

# Dell FluidFS Version 6.0 FS8600 Appliance Pre-Deployment Requirements



# Notes, Cautions, and Warnings



**NOTE:** A NOTE indicates important information that helps you make better use of your product.



**CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.



**WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

# Contents

- About This Guide.....4**
  - Revision History.....4
- 1 Deployment Prerequisites.....5**
  - Rack and Infrastructure.....5
  - Materials.....5
  - Network Credentials.....6
  - SAN and Internal Network for Fibre Channel Appliances.....6
    - Fibre Channel SAN Fabric.....6
    - Internal Network for Multi-Appliance Clusters.....7
  - SAN and Internal Networks for iSCSI Appliances.....7
  - Client Network.....8
  - IP Addresses and Network Infrastructure.....8
  - Network Ports.....9
  - SAN Configuration.....9



# About This Guide

Use this document to prepare for FS8600 appliance deployment before the deployment team arrives. Items listed in this document are required for a successful deployment.

## Revision History

Document number: 680-113-002

Revision	Date	Description
A	February 2017	Initial release of FluidFS v6



# Deployment Prerequisites

Verify that the prerequisites are met before proceeding with the deployment process.

## Rack and Infrastructure

Make sure the rack space and related infrastructure are available for the FS8600 appliances.


■	Prerequisite
<input type="checkbox"/>	2U rack space for each FS8600 appliance in an industry-standard 48.3 cm (19 inch) rack <ul style="list-style-type: none"><li>• The rack must be four-post, square-hole or round-hole, and tool-less.</li><li>• The rack must be rated for 540 kg (1200 pounds) static load or greater.</li><li>• The rack depth must be at least 100 cm (40 inches) from the front to the back of the rack.</li><li>• The distance between the inside of the front and back rack posts (the mounting surfaces) must be 61 cm (24 inches) to 90 cm (36 inches).</li><li>• The rack door and the front of the hardware must have at least 4.1 cm (1.6 inches) between them to accommodate the front bezel.</li><li>• The rack (with installed hardware) must meet the safety requirements of UL 60950-1 and IEC 60950-1.</li></ul>
<input type="checkbox"/>	Rack has two power sources for each FS8600 appliance, preferably from different circuits <ul style="list-style-type: none"><li>• The voltage range must be 90 to 264 VAC.</li><li>• Each power source must have sufficient electrical overload protection.<ul style="list-style-type: none"><li>– In North America, connect the appliance to a source of power with overcurrent protection provided by a 20 A or less device (UL 489 circuit breakers).</li><li>– In Europe, the overcurrent protection must be provided by a 20 A or less device (IEC circuit breakers).</li></ul></li></ul>
<input type="checkbox"/>	Rack has connectivity to the SAN and client networks

## Materials

Make sure the following materials are available.

■	Prerequisite
<input type="checkbox"/>	Completed <i>Solution Integration Document</i> (SID)
<input type="checkbox"/>	VGA monitor and USB keyboard (for initial configuration)
<input type="checkbox"/>	Cables for SAN <ul style="list-style-type: none"><li>• Fibre Channel with 1GbE appliance or Fibre Channel with 10GbE appliance – Four LC Fibre Channel cables for each appliance</li><li>• 10GbE iSCSI appliance – Four LC optical fiber cables or twinax cables for each appliance</li></ul>
<input type="checkbox"/>	Cables for client network <ul style="list-style-type: none"><li>• Fibre Channel with 1GbE appliance – Eight RJ45/Cat 5e or better cables for each appliance</li><li>• Fibre Channel with 10GbE appliance or 10GbE iSCSI appliance – Four LC optical fiber cables or Twinax cables for each appliance</li></ul>
<input type="checkbox"/>	Cables for internal network <ul style="list-style-type: none"><li>• Fibre Channel with 1GbE appliance:<ul style="list-style-type: none"><li>– Single appliance – Four RJ45/Cat 5e or better cables for each appliance (controllers are directly connected to each other)</li></ul></li></ul>



■	Prerequisite
	<ul style="list-style-type: none"> <li>– Multiple appliances – Eight RJ45/Cat 5e or better cables for each appliance</li> <li>• Fibre Channel with 10GbE appliance: <ul style="list-style-type: none"> <li>– Single appliance – Two LC optical fiber cables or twinax cables (controllers are directly connected to each other; two Twinax cables shipped with each appliance)</li> <li>– Multiple appliances – Four LC optical fiber cables or twinax cables for each appliance</li> </ul> </li> <li>• 10GbE iSCSI appliance – None (shared with SAN cables)</li> </ul>
□	<p>(10GbE optical networks only) Intel SFP+ transceivers purchased from Dell for use in an FS8600 appliance</p> <ul style="list-style-type: none"> <li>• Fibre Channel with 10GbE appliance: <ul style="list-style-type: none"> <li>– Client network – Four Intel SFP+ transceivers for each appliance</li> <li>– Internal network – Four Intel SFP+ transceivers for each appliance</li> </ul> </li> <li>• 10GbE iSCSI appliance: <ul style="list-style-type: none"> <li>– Client network – Four Intel SFP+ transceivers for each appliance</li> <li>– SAN/internal network – Four Intel SFP+ transceivers for each appliance</li> </ul> </li> </ul> <p> <b>NOTE: The FS8600 appliance is compatible with specific Intel SFP+ transceivers purchased only from Dell. Other SFP+ transceiver models do not work in the FS8600 appliance.</b></p>

## Network Credentials

Make sure the following network credentials are available to complete the deployment successfully.

■	Prerequisite
□	(Fibre Channel only) Credentials to update Fibre Channel zoning
□	<p>(Active Directory only) Site information and credentials to join the FluidFS cluster to Active Directory</p> <p>Any of the following domain users can be used to join the cluster to Active Directory:</p> <ul style="list-style-type: none"> <li>• Domain administrator account (preferred method)</li> <li>• Domain account that has been delegated the <code>join a computer</code> to the domain privilege and full control over all computer objects in the domain</li> <li>• Domain Organizational Unit (OU) administrator account that has been delegated the <code>join a computer</code> to the domain privilege and full control over objects within that OU, including computer objects <ul style="list-style-type: none"> <li>– Before joining the FluidFS cluster to the domain, a computer object must be created by the OU administrator for the FluidFS cluster.</li> <li>– The FluidFS cluster computer object name and NetBIOS name must match.</li> <li>– The FluidFS cluster computer object permissions must be configured to allow the OU administrator account to join it to a domain.</li> </ul> </li> </ul>
□	(LDAP/NIS only) Site information and credentials to configure LDAP or NIS directory services for the FluidFS cluster
□	(Optional) Credentials to add DNS records for the FluidFS cluster

## SAN and Internal Network for Fibre Channel Appliances

The following prerequisites apply to Fibre Channel with 1GbE appliances and Fibre Channel with 10GbE appliances.

### Fibre Channel SAN Fabric

Make sure the Fibre Channel SAN fabric is ready for deployment.

■	Prerequisite
<input type="checkbox"/>	Fibre Channel switches can be reached from the rack. <ul style="list-style-type: none"> <li>At least one switch must be available to connect the FluidFS cluster to the Storage Center. An FS8600 appliance cannot be connected directly to a Storage Center.</li> <li>For high availability, deploy two switches (one for each Storage Center fault domain).</li> </ul>
<input type="checkbox"/>	Fibre Channel switch infrastructure has four ports available for each FS8600 appliance (all four ports must be connected).

## Internal Network for Multi-Appliance Clusters

The following prerequisites apply to FluidFS clusters that contain multiple FS8600 appliances. In single-appliance FluidFS clusters, the internal network ports are connected directly to each other, so no switch prerequisites apply.

■	Prerequisite
<input type="checkbox"/>	1GbE or 10GbE switches can be reached from the rack in a multi-appliance configuration. Although the best practice is to isolate internal and client traffic on separate physical networks, it is possible to use the same switch and use separate logical networks by configuring VLANs.
<input type="checkbox"/>	Switch infrastructure has sufficient ports available <ul style="list-style-type: none"> <li>Fibre Channel with 1GbE appliance – Eight RJ45 connections for each appliance</li> <li>Fibre Channel with 10GbE appliance – Four LC optical fiber or SFP+ (twinax) connections for each appliance</li> </ul>
<input type="checkbox"/>	Flow Control is enabled on the switches.
<input type="checkbox"/>	Unicast storm control is disabled on the switches.
<input type="checkbox"/>	Jumbo frames are enabled on the switches to support a frame size of 9000 bytes. <ul style="list-style-type: none"> <li>Dell PowerConnect and Force10 switches must be configured to 9216 MTU.</li> <li>Switches from vendors other than Dell might require a different MTU configuration to accept 9000-byte frames.</li> </ul>
<input type="checkbox"/>	Switches allow multicast between all ports connected to FS8600 appliances.
<input type="checkbox"/>	IPv6 is enabled on the switch ports connected to FS8600 appliances. IPv6 link-local addressing is used for internal network communication. Routing of IPv6 traffic is not required on the internal network switches.
<input type="checkbox"/>	IGMP and/or MLD snooping are disabled on the switch ports connected to FS8600 appliances.
<input type="checkbox"/>	All switch ports connected to FS8600 appliances are set as edge ports or PortFast to skip Spanning Tree negotiation.

## SAN and Internal Networks for iSCSI Appliances

The following prerequisites apply to 10GbE iSCSI appliances. For these appliances, the iSCSI network and internal network share 10GbE ports and switch infrastructure.

■	Prerequisite
<input type="checkbox"/>	10GbE switches can be reached from the rack. <ul style="list-style-type: none"> <li>At least one switch must be available to connect the FluidFS cluster to the Storage Center. An FS8600 appliance cannot be connected directly to a Storage Center.</li> <li>To connect an FS8600 appliance to an SCv2080 storage system, use a switch that supports both 10GBASE-T and SFP+ connectivity.</li> <li>For high availability, deploy two switches (one for each Storage Center fault domain).</li> </ul>
<input type="checkbox"/>	10GbE switch infrastructure has four LC optical or SFP+ (twinax) connections available for each FS8600 appliance



■	Prerequisite
<input type="checkbox"/>	If you are using VLAN tagging, configure one unique VLAN for each iSCSI subnet (Storage Center fault domain).
<input type="checkbox"/>	Flow Control is enabled on the switches.
<input type="checkbox"/>	Unicast storm control is disabled on the switches.
<input type="checkbox"/>	Jumbo frames are enabled on the switches to support a frame size of 9000 bytes. <ul style="list-style-type: none"> <li>• Dell PowerConnect and Force10 switches must be configured to 9216 MTU.</li> <li>• Switches from vendors other than Dell might require a different MTU configuration to accept 9000-byte frames.</li> </ul>
<input type="checkbox"/>	Switches allow multicast between all ports on the iSCSI/internal network.
<input type="checkbox"/>	IPv6 is enabled on the switch ports connected to FS8600 appliances. IPv6 link-local addressing is used for internal network communication. Routing of IPv6 traffic is not required on the iSCSI/internal network switches.
<input type="checkbox"/>	IGMP and/or MLD snooping are disabled on the switch ports connected to FS8600 appliances.
<input type="checkbox"/>	All switch ports connected to FS8600 appliances are set as edge ports or PortFast to skip Spanning Tree negotiation.

## Client Network

Make sure the client network meets the following prerequisites. The client network is used by clients to access SMB shares or NFS exports. It is also the network used for replication, backup, and administration.

■	Prerequisite
<input type="checkbox"/>	1GbE or 10GbE switches can be reached from the rack. To ensure high availability to the client network, Dell recommends using a switch stack or Director class switches. Distributing the client network ports across discrete switches/blades in the stack creates a redundant connection to the core network, allowing file access to continue after a single switch failure.
<input type="checkbox"/>	Ethernet switch infrastructure has ports available for each FS8600 appliance. <ul style="list-style-type: none"> <li>• Fibre Channel with 1GbE appliance – Eight RJ45 ports for each appliance</li> <li>• Fibre Channel with 10GbE appliance or 10GbE iSCSI appliance – Four LC optical or SFP+ (twinax) connections for each appliance</li> </ul>
<input type="checkbox"/>	All client ports are in the same broadcast domain or port-based VLAN.
<input type="checkbox"/>	Switches are configured to use MTU size equal to or greater than the minimum supported MTU. <ul style="list-style-type: none"> <li>• Dell Force10 switches must be configured to use MTU 1554 or greater.</li> <li>• Dell PowerConnect switches must be configured to use MTU 1518 or greater.</li> <li>• If jumbo frames are used on the client network, the switches and clients must be configured to use MTU 9000.</li> </ul>
<input type="checkbox"/>	(Recommended but not required) Flow control is enabled on the switches.

## IP Addresses and Network Infrastructure

Reserve IP addresses for the FluidFS cluster and record relevant network infrastructure information.

■	Prerequisite
<input type="checkbox"/>	IP addresses reserved for the FluidFS cluster on the client network <ul style="list-style-type: none"> <li>• Two controller IP addresses for each appliance (one for each controller)</li> <li>• Client VIPs (virtual IPs):</li> </ul>



■	Prerequisite
	<ul style="list-style-type: none"> <li>– Minimum – One client VIP for each cluster</li> <li>– Flat network recommendation – One client VIP for each cluster</li> <li>– Routed network recommendation – One client VIP for each FS8600 client network port</li> </ul>
□	(iSCSI only) Four IP addresses reserved on the iSCSI SAN network for each appliance (two for each controller)
□	Network resource information for FluidFS cluster configuration <ul style="list-style-type: none"> <li>• Client network default gateway IP address</li> <li>• (Optional) DNS server IP addresses</li> <li>• (Optional) NTP server host name or IP addresses</li> <li>• (Optional) Active Directory FQDN and administrator credentials to join domain or OU in a domain.</li> <li>• (Optional) LDAP server host name or IP addresses</li> <li>• (Optional) NIS server host name or IP addresses</li> <li>• (Optional) NDMP DMA server IP addresses</li> <li>• (Optional) Antivirus server host names or IP addresses</li> </ul>

## Network Ports


Make sure the required and feature-specific ports are allowed on the network.

For a list of ports used by the FluidFS cluster, see the *Dell Fluid File System Version 6 Support Matrix*. This matrix is available from [dell.com/support](http://dell.com/support).


■	Prerequisite
□	Required ports are allowed.
□	Feature-specific ports are allowed as needed.

## SAN Configuration

Make sure that Storage Center software and Dell Storage Manager software are installed and satisfy the deployment prerequisites.

■	Prerequisite
□	The Storage Center systems are running the required version of Storage Center software: <ul style="list-style-type: none"> <li>• An SC9000 storage system requires Storage Center 6.7.3 or later.</li> <li>• An SC8000 storage system requires Storage Center 6.5.10 or later.</li> <li>• An SC7020 storage system requires Storage Center 7.1.4 or later.</li> <li>• An SC40 storage system requires Storage Center 6.5.10 or later.</li> <li>• An SC4020 storage system requires Storage Center 6.5.10 or later.</li> <li>• An SCv2080 storage system requires Storage Center 6.6.4 or later.</li> </ul> <div>  <b>NOTE: A single FluidFS cluster supports up to eight Storage Centers.</b> </div> <ul style="list-style-type: none"> <li>• For deployment instructions, see the <i>Dell Storage Center Deployment Guide</i>.</li> <li>• For upgrade instructions, see the <i>Dell Storage Center Software Update Guide</i>.</li> </ul>
□	Each Storage Center certificate contains the host name or management IP address used to add the Storage Center to Dell Storage Manager. For instructions on regenerating an SSL certificate, see the <i>Storage Center Administrator's Guide</i> .
□	(Optional) Storage Centers can be reached by Copilot through Secure Console to assist with troubleshooting.
□	Dell Storage Manager 2016 R3 or later software is installed and configured.



■	<b>Prerequisite</b>
	 <b>NOTE: Dell recommends using the latest version of Dell Storage Manager software.</b> See the <i>Dell Storage Manager Installation Guide</i> for detailed instructions.
□	The Storage Center systems are added to Dell Storage Manager.
□	Dell Storage Manager can successfully send data to Dell Technical Support using SupportAssist.