**1. Overview**

This document outlines the installation of the Datadog Agent on a Kubernetes cluster using Helm, verification of collected metrics, and documentation of key observations.

**2. Installation of Datadog Agent**

**Prerequisites:**

* Kubernetes cluster running
* Helm installed
* Datadog API key

**Installation Steps:**

1. **Add the Datadog Helm repository:**
2. helm repo add datadog https://helm.datadoghq.com
3. helm repo update
4. **Create a Kubernetes secret for the Datadog API key:**
5. kubectl create secret generic datadog-secret --from-literal api-key=<DATADOG\_API\_KEY>

Replace <DATADOG\_API\_KEY> with your actual Datadog API key.

1. **Configure the Datadog values file:**  
   Create a file named datadog-values.yaml with the following content:
2. datadog:
3. apiKeyExistingSecret: datadog-secret
4. site: <DATADOG\_SITE>

Replace <DATADOG\_SITE> with your Datadog site (e.g., datadoghq.com).

1. **Deploy the Datadog Agent using Helm and the custom values file:**
2. helm install datadog-agent -f datadog-values.yaml datadog/datadog
3. **Verify the installation:**
4. kubectl get pods -n default | grep datadog

Expected output should list the running Datadog pods.

1. **Check Datadog Agent Logs:**
2. kubectl logs -l app=datadog-agent

This command retrieves logs from the Datadog Agent running in the cluster.

1. **Verify the API Key Configuration:**
2. kubectl get secret datadog -o yaml | grep api-key

This command checks whether the Datadog API key is correctly stored as a Kubernetes secret.

1. **Confirm Agent installation in Datadog UI:**  
   Verify that Agent pods (tagged with app.kubernetes.io/component:agent) appear on the **Containers page** in Datadog.

**3. Metrics Verification**

Once the agent is deployed, we verified the collection of key metrics from the cluster.

**3.1. Metrics Captured:**

* **CPU Usage:** Monitors node and pod CPU utilization.
* **Memory Usage:** Tracks memory consumption of nodes and pods.
* **Network Traffic:** Analyzes inbound and outbound traffic.
* **Pod Status:** Monitors pod health and readiness.
* **Container Restarts:** Detects any frequent container crashes.

**3.2. Screenshots of Metrics:  
  
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4. Observations and Notes**

* The agent successfully collected metrics and displayed them on the Datadog dashboard.
* No major anomalies were observed in resource consumption.
* Logs were successfully forwarded to Datadog.
* API key verification confirmed successful authentication.
* Agent pods were detected in the Datadog UI.

**5. Documentation and References**

For further details, refer to the official Datadog Kubernetes documentation: https://docs.datadoghq.com/containers/kubernetes/installation/?tab=helm