

CLOUDIQ OVERVIEW

The Quick and Smart Method for Monitoring Unity Systems

ABSTRACT

This white paper introduces EMC™ CloudIQ, a cloud-based Software-as-a-Service platform that enables administrators to remotely monitor Unity™ systems from anywhere and at any time. This paper provides a detailed description of how to use CloudIQ to conveniently monitor and troubleshoot Unity storage systems.

December 2016

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EXECUTIVE SUMMARY

With our busy daily lives, it is important to find easier and faster ways to manage storage. With the Unity Family, EMC seeks to simplify the user experience in every possible way. One key aspect is in providing a simple way to monitor single or multiple Unity systems.

With the release of the Unity Operating Environment 4.1, EMC is making CloudIQ generally available. CloudIQ is designed to help storage administrators with their daily monitoring of Unity systems and to make administrators aware of any potential vulnerabilities with their storage systems. The main goals of CloudIQ are to provide administrators comprehensive monitoring across their Unity storage and to help administrators proactively avoid issues before they occur in their environment.

INTRODUCTION

This white paper describes how CloudIQ can be enabled for, and used with, any number of Unity storage systems. This white paper will review the features and functionality of CloudIQ.

AUDIENCE

This white paper is intended for EMC customers, partners, and employees who want to learn more about the features available with Unity systems, including Hybrid, Flash, and UnityVSA – Professional Edition models of Unity.

TERMINOLOGY

ESRS – EMC Secure Remote Services provides remote connectivity that enables Unity systems to connect to EMC and to automatically open Service Requests (SRs) for any issues that arise. ESRS also allows EMC to securely transfer files, such as logs and dumps, from the system. There are two types of ESRS: **Integrated**, which is embedded within the Unity system, and **Centralized**, which runs on a gateway Virtual Machine (VM).

Unisphere – The Graphical Management Interface that is used for creating, managing, and monitoring Unity systems, storage resources, and related features.

CLOUDIQ OVERVIEW

CloudIQ is a no cost Software-as-a-Service (SaaS) offering that provides a simple monitoring interface for an unlimited number of Unity systems. CloudIQ accesses data in near real time to enable monitoring and troubleshooting for Unity systems.

CloudIQ provides features intended to make the storage administrator's job easier. CloudIQ provides centralized views for simplified monitoring across the customer's environment, aggregating key information such as capacity and performance. CloudIQ also helps administrators mitigate risk, via the Proactive Health Score, which identifies potential issues before they occur in the current environment. For example, CloudIQ will detect if hosts are not properly zoned in a High Availability fashion, which could result in a Data Unavailability issue. The Proactive Health Score enables customers to more proactively and expeditiously remediate issues in their environment.

THE VALUE OF CLOUDIQ TO THE CUSTOMER

CloudIQ:

- Reduces the total cost of ownership
 - Because CloudIQ is deployed from the EMC cloud, customers can simply log in to their CloudIQ account and immediately access this valuable information. There is no licenses, and no burdens.
 - CloudIQ provides an easy browser-based user interface from which users can monitor their Unity systems.
 - CloudIQ provides administrators technical details about what is happening in their storage environments and how they can optimize for the best return on their investment.
- Provides guidelines specific to customers' configurations and enables them to minimize risk by implementing best practices

- The Proactive Health Score provides an easy way to identify and understand potential vulnerabilities in the storage environment.
- As part of the Proactive Health Score, CloudIQ also recommends remediations that easily and expeditiously address potential vulnerabilities, and thus enables storage administrators to raise their Health Score back to a good level.
- Ensures a more robust and reliable storage environment, resulting in higher uptime and optimized performance and capacity
 - By proactively notifying administrators of issues before they occur, CloudIQ enables administrators to achieve higher system uptime, increased performance, and to address both their short-term capacity needs as well as longer-term planning.

CLLOUDIQ REQUIREMENTS

As previously mentioned, CloudIQ is provided with purchase of Unity systems. The following are required for using CloudIQ:

- Unity system(s), including Unity All Flash, Unity Hybrid, and/or Unity VSA – Professional Edition, must be installed and set up.
- ESRS (Integrated or Centralized) must be configured successfully.
- There must be a paid support agreement and an accepted End User License Agreement (EULA) for the Unity system(s).

When these requirements have been met, administrators can monitor their Unity storage systems through CloudIQ.

ENABLE CLOUDIQ VIA THE UNISPHERE MANAGEMENT INTERFACE

Simplicity is a key theme for the Unity systems, so enabling CloudIQ through the Unisphere® interface is a simple process. With only a few mouse clicks, users can see their storage systems in CloudIQ.

As noted above, ESRS must be configured successfully before users can send data to CloudIQ. For more information about enabling ESRS, please check *Secure Remote Services Requirements and Configuration* for EMC Unity Family that can be found at [EMC support.com](http://EMCsupport.com).

Once ESRS has been configured, the user must navigate to **Settings > Management > Centralized Management**. Figure 1 shows the **CloudIQ** tab for **Centralized Management** where the user selects **Send data to CloudIQ**, and then clicks **Apply**. After this action, the system will appear in CloudIQ after some time. The user can then simply proceed to **CloudIQ.emc.com** by clicking the link on the displayed page, or the user can proceed to CloudIQ.emc.com from the main Unisphere page. On the CloudIQ.emc.com page, users can log in with their valid service accounts to view their Unity systems in CloudIQ.

For systems running UnityOE prior to version 4.1, users should refer to EMC Knowledgebase Article # 493483.

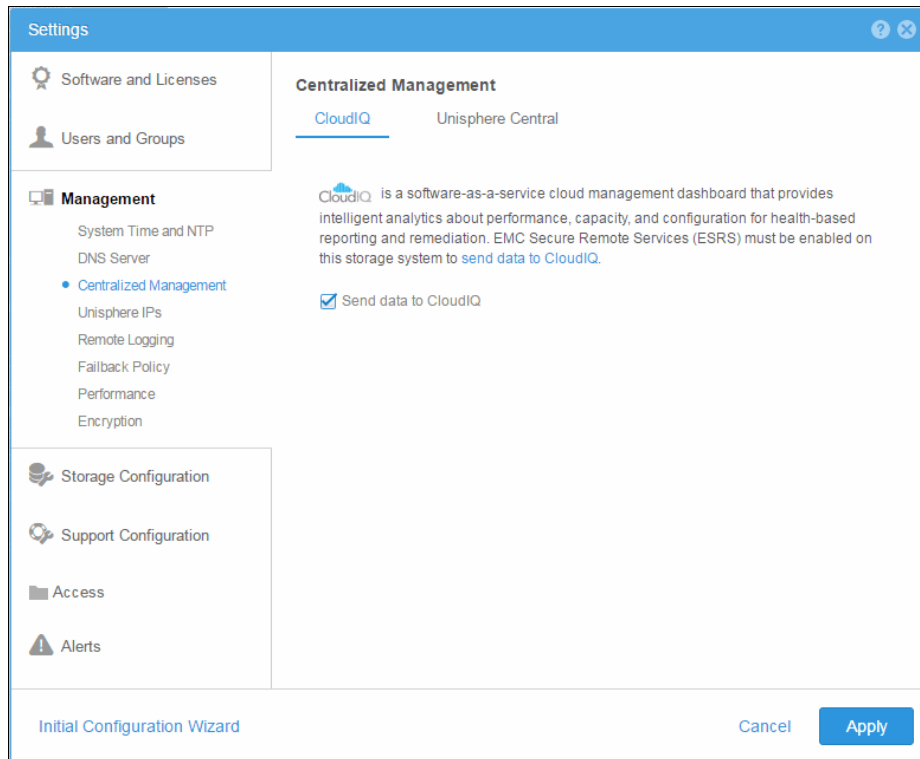


Figure 1. Enable CloudIQ via the Unisphere Management Interface

CLOUdiQ DATA COLLECTION

After the Unity systems have been installed, set up with ESRS connectivity, and CloudIQ Data Collection enabled, ESRS will transfer the required information from the Unity systems to CloudIQ. Figure 2 shows the flow of data into CloudIQ.

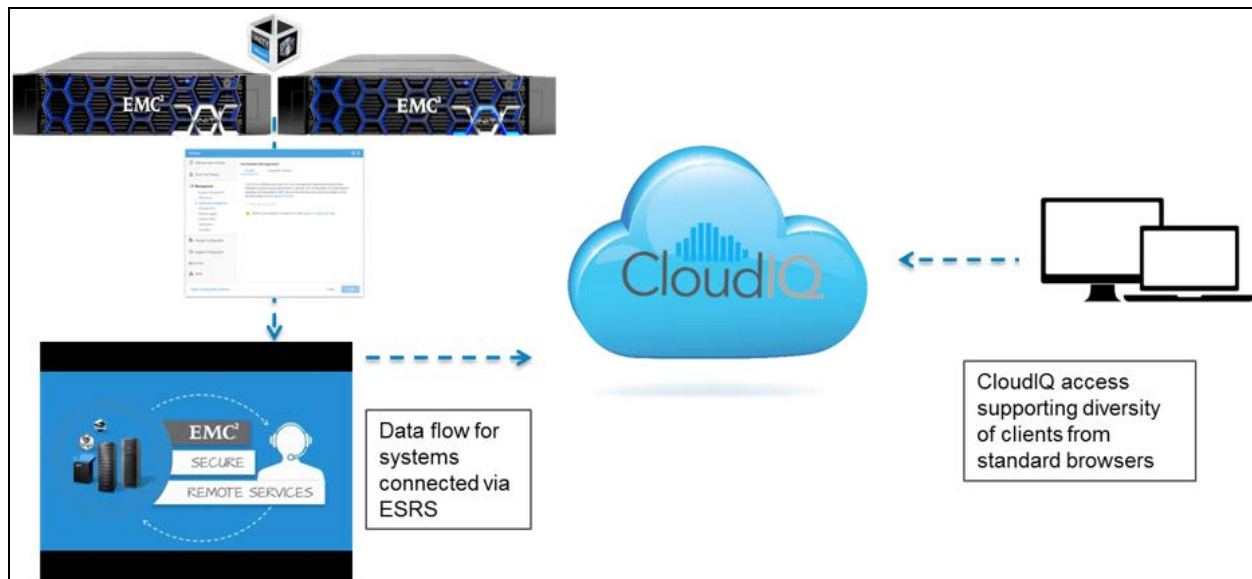


Figure 2. CloudIQ Data Flow

The frequency with which data is updated on CloudIQ varies, based on the type of information. The following Table 1 shows the types of data and the frequency with which CloudIQ updates this information:

Table 1. Frequency with which data is sent to CloudIQ

TYPE OF DATA	UPDATE FREQUENCY
ALERTS	5 minutes
PERFORMANCE	5 minutes
CAPACITY	1 hour
CONFIGURATION	1 hour
DATA COLLECT	Daily

THE CLOUDIQ DELIVERY CADENCE

The CloudIQ team intends to deliver new features and functionality, including new feature requests from EMC customers, on an ongoing basis. CloudIQ will leverage the SaaS deployment model to add new features and functionality after the general availability release, pushing the upgrades to the cloud and exposing these new features to customers on a regular basis with no downtime. Users will be informed of the new features when they log in to CloudIQ. As Figure 3 illustrates, a number badge will display in the top right of the GUI. Clicking this badge will reveal the new features.

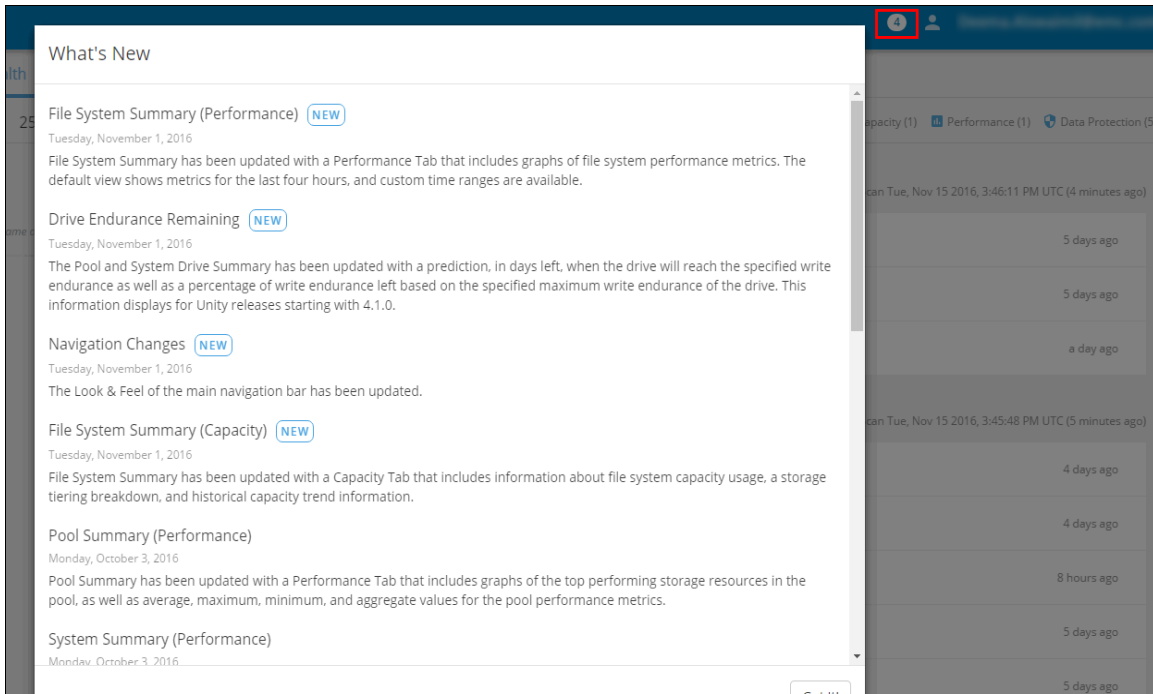


Figure 3. What's New Listing

AVAILABLE FEATURES

CloudIQ addresses operational management use cases through both aggregated and detailed views across all monitored systems. These views are as follows:






- Systems
- Pools
- LUNs
- File systems
- Hosts

CloudIQ also provides a **Proactive Health Score** for each monitored system, which allows the user to quickly identify potential issues and remediate them expeditiously. The Proactive Health Score is what differentiates CloudIQ from other EMC monitoring and reporting tools.

PROACTIVE HEALTH SCORE

Each system will have a health score ranging from 0 to 100 with 100 being the best possible score. The **Health Score** of a system is associated with five categories: **System Health**, **Configuration**, **Data Protection**, **Performance**, and **Capacity**. Table 2 shows the five categories with examples of the type of health check that would apply for each category.

Table 2. Proactive Health Score Categories

CATEGORY		SAMPLE HEALTH CHECKS
	SYSTEM HEALTH	Physical components with issues
	CONFIGURATION	CPU at high utilization and SPs significantly imbalanced
	PERFORMANCE	CPU Utilization, SP Balance
	CAPACITY	Pools at high subscription levels reaching full capacity
	DATA PROTECTION	RPOs not being met

OVERVIEW PAGE

When users log in to CloudIQ, they land on the **Overview** page. The **Overview** page provides the highest-level summary for storage administrators, helping them to understand the storage system's health, alerts, and pools capacity information.

The **Overview** page, shown in Figure 4, has the following four tiles available:

- System Health Scores – Categorizes the monitored systems based on their health score (Poor, Fair and Good).
- Resource Usage – Gives graphical overview showing consumption by each storage resource category across all the monitored systems.
- Alerts Trend – Summarizes the alerts for the monitored storage systems over the last 24 hours
- Pools Running out of Space – Leverages predictive analytics to identify the number of pools at risk of running out of space in the following timeframes:
 - Within a week (7 days)
 - Within a month (8 – 30 days)
 - Within a quarter (31 – 90 days)

Note: Each tile (**System Health Scores**, **System Alerts** and **Pools Running out of Space**) links the user to the list view of that resource, so the user can view more detailed information about specific resources. The displayed information is arranged based on the information that the user selects in the tile. For example, if the user clicks **20 Systems** in the title of the **System Health Scores** tile, the link takes the user to the **Systems** page, arranged by Health (described below). The **Resource Usage** tile is an exception, however, in that it does not link to a corresponding page.

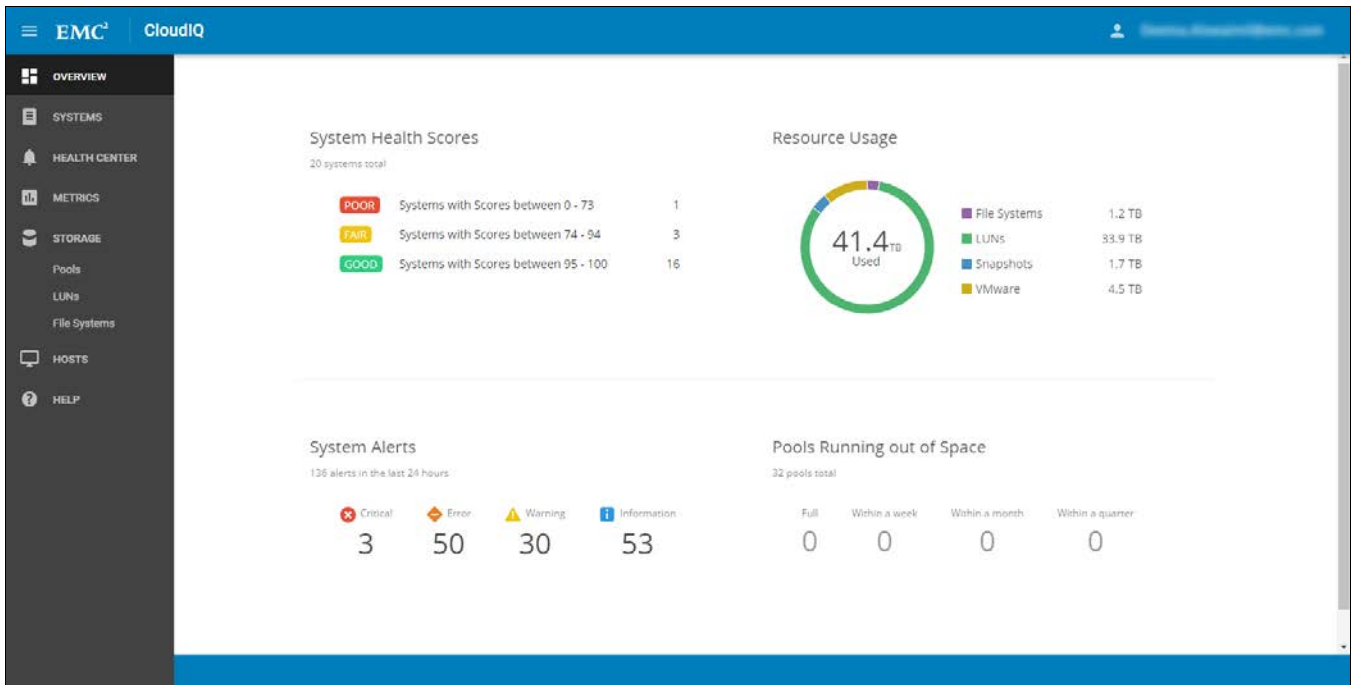


Figure 4. CloudIQ Overview

AGGREGATED LISTINGS

To enable the user to monitor across Unity systems, CloudIQ provides aggregated views of the following storage items:

- Systems
- Pools
- LUNs
- File systems
- Hosts

Each view displays key attributes, and each column is sortable so users can arrange the aggregated view as relevant. For a common and simplified user experience across the CloudIQ GUI, the aggregate views have a similar look and feel. However, different columns are provided based on the object type. For example, Pools, LUNs and File Systems can all be sorted by Capacity; but additional attributes such as Consistency Group membership for LUNs, and NAS Server membership for File Systems, is provided in each respective aggregated listing.

SYSTEMS LIST

The Aggregated Listing of all the monitored systems can be accessed via the link in the left-hand Navigation bar, or the Health Score Tile discussed above. The default format of this page is the **Card** view, shown below. Users can alternatively choose the **Grid** view, which displays the systems in more of a tabular fashion.

There are four different categories of views available for displaying the systems in this page: **Health Score**, **Configuration**, **Capacity** and **Performance**. Each view displays information specific to that category. To view more details about a specific system, a user can click on the system's name, and from there will navigate to the **System Detail** page (discussed below).

The default view for the Aggregated Systems is the **Health Score** view. Each system has a health score which is calculated based on the greatest impact of the five categories. For example, if the system has a System impact of 24 and a Configuration impact of 11, assuming the rest of the categories have no issues, the final score of the overall system would be shown as 76 (100-24), since the System category has the greatest impact to the health score for the system. This approach is intended to help the user focus first on the most significant issue that the system has, so that remediation can be taken to resolve and return the Health Score to a good range.

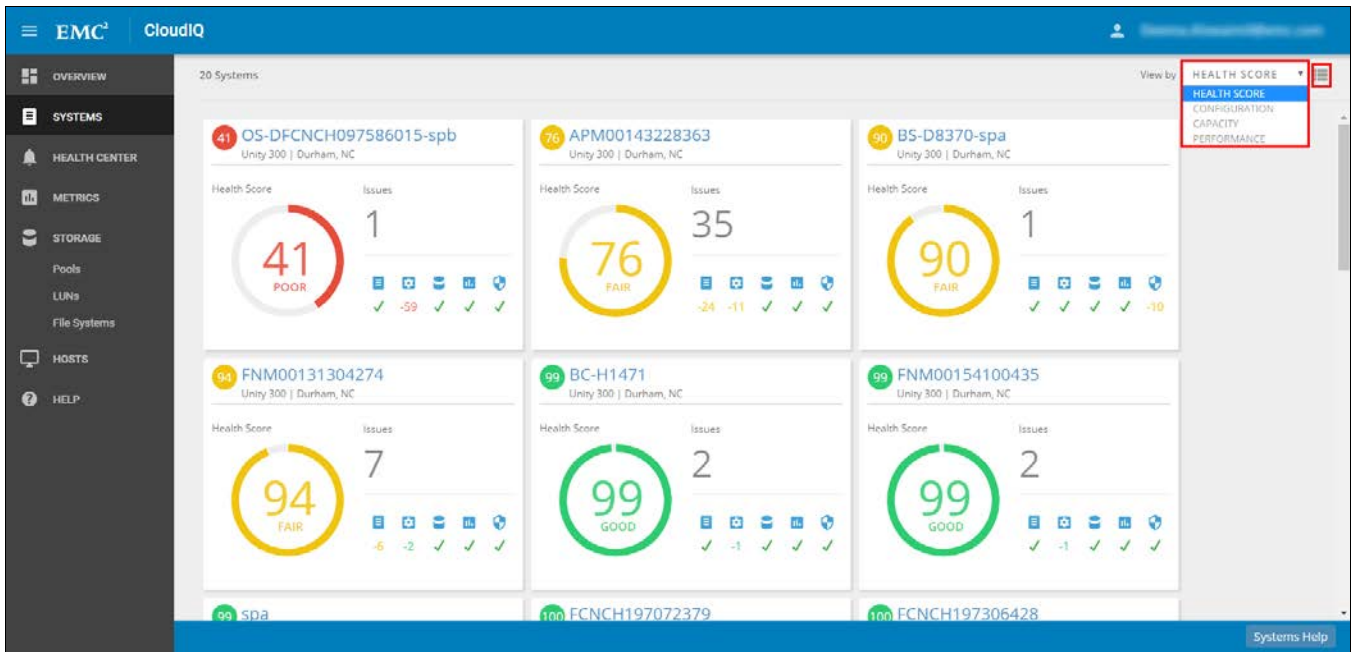


Figure 5. Aggregate Systems List – Health Score View

The **Capacity** view shows the usable, unconfigured, and free space on the system. Additionally, the capacity view shows the **Efficiency Details** that correspond to the EMC Unity All-Flash Logical Capacity Guarantee, for all Unity systems running Unity OE 4.1.0 or above. The **Efficiency Details** include: **Logical Capacity**, **Overall Efficiency Ratio**, and then the ratios for **Thin LUNs**, **Snapshots**, and **Compression** which collectively contribute to the **Overall Efficiency Ratio**.

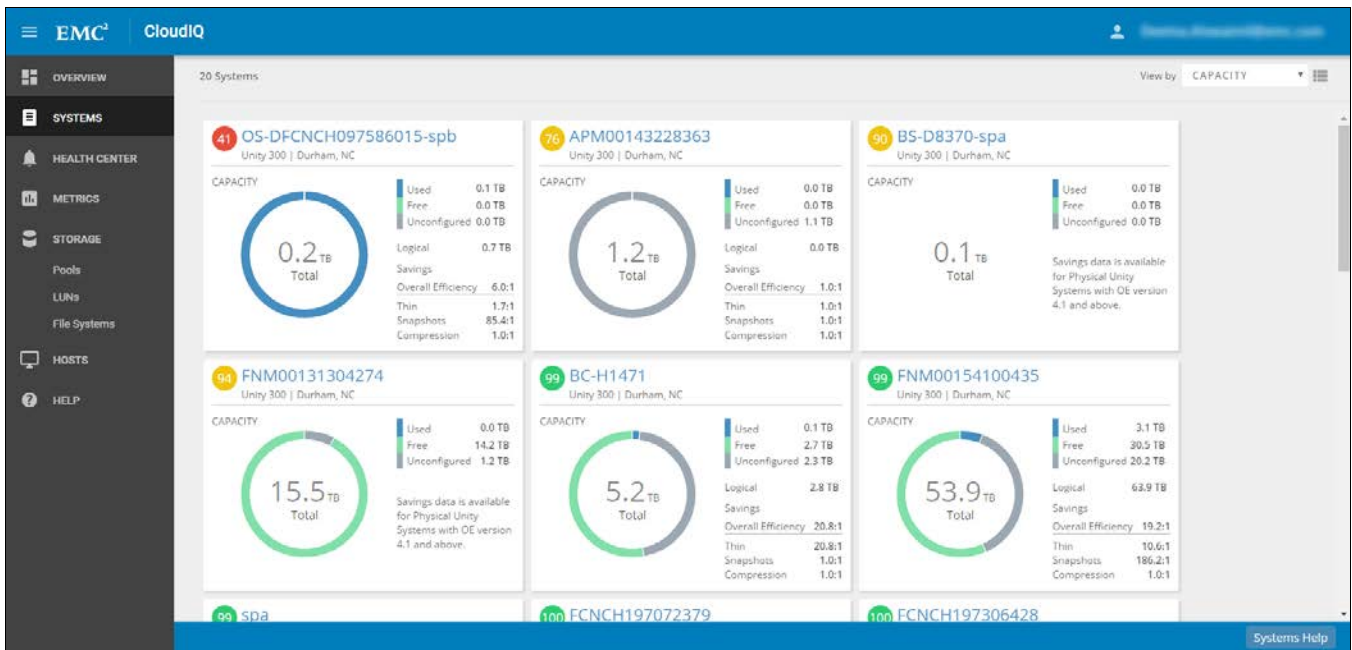


Figure 6. Aggregate Systems List – Capacity View

The **Performance** view displays the key system performance metrics: **Bandwidth**, **SPA Utilization**, **SPB Utilization**, **Block Latency** and the **Used Capacity** data. It also displays the **IOPs** for the most recent four hours of the system. CloudIQ offers the additional feature of enabling the user to select multiple systems (up to 3) to compare their metrics. The user simply clicks the checkbox to select the systems for comparison, and then clicks the **View Metrics** button.

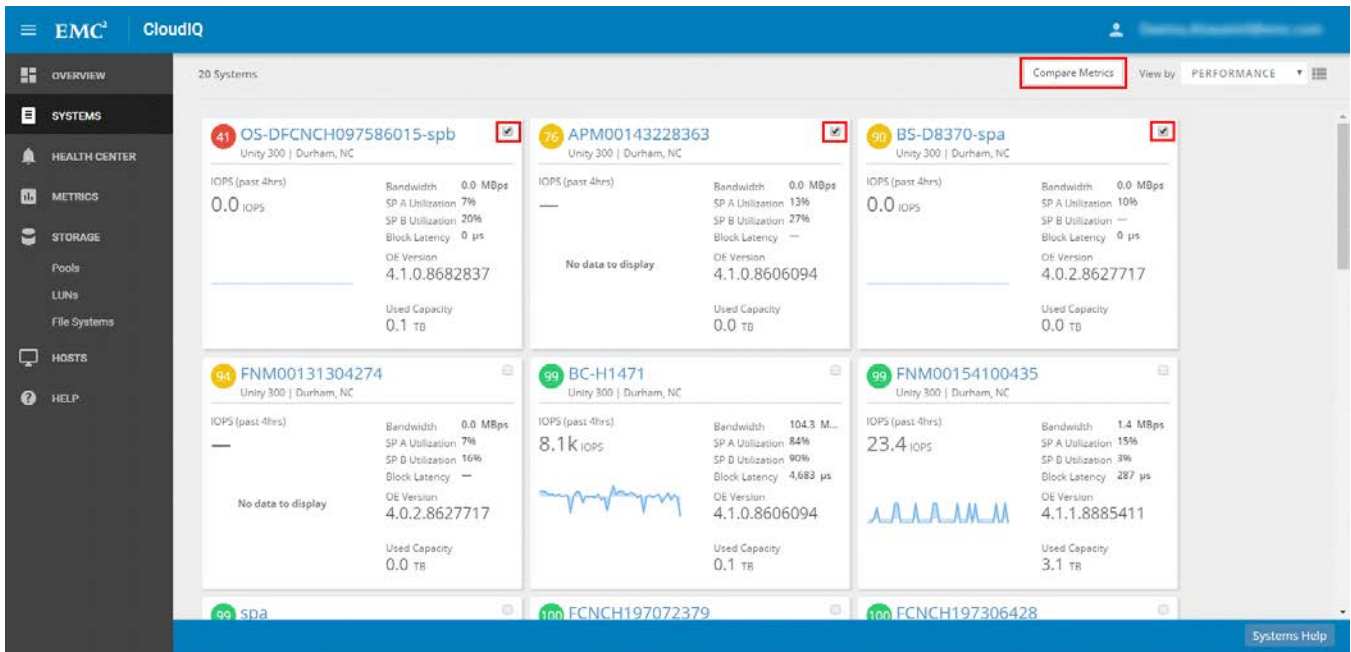


Figure 7. A ggregate Systems List – Capacity View

The **Configuration** view displays the Operating Environment (OE) version for each system and, where applicable, the latest available version of OE. This makes it very easy for administrators to see, at a glance, which systems require an upgrade to ensure they are up-to-date. This view also displays the **Last Contact Time** between the system and CloudIQ, which could indicate a connectivity issue. This view also displays the **Site ID** to which this system is assigned, which is helpful if users are working with Support.

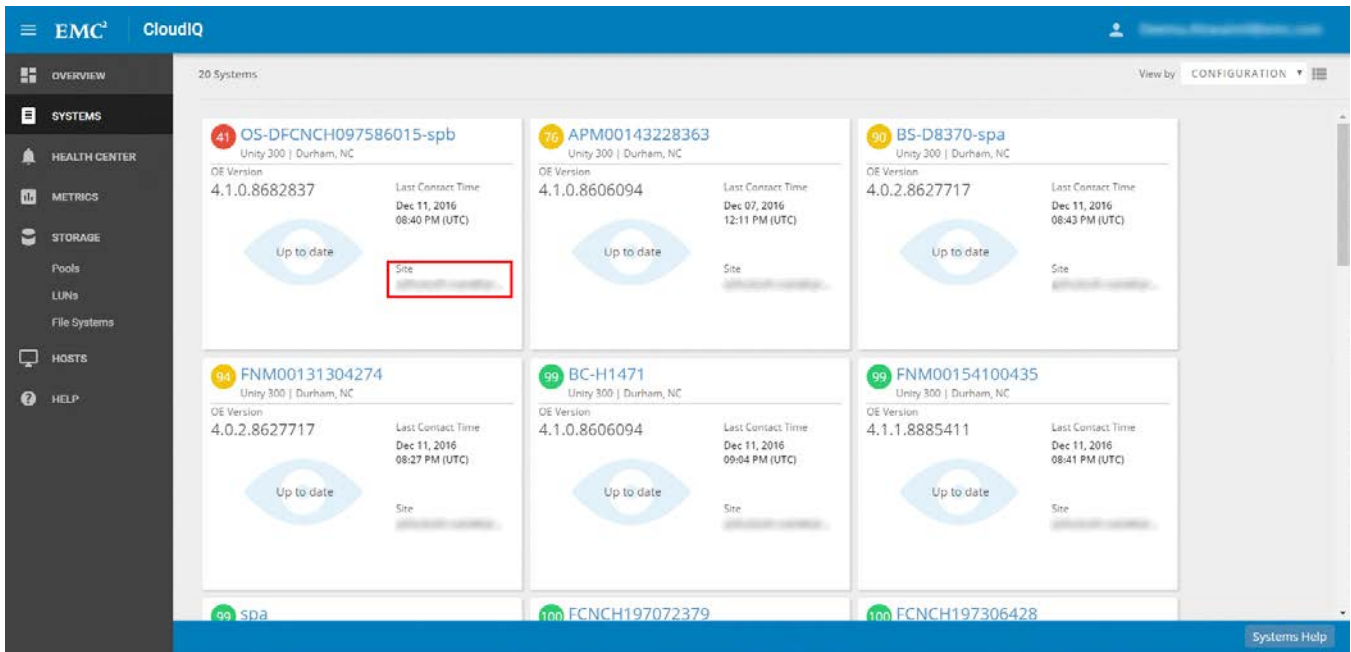


Figure 8. Aggregate Systems List – Configuration View

POOLS LISTING

For the Aggregated Pools list that is available by either clicking on the link in the Overview page, or the link in the Navigation bar, a user can change the view of the list of the pools based on given column headings. For example, a user can sort the pools by **Time to Full** to quickly see how soon the pools are likely to run out of space, or by the **Free** space for each pool, which might help inform an upcoming provisioning task. This functionality simplifies monitoring of multiple pools across one or many monitored storage systems. In addition, the **Issues** column will display the number of health issues associated with any pool, and a green check mark for pools with no associated issues.

ISSUES	NAME	SYSTEM	TOTAL SIZE (TB)	USED (%)	SUBSCRIPTION (%)	TIME TO FULL	FREE (TB)
✓	DR_Test_Pool	BS-D8370-spa	0.0	10.4	46.3	Greater than quarter	0.0
✓	KevPool-1	FCNCH197026077	0.0	53.4	159.5	Greater than quarter	0.0
✓	KevPool-2	FCNCH197026077	0.0	28.2	55.7	Greater than quarter	0.0
✓	os56-shj-pool2	OS-DFCNCH0975860...	0.0	86.7	132.1	Greater than quarter	0.0
✓	os56-shj-pool3	OS-DFCNCH0975860...	0.0	0.0	0.0	Greater than quarter	0.0
1	OS56-shj-src	OS-DFCNCH0975860...	0.1	57.6	154.6	Greater than quarter	0.0
✓	OS59-shj-pool1	FCNCH197306428	0.1	49.1	164.6	Greater than quarter	0.0
✓	pool1	FNMM00152600239	20.3	77.1	79.3	Greater than quarter	4.6
✓	pool1	FNMM00152500502	21.4	73.0	75.1	Greater than quarter	5.8
✓	pool-1	APM00143228363	0.0	0.0	0.0	Greater than quarter	0.0
✓	Pool1	FNMM00131304274	14.2	0.0	0.0	Greater than quarter	14.2

Figure 9. Aggregate Listing of Pools

LUNS LISTING

The LUNs Listing displays all Block storage objects, including VMware block datastores (but not VVols). The LUNs listing displays these key attributes: Health Status (as reported by the Unity system), Name, Total Size, whether it is Thin or Thick LUN, and which Pool, Consistency Group (where applicable), and System to which the LUN belongs. As with other aggregate listings, the user can sort the list of LUNs by any column. The default sorting is by the Name of the LUN.

NAME	TOTAL SIZE (GB)	THIN	POOL	CONSISTENCY GROUP	SYSTEM
✓ a-shj-big-lun-00	200.0	Yes	PublicAFP_1	—	spa
✓ a-shj-big-lun-01	200.0	Yes	PublicAFP_1	—	spa
✓ CGLun-00	3.0	Yes	vvd8058-pool-1	ReplicatedCG	VIRT15435PQMXE
✓ CGLun-01	3.0	Yes	vvd8058-pool-1	ReplicatedCG	VIRT15435PQMXE
✓ CGMember-00	2.0	Yes	KevPool-1	ReplicatedCG	FCNCH197026077
✓ CGMember-01	2.0	Yes	KevPool-1	ReplicatedCG	FCNCH197026077
✓ chris-test	100.0	Yes	OS59-shj-pool1	—	FCNCH197306428
✓ DR_CGLun-00	3.0	Yes	vvd8058-pool-2	DR_ReplicatedCG	VIRT15435PQMXE
✓ DR_CGLun-01	3.0	Yes	vvd8058-pool-2	DR_ReplicatedCG	VIRT15435PQMXE
✓ DR_CGMember-00	2.0	Yes	KevPool-2	DR_ReplicatedCG	FCNCH197026077
✓ DR_CGMember-01	2.0	Yes	KevPool-2	DR_ReplicatedCG	FCNCH197026077

Figure 10. Aggregate Listing of LUNs

FILE SYSTEMS LISTING

The File Systems Listing displays all File storage objects, including VMware file datastores (but not VVols). The File Systems listing displays these key attributes: Health Status (as reported by the Unity system), Name, Total Size and % Used, Protocol, and which NAS Server, Pool, and System to which the File System belongs. As with other aggregate listings, the user can sort the list of File Systems by any column. The default sorting is by the Name of the File System.

	NAME	TOTAL SIZE (GB)	USED (%)	PROTOCOL	NAS SERVER	POOL	SYSTEM
✓	NFS_FNM001539005...	100.0	11.5	Linux/Unix Shares (...)	NAS_FNM0015390...	shj-pool1	FNM00153900596
✓	nsf1	50.0	3.0	Linux/Unix Shares (...)	DR_nasserver1	pool2	VV-D9094-spa
✓	nsf1	50.0	3.0	Linux/Unix Shares (...)	nasserver1	Pool1	VV-D9094-spa
✓	shj-afa-nfs1	20.0	7.6	Linux/Unix Shares (...)	shj-afa-nas2-nfs	shj-pool1	FNM00153900596
✓	shj-afa-nfs2	100.0	1.5	Linux/Unix Shares (...)	NAS_FNM0015390...	shj-pool1	FNM00153900596
✓	shj-afa-nfs3	100.0	1.5	Linux/Unix Shares (...)	shj-afa-nas2-nfs	shj-pool1	FNM00153900596
✓	shj-os56-smb1	3.0	57.4	Windows Shares (...)	shj-os56-nas2	OS56-shj-src	OS-DFCNCH097586...
⚠	shj-os56-smb2	5.0	95.3	Windows Shares (...)	shj-os56-nas2	os56-shj-pool2	OS-DFCNCH097586...
✓	shj-smb1	100.0	14.1	Windows Shares (...)	shj-afa-nas1-smb	shj-pool1	FNM00153900596
✓	shj-smb2	100.0	13.7	Windows Shares (...)	shj-afa-nas1-smb	shj-pool1	FNM00153900596
✓	smb1	50.0	3.5	Windows Shares (...)	DR_nasserver1	Pool1	VV-D9094-spa

Figure 11. Aggregate Listing of File Systems

DETAILED VIEWS

Each of the detailed views for System, Pool, LUNs, and File Systems pages includes the following tabs:

- Properties:** Displays attributes for the item, and also an in-context link to Unisphere for that item, to enable active and/or granular management. When users click this link, it will direct them to the Unisphere login page, where they will be prompted for their Unisphere credentials. Upon providing the Unisphere credentials, the user will be taken to the appropriate page in Unisphere. For instance, if selected from the LUN Detail page in CloudIQ, the user would be taken to the LUN listing in Unisphere, with the specific LUN selected. For System and Pool Detail views, the Properties page also shows Health information and the associated pools, storage objects, drives, and hosts.
- Capacity:** Displays the capacity details for that item. For the System and Pool Detail views, includes predictions for when Pools will become full, aggregate capacity views, and historical capacity trends.
- Performance:** Displays the performance details for that item, over the most recent 4 hours of data. Users who want to see metrics for a longer timeframe can click the **View Detailed Metrics** button to navigate to the Metrics page for this item and customize the timeframe and which metrics are displayed. For the System and Pool Detail views, graphs of the top performing storage resources within the Pool or System are provided as well.

SYSTEM DETAILS

Properties

The **Properties** tab shows information about the system, such as the IP address of the system, the OE version, and the last contact time, so that users can ensure CloudIQ has the most up-to-date information about their system. Also, it shows the System Health Score and any issues that were identified by the Proactive Health Check, according to the five health categories discussed above. The user can view the remediation for each issue, in order to easily address the issue and improve the Health Score. Once the user addresses the issue, it no longer appears in the Health Score.

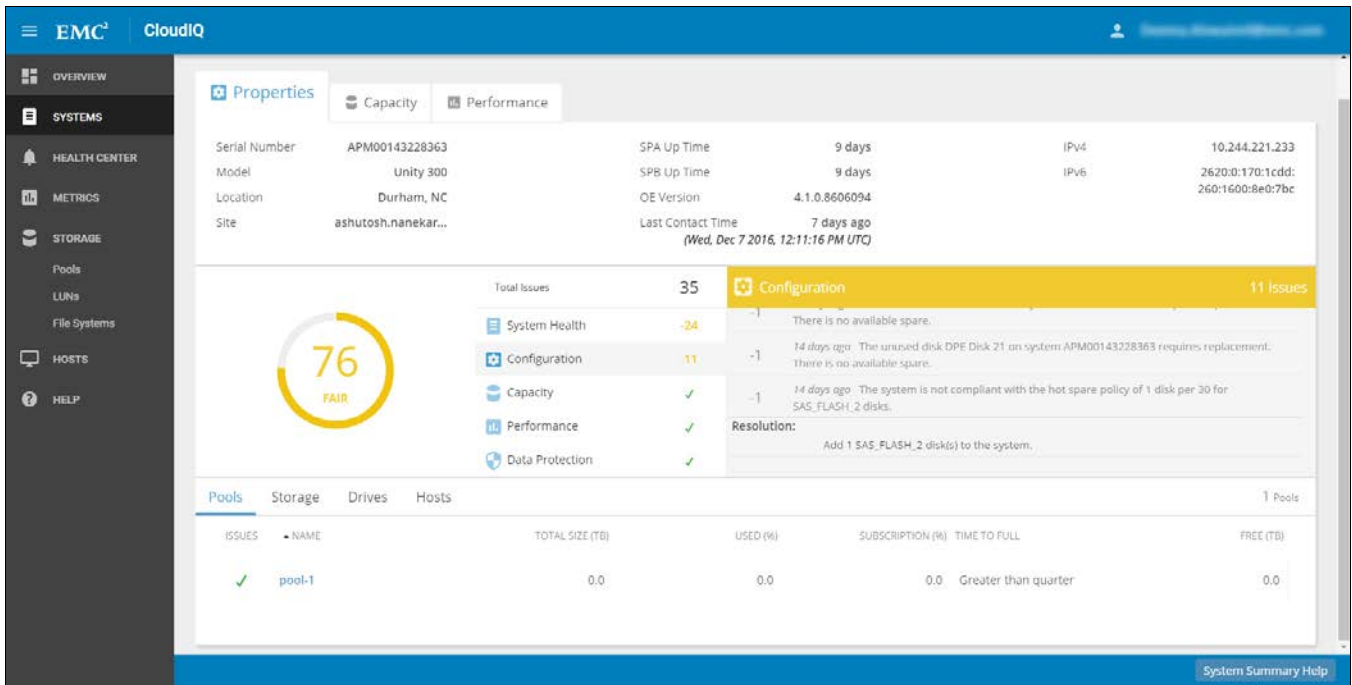


Figure 12. System Details – Properties

At the bottom of the **Properties** tab are the inventories for objects that are contained in the system: Storage Pools, Storage (LUNs and File Systems), Drives, including wear details for Flash drives within 180 days of wearing out, and the Hosts that are attached to the system.

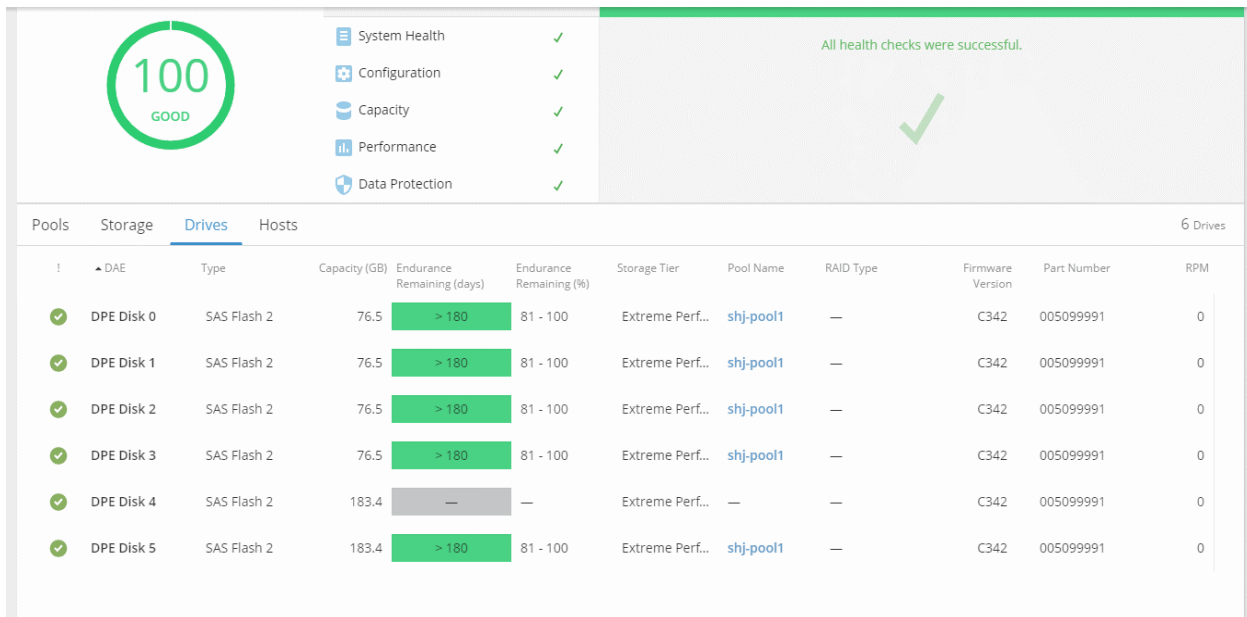


Figure 13. System Details – System Objects

Capacity

The **Capacity** tab of the system details page shows the total capacity of the given system as well as the free space, used space, and any unconfigured drives. In addition, CloudIQ leverages predictive analytics to display the predicted amount of time before the pool reaches 100% full. The tab also includes aggregated capacity views categorized by storage object types: LUNs, File Systems, VMware objects, and Snapshots. Lastly, there is a display of drive usage in the system that is broken out by drive types: SAS, NL SAS, and SAS Flash.

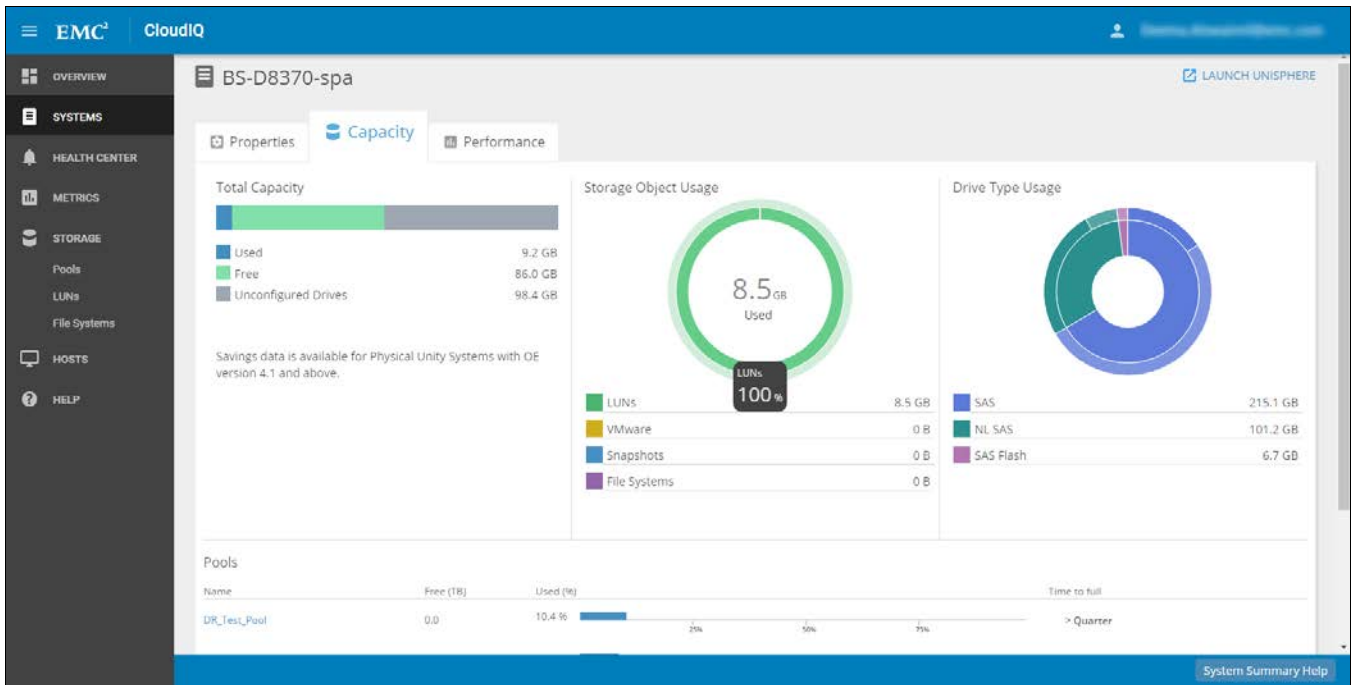


Figure 14. System Details – Capacity

Performance

The **Performance** tab in the **system** details page displays high-level system performance metrics graphs for the last four hours. Information at the top of the page shows the Top Performing Storage Objects with regard to Response Time, IOPS, and Bandwidth. The following table lists the additional metrics that are displayed:

Table 3. Performance Metrics

PERFORMANCE METRIC	DEFINITION
CPU UTILIZATION	Displays the system's aggregate value and the system average value.
IOPS	Displays the system's aggregate value and the system average, minimum, and maximum values.
BANDWIDTH	Displays the system's aggregate value and the system average, minimum, and maximum values.
BACKEND IOPS	Displays the system's aggregate value and the system average, minimum, and maximum values.
RESPONSE TIME	Displays the system's aggregate value and the system average, minimum, and maximum values.

As noted above, users can click the **View Detailed Metrics** button for more customizable performance views for this system.

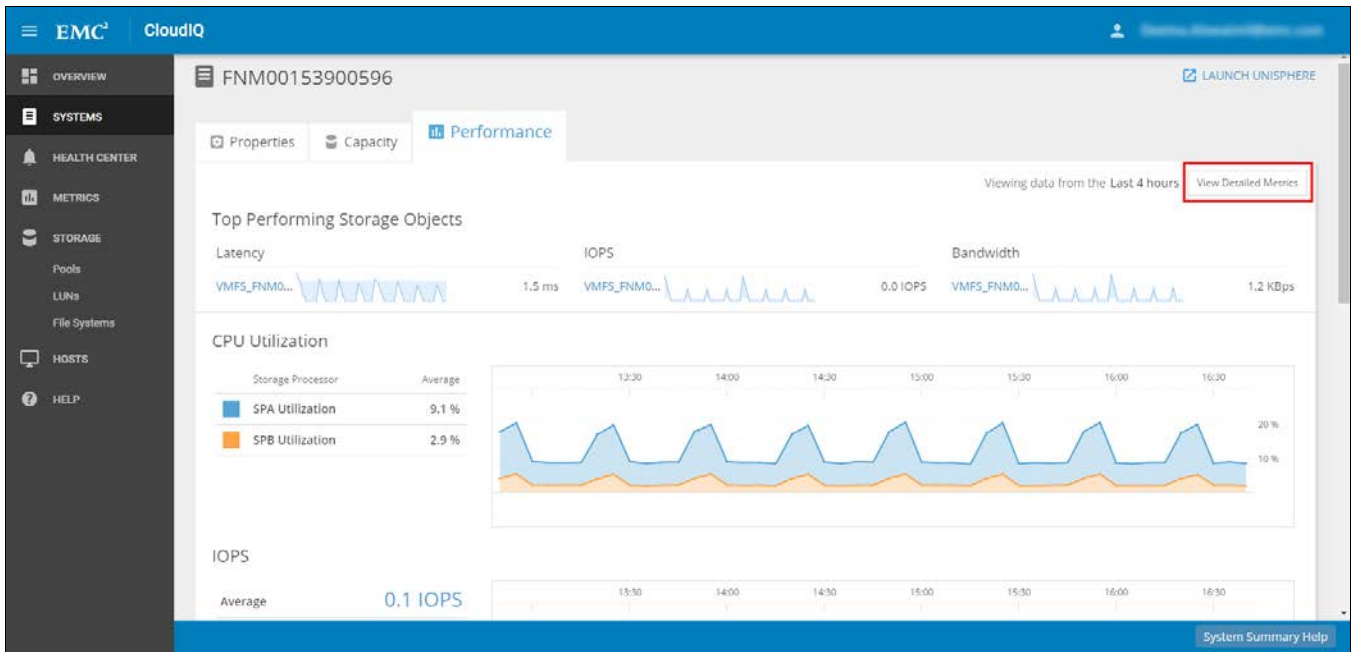


Figure 15. System Details – Performance

POOL DETAILS

The Details view of the **Pool** page has a view similar to the System details view, but in this case with the scope of the individual Pool. The **Properties** tab will display any Health issues and the resolution if any specific to the Pool, and also list the storage objects and drives that are configured in the pool. The **Capacity** tab for Pools will display the total capacity of the pool so the user can see how much capacity is currently used compared to the free space, and also see the current subscription percentage of all the configured storage resources, which is especially helpful in ensuring Pools don't go beyond the expected subscription amount, since that could result in a Data Unavailability event. The **Performance** tab for Pools displays the Top Performing Storage Objects within the Pool, and the Pool-level performance metrics listed in Table 3 above.

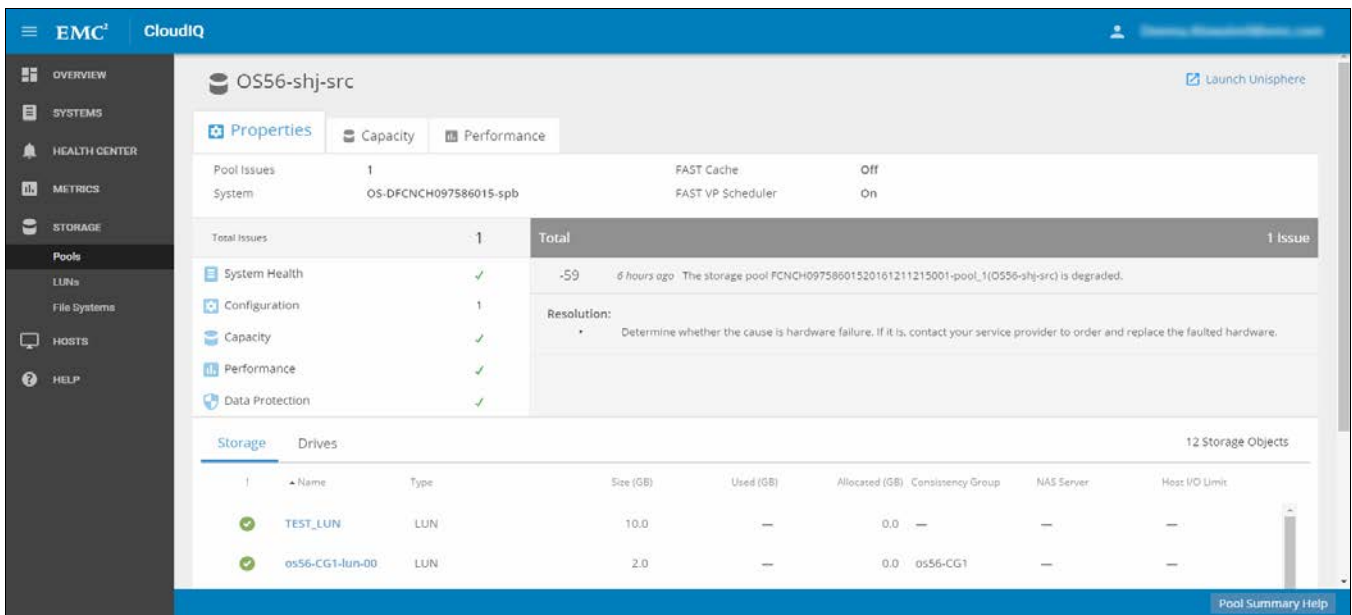


Figure 16. Pool Details

LUN DETAILS

The LUN details view displays information about an individual LUN. From this page, a user can see if this LUN has FAST Cache on or off (according to whether it is enabled at the Pool level or not), and the FAST VP Policy (for Hybrid arrays), and also Consistency Group membership (where applicable). The Host(s) to which this LUN is assigned will be listed at the bottom of the LUN details page. The

Capacity tab will display the Snapshot Space Used and the total Pool Space Used, as well as the Tiering distribution. The **Performance** tab shows key performance information for LUNs, much like that shown below for File Systems.

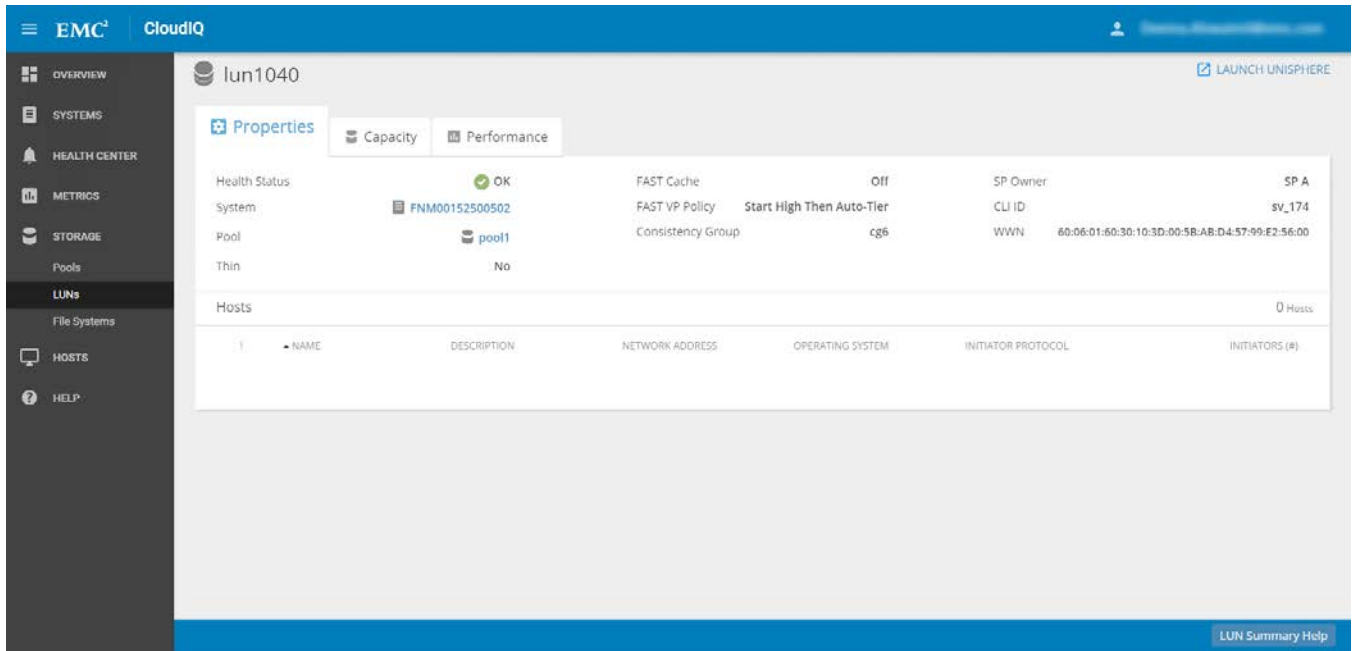


Figure 17. LUN Details

FILE SYSTEM DETAILS

The **Properties** and **Capacity** tabs for File Systems are essentially the same as discussed above for LUNs, with the additional File System specific attributes such as NAS server membership, and Protocol. As shown below, the **Performance** tab displays graphs of the individual File System performance metrics. Since the individual File System Latency metric isn't available, it shows the aggregated metrics across all File Systems on the system.

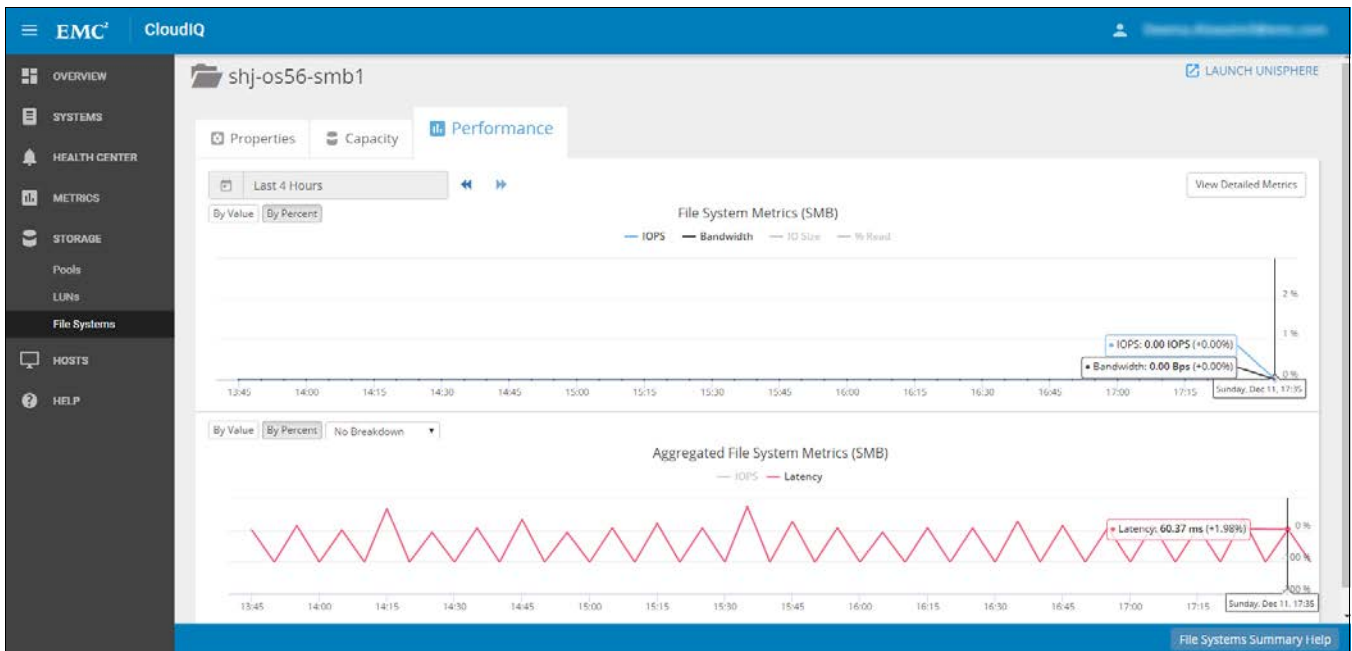


Figure 18. File System Details – Performance

HEALTH CENTER

Proactive Health

The Health Center page consists of two main sections: Proactive Health and the Alerts Log. The Proactive Health section gives a comprehensive view of all the current health issues across all the monitored systems in the environment. Also, the storage administrator can refine the view to a single system, in order to focus on issues for that particular system. When the storage administrator types the name of the system, the Proactive Health section will display the particular system and its associated issues.

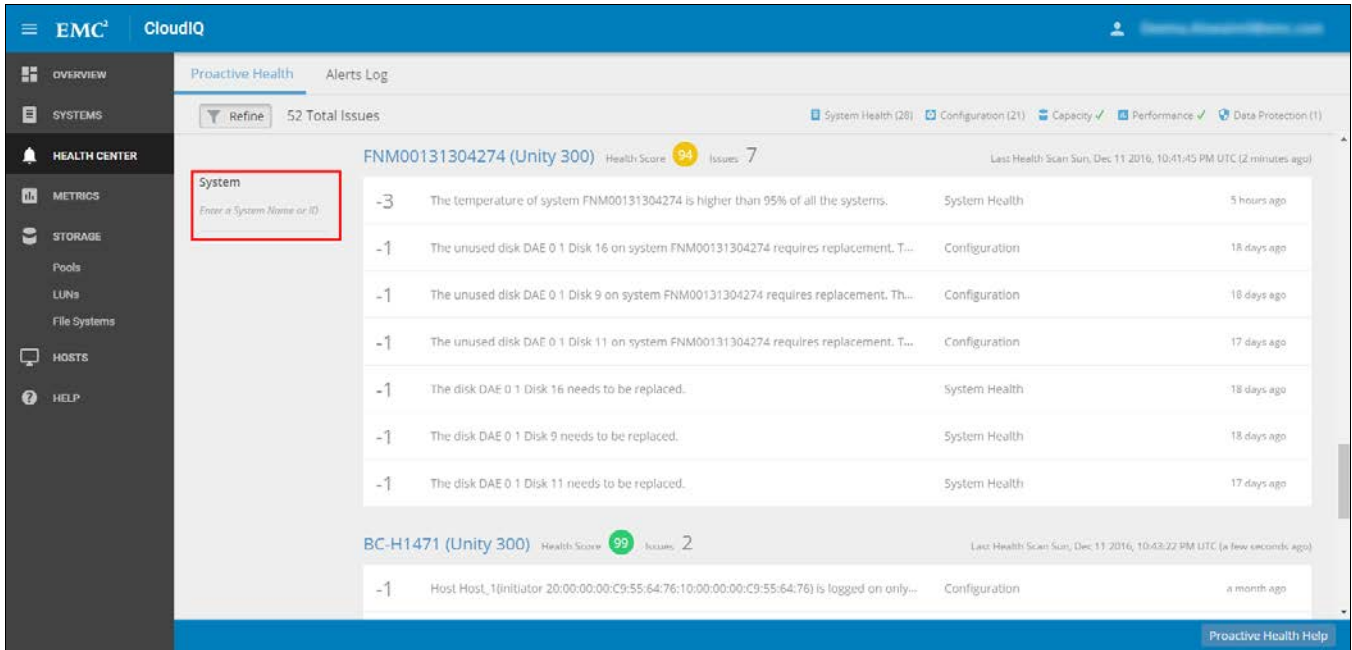


Figure 19. Proactive Health

As shown in the System Details, the user can click any issue to see the remediation or recommended action to resolve the issue. Once the user addresses the issue, it no longer appears in the Health Score. Figure 20 shows an example of an issue and the recommended action to solve the issue.

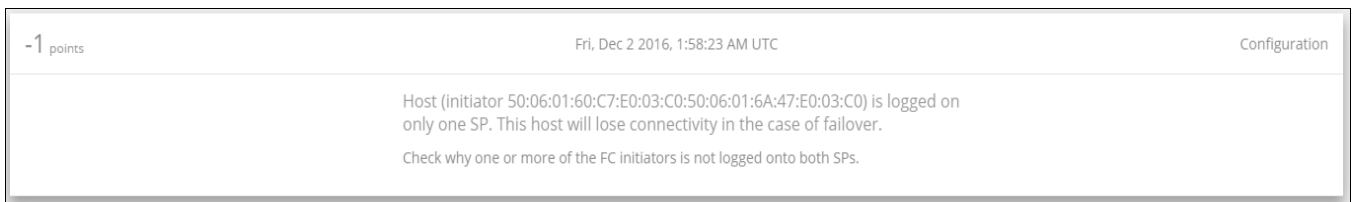


Figure 20. Issue Remediation

Alerts Log

The other tab in the **Health Center** is the **Alerts Log**. The Alerts Log displays all the alerts that are associated with the monitored systems. Users cannot delete any of these alerts. However, CloudIQ provides the following filtering options to enable users to focus the Alerts view, so it provides the information that is most helpful to the user:

- Date
- System
- Severity
- Acknowledged

CONCLUSION

CloudIQ provides these key capabilities to users: First, centralized monitoring with aggregated views across the customer environment, displaying key information such as performance and capacity trending and predictions for Unity systems. And second and most uniquely relative to other EMC management applications, a Proactive Health Score to help users identify potential issues before they occur in the environment.

CloudIQ is deployed as a Software-as-a Service solution, which enables frequent, dynamic, non-disruptive content updates for the user. CloudIQ is accessible from any HTML 5 browser.

CloudIQ is designed to deliver these benefits to customers: reduced total cost of ownership with tailored insights to minimize risk and ensure compliance with best practices, for the purpose of providing higher uptime, optimized performance and simplified capacity management with Unity storage systems.

REFERENCES

The following resources can be found on EMC Online Support:

- EMC Unity: Introduction to the Unity Platform
- EMC Unity: UnityVSA
- Unity Family EMC Secure Remote Services Requirements and Configuration