



White Paper

NetApp Cloud Insights Basic Edition

Monitor, Troubleshoot and Optimize Your NetApp Solutions

Kai Niebergall, NetApp Cloud Analytics, Senior Technical Product Manager

NetApp

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Abstract

Your NetApp environment is more complex and more dynamic than ever before, making monitoring and troubleshooting even more critical—and more difficult. NetApp Cloud Insights Basic Edition is a SaaS solution that goes beyond simple monitoring to identify the relationships between NetApp assets—both on-premises and in the cloud. Powerful, easy-to-use dashboards, queries, and annotations create a more effective monitoring framework. You'll be able to monitor your NetApp environment and meet critical SLAs with less effort and pinpoint the source of slowdowns and outages more quickly with less domain expertise.

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1 About This White Paper

This white paper introduces NetApp® Cloud Insights Basic Edition, a freemium version of NetApp's innovative software-as-a-service (SaaS) monitoring solution designed specifically for NetApp customers. Cloud Insights Basic Edition spans on-premises and public cloud, helping you monitor, troubleshoot, and optimize your entire NetApp ecosystem.

2 IT Complexity Continues to Increase

The applications, services, and infrastructure in your IT environment have always been important, but today effective monitoring and troubleshooting have become essential. In the digital era, enterprises across all industries depend on IT services to control business operations, to inform decisions, to drive customer engagement, and to enable growth. Your company's reputation is now closely tied to the effectiveness and security of your customer-facing and internal digital services.

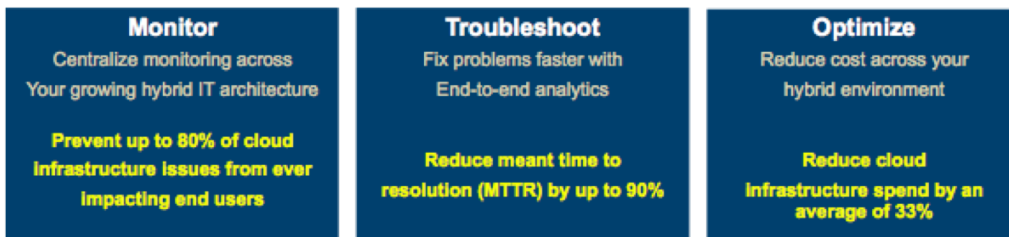
But your IT environment is also more complex and more dynamic than ever before. If you're a NetApp customer, you may not appreciate just how diverse your NetApp environment has become. Just a few years ago, you were likely only concerned with managing on-premises NetApp storage, but now it's a whole new ballgame.

In addition to more data capacity, you probably have more diverse storage systems—disk-based, hybrid-flash, and all-flash—and new data types, including a growing need for object storage. You may be leveraging [NetApp cloud data services](#) across Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP). You could also be using [NetApp HCI](#) hyper converged infrastructure systems to support private cloud, end-user computing, or other needs. Unfortunately, traditional monitoring tools are no longer adequate to the task. These tools:

- Monitor *THINGS* not *RELATIONSHIPS*
- Can't analyze data at cloud scale
- Can't keep up with the cloud's dynamic nature
- Don't identify optimizations that improve efficiency

NetApp created Cloud Insights to address these challenges. NetApp Cloud Insights is a SaaS-based tool that lets you efficiently monitor infrastructure on premises and in the cloud. With Cloud Insights, you can understand at a glance how the elements that make up your IT environment are connected, so you can troubleshoot problems more effectively and optimize your environment to deliver better results at lower cost. (See Figure 1.)

Figure 1) Cloud Insights Basic Edition benefits

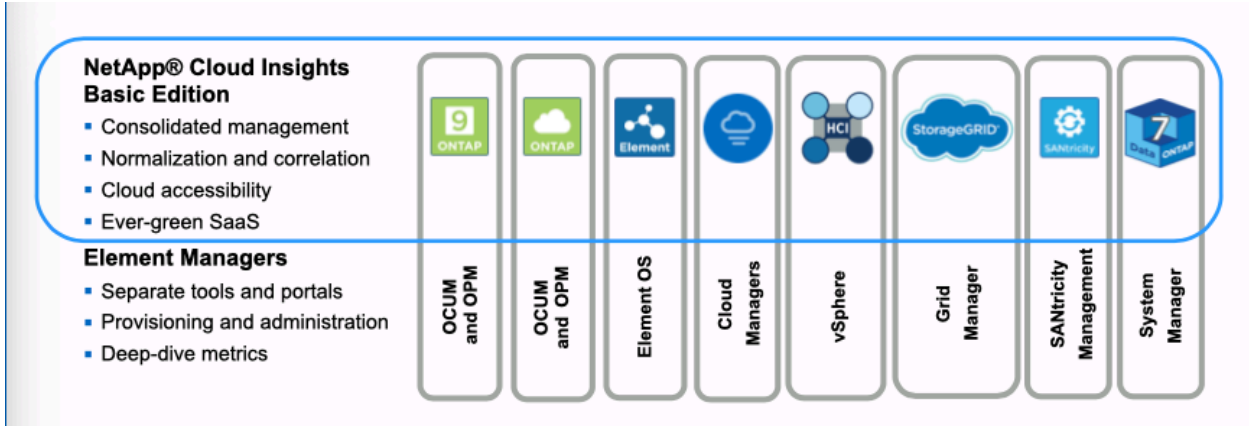


This white paper introduces the monitoring, troubleshooting, and optimization capabilities of Cloud Insights Basic Edition, a free version of Cloud Insights for NetApp customers that's tailored for NetApp environments.

3 Cloud Insights Basic Edition: An Introduction

NetApp Cloud Insights Basic Edition is designed to help NetApp customers centralize monitoring for all NetApp assets and services—both on premises and in the cloud. It provides end-to-end analytics to help you fix problems more quickly and to reduce costs and increase efficiency. Whether your NetApp environment is modest or massive, Cloud Insights provides significant benefits. Cloud Insights can be accessed from anywhere—even a mobile device—and provides information that complements the various NetApp element managers you already use as shown in Figure 2.

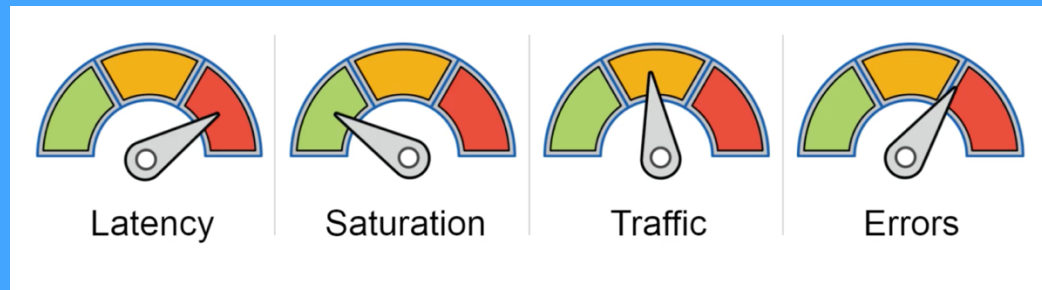
Figure 2) Cloud Insights Basic Edition complements NetApp element managers.



Cloud Insights quickly inventories your NetApp resources, determines their interdependencies, and assembles a topology of your environment, giving you end-to-end visibility into what resources support which applications. Cloud Insights is designed to handle the transient nature of modern cloud infrastructure while giving you a complete understanding of latency, saturation points, traffic, and errors across all your NetApp assets and services.

Cloud Insights Focuses on Four Key SLIs

To help you make sense of your environment, understand your operations, and achieve agreed upon service levels, Cloud Insights Basic Edition focuses on four key service level indicators (SLIs): latency, saturation, traffic, and errors.



- **Latency.** When latency spikes, users are affected and submit trouble tickets. Cloud Insights dashboards focus on latency as a key indicator so that you can identify and correct latency problems before users complain.
- **Saturation.** Latency issues often result when you ask too much of a device and push it beyond its limits. Understanding the cause of saturation is a key step in root-cause analysis. Cloud Insights simplifies identification of saturation points.
- **Traffic.** Saturation might be triggered by an increase in traffic. An unexpected rise in user demand or a misbehaving application can create noisy-neighbor effects that can affect unrelated applications. Cloud Insights helps you correlate increased latency with other events that are driving traffic.
- **Errors.** Errors and alerts are a fact of life in any IT environment. Cloud Insights helps you quickly determine when an error indicates that a real problem exists, discover the root cause, and begin remediation.

Table 1 provides a list of NetApp products and services supported by Cloud Insights Basic Edition.

Table 1) Cloud Insights Basic Edition: supported products and services.

Supported NetApp Products		
All Flash FAS (AFF)	ONTAP Select	NetApp HCI
FAS	StorageGRID	Cloud Volumes ONTAP
ONTAP	E-Series	Cloud Volumes Service
7-Mode	SolidFire	

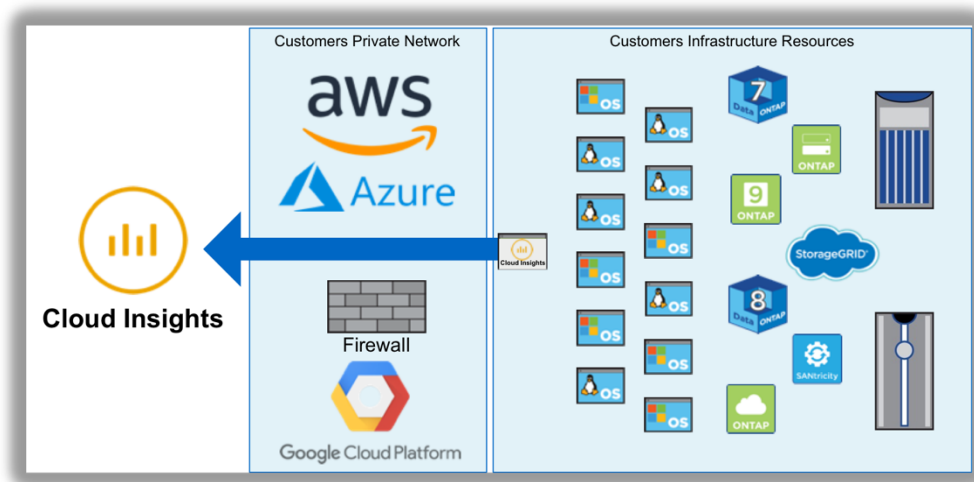
Despite its power, getting started with Cloud Insights is a straightforward process that can be accomplished in just four steps:

1. Collect your NetApp data
2. Monitor your NetApp environment
3. Troubleshoot any failures that arise
4. Optimize cost and efficiency

4 Step 1: Collect Data

To get started with NetApp Cloud Insights Basic Edition, go to cloud.netapp.com/cloud-insights. After you have registered for a free trial, you will need to create an acquisition unit and enable one or more data collectors in order to begin collecting data from your NetApp equipment. The acquisition unit sits behind your firewall, virtual private cloud, or VNet. It is installed on a virtual machine with access through the firewall, and it has the ability to push data out to Cloud Insights. Figure 3 illustrates the role of the acquisition unit.

Figure 3) Acquisition unit and infrastructure topology.



Cloud Insights supports acquisition units for both Windows and Linux. The acquisition unit requires a very lightweight virtual machine (2+ cores, 8GB of RAM, and 50GB of disk).

For the Linux version, all you need to do is copy the supplied text to the console, as shown in Figure 4. If you have a proxy server, additional instructions are provided when you select the “+” next to “Have a Proxy Server?” at the bottom of the dialog box.

Figure 4) Installing a Linux-based acquisition unit.

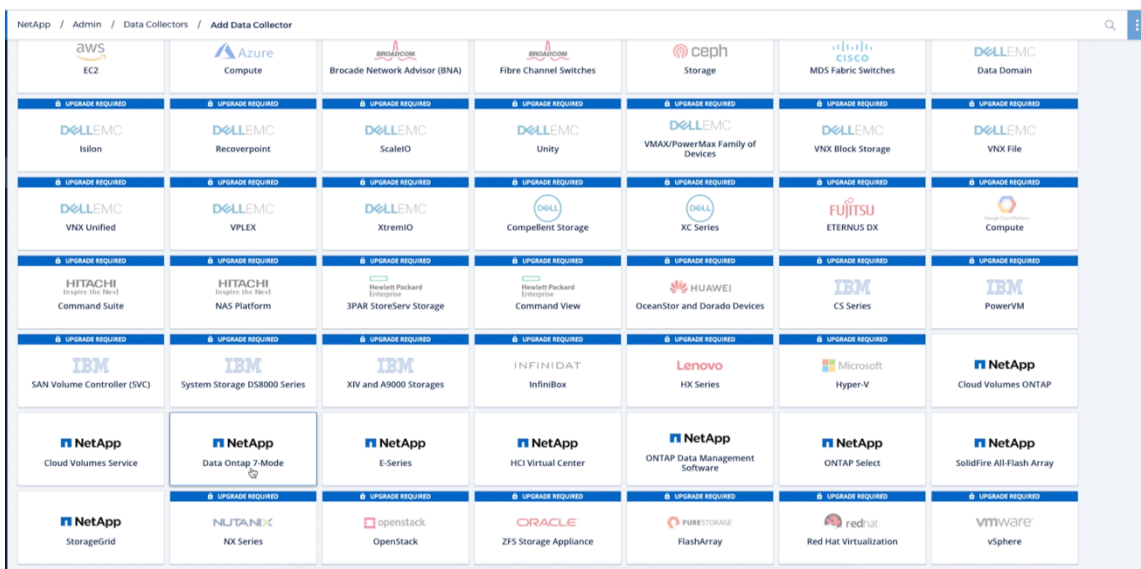
[illegible]

Windows follows a similar process in which you download the Microsoft Installer and run it to set up the acquisition unit.

To deploy a data collector, simply select the data collector you want from the available options as shown in Figure 5. Note that only NetApp options are accessible with Basic Edition. The Standard or Premium Edition is required to utilize data collectors for third-party solutions.

Note: If you are running VMware on NetApp HCI, add the “NetApp HCI Virtual Center” data collector. The VMware vSphere collector is not available for use with Cloud Insights Basic Edition.

Figure 5) Selecting a data collector from the available options.



Once you select a data collector, give the collector a name and choose the acquisition unit that you just deployed. You may be asked to supply additional information specific to the collector as shown in Figure 6.

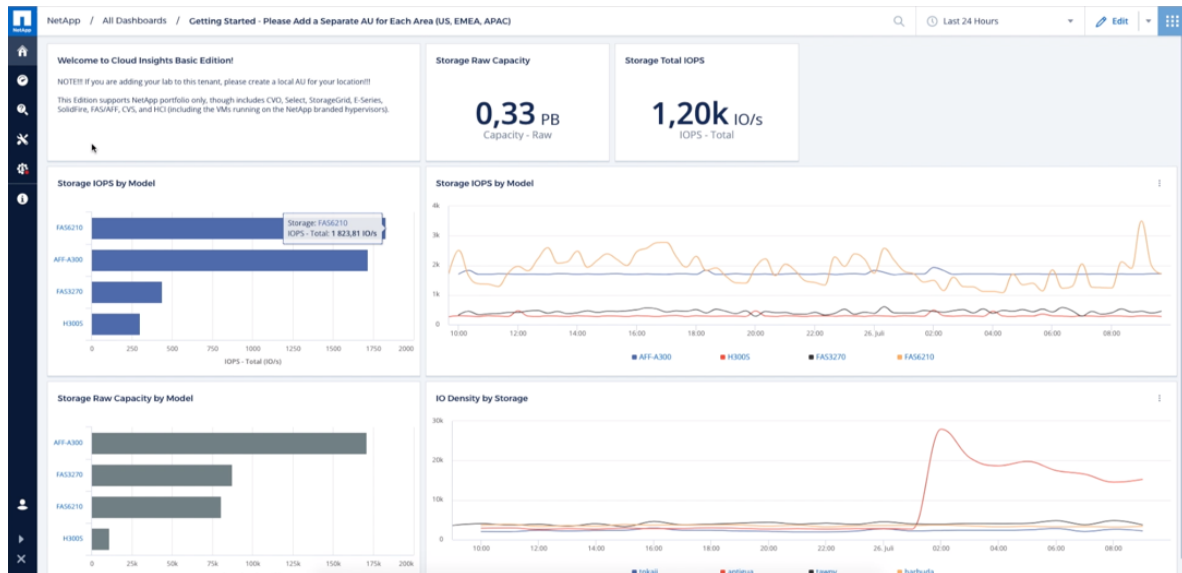
Figure 6) Adding a data collector.

That's all you need to do to get started. You can repeat the steps above as necessary to add additional data collectors and additional acquisition units if necessary. For example, you might want separate acquisition units for data centers in different regions or for public cloud environments.

5 Step 2: Monitor Your NetApp Environment

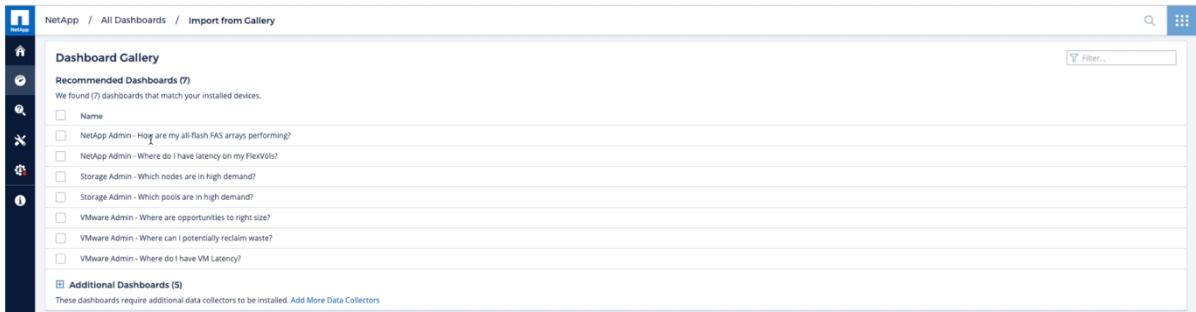
Once data is flowing into the system, you can begin watching for issues. Cloud Insights comes with a gallery of dashboards to get you started. The gallery you see initially is based on the collectors you have enabled. Figure 7 and Figure 8 show examples of an introductory dashboard and dashboard gallery.

Figure 7) Example of an introductory dashboard.*



*Cloud Insights supports internationalization. This image was created with a localized version that uses commas rather than periods to denote decimals.

Figure 8) Cloud Insights Basic Edition dashboard gallery.

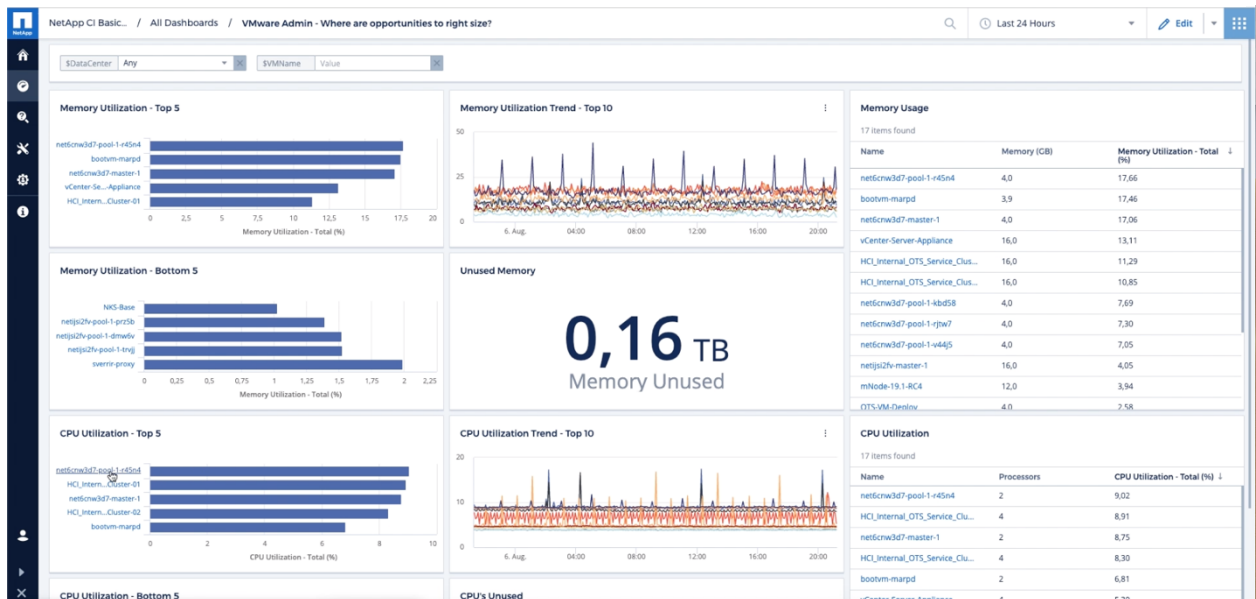


Much of your day-to-day monitoring can be accomplished using these dashboards which are designed to provide immediately actionable information. Each dashboard is designed to help you answer specific questions about your NetApp infrastructure, such as:

- Where are you experiencing high latency?
- Where have SLOs been exceeded?
- Where are errors occurring?

For example, in the NetApp HCI environment shown in Figure 9 you can easily identify VMs that are using a lot of CPU or memory.

Figure 9) Dashboard showing VM CPU and Memory utilization with NetApp HCI.*



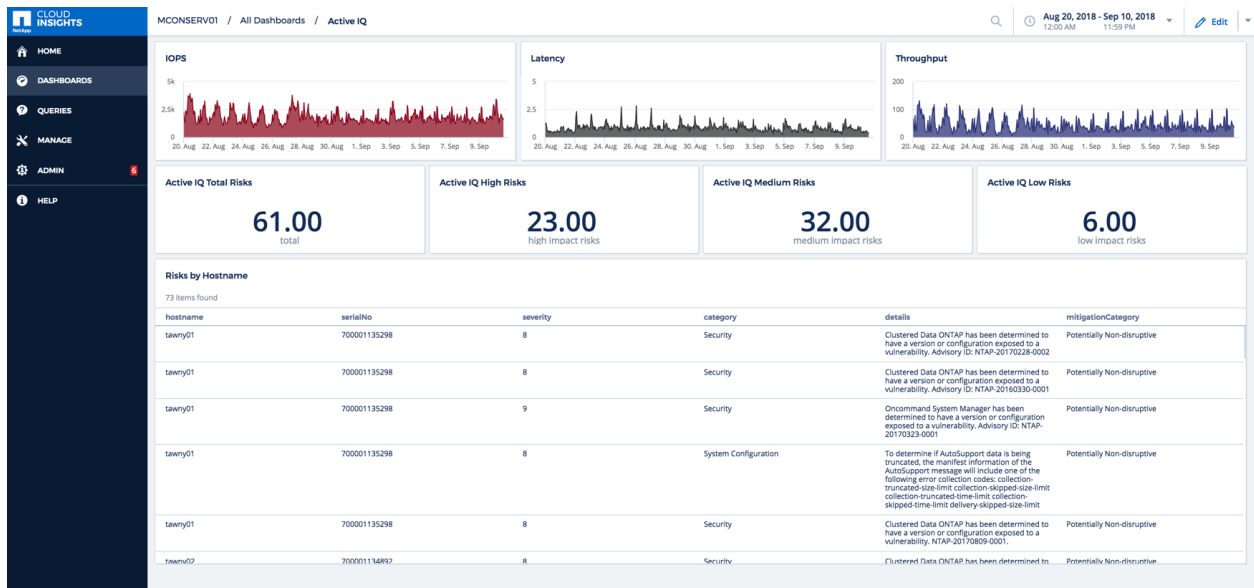
*Cloud Insights supports internationalization. This image was created with a localized version that uses commas rather than periods to denote decimals.

Once you familiarize yourself with the available dashboards and identify the ones that are most useful to you, there's really nothing else you have to enable. Most administrators keep the dashboards relevant to their needs open or view them regularly. However, to get the most from your Cloud Insights environment, you may want to take additional steps to configure custom dashboards, annotations, and queries:

- **Custom Dashboards.** Your team can create tailored dashboard views to meet diverse NetApp monitoring and troubleshooting needs. You can start from an existing dashboard and customize it, or you can create entirely new dashboards from scratch, using powerful tools to visualize available data.
- **Annotations.** Some information can't be obtained through discovery alone. By using annotations, you can add custom metadata that is specific to your IT and business needs. Cloud Insights provides a set of default annotations that you can use, plus you can create your own annotations to slice monitoring data in other ways. Annotation rules can be created that assign the appropriate annotations to new resources automatically.
- **Queries.** Cloud Insights provides a powerful visual search engine with filters and finders that enable you to monitor and troubleshoot your environment more easily. You can search assets at a granular level based on various criteria, including annotations and performance metrics.

Cloud Insights Basic Edition also integrates with NetApp Active IQ, which combines artificial intelligence and community wisdom to identify potential issues and recommend proactive remediations. As Figure 10 shows, you can review Active IQ risks and investigate them from within Cloud Insights.

Figure 10) Cloud Insights works together with NetApp Active IQ to help IT teams be proactive.

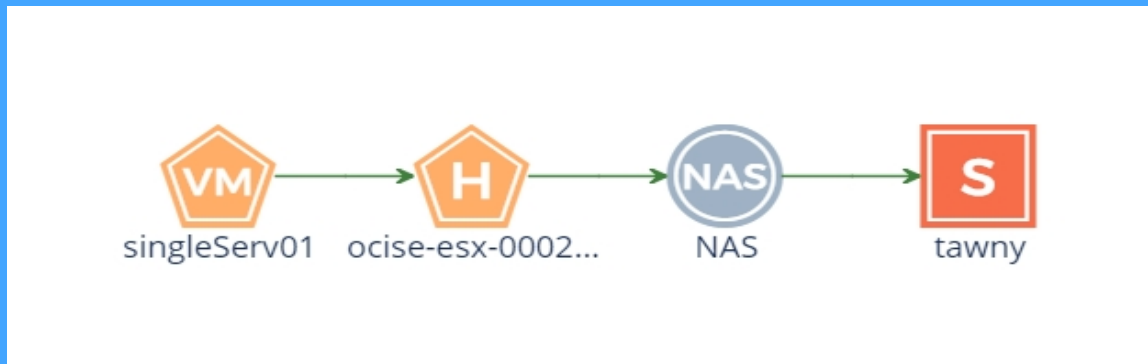


6 Step 3: Troubleshoot Failures Quickly

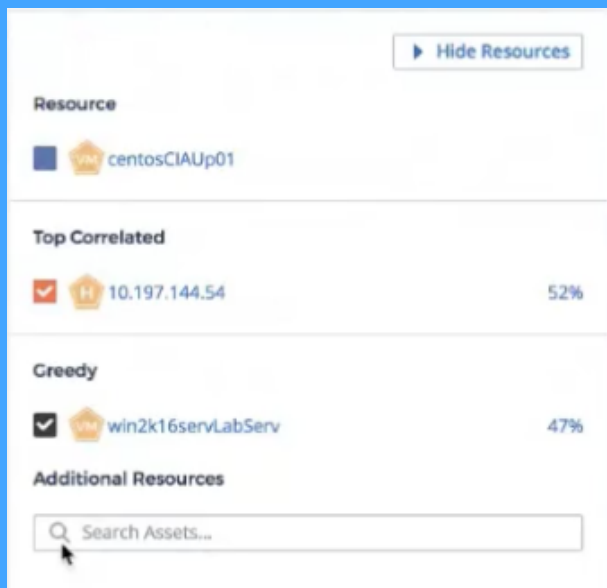
It can often require hours of effort from people with significant domain expertise to get to the bottom of what seems like a simple problem. A key advantage of Cloud Insights Basic Edition is that it automatically discovers service paths, so you can see the relationships between resources, and it correlates events to establish cause and effect. In many instances, Cloud Insights automatically identifies correlated, greedy, and degraded resources for you.

Discovering Service Paths and Identifying Correlated, Greedy, and Degraded Resources

Cloud Insights discovers service paths for individual elements. This figure illustrates how a VM maps to a hypervisor/server and underlying storage.

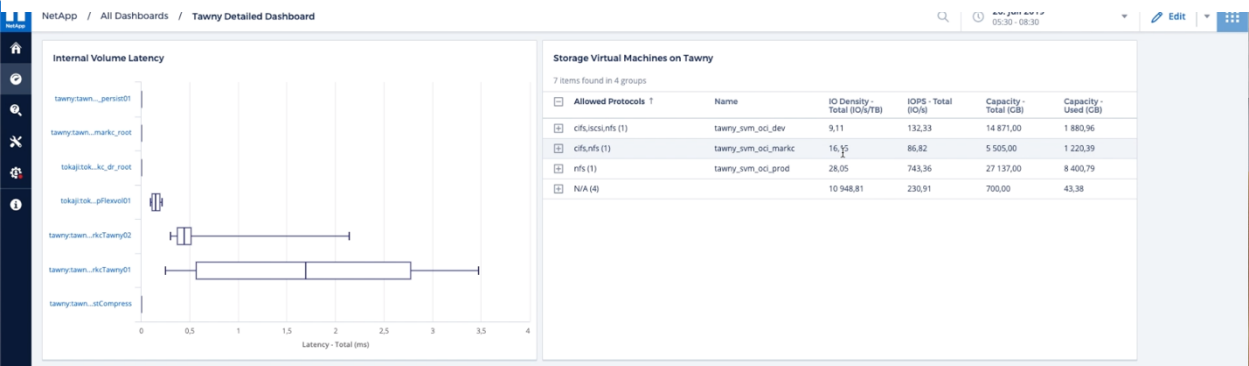


Cloud Insights also automatically identifies correlated, greedy, and degraded resources that may be affecting a particular resource, allowing you to zero in on the most likely culprits with almost no effort.



Whenever you identify a resource that's having trouble, you can drill down to quickly find the root of the problem. For example, suppose you have an internal storage volume exhibiting high latency as illustrated in the left pane of Figure 11.

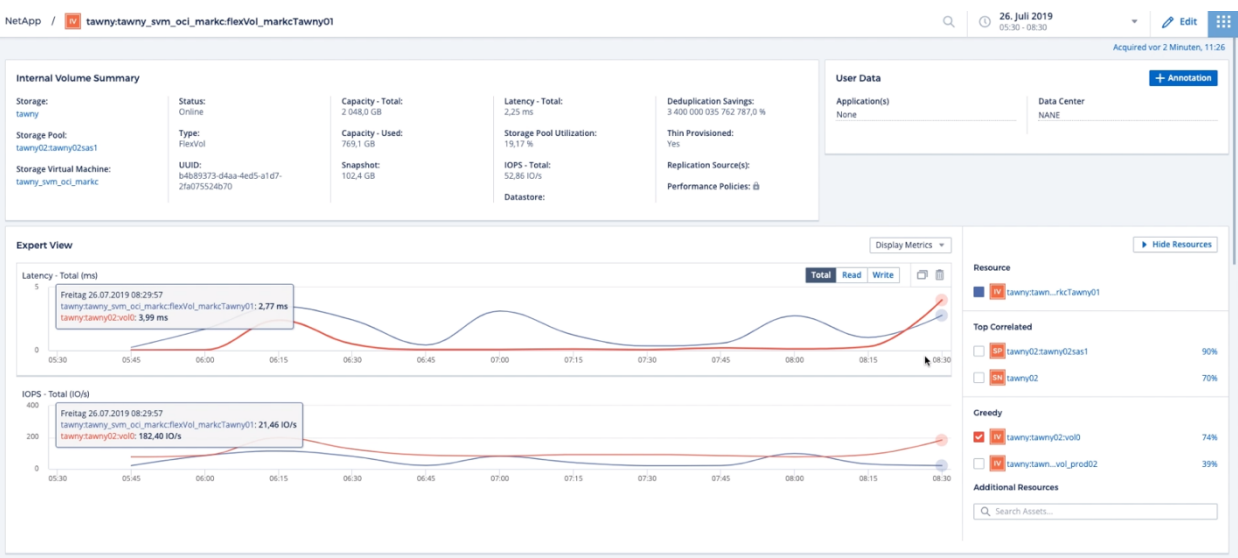
Figure 11) Dashboard showing volume latency.*



*Cloud Insights supports internationalization. This image was created with a localized version that uses commas rather than periods to denote decimals.

You can drill down on that volume to learn more. In this case, we quickly discover that the latency of the affected volume is being impacted by a “greedy” volume on the same storage system, as shown in Figure 12. Full resolution of the issue would require drilling down on the greedy volume to find out who owns it and what application it’s associated with, so that you can take the most appropriate corrective action.

Figure 12) Drilling down on an affected resource shows actionable details.*



*Cloud Insights supports internationalization. This image was created with a localized version that uses commas rather than periods to denote decimals.

7 Step 4: Optimize NetApp Cost and Efficiency

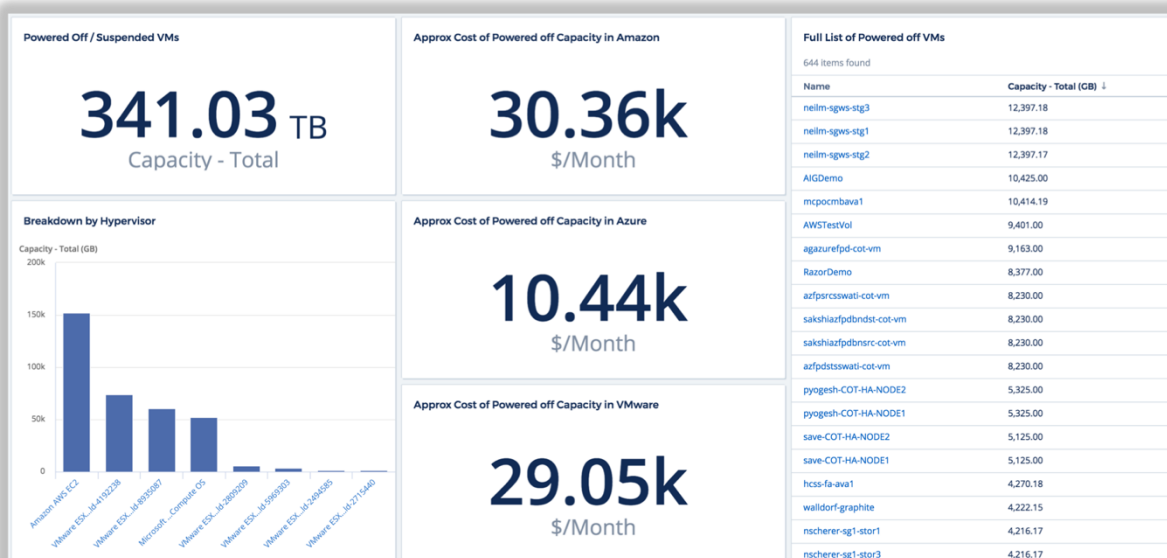
In addition to monitoring and troubleshooting, you also want to make sure that you're not overprovisioning and wasting resources. Especially in the cloud, it's easy to provision resources and forget them.

Cloud Insights Basic Edition offers some easy wins to quickly reduce your costs. For example, because Cloud Insights knows the state of all the virtual machines running on NetApp HCI systems, it can quickly identify those that are idle and the capacity associated with them. You can apply a cost to each VM to see the savings you can achieve. If you refer to the sample dashboard gallery in Figure 8, you'll notice that two of the default dashboards are for this express purpose:

- *Where are opportunities to right size?*
- *Where can I potentially reclaim waste?*

Figure 13 shows a report of all powered-off and suspended VMs and the costs they are incurring. You can drill down on each one to see who they are allocated to and how they are connected to other resources to determine which resources can be released.

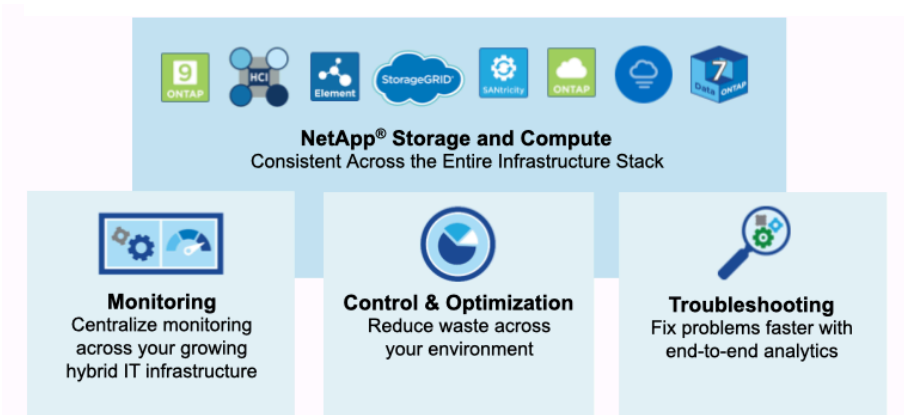
Figure 13) Identifying potential saving in NetApp HCI environments.



8 Summary and Next Steps

NetApp Cloud Insights Basic Edition can help you monitor, troubleshoot, and optimize your NetApp environment both on premises and in the cloud. (See Figure 14.) This paper examined a few of the monitoring, troubleshooting, and optimization capabilities of Basic Edition. Cloud Insights complements the capabilities of NetApp element managers, showing you the relationships between resources so that you can identify problems and bottlenecks quickly.

Figure 14) Cloud Insights Basic Edition capabilities



NetApp customers can get started with Cloud Insights Basic Edition by [registering for a 14-day free trial](#). All you have to do is login or sign up for NetApp Cloud Central and verify your email if you're new. The process is painless, and you can start testing out the solution in a matter of minutes.

During the free trial, you'll have access to the full capabilities of Cloud Insights and can explore all its capabilities for monitoring your IT stack, including a wide range of additional infrastructure, applications, and services. When the trial ends, Basic Edition limits will take effect and NetApp customers will be restricted to NetApp assets only.

To continue using Cloud Insights with full functionality, you can upgrade to Cloud Insights Standard Edition or Premium Edition at the end of the trial. Read the following white papers to learn more about the full capabilities of Cloud Insights:

- [A New Way to Monitor Your Cloud Infrastructure | WP-7291](#)
- [Enhance Monitoring by Understanding the Relationships Between Resources | WP-7302](#)
- [Accelerate Troubleshooting Across Your Hybrid Cloud | WP-7308](#)

Refer to the [Interoperability Matrix Tool \(IMT\)](#) on the NetApp Support site to validate that the exact product and feature versions described in this document are supported for your specific environment. The NetApp IMT defines the product components and versions that can be used to construct configurations that are supported by NetApp. Specific results depend on each customer's installation in accordance with published specifications.

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