QoS in Media Workflows: Enabling more productive collaboration

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Given my background in media and entertainment (M&E), I am always excited when I see new features that I know will deliver practical improvements to industry workflows. Dell Technologies recently shared a lot of good news with the latest PowerScale Storage OneFS 9.5 operating system release, including enhancements in Security, Performance and Quality of Service (QoS). In particular, one of the key features that I am excited about is SmartQoS because of its powerful impact on collaboration.

Collaboration is integral to the success of M&E workflows as centralizing assets into streamlined shared storage helps organizations drive creativity, accelerate production, and reduce costs by eliminating separate media storage islands. Shared storage unlocks collaborative tools and processes that allow artists, system administrators and broadcast engineers to leverage common stored assets whether on-premises or in hybrid cloud workflows. There are two shared storage architectures: traditional controller-based NAS and the scale-out NAS design.

Traditional controller-based NAS solutions, where all files are passing through a single or redundant controller, can often deliver great performance; however, for media workflows, it can introduce a hardware bottleneck for access to the storage bandwidth. Users have needed QoS (quality of service) controls to mitigate the problem of one user stealing CPU cycles and causing other users to suffer.

One of the innovations introduced by Isilon was a true scale-out NAS architecture based on multiple individual storage nodes, bonded by a private network into a single volume storage cluster. This contrasts with the conventional controller-based NAS design. With this approach, the performance and capacity demands are evenly distributed across multiple nodes. Dell PowerScale includes a built-in load balancer (SmartConnect) which maintains an even distribution of clients with IP addresses mapped across all the nodes in the cluster. The PowerScale OneFS filesystem also maintains an even consumption of storage capacity across the cluster via the "Auto-Balance" feature.

Because of the scale-out NAS architecture, many media and entertainment customers find that they have balanced performance for users without any tuning – providing maximum available performance to the shared storage with even distribution for all users. For example, let's say there are twelve editors accessing storage and they're all using Adobe Premiere Pro for editing. In most cases you don't need to do anything. It's simple to manage and everyone's happy.

While the scale-out NAS architecture of PowerScale reduces the need for QoS controls, there are some exceptional use cases where high-intensity workloads can cause performance spikes. These workloads, where performance spikes, are often seen in many industries such as semiconductor design. The PowerScale OneFS v9.5 SmartQoS feature gives storage administrators a new set of workload controls, which are able to drill down to specific user groups or even directories.

How does this benefit our M&E customers in shared architectures? Well, there are cases where one user or workgroup is hitting storage excessively and slowing things down for others. For example, the Lighting department in a VFX / Rendering team, or Graphics in a craft editing team. PowerScale SmartQoS can now quickly identify high workload instances and maintain productivity and balance across the whole user base.

Smart QoS

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The SmartQoS GUI provides a live view of the top workloads. In the example above, we can see several users, and Graphics1 is consuming much higher Protocol Ops than the others.   With SmartQoS, the administrator can pin and throttle a specific workload by setting a Protocol Ops maximum limit. In this example, an upper limit of 8000 Protocol Ops could be set, thereby allowing other users to continue working productively without experiencing a slow-down. The workload pin can be added and removed dynamically, using the GUI so administrators or authorized users can adjust as workload requirements change. For known recurring workload spikes, this limit can also be automated using the PowerScale platform API or by using a group change (as an example).

This latest SmartQoS feature is just another way that Dell is delivering value by providing our customers with flexibility and control over the storage environment – getting the most out of their infrastructure and achieving optimum productivity.

To recap:
PowerScale OneFS offers a way to easily identify excessive workloads and reduce the impact on other users by:
- o   Identifying the top workloads
- o   Pin and throttle multi-protocol workloads by setting a protocol OPs limit
- o   Add and remove workload pins dynamically using the GUI

Dell PowerScale is not only the world's most flexible[1] and secure scale-out NAS solution[2], but it offers a consolidated storage environment that enables concurrent, real-time collaboration with multi-protocol access, integration with key media applications and robust data protection with resilience to cyber-attacks. Emmy® award-winning PowerScale (Isilon) storage has been widely adopted across the media industry.

For more information, and the latest content on Dell Media and Entertainment storage solutions, please visit us online.

Click here to learn more about the author, Charles Sevior

[1] Based on Dell analysis, August 2021.

[2] Based on Dell analysis comparing cybersecurity software capabilities offered for Dell PowerScale vs. competitive products, September 2022.