

TECHNICAL OVERVIEW OF THE FEATURES OF ISILON NEW GENERATION HARDWARE AND ONEFS 8.1 OPERATING SYSTEM

Abstract

This introductory white paper provides a technical overview of the new generation hardware and improved features Isilon OneFS 8.1. OneFS 8.1 includes support for a new generation of Isilon hardware nodes that deliver maximum performance and capacity in a compact form factor.

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Introduction

OneFS 8.1 is a major upgrade to the OneFS operating system and includes support for some revolutionary new hardware platforms with new levels of performance, efficiency and flexibility that deliver great performance and large capacity. In addition, OneFS 8.1 offers improvement in performance to run demanding workloads for M&E 4K, financial ticker analytics or life science genomics.

New Generation Hardware

The new generation of Isilon hardware products consists of 6 new platforms including an all-flash platform, 3 hybrid platforms, and 2 archive platforms. All 6 new Isilon platforms will be powered by Isilon OneFS 8.1 operating system. The new Isilon platforms integrate easily into an existing Isilon cluster or can be deployed as a new cluster to enable customers to modernize IT and enable digital business. These new platforms all use a new, highly dense modular architecture that provides 4 Isilon nodes within a single 4U chassis. With this design, you can scale performance and capacity easily by combining up to 36 chassis in a single cluster.

Dell EMC Isilon F800

This Isilon all-flash scale-out NAS storage system combines extreme performance and scalability with massive storage efficiency. Available in several configurations, the Isilon F800 will deliver up to 250,000 IOPS and 15 GB/s bandwidth per chassis to support demanding file workloads. With a choice of 1.6 TB, 3.2 TB or 15.4 TB SSDs, the Isilon F800 houses 15 SSDs in each of 4 nodes within a single 4U chassis for a total of 60 SSDs per chassis. The storage capacity of the Isilon F800 ranges from 92 TB to 924 TB per chassis. Each Isilon F800 has 256 GB of memory as well as a choice of 10GbE or 40GbE for front-end networking along with InfiniBand or 40GbE for back-end connectivity. The Isilon F800 requires the OneFS 8.1 operating system.

Dell EMC Isilon H600

This new hybrid platform is designed to provide high performance by delivering up to 120,000 IOPS and 12 GB/s bandwidth per chassis. It is an ideal choice for high performance computing (HPC) applications and workloads that don't require the extreme all-flash performance of the Isilon F800. The Isilon H600 is powered by 120 SAS drives within a single 4U chassis. With a choice of 600 GB or 1.2 TB capacity SAS drives, the storage capacity of the Isilon H600 ranges ranging from 72 TB to 144 TB per chassis. To optimize performance, the Isilon H600 can be configured with a choice of four to eight 1.6TB or 3.2TB SSDs for cache. Compared to the S210 platform the H600 provides 3X more IOPS and 5X more throughput and 3X more rack capacity. Each Isilon H600 has 256 GB of memory as well as a choice of 10GbE or 40GbE for front-end networking along with InfiniBand or 40GbE for back-end connectivity. The Isilon H600 requires the OneFS 8.1 operating system.

Dell EMC Isilon H500

This versatile hybrid platform is designed to provide high throughput and scalability by delivering up to 5 GB/s bandwidth per chassis with a capacity of up to 480 TB per chassis. With 60 SATA drives per chassis, the Isilon H500 offers a choice of 2 TB, 4 TB or 8 TB capacity. It can also be configured with a choice of four to eight 1.6TB or 3.2TB SSDs in each chassis for cache to optimize performance. The Isilon H500 is a great choice to support a broad range of enterprise workloads and file use cases. Compared to the S210 platform the H500 provides 2X more throughput and 8X more rack capacity. Compared to the X410 platform the H600 provides 4X more throughput and 3X more rack capacity. Each Isilon H500 has 128 GB of memory as well as a choice of 10GbE or 40GbE for front-end networking along with InfiniBand or 40GbE for back-end connectivity. The Isilon H500 requires the OneFS 8.1 operating system.

Dell EMC Isilon H400

This new hybrid platform is designed to provide a balance of performance, capacity and value to support a wide range of file workloads. The Isilon H400 delivers up to 3 GB/s bandwidth and provides capacity options ranging from 120 TB to 480 TB per chassis. Each chassis houses 60 SATA drives with a choice of 2 TB, 4 TB or 8 TB capacities. Isilon H400 can be configured with a choice of four to eight 800 GB, 1.6 TB or 3.2 TB SSDs in each chassis for caching. Each Isilon H400 has 64 GB of memory, 10GbE for front-end networking along with InfiniBand or 10GbE for back-end connectivity. The Isilon H400 requires the OneFS 8.1 operating system.

Dell EMC Isilon A200

Designed for active archive use cases, the new Isilon A200 platform provides 120 TB to 480 TB of storage capacity per chassis. The Isilon A200 houses 60 drives inside a standard 35-inch deep **rack** and provides a choice of 2 TB, 4 TB or 8 TB SATA drives. For caching, the Isilon A200 can be configured with four to eight 400 GB SSDs in each chassis. Compared to the NL410 platform the A200 provides 2X more rack capacity. Each Isilon A200 has 16 GB of memory, 10GbE for front-end networking along with InfiniBand or 10GbE for back-end connectivity. The Isilon A200 requires the OneFS 8.1 operating system.

Dell EMC Isilon A2000

The new Isilon A2000 platform uses a 40" deep, 4U chassis to provide high density and deep archive storage. The A2000 platform houses eighty 10 TB SATA drives and provides a capacity of 800 TB per chassis. The A2000 can be configured with four to eight 400 GB SSDs in each chassis for cache. Compared to the HD400 platform the A2000 provides 2X more rack capacity. Each Isilon A2000 has 16 GB of memory, 10GbE for front-end networking along with InfiniBand or 10GbE for back-end connectivity. The Isilon A2000 requires the OneFS 8.1 operating system.

Compatibility with Existing OneFS Software

The new generation of Isilon hardware nodes runs the same OneFS operating system as the current generation of Isilon nodes. The new generation of nodes can be seamlessly added to existing cluster and be part of the same Isilon data lake. You can use all the software modules like SnapShotIQ, SyncIQ, SmartQuotas, InsightIQ, SmartDeDupe, SmartConnect, SmartPools and CloudPools. For example, you can introduce an All-Flash pool to your cluster with the F800 to store your most demanding workloads and tier data to lower cost storage. Or, you can use CloudPools to tier data from your new generation nodes to your choice of public or private Cloud options.

Hardware Differences

The previous generation of Isilon hardware required a minimum of three nodes and a minimum of 6U-12U of rack space to form a cluster. In the new generation of Isilon hardware, a single chassis of 4 nodes is required to create a cluster. Even though one more node is required to create a cluster, the floor space occupied has reduced from 6-12 RUs to 4 RUs. Four previous generation nodes could occupy up to 16 RUs but the New Generation nodes only occupy 4 RUs leading to a 75% density savings. The current generation of hardware only supports InfiniBand as the back end interconnect while the New Generation of hardware includes support for InfiniBand and Ethernet connectivity.

The New Generation of Isilon hardware uses the concept of a drive sled that contains the physical drives. There is an increased level of availability and redundancy associated with the hardware including faster disk rebuilds to recover from hardware failures. There is increased resiliency and availability with the built-in "node-pair" design that pairs 2 identical nodes within each chassis for use as mirrored journaling and as a failover power supply.

Because of its modular design, the New Generation of Isilon hardware delivers vastly improved serviceability of failed components. All the New Generation hardware are composed of similar components at identical locations making it easier to service. For example, all nodes across all models have five sleds in front that house the drives. Pulling out a drive or drive slide is the same across all nodes. Also, all nodes have specific locations at the back of the chassis. Streamlining serviceability of hardware improves speed to recovery, reduces errors and lowers risk.

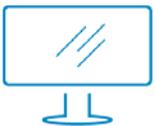
Summary

OneFS 8.1 is a major upgrade to the OneFS operating system and delivers support for some revolutionary new hardware platforms including all-flash, hybrid and archive nodes which deliver new levels of performance, efficiency and flexibility for your workloads of today and tomorrow.

TAKE THE NEXT STEP

Contact your Dell EMC sales representative or authorized reseller to learn more about how Isilon scale-out NAS storage solutions can benefit your organization.

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