

ISILON SUPPORTABILITY AND COMPATIBILITY GUIDE

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Published August, 2013.

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SOFTWARE

OneFS upgrade paths

The table below lists the upgrade options that are available for the supported versions of OneFS. You can download the latest version of OneFS for your cluster from the [EMC Online Support](#) website.

For information about support for simultaneous and rolling upgrades, refer to the release notes for the version of OneFS that you are installing.

If you are upgrading to OneFS 7.0, make sure to read the [OneFS 7.0 Upgrade Readiness Checklist](#) to ensure that your cluster is ready to be upgraded. For more information about OneFS 7.0, the newest release of OneFS that addresses the convergence of Big Data and Enterprise IT, visit the [Isilon OneFS Operating System](#) webpage.

Isilon OneFS

OneFS is the operating system that powers Isilon's end-to-end scale-out storage solutions. OneFS creates a single file system that spans all nodes in a cluster.

		To			
		5.5	6.0	6.5	7.0
From	OneFS				
	5.0	•	•		
	5.5		•	•	
	6.0			•	•
6.5				•	

Isilon SyncIQ

The table below shows the versions of OneFS that can be synchronized using SyncIQ. In versions of OneFS prior to 7.0, when synchronizing files between clusters, the target cluster must be running a version of OneFS that is the same or newer than the version of OneFS that is running on the source cluster. For example, SyncIQ can synchronize files if the source cluster is running OneFS 6.5 and the target cluster is running OneFS 6.5 or later. Beginning with OneFS 7.0, a source cluster running OneFS 7.0 can synchronize with a target cluster running OneFS 6.5 or OneFS 7.0.

For information about SyncIQ, see the [Isilon SyncIQ](#) webpage.

Isilon SyncIQ

SyncIQ delivers extremely fast replication of millions of files and terabytes of data over the WAN and LAN. SyncIQ enables replication jobs to be parallelized and evenly distributed across all sending and all receiving nodes in the Isilon storage clusters.

		Target Cluster				
		5.0	5.5	6.0	6.5	7.0
Source Cluster	5.0	•	•	•	•	•
	5.5		•	•	•	•
	6.0			•	•	•
	6.5				•	•
	7.0				•	•

Customers who are running MigrationIQ on their Isilon cluster are encouraged to upgrade to SyncIQ. MigrationIQ has been discontinued, and its functionality has been incorporated into SyncIQ. Contact Isilon Technical Support if you want to make this transition.

Isilon InsightIQ

To use InsightIQ, a cluster must be running OneFS 5.5.3 or later. Depending on the version of OneFS that the monitored cluster is running, certain InsightIQ features might not be available. For example, OneFS 6.0 includes a File System Analytics job engine that can be used by InsightIQ. For information about InsightIQ, see the [Isilon InsightIQ](#) webpage.

You can access the InsightIQ application through any current web browser that supports sophisticated graphics. For more information about supported browsers, see the “[Web browsers](#)” section in this document.

Isilon InsightIQ

InsightIQ is an off-cluster performance and analytics tool that identifies performance bottlenecks in a cluster.

InsightIQ and OneFS compatibility

		OneFS			
		5.5	6.0	6.5	7.0
InsightIQ	1.0	5.5.3	•	•	
	1.5	5.5.3	•	•	
	2.0	5.5.3	•	•	
	2.1	5.5.3	•	•	•
	2.5	5.5.3	•	•	•

InsightIQ upgrade paths

The following table lists the upgrade options for InsightIQ.

		To			
		1.5	2.0	2.1	2.5*
From	1.0	•	•	•	
	1.5		•	•	•
	2.0			•	•
	2.1				•

* The recommended upgrade paths for InsightIQ 2.5 are as follows:

- 1.0 ⇒ 2.1 ⇒ 2.5.1
- 1.5 or later ⇒ 2.5.1

Isilon for vCenter

The table below lists the compatible versions of OneFS and Isilon for vCenter. For information about how to configure the Isilon for vCenter plug-in, see the Isilon for vCenter product documentation that is available from the [EMC Online Support](#) website.

		OneFS		
		6.0	6.5	7.0
Isilon for vCenter	1.0	•	•	
	1.0.1	•	•	
	1.0.2	•	•	
	1.3		•	•

Isilon for vCenter

Isilon for vCenter is a plug-in for VMware vCenter that enables you to back up and manage virtual machines that exist on Isilon clusters.

VAAI NAS plug-in for OneFS

To use the VMware vSphere API for Array Integration (VAAI) plug-in for OneFS, your cluster must be running OneFS 7.0 or later, and your VMware environment must be running VMware ESXi 5.0 or later. For more information, see [VAAI NAS Plug-In for Isilon](#).

VAAI NAS and OneFS compatibility

	OneFS			
	5.5	6.0	6.5	7.0
VAAI NAS 1.0*				•

* The ESXi host must be running VMware ESXi 5.0 or later.

VAAI NAS plug-in for OneFS

The VMware vSphere API for Array Integration (VAAI) integrates VMware vSphere with an Isilon cluster to clone virtual disks, to create thick virtual disk files, and to monitor disk space.

The EMC Isilon OneFS operating system uses VAAI to perform certain storage and management operations for VMware ESXi hypervisors. VAAI increases the speed at which virtual machine (VM) operations are performed for VMs that are stored on Isilon clusters.

OneFS and HDFS

OneFS supports these distributions of the Hadoop Distributed File System (HDFS). Where provided, an exact OneFS version number indicates the minimum version of OneFS that is required. For information about how Isilon Scale-out NAS can be used to support a Hadoop data analytics workflow, see [Hadoop on Isilon Scale-out NAS](#).

		OneFS	
		6.5	7.0
Hadoop Distributions	Apache 0.20.203	•	•
	Apache 0.20.205	•	•
	Apache 1.0.0–1.0.3	•	•
	Apache 2.0.3	X	7.0.1.5
	Cloudera CDH3u2	•	•
	Cloudera CDH3u3	•	•
	Cloudera CDH3u4	•	•
	Cloudera CDH3u5	•	•
	Cloudera CDH4.2	X	7.0.1.5
	Greenplum GPHD 1.1	•	•
	Greenplum GPHD 1.2	•	•
	Hortonworks (non GUI)	•	•

Hadoop

Hadoop is an open source software project that enables distributed processing of large data sets—Big Data—across clusters of servers. Hadoop is perfect for situations where you want to quickly and cost-effectively run analytics that are deep and computationally extensive.

Web browsers

The OneFS and InsightIQ web interfaces support most modern web browsers with JavaScript, cookies, and SSL enabled. Adobe Flash is required to view charts.

The OneFS and InsightIQ web interfaces were tested with the following web browsers. OneFS and InsightIQ might work with different browsers or newer browser versions that have not been tested for compatibility. You should exercise caution before using an unsupported browser.

		OneFS			
		5.5	6.0	6.5	7.0
Browsers	Chrome	Not tested	Not tested	Not tested	LSV*
	Firefox	2, 3	2, 3	3	LSV*
	Internet Explorer	6, 7	7, 8	7, 8	8, 9
	Safari (Max OS X)	3	3, 4	4, 5	5, 6

		InsightIQ				
		1.0	1.5	2.0	2.1	2.5
Browsers	Chrome	LSV*	LSV*	LSV*	LSV*	LSV*
	Firefox	3.5	3.5	3.5	3.5	LSV*
	Internet Explorer	8	8	8	8	9
	Safari (Max OS X)	4	4	4	4	5

Note: To access the InsightIQ application through Internet Explorer, you must first install the Google Chrome Frame plug-in. If InsightIQ cannot detect the plug-in, an installation prompt appears the first time that you attempt to access InsightIQ through Internet Explorer.

* Latest stable version

Windows versions

OneFS supports the following versions of Microsoft Windows. Where provided, an exact OneFS version number indicates the minimum version of OneFS that is required.

We encourage you to install the latest versions of OneFS. You can download the latest versions for OneFS from the [EMC Online Support](#) website.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
Windows	Windows Server 2012				6.5.5.15	•
	Windows 8				6.5.5.15	•
	Windows 7	5.0.8	5.5.3	•	•	•
	Windows Server 2008, R2	5.0.8	•	•	•	•
	Windows Server 2008		•	•	•	•
	Windows Vista	5.0.8	•	•	•	•
	Windows Server 2003	•	•	•	•	•
	Windows XP	•	•	•	•	•
	Windows 2000	•	•	•	•	•

OS X versions

OneFS supports the following versions of OS X. Clients running OS X can connect to an Isilon cluster using the NFS or SMB protocol.

OS X 10.4 over SMB is not compatible with OneFS 6.5 – 7.0.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
OS X	10.4 (Tiger)	•	•	•	NFS only	NFS only
	10.5 (Leopard)	•	•	•	•	•
	10.6 (Snow Leopard)	•	•	•	•	•
	10.7 (Lion)	•	•	•	•	•
	10.8 (Mountain Lion)	•	•	•	•	•

Apache HTTP Server

Versions of OneFS include varying degrees of support for Apache HTTP Server 1.3.x and 2.2.x. Apache HTTP Server 2.2.x is recommended. Support for Apache HTTP Server 1.3.x was removed in OneFS 6.0.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
Apache HTTP Server 1.3.x		•	•			
Apache HTTP Server 2.2.x		•	•	•	•	•

Aspera Enterprise Server

Each version of the OneFS operating system might require a different version of Aspera Enterprise Server. The following table lists the versions of Aspera Enterprise Server that are compatible with OneFS. For information see the [Aspera Enterprise Server for EMC Isilon](#) webpage.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
Aspera	Aspera 2.2.1	•				
	Aspera 2.5.2		•			
	Aspera 2.6			•		
	Aspera 2.6.3				•	
	Aspera 3.1*					•

Aspera 3.1 requires OneFS 7.0.1 or later.

File transfer applications

OneFS supports rsync, an open source utility that provides incremental file transfers between Unix-based systems via an SSH connection. rsync is supported as a standard Unix-level program.

rsync

rsync is a software application for Unix systems that synchronizes files and directories from one location to another while minimizing data transfer using delta encoding when appropriate.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
rsync	rsync 2.5.6	•				
	rsync 3.0.2		•	•	•	•

Anti-virus scan applications

OneFS supports the following anti-virus scan applications:

Anti-Virus Applications			OneFS			
Company	Product	Version	5.5	6.0	6.5	7.0
Symantec	SAVSE	5.2	•	•	•	•
McAfee*	VirusScan Enterprise for Storage	7.1	•	•	•	•
TrendMicro	InterScan Web Security Suite	3.1	•	•	•	•
Kaspersky	Anti-Virus for Proxy Server	5.5	•	•	•	•

* OneFS 6.5.4.15 and greater is compatible with McAfee 8.8/ICAP 1.02 package or greater, and SSE 10.0.1 or greater.

PROTOCOLS

File system protocols

OneFS supports the Network File System (NFS) and Server Messenger Block (SMB) file system protocols. For information about how to configure NFS and SMB for OneFS, see the *Isilon OneFS Administration Guide* (for OneFS 6.5 and earlier, see the *Isilon OneFS User Guide*).

NFS

		OneFS				
		5.0	5.5	6.0	6.5	7.0
NFS 2		•	•	•	•	•
NFS 3		•	•	•	•	•
NFS 4					•	•

NFS AND SMB

- NFS – A client and server application that lets users view and optionally store and update files on a network as if the files were saved in a local file directory. The NFS protocol is designed to be independent of the computer, operating system, network architecture, and transport protocol.
- SMB – An Internet protocol used by Windows computers to share files, printers, and serial ports.

SMB

		OneFS				
		5.0	5.5	6.0	6.5	7.0
SMB 1		•	•	•	•	•
SMB 2					•	•
SMB 2.1						•

Isilon with iSCSI

The following table lists the iSCSI initiators that are supported by the OneFS implementation of iSCSI. These limitations apply:

- MC/S (Multiple Connections per Session) is not supported.
- iSCSI host bus adapters (HBAs) are not supported.
- iSNS (Internet Storage Name Service) protocol is supported on Microsoft Windows for use by the Microsoft iSNS Server service only.

Operating system	iSCSI initiator	OneFS			
		5.5.4.x	6.0	6.5	7.0
Microsoft Windows 2003 (32-bit and 64-bit)	Microsoft iSCSI Initiator	•	•	•	•
Microsoft Windows 2008 (32-bit and 64-bit)	Microsoft iSCSI Initiator	•	•	•	•
Microsoft Windows 2008 R2 (64-bit)	Microsoft iSCSI Initiator	•	•	•	•
Red Hat Enterprise Linux 5	Linux Open-iSCSI Initiator	•	•	•	•
VMware ESX 4.0 and ESX 4.1	iSCSI Initiator	•	•	•	•
VMware ESXi 4.0 and ESXi 4.1	iSCSI Initiator	•	•	•	•

Kerberos

OneFS is configured to use the following versions of Kerberos 5. To see which version of Kerberos 5 is installed on a cluster, run the following command from the shell prompt: `krb5-config --version`

	OneFS				
	5.0	5.5	6.0	6.5	7.0
Kerberos	1.4.1	1.6.3	1.6.3	1.7	1.7

KERBEROS

Kerberos is a network authentication protocol that provides strong authentication for client and server applications by using secret-key cryptography. Kerberos 5 is standard on all supported versions of OneFS and ensures the highest level of security to network resources.

HARDWARE

OneFS and node compatibility

The tables below list the versions of OneFS that are compatible Isilon nodes. Where provided, an exact version number indicates the minimum version of OneFS that is required. For example, the S200 is compatible with OneFS 6.5.1 and later.

Note: Isilon EX nodes are capacity extension nodes that do not run OneFS.

You can download the latest versions of OneFS from the [EMC Online Support](#) website.

Isilon S-Series, X-Series, and NL-Series nodes

ISILON PLATFORMS

- S-Series – The answer for ultra-performance primary storage, purpose-built for high-transactional and IOPS-intensive applications.
- X-Series – Strikes the right balance between large capacity and high-performance, an ideal solution for high throughput and high concurrency applications.
- NL-Series – Designed to provide cost-effective, highly-scalable nearline storage.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
S200	IQ 5000S-SSD		5.5.4	•	•	•
	IQ 5400S	5.0.4	•	•	•	•
					6.5.1	•

Nodes			OneFS				
			5.0	5.5	6.0	6.5	7.0
Nodes	X200					6.5.1	•
	X400					6.5.5.4	•
	IQ 1920X	•	•	•	•	•	•
	IQ 3000X	•	•	•	•	•	•
	IQ 6000X	•	•	•	•	•	•
	IQ 9000X	•	•	•	•	•	•
	IQ 10000X-SSD		5.5.4	•	•	•	•
	IQ 12000X	•	•	•	•	•	•
	IQ 32000X-SSD		5.5.4	•	•	•	7.0.1
	IQ 36000X	5.0.4	•	•	•	•	•
	IQ 72000X		5.5.3	•	•	•	•

		OneFS				
		5.0	5.5	6.0	6.5	7.0
NL-Series	IQ 36NL	5.0.4	•	•	•	•
	IQ 72NL		5.5.3	•	•	•
	IQ 108NL				6.5.1	•
	NL400				6.5.5.4	•

OneFS and node compatibility (continued)

Isilon E-Series, I-Series, and Accelerator nodes

Where provided, an exact version number indicates the minimum version of OneFS that is required. For example, the A100 accelerator nodes are compatible with OneFS 7.0.2 and later.

		OneFS				
		5.0	5.5	6.0	6.5	7.0
	IQ 1920	•				
	IQ 3000	•				
	IQ 6000	•				
Nodes	IQ 1920i	•	•	•	•	
	IQ 3000i	•	•	•	•	
	IQ 6000i	•	•	•	•	
	IQ 9000i	•	•	•	•	
	IQ 12000i	•	•	•	•	
	A100 Backup Accelerator					7.0.2.1
	A100 Performance Accelerator					7.0.2.1
	IQ Backup Accelerator-x	•	•	•	•	•
	IQ Performance Accelerator-x	•	•	•	•	•

Mixed-node cluster compatibility (pre-OneFS 7.0)

The following tables list Isilon nodes that can be combined in a cluster without running Isilon SmartPools. In OneFS 7.0, heterogeneous clusters are not supported without an Isilon SmartPools license.

To improve the performance and stability of a cluster using mixed nodes without Isilon SmartPools, the following limitations apply:

- OneFS 5.0.4 or later is required.
- The cluster cannot include more than two different kinds of Isilon nodes.
- Not all nodes are supported on all versions of OneFS. Check the [“OneFS and node compatibility”](#) section of this document first before mixing nodes in a cluster.

For more information, see the [EMC Isilon SmartPools](#) webpage.

Isilon S-Series compatible nodes

S-Series Nodes	Compatible Nodes
S200	S200
IQ 5000S-SSD	IQ 5000S-SSD
IQ 5400S	IQ 5400S

Isilon S-Series compatible accelerators

S-Series Nodes	Compatible Accelerators
S200	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 5000s-SSD	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 5400S	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x

Mixed-node cluster compatibility (pre-OneFS 7.0) (continued)

Isilon X-Series compatible nodes

X-Series Nodes	Compatible Nodes
X200-6 TB	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i
X200-12 TB	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i
X200-24 TB	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i
X400-36 TB	X400-36 TB, X400-SSD-72 TB, IQ 32000X-SSD, IQ 36000X
X400-72 TB	X400-72 TB, IQ 72000X
X400-SSD-32 TB	X400-SSD-32 TB
IQ 1920X	IQ 1920X, IQ 3000X, IQ 3000i
IQ 3000X	IQ 1920X, IQ 3000X, IQ 3000i
IQ 6000X	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i, EX6000, EX9000, EX12000
IQ 9000X	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i, EX9000, EX12000
IQ 12000X	X200-6 TB, X200-12 TB, X200-24 TB, IQ 6000X, IQ 9000X, IQ 12000X, IQ 9000i, IQ 12000i, EX12000
IQ 32000X-SSD	X400-36 TB, X400-SSD-72 TB, IQ 32000X-SSD, IQ 36000X
IQ 36000X	X400-36TB
IQ 72000X	X400-72 TB, IQ 72000X

Mixed-node cluster compatibility (pre-OneFS 7.0) (continued)

Isilon X-Series compatible accelerators

X-Series Nodes	Compatible Accelerators
X200-6 TB	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
X200-12 TB	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
X200-24 TB	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
X400-SSD-32 TB	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
X400-72 TB	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 1920X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 3000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 6000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 9000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 12000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 32000X-SSD	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 36000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 72000X	A100 Backup Accelerator, A100 Performance Accelerator, IQ Backup Accelerator-x, IQ Performance Accelerator-x

Mixed-node cluster compatibility (pre-OneFS 7.0) (continued)

Isilon NL-Series compatible nodes

NL-Series Nodes	Compatible Nodes
NL400-36 TB	NL400-36 TB, IQ 36NL
NL400-72 TB	NL400-72 TB, IQ 72NL
NL400-108 TB	NL400-108 TB, IQ 108NL
IQ 36NL	NL400-36 TB, IQ 36NL
IQ 72NL	NL400-72 TB, IQ 72NL
IQ 108NL	NL400-108 TB, IQ 108NL

Isilon NL-Series compatible accelerators

NL-Series Nodes	Compatible Accelerators
NL400-36 TB	A100 Backup Accelerator, Backup Accelerator
NL400-72 TB	A100 Backup Accelerator, Backup Accelerator
NL400-108 TB	A100 Backup Accelerator, Backup Accelerator
IQ 36NL	A100 Backup Accelerator, Backup Accelerator
IQ 72NL	A100 Backup Accelerator, Backup Accelerator
IQ 108NL	A100 Backup Accelerator, Backup Accelerator

Mixed-node cluster compatibility (pre-OneFS 7.0) (continued)

Isilon E-Series compatible nodes

E-Series Nodes	Compatible Nodes
IQ 1920E	IQ 1920E, IQ 3000E
IQ 3000E	IQ 1920E, IQ 3000E
IQ 6000E	IQ 6000E, EX6000

Isilon I-Series compatible nodes

I-Series Nodes	Compatible Nodes
IQ 1920i	IQ 3000X, IQ 1920i, IQ 1920X, IQ 3000i
IQ 3000i	IQ 1920i, IQ 1920X, IQ 3000i, IQ 3000X
IQ 6000i	IQ 6000i, IQ 6000X, IQ 9000i, IQ 9000X, IQ 12000i, IQ 12000X, EX6000
IQ 9000i	IQ 6000i, IQ 6000X, IQ 9000i, IQ 9000X, IQ 12000i, IQ 12000X, EX9000
IQ 12000i	IQ 6000i, IQ 6000X, IQ 9000i, IQ 9000X, IQ 12000i, IQ 12000X, EX9000, EX12000

Isilon I-Series compatible accelerators

I-Series Nodes	Compatible Accelerators
IQ 1920i	IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 3000i	IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 6000i	IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 9000i	IQ Backup Accelerator-x, IQ Performance Accelerator-x
IQ 12000i	IQ Backup Accelerator-x, IQ Performance Accelerator-x

Mixed-node cluster compatibility (pre-OneFS 7.0) (continued)

Isilon EX-Series compatible nodes

EX-Series Nodes	Compatible Nodes
EX6000	IQ 6000X, IQ 6000i, IQ 6000E
EX9000	IQ 6000X, IQ 9000X, IQ 9000i
EX12000	IQ 6000X, IQ 9000X, IQ12000X, IQ 12000i

OneFS 7.0 node provisioning equivalences

OneFS 7.0 automatically assigns Isilon nodes to node pools in the cluster based on node type. This autoprovisioning optimizes the performance and reliability of the file system. Nodes are not autoprovisioned until at least three nodes of an equivalence class are assigned to the node pool. If you have added only two nodes of an equivalence class to your cluster, there is no communication between the nodes until one more equivalent node is added. For information about node pools and autoprovisioning, see the *OneFS 7.0 Administration Guide*.

The following table shows the non-CTO and CTO (configure-to-order) nodes that are equivalent, arranged by equivalence class. The nodes in the same equivalence class can be autoprovisioned into the same node pool. For example, these nodes in Equivalence Class 3 can be combined in the same node pool: IQ 36000x (non-CTO) and X400-36 TB (CTO).

CTO NODES

For configure-to-order (CTO) nodes, customers select a base chassis model and then specify the number of SSD drives, the amount of memory, and the NIC card that they want to include. CTO nodes are available for the S200, X200, and X400 platforms.

Equivalence Class	Non-CTO Nodes	CTO Nodes
Class 1	X200-6 TB, IQ 6000X	X200-6 TB, 6 GB RAM
Class 2	X200-12 TB, IQ 12000X	X200-12 TB, 6 GB RAM
Class 3	IQ 36000X	X400-36 TB, 24 GB RAM
Class 4	IQ 72000X	X400-72 TB, 24 GB RAM
Class 5	IQ 32000X-SSD*	X400-SSD-32 TB, 24 GB RAM
Class 6	IQ 36NL	NL400-36 TB, 12 GB RAM
Class 7	IQ 72NL	NL400-72TB, 12 GB RAM
Class 8	IQ 108NL	NL400-108 TB, 12 GB RAM

* IQ 32000X-SSD requires OneFS 7.0.1 or later.

Drive and node compatibility

The following tables list the types and brands of drives that are compatible with Isilon nodes. For information about how drives are arranged in a node, or how to replace a drive, refer to the hardware documentation for your brand of node. Hardware documentation is available from the [EMC Online Support](#) website.

SSD drive storage

Manufacturer	Drive Name	Disk Capacity	Node Compatibility
Hitachi	Ralston Peak 25 nm	100 GB	S200, IQ 5000S-SSD, X200, X400, IQ 10000X-SSD, IQ 32000X-SSD, NL400
Hitachi	Ralston Peak 25 nm	200 GB	S200, X200, X400, NL400
Hitachi	Ralston Peak 25 nm	400 GB	S200, X200, X400, NL400
Hitachi	Ralston Peak 34 nm	100 GB	S200, IQ 5000S-SSD, X200, X400, IQ 10000X-SSD, IQ 32000X-SSD, NL400
Hitachi	Ralston Peak 34 nm	200 GB	S200, X200, X400, NL400
Hitachi	Ralston Peak 34 nm	400 GB	S200, X200, X400, NL400
Micron	P300 SATA SLC	200 GB	S200, X200, X400, NL400
STEC	Mach8	200 GB	S200, X200, X400, NL400

Boot flash SSD

Manufacturer	Drive Name	Disk Capacity	Node Compatibility
Netlist	Netlist NLS7	8 GB	S200
SanDisk	P4	8 GB	S200, X200, X400, IQ 108NL, NL400
Smart Modular	Smart Modular 8 GB	8 GB	S200, X200, X400, IQ 108NL
Western Digital	Western Digital 8 GB	8 GB	S200, X200, X400, IQ 108NL

Drive and node compatibility (continued)

SAS hard disk drives

Manufacturer	Drive Name	Disk Capacity	Node Compatibility
Hitachi	Cobra-D	300 GB	S200
Hitachi	Cobra-D	600 GB	S200
Hitachi	Cobra-E	300 GB	S200
Hitachi	Cobra-E	600 GB	S200
Hitachi	Cobra-E	900 GB	S200
Seagate	Compass	300 GB	S200
Seagate	Compass	600 GB	S200
Seagate	Compass	900 GB	S200

SATA hard disk drives

Manufacturer	Drive Name	Disk Capacity	Node Compatibility
Hitachi	Jupiter U	500 GB	X200, X400, IQ 6000X, NL400, IQ Performance Accelerator-x
Hitachi	Jupiter U	1 TB	X200, X400, IQ 10000X-SSD, IQ 12000X, IQ 32000X-SSD, IQ 36000X, IQ 36NL, NL400
Hitachi	Mars-K	2 TB	X200, X400, IQ 72000X, IQ 72NL, NL400
Hitachi	Mars-K	3 TB	X200, X400, IQ 108NL, NL400
Hitachi	Mars-K Plus	4 TB	X400, NL400
Seagate	Mantaray	3 TB	X200, X400, IQ 108NL, NL400
Seagate	Megalodon	4 TB	X400, NL400

Node firmware package updates

The table below lists the Node Firmware Packages that are compatible with Isilon nodes. For example, Node Firmware Package 8.2 is compatible with the X-Series, S-Series, NL-Series, and I-Series nodes.

Node Firmware Packages are provided by Isilon Technical Support. For information about Node Firmware Packages, see the product documentation that is available from the [EMC Online Support](#) website.

		Nodes					
		S-Series	X-Series	NL-Series	E-Series	I-Series	EX-Series
Node Firmware Packages	1.0		•		•	•	
	2.0	•	•	•	•	•	
	3.0	•	•	•	•	•	
	5.0	•	•	•	•	•	•
	5.1	•	•	•	•	•	•
	6.0	•	•	•	•	•	•
	6.1	•	•	•	•	•	•
	7.1	•	•	•		•	•
	8.0	•	•	•		•	•
	8.1	•	•	•		•	•
	8.2	•	•	•		•	•

Drive firmware package updates

The following table lists the drives that are updated by the Isilon Drive Firmware Packages. All the drives in this table are compatible with Isilon software and hardware. Drive Firmware Packages are provided by Isilon Technical Support. Depending on the version of OneFS you are running, the Drive Firmware Package might also include:

- A patch to add support to OneFS for new drives. This patch enables nodes containing the specified drives to pass the On-site Verification Test (OVT).
- A patch required on some older versions of OneFS to add support for the drive firmware update installer.

For information about installing and applying Drive Firmware Packages—as well as information about preparing OneFS prior to updating drive firmware—see the product documentation that is available from the [EMC Online Support](#) website.

		Drive Firmware Packages		
		1.3	1.4	1.5
Updated Drives	Hitachi Cobra-E - 300 GB			•
	Hitachi Cobra-E - 600 GB			•
	Hitachi Cobra-E - 900 GB			•
	Hitachi Jupiter - 500 GB	•	•	•
	Hitachi Jupiter - 1 TB	•	•	•
	Hitachi Jupiter - 2 TB	•	•	•
	Hitachi Mars - 2 TB	•	•	•
	Hitachi Mars - 3 TB	•	•	•
	Hitachi Ralston Peak - 100 GB			•
	Hitachi Ralston Peak - 200 GB			•
	Hitachi Ralston Peak - 400 GB			•
	STEC Mach8 - 100 GB	•	•	•
	Western Digital RE3 - 1 TB	•	•	•

Switches, firmware, and cables

The following tables list the InfiniBand and Ethernet switches, switch firmware, and cables that are compatible with Isilon nodes. With the exception of Isilon E-Series nodes, which use Ethernet for the back-end network, all Isilon nodes are compatible with these InfiniBand switches.

Pre-RoHS compliant switches

Manufacturer	Manufacturer Part Number	Firmware	Data Rate	Ports	Connector	Cable
Cisco	SFS-7000-4X024-SK9	2.1.137 & 2.3.0	SDR	24	CX4	CX4-CX4
Cisco	SFS-7008-4X072-SK9	2.1.137 & 2.3.0	SDR	72	CX4	CX4-CX4
Cisco	SFS-7008-96-HK9	2.1.137 & 2.3.0	SDR	96	CX4	CX4-CX4
Flextronics	F-X430061	0.7.0 & 0.8.0	DDR/SDR	24	CX4	CX4-CX4
Flextronics	F-X430061	0.8.6	DDR/SDR	24	CX4	CX4-CX4
Flextronics	F-X430066	5.6.0	SDR	8	CX4	CX4-CX4
Mellanox	MTS2400-24-2P	0.5.0	SDR	24	CX4	CX4-CX4
Topspin/Cisco	A0387877/SFS-7008-48-HK9	2.1.137 & 2.3.0	SDR	48	CX4	CX4-CX4

RoHS compliant switches

Manufacturer	Manufacturer Part Number	Firmware	Data Rate	Ports	Connector	Cable
Cisco	SFS7000D-HK9	N/A	DDR/SDR	24	CX4	CX4-CX4
Cisco	SFS7008P-48-HK9	N/A	DDR/SDR	48	CX4	CX4-CX4
Cisco	SFS7008P-96-HK9	N/A	DDR/SDR	96	CX4	CX4-CX4
Flextronics	F-X430046	N/A	DDR/SDR	24	CX4	CX4-CX4
QLogic	924666	N/A	DDR/SDR	24	CX4	CX4-CX4
QLogic	924667	N/A	DDR/SDR	48	CX4	CX4-CX4
QLogic	9120-PS144-28	N/A	DDR/SDR	144	CX4	CX4-CX4
QLogic	9120-PS48-28	N/A	DDR/SDR	48	CX4	CX4-CX4
QLogic	9120-PS96-28	N/A	DDR/SDR	96	CX4	CX4-CX4

Switches, firmware, and cables (continued)

QDR switches

Manufacturer	Manufacturer Part Number	Firmware	Data Rate	Ports	Connector	Cable
Mellanox	851-0167-01	7.4.2050	QDR/DDR/SDR	8	QSFP	Hybrid CX4-QSFP*
Mellanox	851-0168-01	7.4.2050	QDR/DDR/SDR	18	QSFP	Hybrid CX4-QSFP
Mellanox	851-0169-01	7.4.2050	QDR/DDR/SDR	36	QSFP	Hybrid CX4-QSFP
Mellanox	851-0179-01	7.4.2050	QDR/DDR/SDR	36	QSFP	Hybrid CX4-QSFP
QLogic	924433	6.1.0.1.11	QDR/DDR/SDR	18	QSFP	Hybrid CX4-QSFP
QLogic	924441	6.1.0.1.11	QDR/DDR/SDR	36	QSFP	Hybrid CX4-QSFP
QLogic	924605	6.1.0.1.11	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP
QLogic	924740	6.1.0.1.11	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP
QLogic	12200-18-28	6.1.0.0.72	QDR/DDR/SDR	18	QSFP	Hybrid CX4-QSFP
QLogic	12800-040-48-28	6.0.0.2.7	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP
QLogic	12800-040-48-28	6.1.0.1.11	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP
QLogic	12800-120-48-28	6.0.0.2.7	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP
QLogic	12800-120-48-28	6.1.0.1.11	QDR/DDR/SDR	48	QSFP	Hybrid CX4-QSFP

* The A100 accelerator nodes use a QSFP-QSFP cable to connect to QDR switches. To connect to DDR switches, these nodes use a Hybrid CX4-QSFP cable.

Ethernet compliant switches

Isilon nodes support industry-standard 1 GbE and 10 GbE switches. Ethernet switches should meet the following minimum requirements:

- Include non-blocking switch fabric
- Support a 1 MB buffer per switch port
- Support jumbo frames