Success Story

NetApp IT Gains End-to-End Visibility of Storage Infrastructure and Improves Capacity Utilization

KEY HIGHLIGHTS

Industry
Data storage

The Challenge
To enable cost-based decision-making about storage capacity and to gain end-to-end visibility of the IT infrastructure.

The Solution
Adopting NetApp® OnCommand® Insight (OCI) software to manage storage as an end-to-end service and decision support tool for future planning.

Benefits
• Gain visibility into the IT service delivery chain.
• Align storage costs to capacity and performance.
• Map storage dependencies to business applications and capabilities.
• Analyze risks, minimize downtime, and track cloud deployment.
• Accurately plan future investments.

Customer Profile
NetApp creates innovative storage and data management solutions that deliver outstanding cost efficiency and accelerate business performance. OnCommand Insight delivers a high-level view of performance metrics, including application performance, datastore performance, virtual machine performance, and storage infrastructure performance, enabling users to better balance workloads across the entire application portfolio.

NetApp IT integrated OnCommand Insight into its daily IT operations to help optimize its storage network across physical and virtual, private and cloud platforms. OnCommand Insight also implements key performance indicators to track network health and analyzes trends to improve capacity planning. Since its initial adoption, OnCommand Insight evolved far beyond a capacity management tool for monitoring and emerged as a platform for better decisions about capacity and cost.

The Challenge
Like many companies, NetApp IT went through a period of installing storage systems as quickly as it could to keep up with client demand. Application requests were processed as individual requests instead of as part of an aggregated foundational view. The introduction of virtual machines caused further confusion as applications were dynamically moved. High-level reports analyzing performance, capacity, and costs across the infrastructure were difficult to compile and resource-intensive. Housekeeping issues and capacity planning were often moved to the back burner.

What was needed was an aerial view of the performance and costs of a storage infrastructure, whether it was physical or virtual, private or cloud. This included end-to-end visibility of the storage infrastructure to visualize the links between applications and business services. The storage team needed a tool that answered the following questions:
• What storage do we have?
• How are we using it?
• What costs are involved?
• What do we need for the future?
“OnCommand Insight jump-started our move from reactive to proactive. Thanks to the end-to-end visibility, we have been able to redefine the roles of our storage team to broaden their business skills and to devote more time to continuous process improvement, creating roadmaps, and driving innovation. The result is a happier, more satisfied storage team.”

Michael Morris  
Director, IT Infrastructure & Operations, NetApp

The Solution  
As a first step, NetApp IT integrated NetApp OnCommand Insight into its storage network, gaining the ability to better control, automate, and analyze its storage infrastructure. The software immediately improved the efficiency of NetApp’s storage operations. It provided a holistic view and an analysis of NetApp’s storage infrastructure. This infrastructure includes the NetApp Data ONTAP® operating system operating in 7-Mode, clustered Data ONTAP, and NetApp E-Series, whether deployed on the premises or in the cloud. The software discovered detailed information about installed storage devices, quickly identified underused and orphaned assets for future reuse, and made suggestions for switch consolidations. OnCommand Insight can also be used to monitor products from other storage vendors, including EMC, HDS, HP, and IBM.

OnCommand Insight yielded other significant operational information during its evaluation of the infrastructure. The software detected Fibre Channel vulnerabilities and risks in the IT environment. This information was used to establish best practices for redundancy and sharing across every part of the network.

Identifying and tracking key performance metrics also enabled the team to proactively identify and address storage issues before they occurred. IT developed three key performance indicators (KPIs) to assess both capacity and performance. These are node utilization (similar to CPU performance), aggregate utilization (how hard the media is working), and aggregate space (how much storage space is being used). When a KPI approaches a predefined threshold, the storage team drills down into historical performance data to make educated decisions about next steps that avoid affecting the storage.

End-to-End Visibility  
A major improvement delivered by OnCommand Insight was the end-to-end visibility of the entire IT service delivery chain. In the past, applications were not always clearly linked to a business service. The deployment of virtual machines made these links even harder to track.

OnCommand Insight brought the capability to trace applications to their business services. To achieve this, the software was integrated with the configuration management database (CMDB). Relationship dependency information was pulled from OnCommand Insight into the CMDB, bringing technical content to the business service. OnCommand Insight maps, tracks, and dynamically updates the relationships between applications, virtual machines, and storage for near-real-time analysis.

With this broad view, the storage team now sees the impact of any storage issue on the business service being delivered and can respond accordingly. These services include physical or virtual storage in the private or hybrid cloud, such as NetApp Private Storage. In addition, the team manages storage capacity more efficiently and makes more informed decisions about workload rebalancing. As a result, IT has been able to avoid purchasing new storage and more accurately anticipate future demand.

“The combination of NetApp IT best practices and a feature-rich tool like OnCommand Insight has transformed our IT operations. We can make informed decisions about optimizing our storage to meet specific performance and cost criteria, both now and in the future,” said Michael Morris, director, IT Infrastructure & Operations at NetApp.
Business-Level Reporting

Another key OnCommand Insight benefit is automated business-level reporting. Information is aggregated into one data warehouse and sorted by multiple descriptors (site, vendor, tier, application, and so on). The team then has access to a powerful data analysis tool. Team members can use the business application names in the CMDB to annotate OCI objects with business context to bridge the gap between technical and business users.

OnCommand Insight’s tracking of storage utilization also helps evaluate usage trends, including determining how much storage is needed at each storage service level and across all platforms. This information is used to prioritize tasks against goals and ultimately manage costs.

OnCommand Insight can also generate reports tailored to the unique needs of an individual user. For example, executive dashboards are used to provide high-level analysis about performance and cost trends to facilitate planning decisions. Storage managers can use the reporting feature to sort and rank application service levels and performance. Ad-hoc queries enable administrators to drill down into technical issues.

Self-Service Portal

OnCommand Insight’s powerful reporting features are also available through a self-service portal that gives NetApp IT users access to application performance data. In the past, when employees called with performance issues or requests, IT ran system-level reports on an ad-hoc basis. Multiple people and steps were involved because information had to be gathered from E-Series, 7-Mode, and clustered Data ONTAP.

As described above, the integration of OnCommand Insight with the CDMB enables cross-referencing OCI performance and capacity metrics for business applications through a URL. These URLs are the basis of the self-service portal, which provides automated business-level information on the portal. Database administrators, application owners, project managers, and others can directly verify storage performance, such as utilization and response times for a specified timeframe. They can also analyze usage patterns without contacting the storage team.

Clustered Data ONTAP Migration

OnCommand Insight also has played a critical role in the multiyear migration to clustered Data ONTAP in NetApp’s data centers. During the migration, the process of adding new applications into the production environment can affect other applications.

To minimize the impact, the storage team created transition nodes to remove this risk. Instead of deploying new capabilities directly into the production environment, the team deployed applications into a transition node where the applications could be separated within a cluster for workload analysis using OnCommand Insight. Only when the team was comfortable with the application’s performance was it migrated into the clustered Data ONTAP node to run with other applications.

This model has since matured to a storage services model that classifies applications based on their performance requirements and cost parameters. OnCommand Insight’s aggregated I/O density report is used to profile application performance across the entire infrastructure and establish a fact-based architecture. Then, using clustered Data ONTAP’s quality-of-service feature, the application is placed in its own “swim lane,” where it runs within its preset parameters and without affecting other applications. It is able to guarantee a service level and minimize the impact of applications on each other, thus lowering the overall risk. IT also uses OnCommand Insight to rebalance workloads against business requirements, resulting in a more predictable cost model for storage.
“OnCommand Insight has evolved into a decision support tool that we use to guarantee performance delivery while better forecasting future costs,” said Morris.

**Focus on Being Proactive**

NetApp IT’s use of OnCommand Insight continues to evolve. The tool has played a critical role in enabling the team to move from firefighting mode to proactive mode, with less time spent on troubleshooting and more time on proactive planning. As issues declined, storage administrators were able to spend more time proactively addressing critical issues, such as meeting service-level agreements for internal business clients.

IT will continue to find new ways to leverage OnCommand Insight to improve storage operations while simplifying its costs and risks. By enabling the management of storage as an end-to-end service and integrating it into the IT service delivery chain, the tool has given IT a powerful way to view and analyze its complete storage environment. The tool also ensures that its applications support business goals with minimal downtime.

OnCommand Insight’s dashboard gives NetApp IT a visual analysis of performance and capabilities to enable better decisions about storage operations, today and in the future.

**SOLUTION COMPONENTS**

**NetApp Products**

OnCommand Insight

**Infographics**

Predicting Application Performance

Integration with the CMDB

Delivering Storage as a Service

Maximizing Storage Assets

Transforming Service Delivery