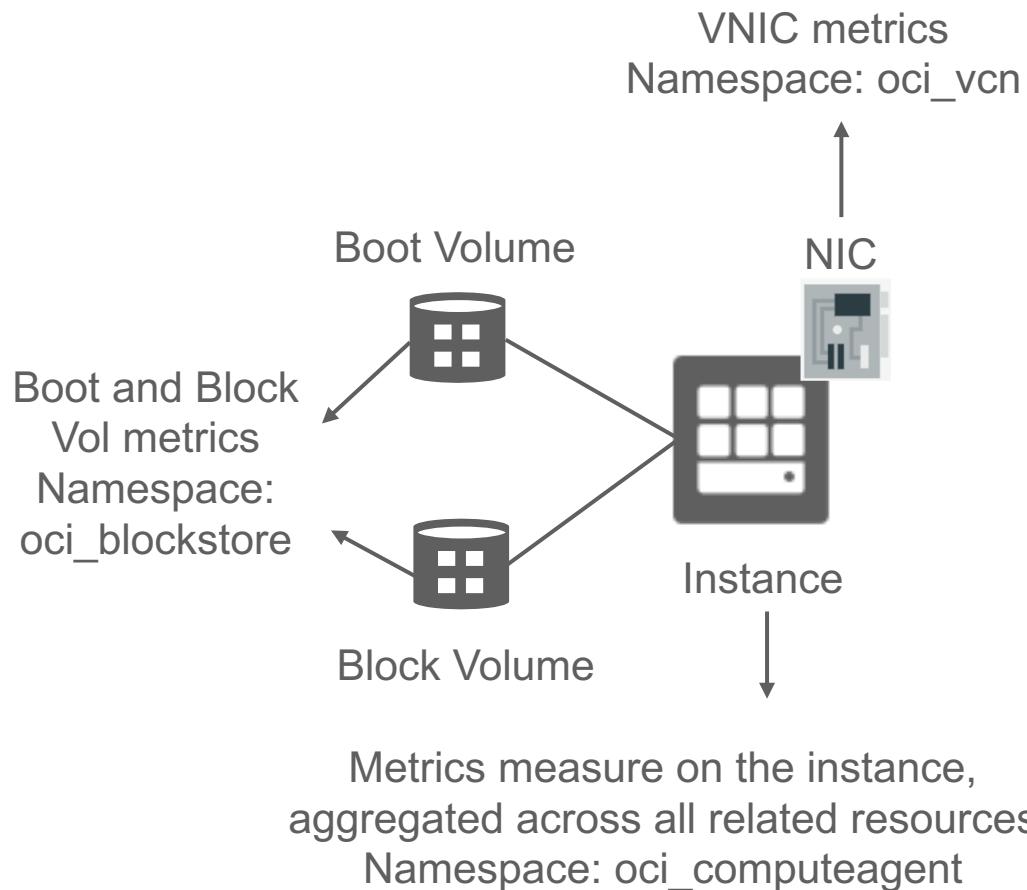
OCI Monitoring Service

- OCI Monitoring service enables you to monitor your cloud resources
- Currently, supports Metrics and Alarms features
- Current supported services include compute, VCN, Load Balancer, Block and Object storage
- Metrics feature relays metric data about the health, capacity, and performance of your cloud resources
 - Offers a standard set of pre-defined metrics for most common OCI resources
 - Includes advanced Monitoring Query Language (MQL) for deeper insights
 - Supports custom metrics (customer can bring their own metrics)
- Alarms feature to notify you when metrics meet alarm-specified triggers
 - Notifications sent via the OCI Notification service for Email and PagerDuty
- OCI Monitoring service is available via the OCI Console, API, SDK, and Terraform

Metrics

- Metric: a measurement related to health, capacity, or performance of a given resource. E.g. CpuUtilization metric measures usage of a compute instance
- Metric -> Namespace + Dimension + Metadata
 - Namespace: an indicator of the resource, service, or application that emits the metric. E.g. the CpuUtilization metric lists the metric namespace `oci_computeagent` as its source
 - Dimension: a qualifier to filter or group metric data. E.g. dimension name-value pair for filtering by AD: `availabilityDomain = "VeBZ:PHX-AD-1"`
 - Metadata: A reference provided in a metric definition. E.g. unit (bytes), for `oci_computeagent metricDiskBytesRead` (provides additional information for a metric)
- Metric Stream: An individual set of aggregated data for a metric. A stream can be either specific to a single resource or aggregated across all resources in the compartment

Compute Metrics



Metric Namespace*	Resource OCID	Where measured
oci_computeagent	Instance OCID	On the instance. Metrics in this namespace are aggregated across all the related resources on the instance. E.g., DiskBytesRead is aggregated across all the instance's attached storage volumes, and NetworkBytesIn is aggregated across all the instance's attached VNICs
oci_blockstore	Boot/Block OCID	By the Block Volume service. The metrics are for an individual boot/block volume
oci_vcn	VNIC OCID	By the Networking service. The metrics are for an individual VNIC

Other namespaces include oci_lbaas, oci_objectstorage, oci_notification

Resources

8 Metrics

START TIME END TIME
2019-02-06 03:35 2019-02-06 04:37

Reset charts

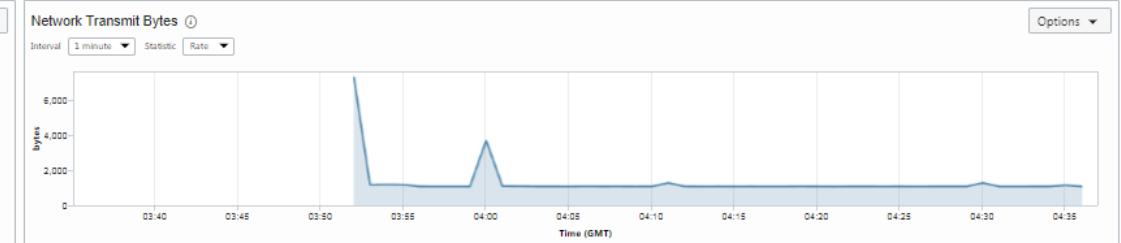
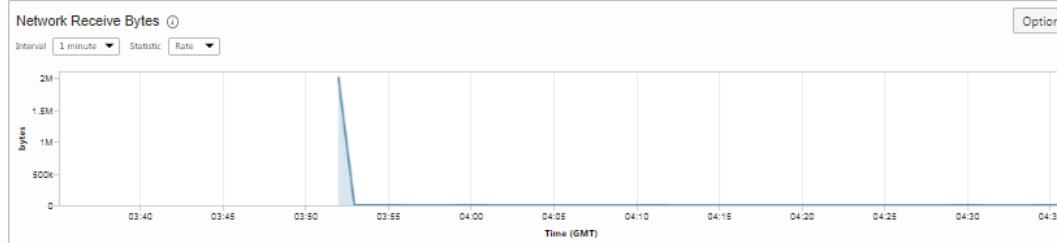
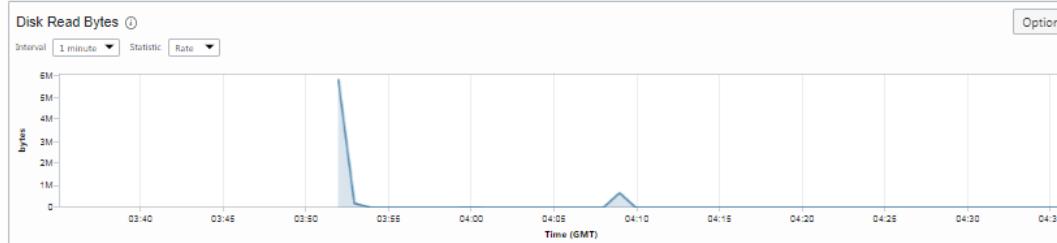
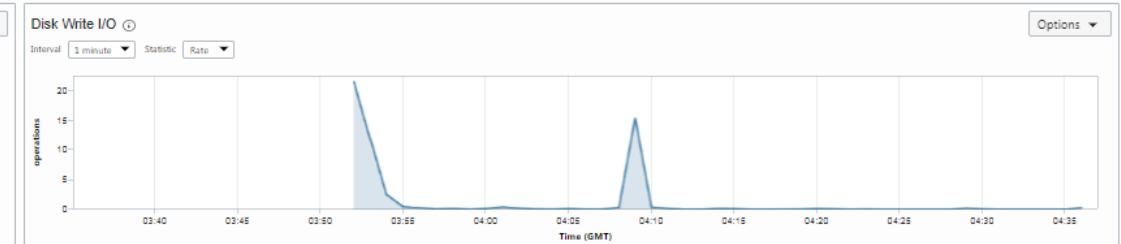
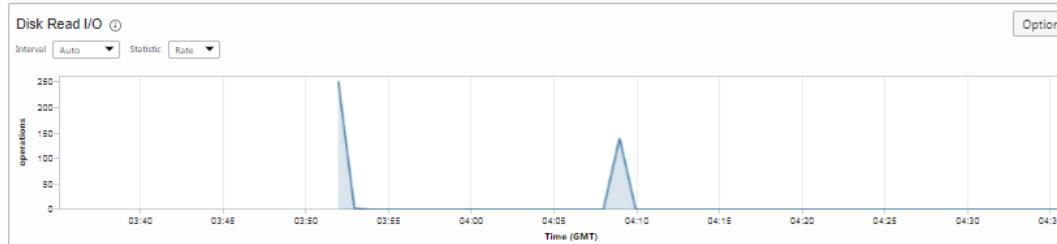
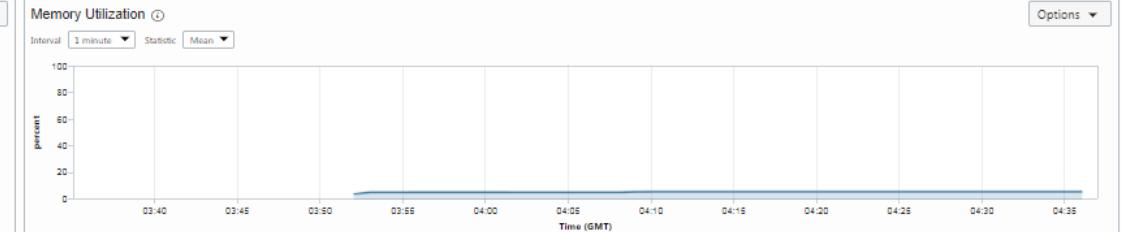
Metrics

Attached Block Volumes (0)

Attached VNICs (1)

Boot Volume (1)

Console Connections (0)



Metric Queries

- Monitoring Query Language (MQL) expression can be used to evaluate returning aggregated data. The query must specify a metric, statistic, and interval
- Syntax: metric[interval]{dimensionname=dimensionvalue}.groupingfunction.statistic
 - Interval: frequency at which data points are aggregated. E.g. 5 min
 - Statistic: available functions include count, max, mean, rate, min, sum, and percentile
- Examples
 - Max CPU utilization at 1 min intervals, CpuUtilization[1m].max()
 - Maximum CPU Utilization at a one-minute interval, filtered to a single resource, CpuUtilization[1m]{resourceId="ocid1.instance.oc1.phx.exampleuniqueID"}.max()
 - All read IOPS at a one-minute interval, filtered to a compartment, aggregated for the maximum, lopsRead[1m]{compartmentId="ocid1.compartment.oc1.phx..exampleuniqueID"}.grouping().max()

Alarms

- The Alarms feature of the Monitoring service publishes alarm messages to configured destinations managed by the OCI Notification service
- Monitoring Query Language (MQL) expression can be used to evaluate for the alarm. An alarm query must specify a metric, statistic, interval, and a trigger rule (threshold or absence)
- Alarm states
 - Firing
 - Reset - The alarm is not detecting the metric firing; the metric is no longer being emitted
 - Suspended

Use case

- Service Metrics: same metrics as the resource specific ones, but for all the resources in a compartment.
Allows for filtering with Dimensions
- Metric Explorer: Dive into detail on a specific metric and show multiple resource metrics together. Also includes a powerful Metric Query Language (MQL) interface for complex queries
- Alarm Definition: create an alarm based on a metric and create a notification via OCI Notifications Service (email and PagerDuty)
- Alarms Status: review the status of the configured firing alarms
- Both Monitoring pages plus the Resource specific charts allow the customer to create Alarms directly, prepopulating the query

Monitoring

Service Metrics

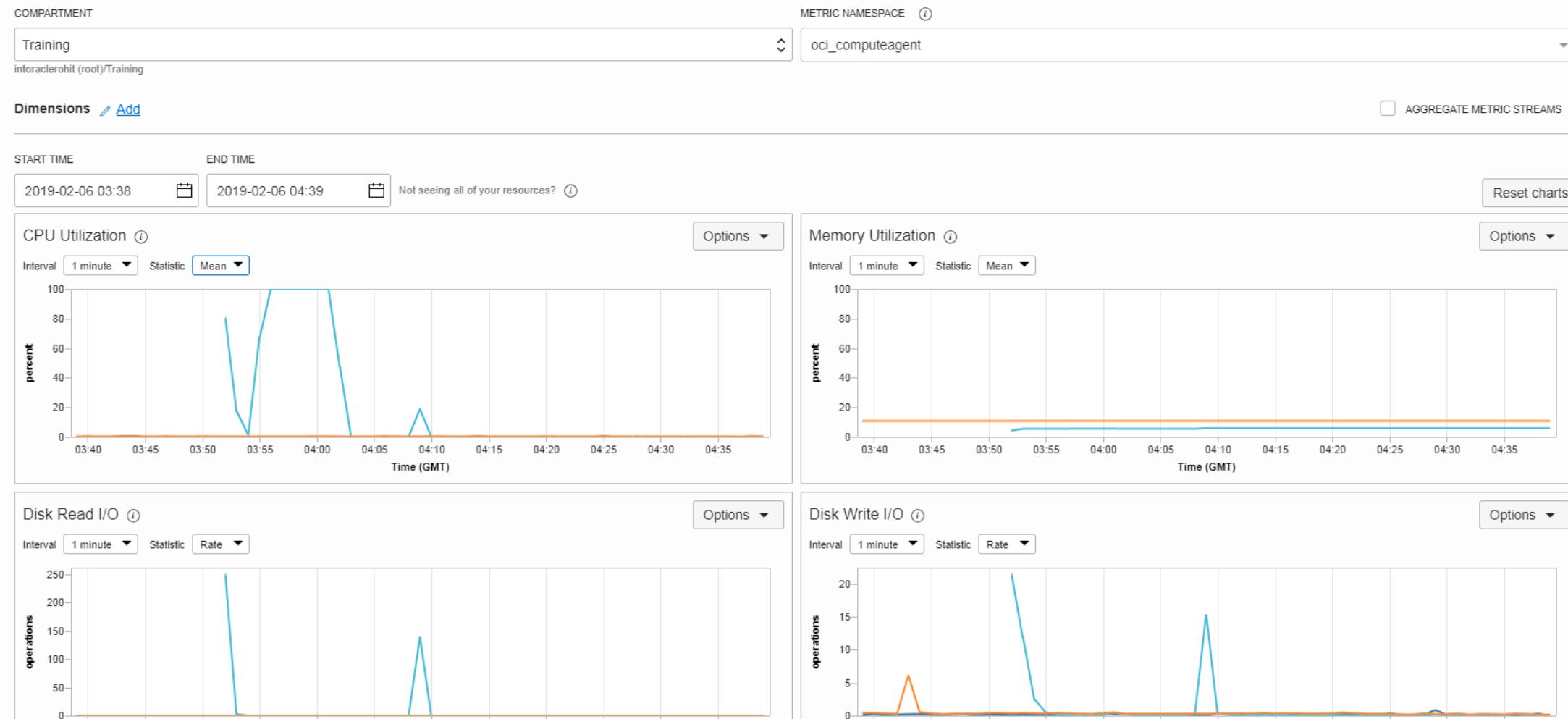
Monitor health, capacity, and performance of your Oracle Cloud Infrastructure resources through default queries provided by the selected service.

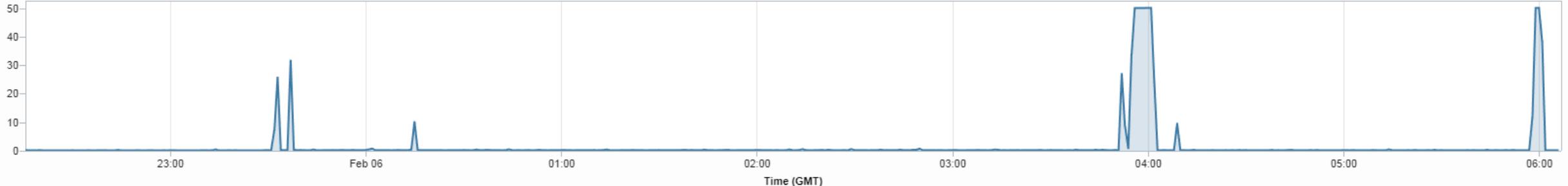
Service Metrics

Metrics Explorer

Alarm Status

Alarm Definitions





Adjust x-axis (window of data display)

09:00 12:00 15:00 18:00 21:00 Feb 06 03:00 06:00

[Close Query Editor](#)

Query 1

CpuUtilization[1m]{availabilityDomain = "dKYS:US-ASHBURN-AD-1"}.group...

[Add Query](#)

Query 1

COMPARTMENT

Training

intraclearohit (root)/Training

ADVANCED MODE

METRIC NAMESPACE [\(i\)](#)

oci_computeagent

METRIC NAME [\(i\)](#)

CpuUtilization

INTERVAL [\(i\)](#)

1m

STATISTIC [\(i\)](#)

Mean

Metric dimensions (optional)

DIMENSION NAME [\(i\)](#)

availabilityDomain

DIMENSION VALUE [\(i\)](#)

dKYS:US-ASHBURN-AD-1

AGGREGATE METRIC STREAMS

+ Additional dimension

[Update Chart](#)

[Create Alarm](#)

Define alarm

ALARM NAME

ALARM SEVERITY *(i)*

CPU-AD1

Critical

ALARM BODY *OPTIONAL (i)*

Enter notification content. Example: High CPU usage alert. Follow runbook instructions for resolution.

Limited to 1000 characters (0/1000)

Tags (optional)

Tagging is a metadata system that allows you to organize and track alarms within your tenancy.

TAG NAMESPACE

TAG KEY

VALUE

None (apply a freeform tag) *(i)*

Metric description

The metric to evaluate for the alarm.

COMPARTMENT

METRIC NAMESPACE *(i)*

METRIC NAME *(i)*

Training

oci_computeagent

CpuUtilization

intoraclerohit (root)/Training

INTERVAL *(i)*

STATISTIC *(i)*

1m

Mean

Metric dimensions (optional)

DIMENSION NAME [\(i\)](#)

availabilityDomain

DIMENSION VALUE [\(i\)](#)

dKYS:US-ASHBURN-AD-1

AGGREGATE METRIC STREAMS

Trigger rule

The condition for putting the alarm in the firing state.

OPERATOR [\(i\)](#)

greater than

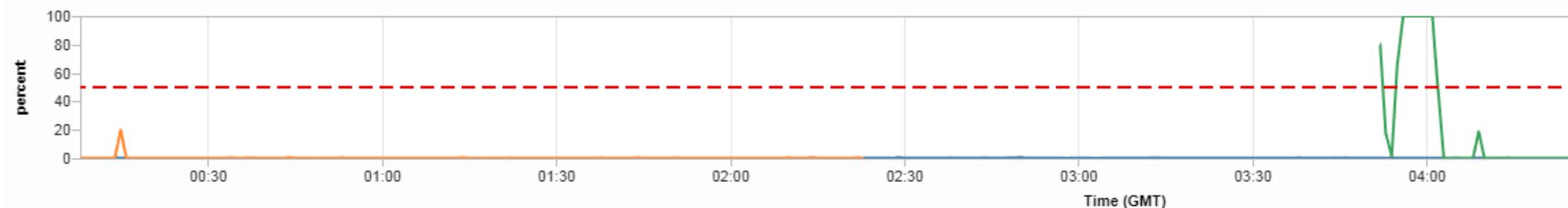
VALUE [\(i\)](#)

50

TRIGGER DELAY MINUTES [\(i\)](#)

1

CPU Utilization



Query 1 (6 metric streams)

```
CpuUtilization[1m]{availabilityDomain = "dKYS:US-ASHBURN-AD-1"}.mean()
```

Notifications

Destinations

DESTINATION SERVICE (i)COMPARTMENT (i)

Notification Service

Training

intoraclerohit (root)/Training

Create a new topic

TOPIC NAME

TOPIC DESCRIPTION OPTIONAL

CPU-AD1

SUBSCRIPTION PROTOCOL (i)

EMAIL ADDRESSES (COMMA OR SPACE SEPARATED)

Email

rohit.rahi@oracle.com

Create topic and subscription

Cancel

 REPEAT NOTIFICATION? (IF ALARM CONTINUES TO FIRE) (i)

NOTIFICATION INTERVAL

60

minutes

▼

 SUPPRESS NOTIFICATIONS ENABLE THIS ALARM? (i)This alarm applies to **6** metric streams.**Save alarm**

Cancel

SUMMARY

Alarm fires when the `max()` of this metric is greater than the threshold value of 80, with a trigger delay of a minute.

ALARM SEVERITY

 Critical

EVALUATION

Compartment: Training-sub1
Namespace: oci_computeagent
Metric: CPUUtilization
Statistic: max()
Interval: 1m
Aggregation: None
Dimensions: resourceId:ocid1.instance.oc1.iad.abuwcljtbdslkkixnbabtcc65lvpnvcdmtva6ijesqwks4gvbjafcy7hc6a

Notifications:

Repeat notification:
Suppression:
Last updated:

[1 destination \(details\)](#)

Repeats every 5 minutes
Not suppressed
2019-02-06 04:10 GMT

TAGS

No tags applied

Alarm history

START TIME

END TIME

2019-02-06 00:17  2019-02-06 06:17 



Adjust x-axis (window of data display)



▶ Query 1 (1 metric stream)

```
CPUUtilization[1m]{resourceId = "ocid1.instance.oc1.iad.abuwcljtbdslkkixnbabtcc65lvpnvcdmtva6ijesqwks4gvbjafcy7hc6a"} max()
```

Transition time

Transition state

2019-02-06 06:02 GMT

Ok

2019-02-06 05:58 GMT

Firing

2019-02-06 04:03 GMT

Ok

2019-02-06 03:56 GMT

Firing



Monitoring Demo

Design Considerations

- OCI Monitoring service doesn't support OCI DB Systems and ATP/ADW
- OCI Monitoring service doesn't support FastConnect/VPN to report on availability, connectivity and performance between customer data centers and VCNs
- OCI compute instances need to have a public IP in order to emit metrics

Pricing

- OCI Monitoring Ingestion:
 - Price \$0.0025 per 1 million data points ingested, first 500 Million data points ingested per month free
- OCI Monitoring Retrieval:
 - Price \$0.0015 per 1 million data points analyzed, first 1 Billion data points analyzed per month free

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