Monitor VMs with DII

NetApp virtualization solutions

NetApp
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Monitor VMs with DII

Learn about monitoring VMs with Data Infrastructure Insights in Red Hat OpenShift Virtualization

NetApp Data Infrastructure Insights (formerly Cloud Insights) integrates with OpenShift Virtualization to monitor VMs, providing visibility across public clouds and private data centers. It enables users to troubleshoot, optimize resources, and gain insights using dashboards, powerful queries, and alerts for data thresholds.

NetApp Cloud Insights is a cloud infrastructure monitoring tool that gives you visibility into your complete infrastructure. With Cloud Insights, you can monitor, troubleshoot, and optimize all your resources including your public clouds and your private data centers. For more information about NetApp Cloud Insights, refer to the Cloud Insights documentation.

To start using Data Infrastructure Insights, you can sign up at the following Data Infrastructure Insights Free Trial. For details, refer to the Data Infrastructure Insights Onboarding

Cloud Insights has several features that enable you to quickly and easily find data, troubleshoot issues, and provide insights into your environment. You can find data easily with powerful queries, you can visualize data in dashboards, and send email alerts for data thresholds you set. Refer to the video tutorials to help you understand these features.

For Cloud Insights to start collecting data you need the following

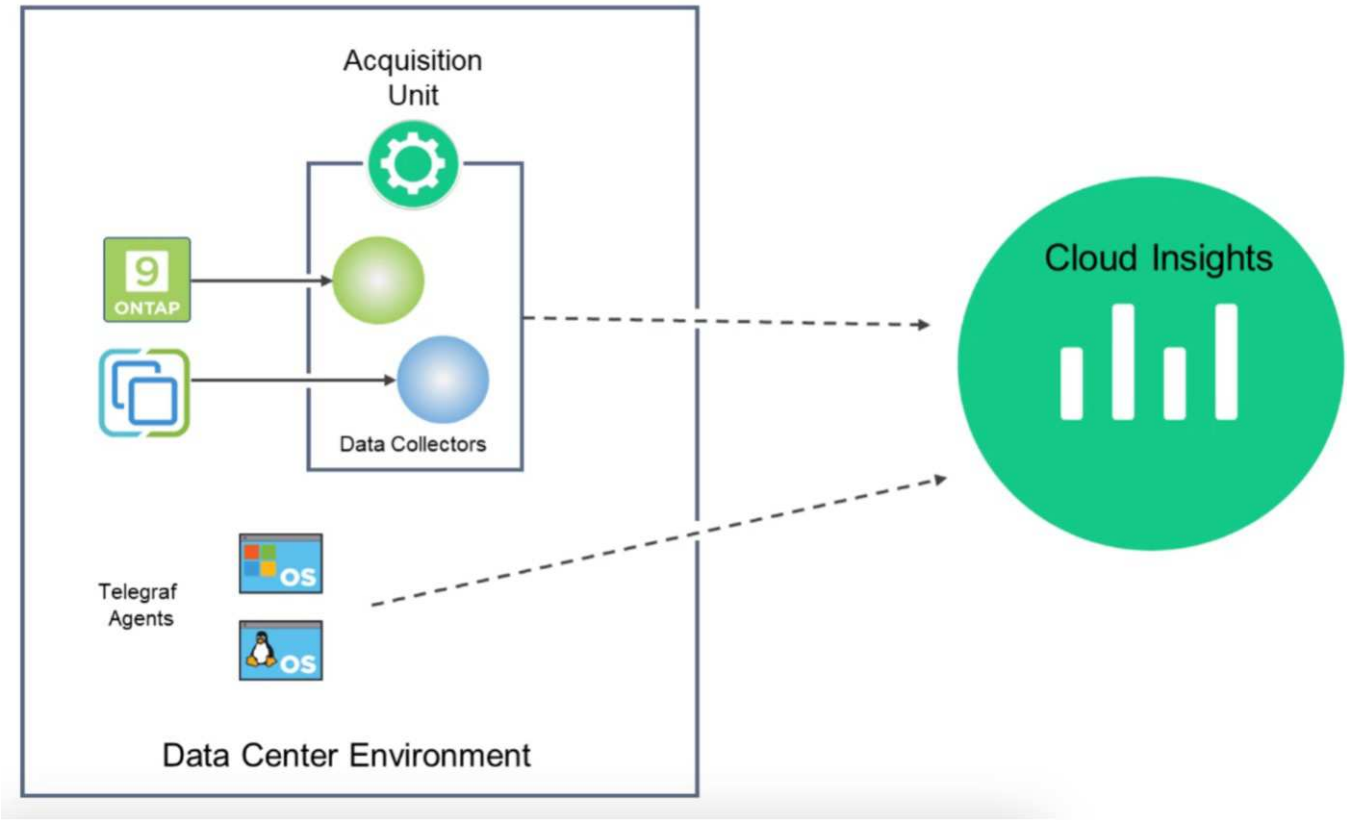
Data Collectors
There are 3 types of Data Collectors:
* Infrastructure (storage devices, network switches, compute infrastructure)
* Operating Systems (such as VMware or Windows)
* Services (such as Kafka)

Data Collectors discover information from the data sources, such as ONTAP storage device (infrastructure data collector). The information gathered is used for analysis, validation, monitoring, and troubleshooting.

Acquisition Unit
If you are using an infrastructure Data Collector, you also need an Acquisition Unit to inject data into Cloud Insights. An Acquisition Unit is a computer dedicated to hosting data collectors, typically a Virtual Machine. This computer is typically located in the same data center/VPC as the monitored items.

Telegraf Agents
Cloud Insights also supports Telegraf as its agent for collection of integration data. Telegraf is a plugin-driven server agent that can be used to collect and report metrics, events, and logs.

Cloud Insights Architecture



Integrate Data Infrastructure Insights to collect VM data in Red Hat OpenShift Virtualization

To start collecting data for VMs in OpenShift Virtualization, you need to install several components, including a Kubernetes monitoring operator, a data collector for Kubernetes, and an acquisition unit to gather data from ONTAP storage supporting VM disks.

1. A Kubernetes monitoring operator and data collector to collect Kubernetes data
   For complete instructions, refer to the documentation.
2. An acquisition unit to collect data from ONTAP storage that provides persistent storage for the VM disks
   For complete instructions, refer to the documentation.
3. A data collector for ONTAP
   For complete instructions, refer to the documentation

Additionally, if you are using StorageGrid for VM backups, you need a data collector for the StorageGRID as well.

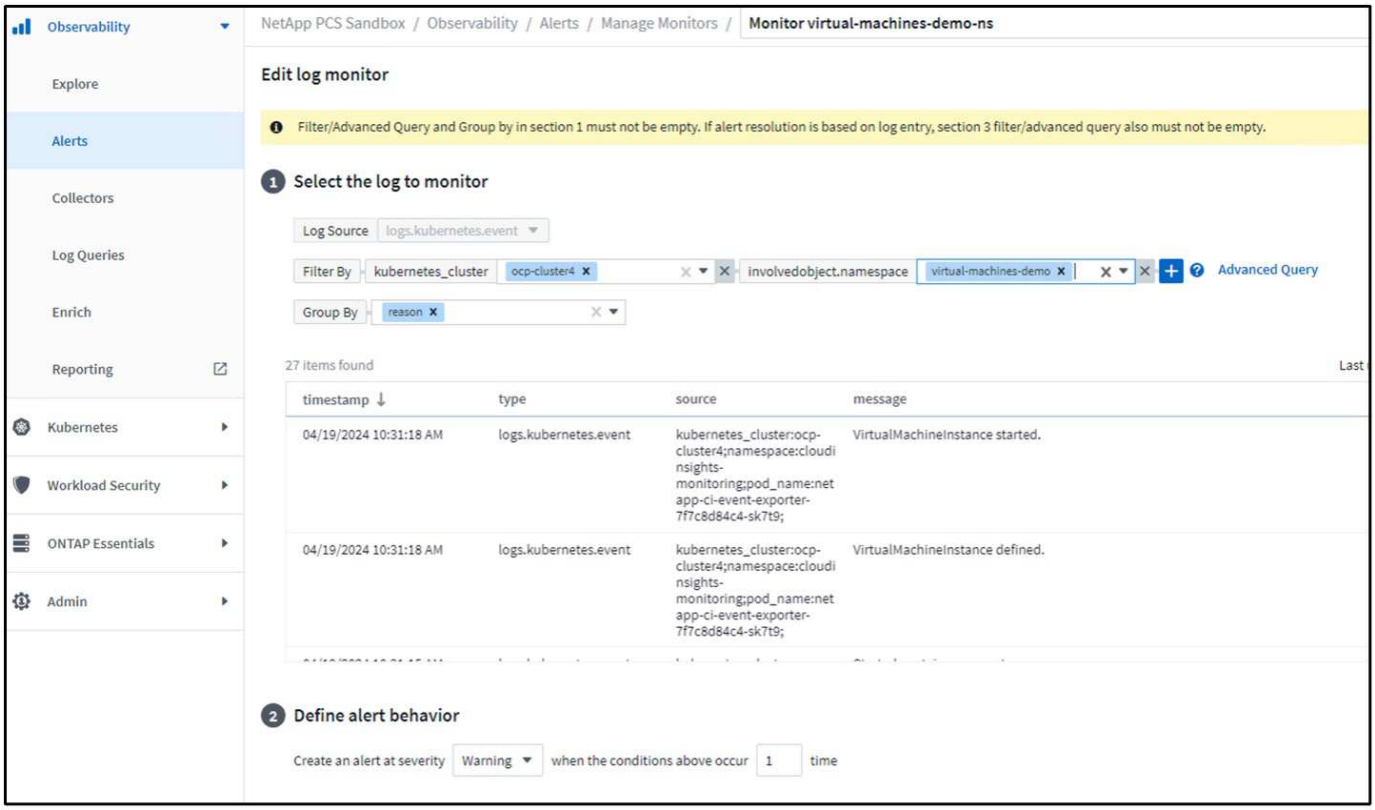
Monitor VMs in Red Hat OpenShift Virtualization using Data Infrastructure Insights

NetApp Data Infrastructure Insights (formerly Cloud Insights) provides robust monitoring capabilities for VMs in OpenShift Virtualization, including event-based monitoring, alert creation, and backend storage mapping. It also offers change analytics to track cluster

changes and assist with troubleshooting.

Monitoring based on events and creating Alerts

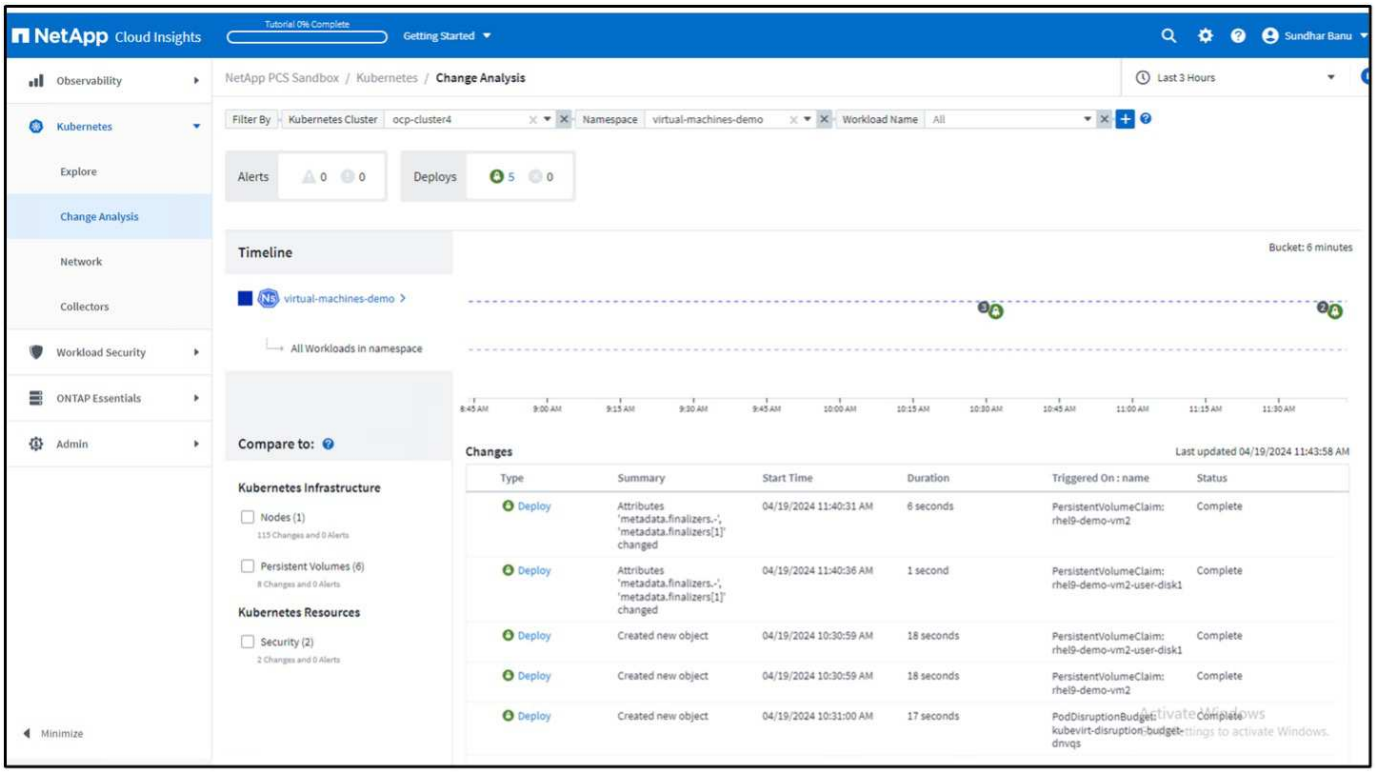
Here is a sample where the namespace that contains a VM in OpenShift Virtualization is monitored based on events. In this example, a monitor is created based on **logs.kubernetes**.event for the specified namespace in the cluster.



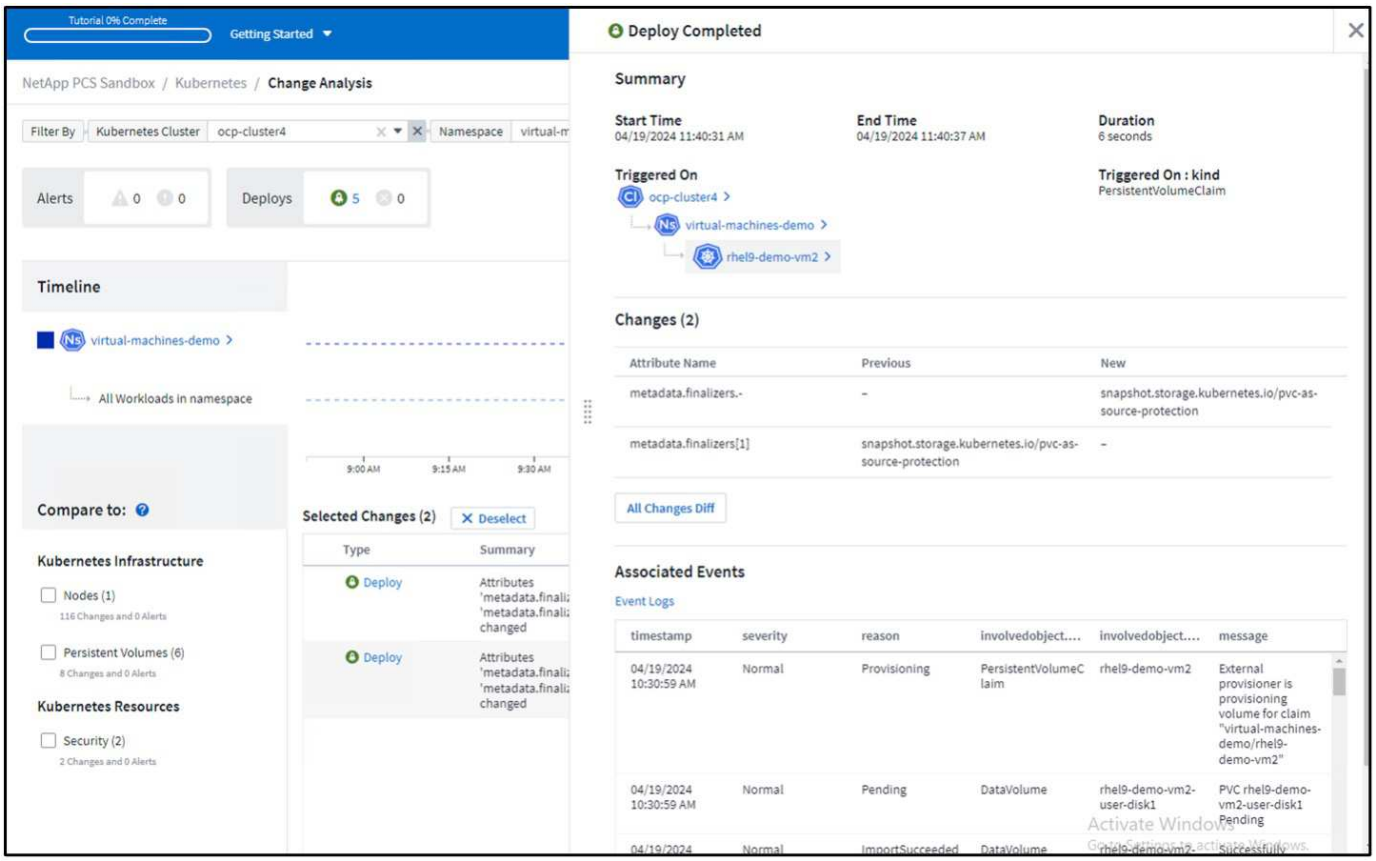
This query provides all the events for the virtual machine in the namespace. (There is only one virtual machine in the namespace). An advanced query can also be constructed to filter based on the event where the reason is "failed" or "FailedMount" These events are typically created when there is an issue in creating a PV or mounting the PV to a pod indicating issues in the dynamic provisioner for creating persistent volumes for the VM.
While creating the Alert Monitor as shown above, you can also configure notification to recipients. You can also provide corrective actions or additional information that can be useful to resolve the error. In the above example, additional information could be to look into the Trident backend configuration and storage class definitions for resolving the issue.

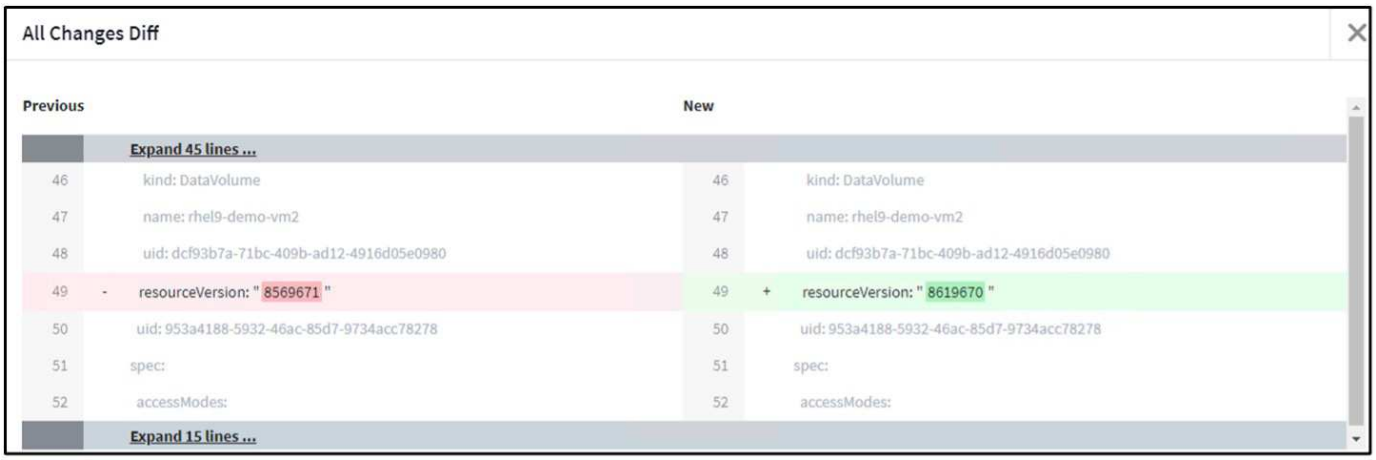
Change Analytics

With Change Analytics, you can get a view of what changed in the state of your cluster including who made that change which can help in troubleshooting issues.



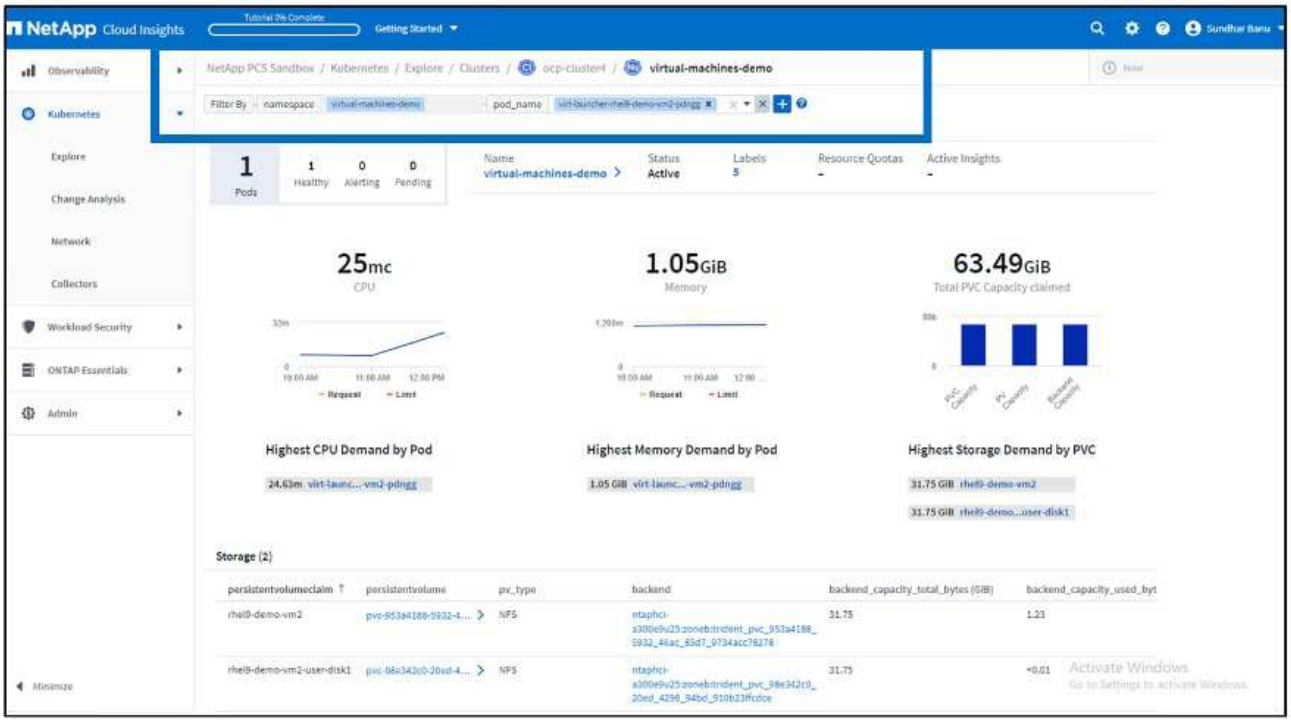
In the above example, Change Analysis is configured on the OpenShift cluster for the namespace that contains an OpenShift Virtualization VM. The dashboard shows changes against the timeline. You can drill down to see what changed and the click on All Changes Diff to see the diff of the manifests. From the manifest, you can see that a new backup of the persistent disks was created.



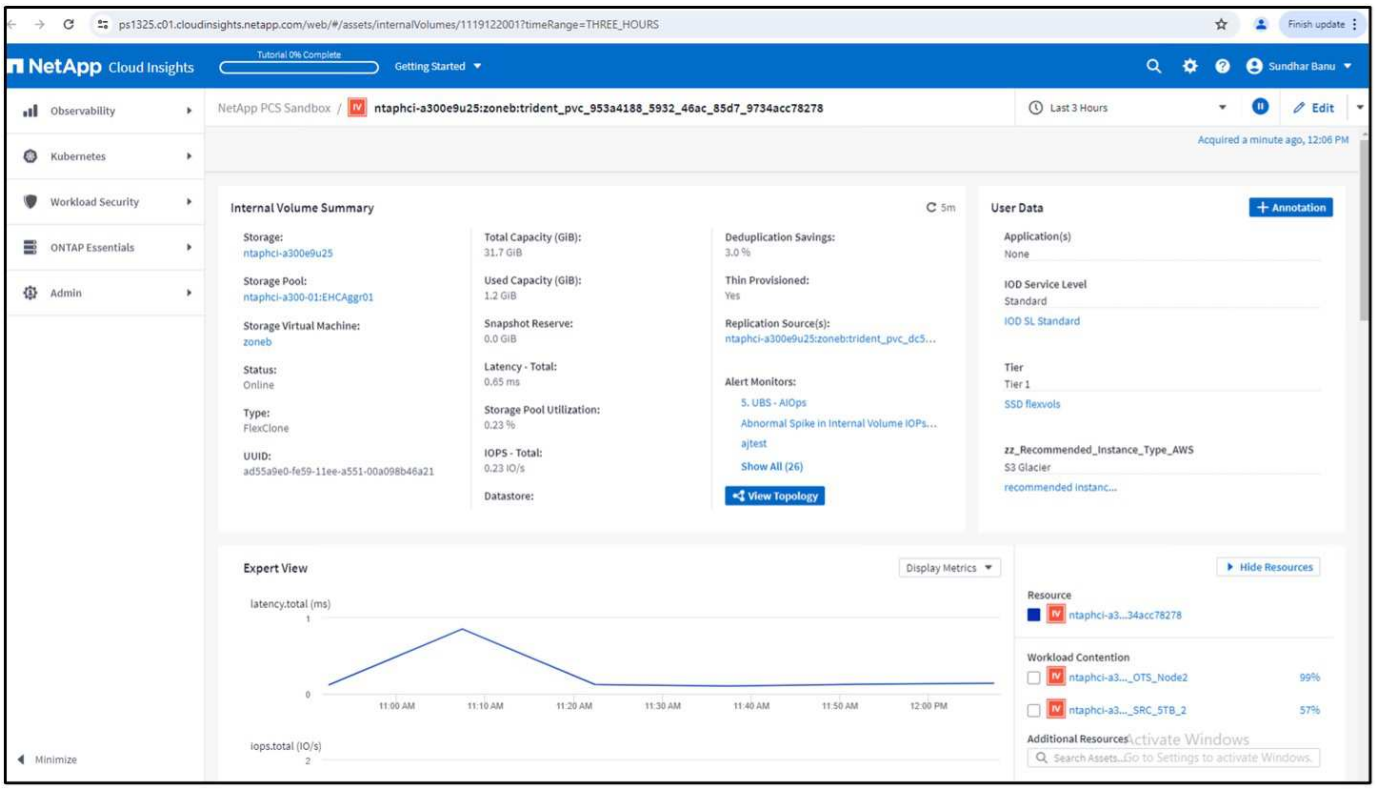


Backend Storage Mapping

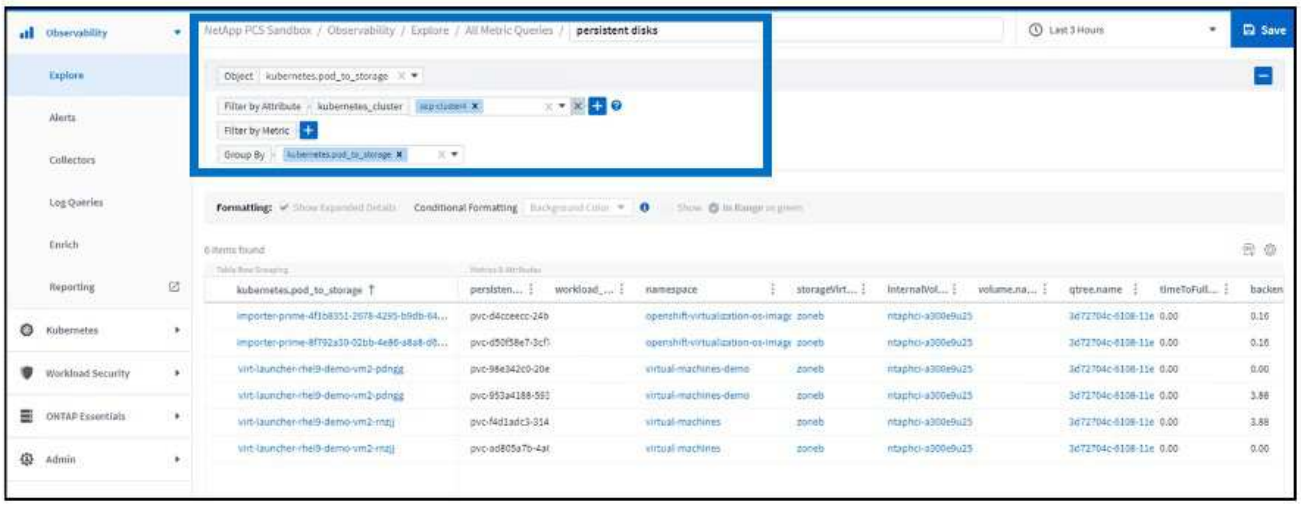
With Cloud Insights, you can easily see the backend storage of the VM disks and several statistics about the PVCs.



You can click on the links under the backend column, which will pull data directly from the backend ONTAP storage.

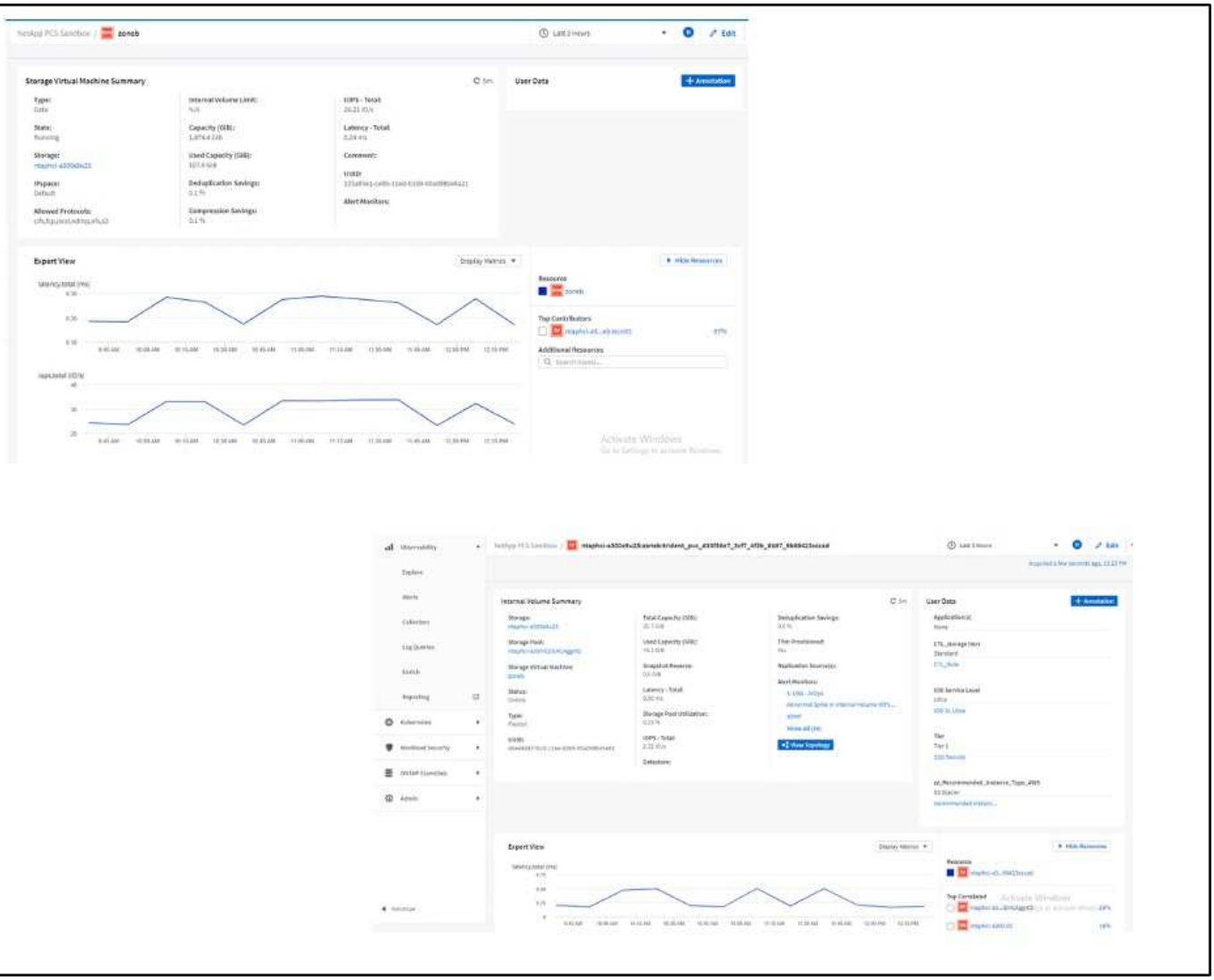


Another way to look at all the pod to storage mapping is creating an All Metrics query From Observability menu under Explore.



Clicking on any of the links will give you the corresponding details from ONTP storage. For example, clicking on an SVM name in the storageVirtualMachine column will pull details about the SVM from ONTAP. Clicking on an internal volume name will pull details about the volume in ONTAP.

	storageVirtualMachin...	internalVolume.name	volume.na..
zation-os-image	zoneb	ntaphci-a300e9u25:zoneb:trident_p	
zation-os-image	zoneb	ntaphci-a300e9u25:zoneb:trident_p	
demo	zoneb	ntaphci-a300e9u25:zoneb:trident_p	
demo	zoneb	ntaphci-a300e9u25:zoneb:trident_p	
	zoneb	ntaphci-a300e9u25:zoneb:trident_p	
	zoneb	ntaphci-a300e9u25:zoneb:trident_p	



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