

Achieve Your Storage Management Goals—in More Ways than One



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This article is the first of a four-part series focusing on NetApp storage management as an integral part of our [Data Fabric](#) story.

Think about your biggest concerns around storage management today. Are you most focused on managing data growth, or increasing server or desktop virtualization? Are you planning a tech refresh or a data center consolidation? Do you have a highly virtualized environment, or are you moving to a hybrid cloud environment?

NetApp has a portfolio of management solutions to help you meet your specific business requirements. In this article we look at two options, OnCommand® Unified Manager and OnCommand Insight—how they complement each other and how they are suited for different environments.

Unified Manager for Managing NetApp Environments

NetApp® OnCommand Unified Manager 6.3 monitors and manages NetApp clustered Data ONTAP® storage. If you're a storage admin, use Unified Manager daily to get your work done. Plus, rely on its operational reporting to keep you in control of your NetApp storage resources.

Figure 1) The Unified Manager dashboard provides a snapshot of your NetApp storage health, including availability, capacity, performance, and protection.

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Explore

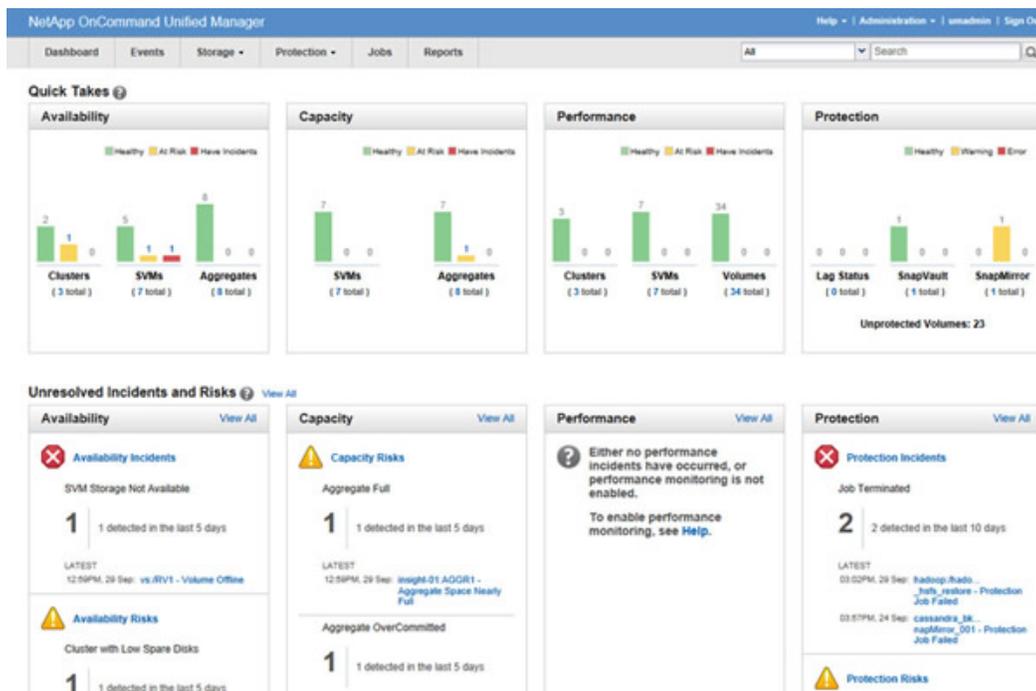
OnCommand Data Management Portfolio at a Glance

The industry-leading NetApp OnCommand management software products simplify your data management, on premises and in the hybrid cloud. You gain greater control over your shared storage infrastructure, plus the visibility you need to achieve common data management across resources in the Data Fabric.

In addition to OnCommand Unified Manager and OnCommand Insight, other products in the OnCommand portfolio include:

- **System Manager.** Get simple element management for your NetApp FAS storage systems.
- **Unified Manager.** Monitor the health of your NetApp clustered Data ONTAP storage environment.
- **Performance Manager.** Analyze and optimize performance in your clustered Data ONTAP environment.
- **API Services.** Integrate your NetApp storage data to streamline storage management processes, on premises and in the cloud.
- **Workflow Automation.** Automate repeatable manual storage management processes.
- **Cloud Manager.** Streamline the deployment, management, and

tracking of your hybrid cloud resources.



Source: NetApp, 2015

For example, you need to know what storage is unprotected and what level of data protection is required for any given volume. Unified Manager offers reports such as Volume Data Protection Configuration that let you view unprotected volumes and storage virtual machines (SVMs) used in a node or cluster. You can quickly see what's protected and what's unprotected, as well as the risks associated with the unprotected data. Similarly, the Volume Relationships Inventory Report lets you analyze storage inventory details and understand the degree of data protection required.

For analysis of storage efficiency, use the Volume Transfer Status Report to analyze volume transfer trends over time, or turn to the Volume Transfer Rate Report to analyze the total amount of data that a particular volume transferred on a daily basis. Unified Manager also provides reports on capacity utilization, operations, and inventory. Customize views of the standard reports, or create custom reports.

With the release of Unified Manager 6.3, NetApp increased your flexibility to create custom reports using annotations and groups. An annotation is simply a custom tag or user-defined label associated with storage objects that enables context-specific reporting and more detailed impact analysis. Create custom annotations for SVMs, clusters, and NetApp FlexVol® volumes, and set automatic annotations as soon as objects are

discovered.

Annotation tables are exposed as a database view, so you can create custom reports using the annotation dimensions. Set up annotations for applications and business units, and Unified Manager continually monitors and alerts on incidents and risks. For example, it can alert that there's a problem with an Oracle® application in the finance business unit. Furthermore, an annotation designating a data center location allows you to report on total/used/available capacity by data center location, such as Boston, U.S., and Frankfurt, Germany.

Unified Manager also lets you group storage objects and prioritize a set of actions, such as setting a threshold of 80% for space nearly full on all volumes serving Oracle. Set up dynamic custom groups and apply collective actions to groups, to simplify and automate processes such as establishing monitoring preferences. For instance, configure a threshold setting based on a deployment hierarchy where all volumes serving the Exchange application will have a "space nearly full" threshold alert at 90%; override the threshold to 80% for volumes in just one specific data center.

Unified Manager 6.3 also offers alert scripting as an automation framework for remediation. It can invoke Unified Manager run commands and also OnCommand Workflow Automation processes. This alert-scripting capability can simplify and streamline management across systems, acting as an integration mechanism for ticketing software.

Lastly, use Unified Manager 6.3 to monitor and manage NetApp MetroCluster™ 2-node and 4-node configurations. View the topology of MetroCluster protection relationships, including switches, devices, aggregates, and nonvolatile random-access memory (NVRAM) mirroring. Receive fast notifications and alerts on issues that affect disaster recovery (DR).

Figure 2) Unified Manager monitors MetroCluster data protection and provides a topology view of that protection relationship, with details to help you quickly troubleshoot and resolve issues.

Event: MetroCluster Aggregate Mirroring Degraded (Triggered Time: 9 Hours 20 Mins Ago) Assign To Acknowledge Mar

Summary
 Severity: Error
 State: New
 Impact Level: Risk
 Impact Area: Protection
 Source: SiteA-N1-N2-01:aggr1_02
 Source Type: Aggregat (Data)
 Acknowledged By:
 Resolved By:
 Assigned To:
 Triggered Time: 9 Hours 20 Mins Ago
 Trigger Condition: MetroCluster aggregate mirroring is in a degraded state.
 Alert Settings: [Add](#)

Scope of Impact

Possible Causes

- Mirrored aggregate aggr1_02 has a failed plex.

Possible Effect

- DR protection of backend storage is compromised.

Suggested Corrective Actions

Data ONTAP Recommendations

- If the configuration includes fabric switches
- ensure that the ISLs are healthy.
 - Locate the problematic shelf and address any issues if seen.
 - Check if any disks are broken by using the command "storage disk show -container-type broken".

Source: NetApp, 2015

OnCommand Insight for Mixed Environments

While Unified Manager is ideal for managing NetApp storage at scale, OnCommand Insight is the right tool for large multivendor environments that need performance, capacity, and configuration management. OnCommand Insight can discover and automatically map your data center topology, including storage arrays, VMs, switches, and Access Gateways—delivering a single pane of glass where you can monitor and manage your heterogeneous environment.

Figure 3) OnCommand Insight capacity and performance workload analysis shows usage by cluster.



Source: NetApp, 2015

Use OnCommand Insight to rapidly discover and intuitively understand storage resources and their dependencies for delivering services across the storage environment. Monitor and audit configuration, performance, and health metrics, and proactively receive alerts. Visualize your data with out-of-the-box dashboards and automated reports that can be customized to fit your specific needs. OnCommand Insight lets you optimize storage resources by aligning workloads to the correct resource to obtain quality of service (QoS) at the best cost, while reducing waste and helping you make accurate decisions.

Both Unified Manager and OnCommand Insight deliver a wealth of information through customizable dashboards and reports. Unified Manager is focused on point-in-time reporting, while OnCommand Insight maintains two weeks of point-in-time data for detailed troubleshooting. In addition, OnCommand Insight has more than five years of historical capacity in its data warehouse for trend analysis and historic reporting.

Figure 4) OnCommand Insight lets you perform storage service cost analysis across your storage environment for effective tiering and cost savings.



Source: NetApp, 2015

The OnCommand Insight data warehouse facilitates capacity-related reports such as chargeback/showback, consumption analysis, and forecasting. See immediately how much storage each business unit or application has used in each storage tier over a period of time. Equipped with this information, you can work with business units to make intelligent decisions based on how storage is being used. OnCommand Insight helps you quickly identify misplaced datasets and reduce the amount of expensive tier 1 storage that's needed. You can also assign a dollar value to each type of tier and determine the tier cost. These types of reports can be part of a chargeback process.

Because OnCommand Insight lets you roll up data from multiple site environments, while delivering detailed analysis and reporting capabilities, it is the perfect platform for modernization initiatives. Its planning tools can simulate changes that you intend to make. Then, during simulations, it will check for policy violations that could lead to service-quality issues or outages. OnCommand Insight proactively identifies problems so that they can be corrected before they affect migration or transitions.

Before any modernization effort kicks off, OnCommand Insight creates a baseline snapshot of the physical and logical state of your entire storage environment. By using "what if" scenarios, you can tailor a migration plan to account for storage services that must be delivered during and after the modernization initiative. Use this pre-migration baseline to track post-migration efficiencies.

OnCommand Insight has helped customers with many types of data center modernization initiatives, including:

- From a thick- to a thin-provisioned environment
- From a traditional to a deduped infrastructure
- From NetApp 7-Mode to clustered Data ONTAP
- From EMC VMAX to NetApp clustered Data ONTAP
- From EMC Vblock to a NetApp FlexPod® environment

As an open platform for data center management, OnCommand Insight easily integrates with a configuration management database (CMDB) such as Service Now or BMC Atrium, to include storage in the IT service-delivery chain. This IT ecosystem integration gives you end-to-end visibility of the business service management (BSM) model, so storage resources can be traced into business services.

Take Control of Your Data and Storage Management

The OnCommand Management portfolio enables you to better control your data and storage, automate common workflows and complex tasks, and analyze how to evolve your storage environment to meet challenging business needs. The OnCommand portfolio includes solutions for managing both NetApp and non-NetApp storage and for integrating storage into your IT ecosystem.

In data storage management, as in life, there are no simple answers. Still, the first step in determining which management tool is right for you is to understand the business demands of your storage today, then to look ahead to your future plans.

[Watch this video](#) to see how OnCommand Unified Manager is used in a hybrid cloud environment with NetApp Private Storage (NPS) and Amazon Web Services (AWS).

[Read our white papers, datasheets, and case studies](#) to learn more about OnCommand Insight. For more in-depth product details, including what's new in OnCommand Insight release 7.1, watch [Session 1](#) and [Session 2](#) of our quarterly customer webinar series recordings.

Kristina Brand, NetApp senior product marketing manager, supports a number of OnCommand products including Unified Manager, Performance Manager, Workflow Automation, and API Services. She conducts product training sessions and meets with customers regularly, learning about their storage management challenges and educating them on solutions available to them.

A member of the Data Management Software Product Marketing team at NetApp, David Boland focuses on the OnCommand Insight product line and solutions for open data center management. Before NetApp, David held various product management and marketing positions at Juniper Networks, Lucent Technologies, Ascend

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