Analyzing an application performance problem

OnCommand Insight

NetApp
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Analyzing an application performance problem

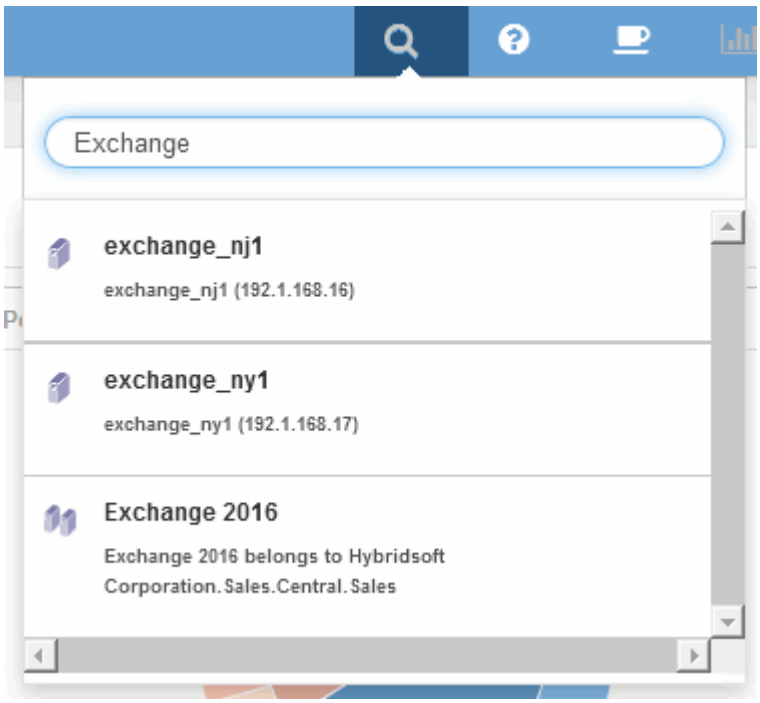
This document describes steps you might take to address reports of performance problems for an application that are impacting users or administrators. For example, users are complaining that their Exchange application is experiencing periods of slowness throughout the day.

About this task

In OnCommand Insight, an application is a configured entity. You assign a name and business entity to the application and you assign compute and storage resources to the application. This allows a better end-to-end view of infrastructure health and more pro-active management of infrastructure asset management.

Steps

1. To begin investigating the issue, use the Insight toolbar to perform a global search for the Exchange application.

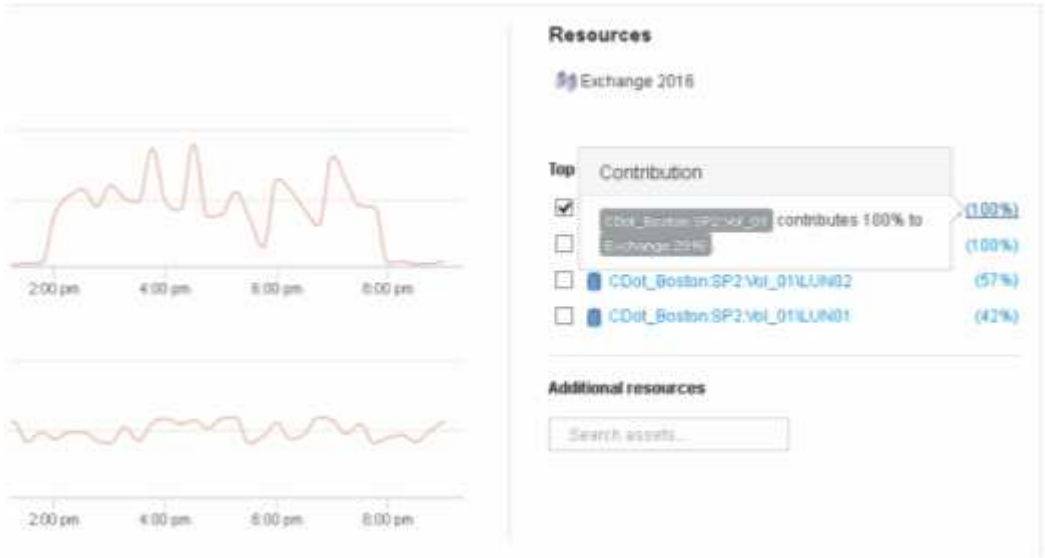


When performing a search, you can add an object descriptor before the object name to refine the search results.

2. When you select "Exchange 2016" from the search results, the system displays the Application landing page.

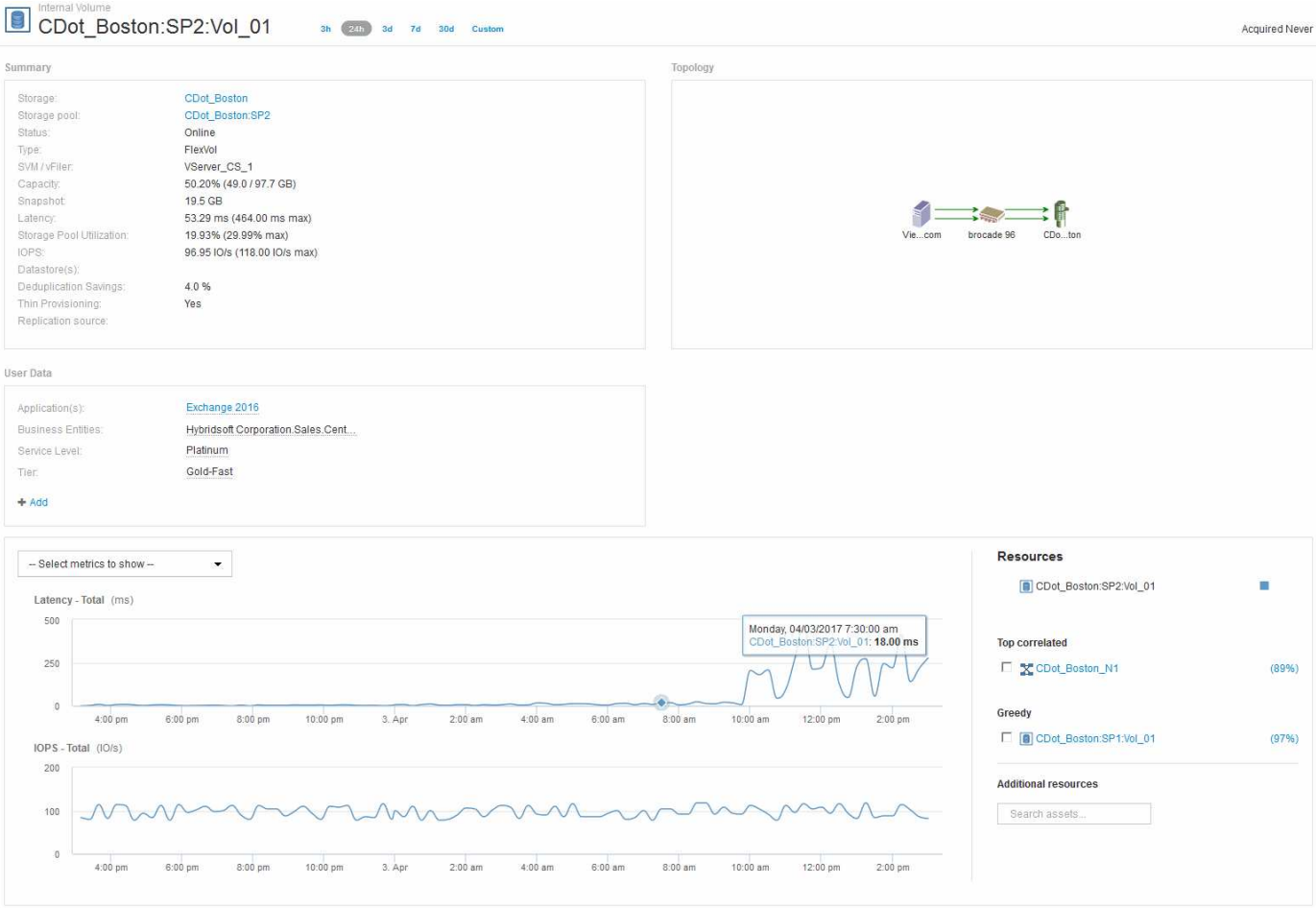
In the Application landing page, the following information is of interest:

- In the 24-hour time period selected, an increase in latency is shown on the right of the latency graph.
- During the period of increased latency there is no significant change in the level of IOPS. It appears the latency increase is not caused by a heavier application usage. We are not really seeing a high IOPS demand on the storage that could account for the latency spike. The increase in latency could be due to an external factor.
- On the right of the charts in the Top contributors section, click on the 100% for the selected internal volume (CDot_Boston:SP2:Vol_01). The system shows this resource is contributing 100% to the Exchange 2016 application.



- Click on the navigation link for this internal volume (CDot_Boston:SP2:Vol_01) to access the internal volume landing page. Analysis of the internal volume might provide information pertaining to the latency spike.

Examining the internal volume



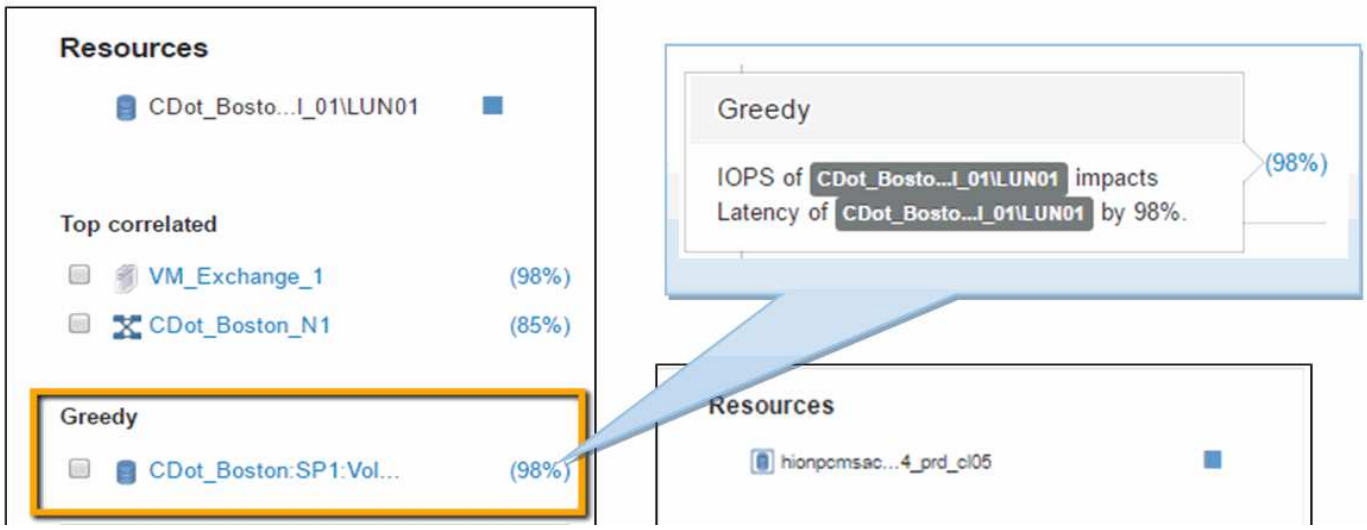
In the Internal Volume landing page, you see:

- The performance charts for the internal volume match what was previously seen for the application performance for both latency and IOPS.
- In the Resources section, where the correlated assets are displayed, a “Greedy” resource is identified (CDot_Boston:SP1:Vol_01).

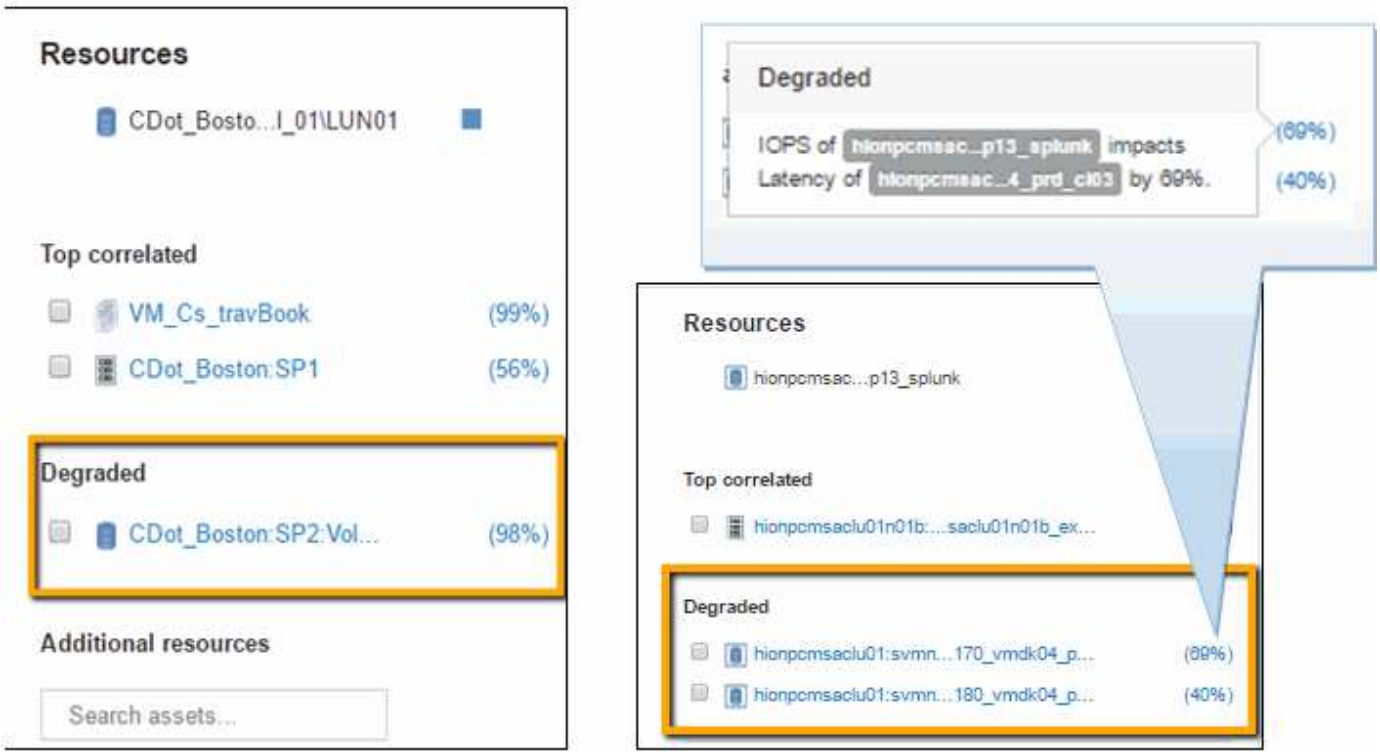
A greedy resource is identified by insight correlation analytics. Greedy/degraded resources are “peers” that utilize the same shared resource. The greedy resource has IOPS or utilization rates that negatively impact the degraded resource’s IOPS or latency.

Greedy and Degraded resources can be identified on Virtual Machine, Volume, and Internal Volume landing pages. A maximum of two greedy resources will be displayed on each landing page.

Selecting the correlation ranking (%) provides the Greedy resource analysis findings. For example, clicking a greedy percentage value identifies the operation on an asset that impacts the operation on the Degraded asset, similar to what is shown in the following example.



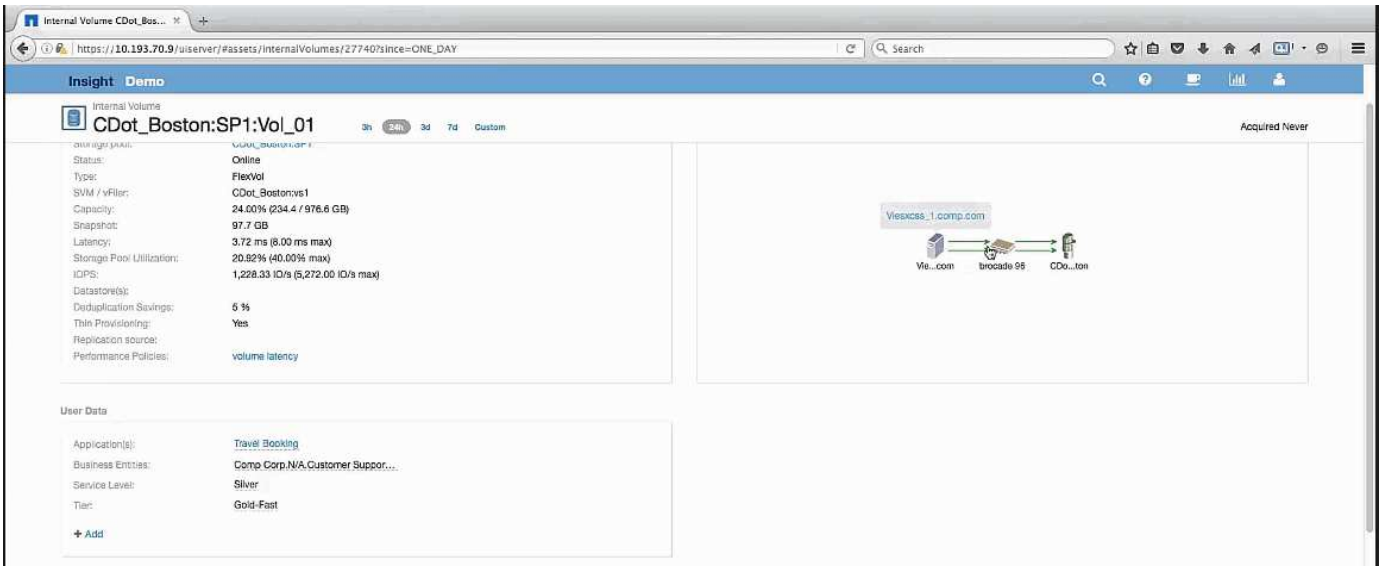
When a degraded resource is identified, you can select the degraded (%) score to identify the operation and the resource that is impacting the degraded resource.



Examining the greedy resource

Clicking on the internal volume identified as the greedy resource opens the landing page for the volume CDot_Boston:SP1:Vol_01.

Note in the summary details this internal volume is a resource for a different application (Travel Booking) and although contained in a different storage pool is on the same node as the internal volume for Exchange 2016 (CDot_Boston_N1)



The landing page shows:

- The internal volume associated with a Travel Booking application.
- A new storage pool is identified in the correlated resources.
- The original internal volume you were examining (CDot_Boston:SP2:Vol_01) is identified as “Degraded”.
- In the performance graph, the application has a steady latency profile and does have an IOPS spike roughly at the same time we see the latency spike on the Exchange application.

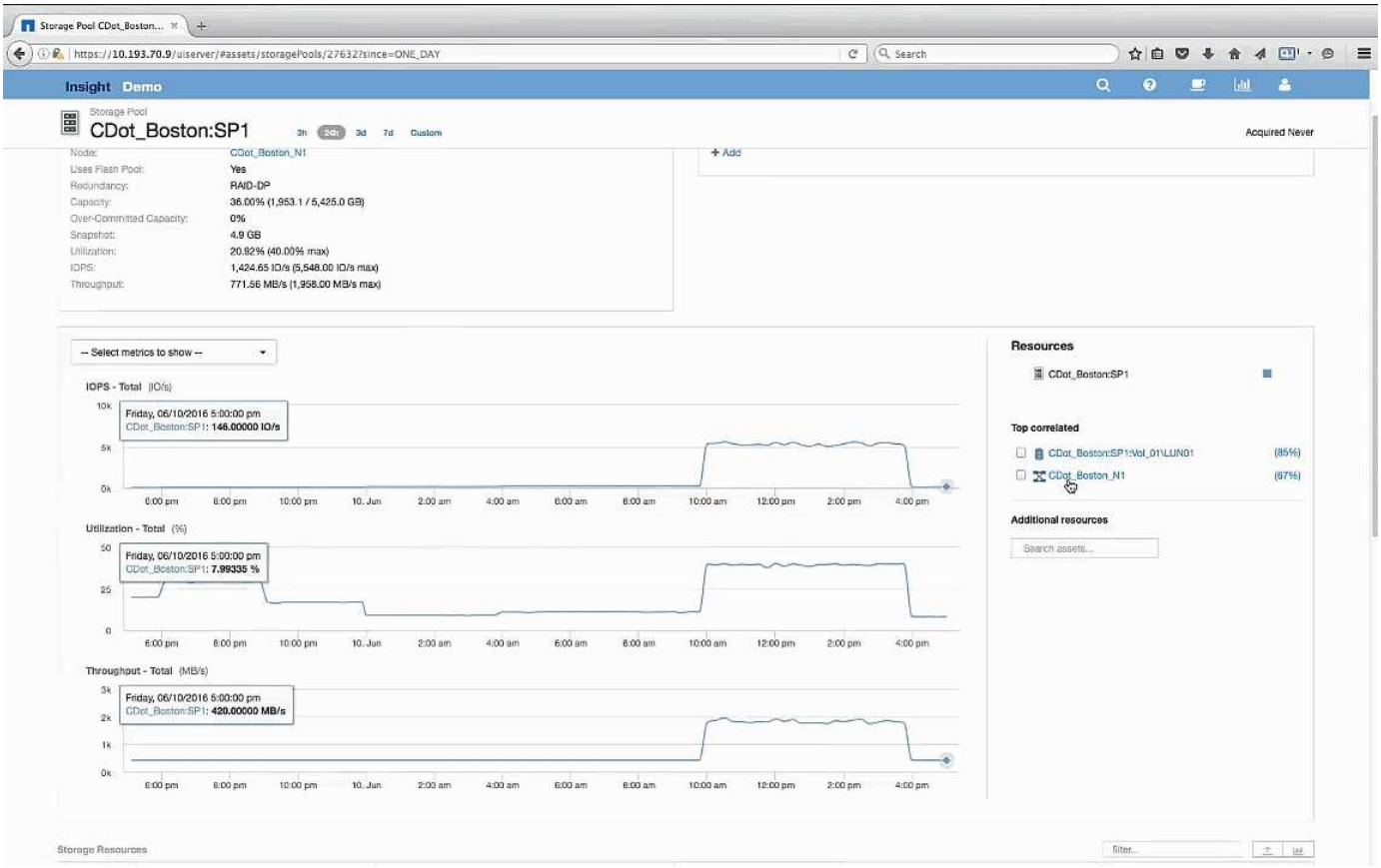
  This might indicate that the latency spike on the Exchange application is likely caused by the IOPS spike on this volume.

To the right of the charts in the Resource section notice the correlated Degraded resource which is the Exchange 2016 internal volume (CDot_Boston:SP2:Vol_01). Click on the check box to include the degraded internal volume in the in the performance graphs. Aligning the two performance graphs shows that the latency and IOPS spikes occur at nearly the exact same time. This tells us that we want to get a better understanding of the Travel Booking application. We need to understand why the application is experiencing such a prolonged IOPS spike.

Examining the Storage pool associated with the Travel Booking application might identify why the application is experiencing the IOPS spike. Click CDot_Boston:SP1 to view the Storage Pool landing page.

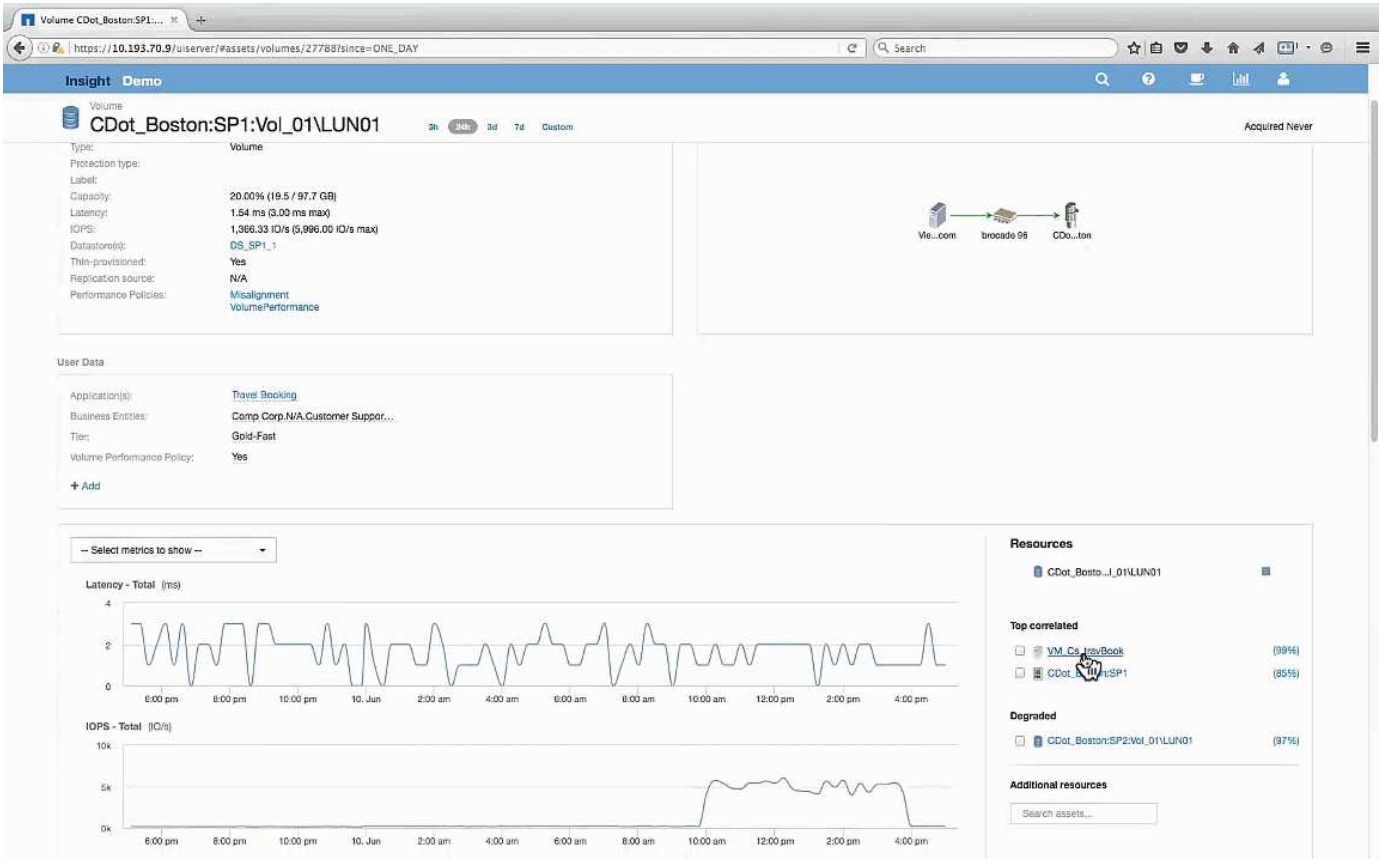
Examine the storage pool

Examining the storage pool landing page shows the same IOPS spike seen in its correlated assets. In the Resources section you can see that this storage pool landing page links to the volume of the travel application. Click on the volume to open the volume landing page.



Examining the volume

The volume landing page shows the same familiar IOPS spike seen in its correlated assets.



In the resources section the VM for the Travel Booking application is identified. Click on the VM link to view the VM landing page.

Examining the VM

In the VM landing page, select additional metrics to display and include CPU utilization and Memory utilization. The graphs for CPU and Memory utilization show that both are operating at nearly 100% of their capacity. This tells us that the problem with the Exchange server is not a storage problem, but instead is the result of the high VM CPU and memory utilization and the consequential memory swapping of I/O to disk.

To solve this problem, you can look for additional similar resources. Enter “Node” in the Additional resources input dialog to show metrics for assets similar to the Exchange VM. The comparison can help identify a node that might be a better fit for hosting the workload should a change be necessary.

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