

Isilon TrueScale: The Clustered Revolution is Upon Us

Date: March 2006

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Abstract: Isilon TrueScale is a revolutionary approach to storage that leverages Isilon's best-in-class clustering technology, ease of use, and protection capabilities. Additionally, with three different types of nodes to choose from, including the Isilon IQ nodes, Accelerator IQ, and new EX nodes, the Isilon TrueScale clustering architecture adds value that is truly unique in the industry.

Isilon has been touting storage clustering and the ensuing revolution over traditional storage systems, with good reason. Isilon has built a very strong business that is growing rapidly. Additionally, when Isilon runs into the major incumbent storage companies, they rarely lose. That is because Isilon actually does have a solution that stands apart from traditional storage system products. At the core of its value, and the reason customers buy their products over the competition, is the unique and compelling Isilon TrueScale clustering.

Storage clustering is a term that a number of storage vendors use today. However, Isilon clustering provides extreme value and flexibility that offers a new approach to storage. Isilon TrueScale consists of the following key elements:

- Isilon provides a cache coherent cluster. Regardless of how many physical nodes are in a cluster, it is one logical device. This means that no matter how big the cluster gets, it remains easy to manage. ESG has spoken with one of Isilon's larger customers, who have grown their storage from 100 TB to 1000 TB without needing to add any additional staff to manage the Isilon TrueScale storage cluster. And because the Isilon cluster is a single logical device, all of the hardware resources are aggregated and can scale to a massively parallel system.
- But not everyone needs a massively parallel system. Isilon starts out with 3 nodes. Additional nodes can then be added in increments of one. This enables you to grow as needed. The beauty of the Isilon TrueScale cluster is that it provides lots of head room to grow without having to pay up front. You can grow as needed and pay as you grow.
- ESG Lab has performed hands-on analysis of Isilon IQ and we were impressed with how easy it is to add nodes. It is a simple process that takes less than a minute to perform. When you add the new node to the network, the Isilon IQ console asks if you want to add the node. When you say yes, the node is simply added. That's it. It's a transparent process that doesn't impact users and it's done completely online with no downtime.
- Once you add the new node, data is re-distributed to that node so that data is load balanced equally throughout the entire cluster. This enables true scalability, load balancing the data across the cluster and leveraging all of the Isilon IQ hardware resources equally.
- Isilon SmartConnect technology provides intelligence that acts as a traffic cop, directing read and write requests to the node that will respond fastest. This is especially important during peak traffic times.

One of the more recently implemented and most important aspects of Isilon TrueScale is that it provides support for different types of nodes that you can add to the cluster based on the needs of your business.

Isilon IQ Nodes

Isilon IQ is an all-in-one appliance that comes in a minimum 3-node cluster. Each Isilon IQ node contains CPU, memory, host ports, and disk drives. All of the physical Isilon IQ nodes act as a single logical system. Although there are three physical nodes in a cluster, it is all managed as a single system. Additional Isilon IQ nodes can be added in increments of one or more at a time. Even as more nodes are added to the cluster, it still remains one logical system to manage, regardless of the number of nodes added. Some Isilon IQ clusters contain over 50 nodes in a single cluster, and they are essentially just as easy to manage as a 3-node Isilon IQ cluster. With the release of OneFS 4.0 with TrueScale, Isilon can now scale a single cluster to 88 nodes, creating a 528TB single file system.

The Isilon IQ nodes provide an excellent balance of performance and capacity. Since the Isilon IQ nodes come with CPU, memory, host ports, and disk drives, performance scales in near linear fashion as more nodes are added to the cluster.

Accelerator IQ Nodes

However, what if you want to increase performance so that you can add more streams, users, and applications, but don't need more capacity? Some applications require more CPU, cache memory, and host ports to improve performance but don't require additional storage capacity. To improve the performance of these programs, you can install Accelerator nodes to the TrueScale cluster. In this way, you can add more performance and resources to the cluster without having to add more capacity.

It is important to understand the value of this capability, which is unique to the Isilon solution. Because of the Isilon true cluster technology - a cache coherent system with load balancing - users can easily add performance elements, in the form of Accelerator IQ nodes. The Accelerator IQ node simply gets joined to the cluster and immediately goes to work improving performance. It takes about 15 seconds to join to the cluster and instantly adds value without taking applications off-line and with very little administrative effort.

The value of being able to add performance this simply and inexpensively without having to add capacity provides companies with the flexibility to easily keep pace with the needs of their business. If they need more performance and no additional capacity, they can just add an Accelerator IQ node.

EX 6000 Nodes

But what if you had a reverse requirement? What if you had plenty of performance but just needed more capacity? You could add more Isilon IQ nodes but you would then be paying for the additional and unnecessary CPU, memory, and bandwidth of each node along with the capacity. EX 6000 nodes provide additional capacity only, allowing companies to scale to 100s of TBs in a single cluster. This enables customers to build Isilon clusters with lots of capacity cost efficiently.

All of the various Isilon nodes, including the Isilon IQ, Accelerator IQ, and EX 6000 nodes can be combined in a single cluster, providing the flexibility to add performance and capacity as needed.

We have become accustomed to using different storage systems for different applications. High performance tiers of storage typically are priced at a premium. On the other hand, online digital archiving is lower cost and requires lots of capacity. Isilon TrueScale challenges this old model by instead providing a single solution that offers various levels of performance with matching price points. In this way, Isilon IQ meets the needs of high performance computing and digital archiving, two applications on different sides of the spectrum.

Isilon is known for its scalable performance and its ability to meet the needs of throughput-intensive applications with lots of concurrent access. Isilon provides a massively scalable storage system with cache coherency that aggregates hardware resources to provide near linear performance scalability. At the same time, Isilon also provides a low cost solution that is easy to manage. In fact, it is the easiest storage system ESG has ever tested. Currently many customers use Isilon for both high performance applications and dense digital archives since it meets the cost and ease of use requirements for both applications. With the support of Accelerator IQ nodes for performance and EX 6000 nodes for capacity, Isilon provides even greater value.

ESG's View

Isilon provides an innovative, compelling, high performance, and cost effective storage cluster that is extremely easy to manage, regardless of the size of the cluster or the amount of capacity or data stored on it. Isilon provides a truly unique clustered solution that effectively changes the way we store data and creates a leap in efficiency and value.

However, it is important to understand that the Isilon solution is not about having a one size fits all approach. In fact, it's quite the opposite. It is about right-sizing the storage system to meet your needs. It is about dynamically growing, changing, adding, moving, and scaling to meet the needs of your business. And Isilon accomplishes this transparently and easily. This is a new concept and traditional storage systems are incapable of supporting it. Right-sizing storage is at the heart of what Isilon TrueScale brings to the table. The clustered revolution is *now*.