Cheatsheet: Amazon SageMaker Monitoring

Amazon SageMaker is a fully managed machine learning service used to build, train, and deploy machine learning (ML) models into a production-ready hosted environment.

Learn more about Datadog's Amazon SageMaker monitoring capabilities here.

SageMaker Endpoints

You can deploy SageMaker Endpoints that host one or more models for use in real-time inference.

With **Datadog's preconfigured dashboard**, you can easily view the volume of invocations and errors, detect high endpoint latency, and determine if there are hardware resource utilization issues (such as CPU, GPU, and storage bottlenecks).

Relevant tags for endpoint metrics

TAG DESCRIPTION	TAG VALUE
The AWS region where your endpoint is hosted	region
The name of the model endpoint	endpointname
The name of the production variant for the model	variantname

1. Error metrics

METRIC DESCRIPTION	METRIC NAME
Number of model invocation requests which did not result in 2xx HTTP response, including 4xx/5xx status codes, low-level socket errors, malformed HTTP responses, and request timeouts This is the best metric to alert on for the total request error count	aws.sagemaker.invocation_model_errors
Number of model invocation requests that returned a 4xx HTTP response code	aws.sagemaker.invocation_4xx_errors
Number of model invocation requests that returned a 5xx HTTP response code	aws.sagemaker.invocation_5xx_errors

2. Resource utilization metrics

METRIC DESCRIPTION	METRIC NAME
Average percentage of CPU units that are used by the containers on the endpoint instances	aws.sagemaker.endpoints.cpuutilization
Average percentage of memory used by the containers on the endpoint instance	aws.sagemaker.endpoints.memory_utilization
Average percentage of disk space used by the containers on the endpoint instances	aws.sagemaker.endpoints.disk_utilization
Average percentage of GPU memory used by the containers on the endpoint instances	aws.sagemaker.endpoints.gpu_memory_utilization
Average percentage of GPU units used by the containers on the endpoint instances	aws.sagemaker.endpoints.gpu_utilization

3. Latency metrics

METRIC DESCRIPTION	METRIC NAME
Average interval of time taken by a model to respond to a SageMaker API request This includes the local communication times taken to send the request and to fetch the response from the model container and the time taken to complete the inference in the container	aws.sagemaker.model_latency
Average interval of time starting from when SageMaker receives the request until it returns a response to the client, minus the Model latency	aws.sagemaker.overhead_latency
Average interval of time from when SageMaker receives the request until it returns a response to the client	SUM(aws.sagemaker.model_latency + aws.sagemaker.overhead_latency)

4. Invocation metrics

METRIC DESCRIPTION	METRIC NAME
Total number of model invocation requests	aws.sagemaker.invocations
Number of model invocation requests normalized by the number of active instances for the production variant at the time of the request	aws.sagemaker.invocations_per_instance

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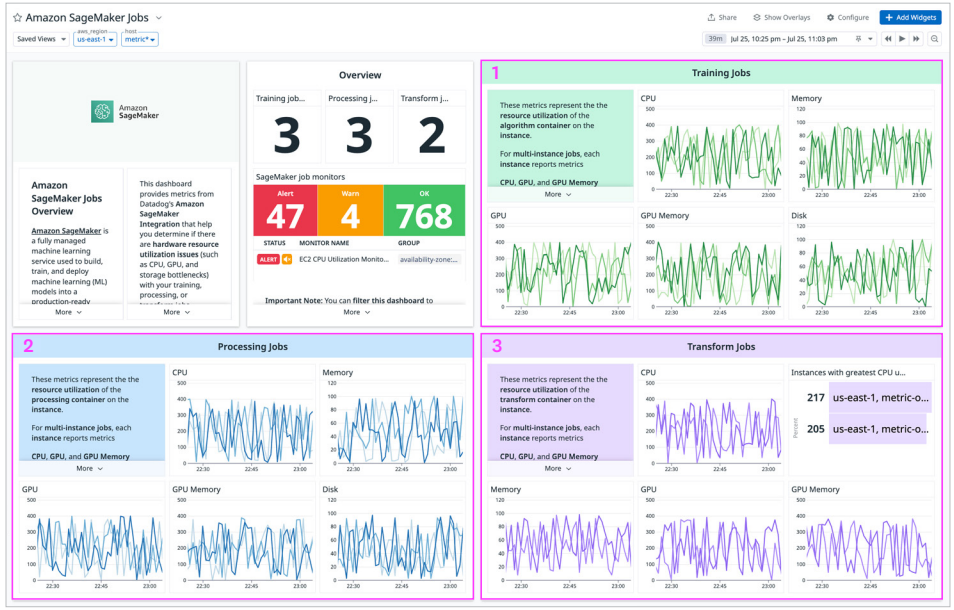
SageMaker Jobs

There are a variety of job types in SageMaker for accomplishing different tasks:

— To train a model, you create a **training** job.
— To process data for tasks such as feature engineering, data validation, or model evaluation you create a **processing** job.
— To get inferences from large datasets as a batch operation, you create a **transform** job.

Datadog's preconfigured dashboard helps you determine if there are hardware resource utilization issues (such as CPU, GPU, and storage bottlenecks) with your training, processing, or transform jobs.



Relevant tags for jobs metrics

TAG DESCRIPTION	TAG VALUE/FORMAT
The AWS region where the job is run	region
Identifier for a specific compute instance for a job	host
Tag value format for training jobs	[training-job-name]/algo-[instance-number-in-cluster]
Tag value format for processing jobs	[processing-job-name]/algo-[instance-number-in-cluster]
Tag value format for transform jobs	[transform-job-name]/[instance-id]

NOTE: You can filter to all instances for a specific job by using the wildcard asterisk () filter and typing "[job-name]"

1. Training jobs metrics

METRIC DESCRIPTION	METRIC NAME
Average percentage of CPU utilized by the algorithm container on the instance	aws.sagemaker.trainingjobs.cpuutilization
Average percentage of disk space used by the algorithm container on the instance	aws.sagemaker.trainingjobs.disk_utilization
Average percentage of memory used by the algorithm container on the instance	aws.sagemaker.trainingjobs.memory_utilization
Average percentage of GPU units used by the algorithm container on the instance	aws.sagemaker.trainingjobs.gpu_utilization
Average percentage of GPU memory used by the algorithm container on the instance	aws.sagemaker.trainingjobs.gpu_memory_utilization

2. Processing jobs metrics

METRIC DESCRIPTION	METRIC NAME
Average percentage of CPU utilized by the processing container on the instance	aws.sagemaker.processingjobs.cpuutilization
Average percentage of disk space used by the processing container on the instance	aws.sagemaker.processingjobs.disk_utilization
Average percentage of memory used by the processing container on the instance	aws.sagemaker.processingjobs.memory_utilization
Average percentage of GPU units used by the processing container on the instance	aws.sagemaker.processingjobs.gpu_utilization
Average percentage of GPU memory used by the processing container on the instance	aws.sagemaker.processingjobs.gpu_memory_utilization

3. Transform jobs metrics

METRIC DESCRIPTION	METRIC NAME
Average percentage of CPU utilized by the transform container on the instance	aws.sagemaker.transformjobs.cpuutilization
Average percentage of memory used by the transform container on the instance	aws.sagemaker.transformjobs.memory_utilization
Average percentage of GPU units used by the transform container on the instance	aws.sagemaker.transformjobs.gpu_utilization
Average percentage of GPU memory used by the transform container on the instance	aws.sagemaker.transformjobs.gpu_memory_utilization