

Site Requirements Guide

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Safety Information (Sicherheitshinweise)

Safety rules

All products are Class 1 laser devices. You must follow these safety rules when working with this equipment:

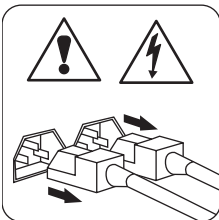
WARNING

Failure to follow these directions could result in bodily harm or loss of life.

When installing disk shelves and a storage appliance into a movable cabinet or rack, install from the bottom up for best stability.

- ◆ DC-based systems must be installed in a restricted access location and the two input power terminals for the DC power supply must be connected to separate isolated branch circuits.
- ◆ To reduce the risk of personal injury or equipment damage, allow internal components time to cool before touching them and ensure that the equipment is properly supported or braced when installing options.
- ◆ This equipment is designed for connection to a grounded outlet. The grounding type plug is an important safety feature. To avoid the risk of electrical shock or damage to the equipment, do not disable this feature.
- ◆ This equipment is furnished with one or more replaceable batteries. There is danger of explosion if the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warning for units with multiple power cords



If your storage appliance or disk shelf has multiple power cords and you need to turn the unit off, heed the following warning:

WARNING

This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect all power supply cords before servicing.

Sicherheitsvorgaben

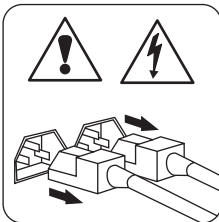
Alle Produkte sind Lasergeräte der Klasse 1. Die folgenden Sicherheitshinweise sind beim Betreiben des Geräts unbedingt zu beachten:

Vorsicht

Nichtbeachtung dieser Anweisungen kann zu schweren Körperschäden führen oder tödlich sein.

- ◆ Bei der Montage der Diskettenregale und Archivierungsgeräte, des NetCache™ -Geräts oder des NearStore™ -Systems in bewegliche Schränke oder Regale sind die Geräte von unten nach oben einzubauen, um optimale Stabilität zu gewährleisten.
- ◆ Gleichstrom-Systeme müssen an Betriebsstätte mit beschränktem Zutritt installiert sein und die beiden Eingangsstromklemmen für das Gleichstrom-Netzteil müssen an separate und isolierte Abzweigleitungen angeschlossen sein.
- ◆ Zum Schutz vor Körperverletzung oder Sachschäden am Gerät lassen Sie die inneren Bauteile stets vor dem Berühren abkühlen. Sorgen Sie dafür, dass das Gerät richtig abgestützt ist oder fest aufrecht steht, bevor Sie neues Zubehör einbauen.
- ◆ Dieses Gerät ist für die Einspeisung aus einer geerdeten Netzverbindung ausgelegt. Der Netzstecker mit Erdungsvorrichtung ist ein wichtiger Sicherheitsschutz. Zum Schutz vor elektrischem Schlag oder Sachschäden am Gerät die Erdung nicht abschalten.
- ◆ Das Gerät ist mit einer oder mehreren auswechselbaren Batterien ausgestattet. Bei unsachgemäßem Auswechseln der Batterie besteht Explosionsgefahr. Batterien nur mit dem vom Hersteller empfohlenen Typ oder entsprechenden Typen ersetzen. Gebrauchte Batterien sind gemäß den Anweisungen des Herstellers zu entsorgen.

Warnhinweis für Geräte mit mehrfachen Netzanschlussleitungen



Sollte Ihr Archiviergerät, NetCache-Gerät, NearStore-System oder Diskettenregal mehrfache Netzanschlussleitungen aufweisen und Sie wollen das Gerät abschalten, bitte folgenden Warnhinweis beachten.

ACHTUNG

Gerät besitzt zwei Netzanschlussleitungen. Vor Wartung alle Anschlüsse vom Netz trennen.

Site Requirements

About this guide This guide provides the information you need to prepare your site for Network Appliance™ hardware installation.

Topics in this guide This guide contains the following information:

- ◆ “[Required tools and equipment](#)” on page 2
- ◆ “[Hardware characteristics](#)” on page 5
- ◆ “[Environmental requirements](#)” on page 16
- ◆ “[Power requirements](#)” on page 22

Required tools and equipment

Required tools and equipment

Prior to receiving your Network Appliance hardware, make sure that you have the appropriate tools and equipment assembled and ready to use:

- ◆ Pallet jack or forklift, if you ordered a filer or NetCache™ appliance and nine or more disk shelves, or a NearStore™ system; or a hand truck or cart, if you ordered just a filer or NetCache appliance or individual disk shelves

Note

This guide uses the term *storage appliance* to refer to a filer, NetCache appliance, NearStore system, or FAS900 series appliance.

- ◆ #1 and #2 Phillips head screwdrivers and a flathead screwdriver for cable adapters and LRC screws
- ◆ ASCII terminal (also referred to as an ANSI terminal)
- ◆ Serial console
- ◆ Null modem cable (optional)

Note

If the DB-9 to DB-9 straight-through serial cable for an ASCII terminal connection provided with your storage appliance is not compatible with your terminal connector, you need a null modem cable.

WARNING

Three people are required to install FAS900 series appliances and NearStore storage engines (chassis) when both power supplies are installed. Two people are required to install all other storage appliances and disk shelves safely into a rack or NetApp® System Cabinet.

Additional tools necessary for -48V DC power connections

If you ordered a -48V DC version of the filer or NetCache appliance, you need the following -48V DC power supply cable tools and equipment to fabricate the three-way cables required for DC power connections:

- ◆ Wire-stripper
- ◆ Soldering tool
- ◆ Pliers
- ◆ 12 AWG (0.6 cm) x 3C copper wire (Wire length is determined by your environment.)

Caution

Do not mix different AC and DC power supplies in your filer or NetCache appliance.

Network cables and requirements

The following table lists the network cables required for your filer or NetCache appliance.

Port	Cabling requirements	
Ethernet network		
10Base-T/100Base-TX	Category 3 (10Base-T only) or 5 (10Base-T/100Base-TX) unshielded twisted-pair (UTP) cable with RJ-45 connectors	
Gigabit Ethernet (GbE)	Cable type	Maximum distance
	50 micron multimode fiber optic cable with SC connector	550m
	62.5 micron multimode fiber optic cable with SC connector	220m
10Base-T, 100Base-TX, 1000Base-T Copper GbE	Category 5 unshielded four-pair cable with RJ-45 connectors	100m
FDDI network		
RJ-45 connector	Category 5 unshielded twisted-pair (UTP) or a 100-ohm screened twisted-pair (ScTP) cable with a TP-MIC plug	

Port	Cabling requirements	
Duplex SC connector	Cable type	Maximum distance
	50 micron multimode fiber optic cable	550m
	62.5 micron multimode fiber optic cable	220m
DAFS network		
LC connector	50 micron multimode fiber optic cable	500m
Fibre Channel network		
LC connector	50 micron multimode fiber optic cable	1m, 5m, 30m
ATM network		
SC connector	Duplex 62.5/125 micron multimode fiber optic cable with an SC connector.	2000m Note ————— Cable not to exceed the maximum length specified in the appropriate ATM Forum UNI (User Network Interface) standard. —————

Hardware characteristics

About hardware characteristics

This section lists tabulated descriptions of hardware characteristics for all storage appliances and disk shelves.

For detailed Information

For details about the hardware characteristics, see the following topics:

- ◆ [“Height, width, and depth”](#) on page 6
- ◆ [“Clearance dimensions”](#) on page 10
- ◆ [“Weight”](#) on page 14

Hardware characteristics

Height, width, and depth

Cabinet, crate, and rack dimensions

The dimensions in the following table are for the NetApp System Cabinet, the NetApp System Cabinet crate, and a telco-type rack.

Note—————
You need to purchase telco-type racks from a supplier other than Network Appliance. That supplier should provide you with the appropriate weight and dimensions.

Hardware	Dimension	U.S.	Metric
42U NetApp system cabinet	Height	78.7 in.	200 cm
	Width	23.6 in.	60 cm
	Depth	37.4 in.	95 cm
42U NetApp System Cabinet crate	Height	85.8 in.	218 cm
	Width	29.8 in.	75.7 cm
	Depth	48.0 in.	121.9 cm
36U NetApp System Cabinet	Height	73 in.	185.4 cm
	Width	24 in.	61.0 cm
	Depth	36 in.	91.4 cm
36U NetApp System Cabinet crate	Height	79 in.	200.7 cm
	Width	42 in.	106.7 cm
	Depth	44.6 in.	113.4 cm
Telco-type rack	Height	96 in. (max.)	243.8 cm

Hardware dimensions

The dimensions in the following table are for storage appliances and disk shelves.

Note

1U = 1.75 inches

Hardware	Dimension	U.S.	Metric	Rack units
FAS900 series appliance and R150 storage engine	Height	10.3 in.	26.2 cm	6U
	Width	17 in.	43.2 cm	
	Depth	22 in.	55.9 cm	
R100 chassis (storage engine)	Height	8.8 in.	22.2 cm	5U
	Width	17 in.	43.2 cm	
	Depth	25.3 in.	61.0 cm	
R100/R150 disk shelf	Height	7 in.	17.8 cm	4U
	Width	17 in.	43.2 cm	
	Depth	22 in.	55.9 cm	
F800 series filer and C6100/C3100 series NetCache appliance	Height	8.8 in.	22.2 cm	5U
	Width	17 in.	43.2 cm	
	Depth	25.3 in.	61.0 cm	
F85 filer rack-mount version	Height	10.5 in.	26.7 cm	6U
	Width	17.5 in.	44.5 cm	
	Depth	23.5 in.	59.7 cm	
F85 filer freestanding tower version	Height	17.5 in.	44.5 cm	N/A
	Width	10.5 in.	26.7 cm	
	Depth	23.5 in.	59.7 cm	
F87 filer rack-mount version	Height	8.6 in.	21.8 cm	5U
	Width	17.9 in.	48.0 cm	
	Depth	24.5 in.	62.2 cm	

Hardware	Dimension	U.S.	Metric	Rack units
F87 filer freestanding tower version	Height	17.9 in	45.5 cm	N/A
	Width	9.05 in.	23.0 cm	
	Depth	24.5 in.	62.2 cm	
F700 series filer and C700 series NetCache appliance	Height	8.8 in.	22.2 cm	5U
	Width	17 in.	43.2 cm	
	Depth	25.3 in.	64.1 cm	
C1100 series NetCache appliance	Height	1.7 in.	4.3 cm	1U
	Width	16.8 in.	42.6 cm	
	Depth	22 in.	55.9 cm	
C1200 NetCache appliance	Height	1.75 in.	4.4 cm	1U
	Width	16.9 in.	43 cm	
	Depth	25.5 in.	64.8 cm	
C2100 NetCache appliance	Height	3.504 in.	8.9 cm	2U
	Width	16.93 in.	43 cm	
	Depth	25.21 in.	64.8 cm	
DS14 disk shelf	Height	5.3 in.	13.3 cm	3U
	Width	17.6 in	44.8 cm	
	Depth	20 in.	50.9 cm	
SDS12 disk shelf	Height	5.3 in.	13.3 cm	3U
	Width	17.6 in.	44.6 cm	
	Depth	17 in.	43.2 cm	
FC9 disk shelf	Height	5.1 in.	13 cm	2.9U
	Width	17.5 in.	44.5 cm	
	Depth	16 in.	40.6 cm	

Hardware	Dimension	U.S.	Metric	Rack units
FC7 and FC8 disk shelves	Height	5.3 in.	13.3 cm	3U
	Width	17.5 in.	44.5 cm	
	Depth	13.8 in.	35.1 cm	

Clearance dimensions

Recommended minimum clearance

When you install a NetApp System Cabinet or a third-party system cabinet, or have rack-mounted equipment, you need to have enough space around the equipment for cooling and servicing. The following tables list the minimum clearances from the front and rear of the filer.

36U NetApp system cabinet	U.S.	Metric
Front clearance	25 in.	63.5 cm
Rear clearance	25 in.	63.5 cm

42U NetApp system cabinet	U.S.	Metric
Front and rear clearance	30 in.	76.3 cm
Side clearance (for panel removal)	24 in.	61 cm
Top clearance	12 in.	30 cm

Third-party system cabinet with an F87 installed	U.S.	Metric
Front clearance	32 in.	81.3 cm
Rear clearance	25 in.	63.5 cm

FAS900 series appliances, R150 storage engine, and disk shelves	U.S.	Metric
Front clearance	9 in.	22.9 cm
Rear clearance	30 in.	76.2 cm
Bezel clearance	1.5 in.	3.8 cm

FAS900 series appliances, R150 storage engine, and disk shelves	U.S.	Metric
Work space for maintenance	24 in.	61.0 cm
Vertical rack space	10.5 in.	26.7 cm

F700 and F800 series filers, NetCache appliances, R100 storage engine, and disk shelves	U.S.	Metric
Front clearance	9 in.	22.9 cm
Rear clearance	30 in.	76.2 cm
Bezel clearance	1 in.	2.5 cm
Work space for maintenance	24 in.	61.0 cm
Vertical rack space	10.5 in.	26.7 cm
Vertical rack space above storage appliance	1.5 in.	3.8 cm

F87 filer	U.S.	Metric
Front clearance for cooling		
Tower	6 in.	15.2 cm
Two-post equipment rack	6 in.	15.2 cm
Double two-post equipment rack	6 in.	15.2 cm
Rear clearance for cooling		
Tower	12 in.	30.5 cm
Two-post equipment rack	19 in.	48.3 cm
Double two-post equipment rack	12 in.	30.5 cm

F87 filer	U.S.	Metric
Front clearance for maintenance		
Tower	12 in.	30.5 cm
Two-post equipment rack	45 in.	114.3 cm
Double two-post equipment rack	32 in.	81.28 cm
Rear clearance for maintenance		
Tower	12 in.	30.5 cm
Two-post equipment rack	19 in.	48.3 cm
Double two-post equipment rack	12 in.	30.5 cm

C2100 NetCache appliance	U.S.	Metric
Front clearance		
Cooling	1 in.	2.54 cm
Maintenance	10 in.	25.4 cm
Rear clearance		
Cooling	6 in.	15.2 cm
Maintenance	12 in.	30.5 cm

Caution

When mounting a C2100 or C1200 in an equipment rack or system cabinet, you must use mounting brackets approved by NetApp. Failure to use mounting brackets approved by NetApp voids your warranty.

C1200 NetCache appliance	U.S.	Metric
Front clearance		
Cooling	1 in.	2.54 cm

C1200 NetCache appliance	U.S.	Metric
Maintenance—without slide rails	10 in.	25.4 cm
Maintenance—with slide rails	30 in.	76.2 cm
Rear clearance		
Cooling	6 in.	15.2 cm
Maintenance	12 in.	30.5 cm

Weight

Hardware weight

The following table lists the weights of the NetApp System Cabinet, rack, storage appliances, and disk shelves.

Hardware	Weight
42U NetApp System Cabinet (empty)	275 lbs (124.7 kg)
42U NetApp System Cabinet (loaded)	Up to 1,600 lbs (727 kg)
36U NetApp System Cabinet (empty)	312.4 lbs (142 kg)
36U NetApp System Cabinet (fully configured with DS14 disk shelves)	1,110 lbs (505.5 kg)
36U NetApp System Cabinet (fully configured with FC9 disk shelves)	1,010 lbs (459.1 kg)
36U NetApp System Cabinet (fully configured with DS14 disk shelves) and crate	1,300 lbs (590.9 kg)
36U NetApp System Cabinet (fully configured with FC9 disk shelves) and crate	1,200 lbs (545 kg)
F85 filer	55 lbs (25 kg)
F87 filer	90 lbs (40.8 kg)
F800 series filer and C6100/C3100 series NetCache appliance	66 lbs (30 kg)
FAS900 series appliance (with power supply units)	105 lbs (47.7 kg)
F700 series filer/C700 series NetCache appliance	64 lbs (29.1 kg)
C1100 series NetCache appliance (fully configured)	23 lbs (10.5 kg)

Hardware	Weight
C1200 NetCache appliance (fully configured)	29 lbs (13.2 kg)
C2100 NetCache appliance (fully configured)	47 lbs (21.4 kg)
R100 system ◆ In NetApp System Cabinet (fully loaded) ◆ Storage engine ◆ Disk shelf	768.30 lbs (349.22 kg) 66 lbs (30 kg) 55 lbs (25 kg)
R150 system ◆ In NetApp System Cabinet (fully loaded) ◆ Storage engine ◆ Disk shelf	875 lbs. (398 kg) 105 lbs (47.7 kg) 55 lbs (25 kg)
DS14 disk shelf ◆ Empty ◆ Fully loaded	50.06 lbs (23 kg) 77 lbs (35 kg)
SDS12 disk shelf ◆ Empty ◆ Fully loaded	35.4 lbs (16 kg) 75 lbs (34 kg)
FC9 disk shelf ◆ Empty ◆ Fully loaded	32 lbs (14.5 kg) 62 lbs (28.2 kg)
FC7 and FC8 disk shelves ◆ Empty ◆ With seven disk drives and one power supply ◆ With seven disk drives and two power supplies	15.1 lbs (6.9 kg) 41.2 lbs (18.7 kg) 43.7 lbs (19.9 kg)

Environmental requirements

About environmental requirements

This section lists tabulated descriptions of the proper environmental conditions suitable for operating all storage appliances and disk shelves.

For detailed information

For details about the environmental requirements, see the following topics:

- ◆ [“Operating temperature”](#) on page 17
- ◆ [“Air conditioning”](#) on page 19

Operating temperature

Operating temperature ranges

The following table lists the absolute maximum and recommended temperature ranges for your storage appliances and disk shelves. As you add equipment to your room, you need to verify compliance with the recommended operating temperature range.

Hardware	Maximum temperature range	Recommended temperature range
F85 and F87 filers	50° F to 95° F (10° C to 35° C)	68° F to 77° F (20° C to 25° C)
C1100, C1200, and C2100 NetCache appliances	50° F to 95° F (10° C to 35° C)	68° F to 77° F (20° C to 25° C)
All other storage appliance models	50° F to 104° F (10° C to 40° C)	68° F to 77° F (20° C to 25° C)
R100/R150 disk shelves	41° F to 104° F (5° C to 40° C)	68° F to 77° F (20° C to 25° C)
SDS12 disk shelf	50° F to 95°F (10° C to 35° C)	68° F to 77° F (20° C to 25° C)
DS14, FC7, FC8, and FC9 disk shelves	32° F to 104° F (0° C to 40° C)	68° F to 77° F (20° C to 25° C)

Caution

Overheating can degrade the reliability of the equipment.

Nonoperating (storage) temperature ranges

The following table lists the temperature range at which all disk shelves and all storage appliances can be stored.

Hardware	Temperature range
All storage appliance models	-4° F to 149° F (-20° C to 65° C)
All disk shelf models	-40° F to 149° F (-40° C to 65° C)

Relative humidity

The following table lists the relative humidity for storage appliances and disk shelves.

Hardware	Relative humidity range
Most storage appliances	10 to 90% noncondensing
C1100 series NetCache appliance	5 to 90% noncondensing
F85 filer and SDS12 disk shelf	8 to 80% noncondensing
R100/R150 storage engine R100/R150 disk shelf	10 to 90% noncondensing 5 to 95% noncondensing

Air conditioning

Air conditioning capacity

Use the following table to determine the average power consumption of your storage appliances and disk shelves. All BTU (British Thermal Unit) ratings are for maximally configured storage appliances and disk shelves at 200–240V.

Hardware	Watts	Air exchange (BTU/hr.)
FAS900 series appliance	330	1,126
F85 filer	238	812
F87 filer (two power supplies, with one backup)	520	1,774
F810, F820, F825, and F840 filer	159	543
F880 filer	185	631
F700 series filer	207	706
C6100/C3100 NetCache appliance	159	543
C2100 NetCache appliance	307	1,048
C1200 NetCache appliance	118	403
C1100 series NetCache appliance	92	314
C700 series NetCache appliance	216	737
R100 system	1,100	3,750
R100 storage engine	185	631
R100 disk shelf	200	682
R150 system	2,130	7,270
R150 storage engine	330	1,126
R150 disk shelf	200	682

Hardware	Watts	Air exchange (BTU/hr.)
DS14 disk shelf	349	1,191
SDS12 disk shelf	380	1,297
FC7, FC8, and FC9 disk shelves	194	662

Determining sufficient air conditioning

To determine whether you have sufficient cooling for your site, complete the following steps.

Step	Action
1	Add the BTU rates for all storage appliances, disk shelves, and any other hardware you plan to keep in one room.
2	Determine whether the air conditioning in your room can handle the total BTU rate. Note_____ If you need help in determining the total BTU rate, contact the heating/cooling expert for your site. _____
3	If your room air conditioning cannot handle the BTU load of all your hardware, upgrade the air conditioning or install your hardware in another room.

Operating acoustic noise

The following table lists the operating acoustic noise levels for your equipment.

Hardware	Acoustic level
F85 filer	56 decibels at 23° C
F87 filer	45 decibels at 23° C 5.9 bels at 23° C

Hardware	Acoustic level
F800 series filer and C6100/C3100 series NetCache appliance	50 decibels at 23° C
FAS900 series appliance	49.5 dBA at 23° C
C1100 series NetCache appliance	45 decibels at 23° C
C1200 NetCache appliance	46.4 dBA sound pressure (LpA) in normal operating conditions* 6.05 bels sound power (LWAd) in normal operating conditions*
C2100 NetCache appliance	53.3 dBA sound pressure (LpA) in normal operating conditions* 6.5 bels sound power (LWAd) in normal operating conditions*
F700 series filer/C700 series NetCache appliance	50 decibels at 23° C
R100/R150 storage engine	50 decibels at 23° C
R100/R150 disk shelf	55 decibels at 25° C 5.5 bels at 25° C
DS14 disk shelf	54 decibels at 23° C
SDS12 disk shelf	56 decibels at 23° C
FC7, FC8, FC9 disk shelves	65 decibels at 25° C

* Normal operating conditions consist of an active system operation at an ambient room temperature of 22° C at sea level.

Power requirements

About power requirements

This section lists tabulated descriptions of power requirements for all storage appliances and disk shelves.

Hardware	Input voltage	Input current rating, A	Input current actual, A	Input power actual, W	Thermal dissipation, BTU/hr
C1100	110–240V	2–1	1.0–0.6	90	307
C1200	100–127/ 200–240V	3.6/1.8	1.7/0.9	152	519
C2100	100–127/ 200–240V	5/2.5	3.1/1.4	310	1,058
C3100, C6100	100–240V	5	1.8–0.9	203	693
	-40 to -60V DC	5	5.3–2.5	217	741
C6200	100–240V	12–6	3.8–2.0	331	1,130
F85	115/230V	6/3	2.4/1.2	250	853
F87	100–240V	6.5	2.7	256	874
F810, F820, F825, F840	100–240V	5	1.8–0.9	203	693
	-40 to -60V DC	5	5.3–2.5	217	741
F880	100–240V	5	2.2–1.6	160	546
	-40 to -60V DC	5	5.5 to 3.1	200	683
FAS900 series	100–240V	12–6	3.8–2.0	331	1,130
R100 storage engine	100–240V	5	2.2–1.6	200	683
R150 storage engine	100–240V	12–6	3.8–2.0	331	1,130
SC100	100–127/ 200–240V	3.6/1.8	1.0–0.6	90	307

Hardware	Input voltage	Input current rating, A	Input current actual, A	Input power actual, W	Thermal dissipation, BTU/hr
FC7, FC8, FC9	100–127/ 200–240V	5.5/3.5	1.4	217	741
SDS12	115/230V	6/3	1.3	130	444
DS14	100–127/ 200–240V	7/3.5	1.8	300	1,024
R100/R150 disk shelf	100–240V	2.2	0.7	133	453
36U 24A cabinet	200–240V	24	17.8	3,076	10,500
42U 64A cabinet	200–240V	16A x 4 (pwr strips) = 64A	11.5/strip	2,150/strip	7,338/strip
8-port Fibre Channel switch	100–240V	1.0	0.5	45	154
16-port Fibre Channel switch	100–240V	2.5	1.3	115	392
32-port Fibre Channel switch	100–240V	5.0	2.62 @ 100V; 1.25 @ 240V	230	785

Inrush current and voltage requirements

What inrush current is

Inrush current is the measured peak of current from your AC source when you switch on the power supply at the peak of the input voltage. When you test DC-to-DC power supplies, the inrush current is always the same.

List of inrush current

The following table lists the inrush current and input voltage requirements with power applied to the disk shelf and storage appliances.

Hardware	Input voltage	Inrush current
FAS900 series appliance	264V AC	30A
F87 filer	240V AC 120V AC	66A 51A
F85 filer	220V AC 115V AC	70A 35A
F800 series filer, C6100/C3100 NetCache appliance	220V AC 110V AC	50A 40A
	-40 DC to -70V DC	No greater than 25A under any condition
C2100 NetCache appliance	220V AC 115V AC	30A 25A
	180-264V AC 90-140V AC	50A (max.)
F700 series filer/C700 series NetCache appliance	220V AC 115V AC	50A 40A
	-40 DC to -70V DC	No greater than 25A under any condition

Hardware	Input voltage	Inrush current
R100 system	220V AC	30A
R150 system	220V AC	60A
DS14 disk shelf	220V AC	40A
SDS12 disk shelf	220V AC 115V AC	40A 20A
FC9 disk shelf	220V AC 120V AC	30A 22A
	-60V DC to -40V DC Note _____The DC power can operate from a -48V or +48V DC source._____	No greater than 20A under any condition
FC7 and FC8 disk shelves	220V AC 115V AC	30A 22A

Circuit breaker and power outlet requirements

About the requirements

If your equipment is mounted in a rack, the total number of circuit breakers required for your equipment is based on the current draw.

Caution

The circuit breakers you are using should be connected only to Network Appliance equipment. Overloading circuit breakers can lead to popped breakers or power brownouts that can cause system errors.

Typical AC power breaker requirements

The following illustration displays the redundant power configuration of four DS14 disk shelves and one F840 filer. In this example, two 20A circuits at 115V AC (four disk shelves and one filer per circuit) are required.

The conditions stated in the following illustration might not meet the requirements of your site. See “[Power requirements](#)” on page 22 for the power rating and typical input voltage of your storage appliances and disk shelves.

Note

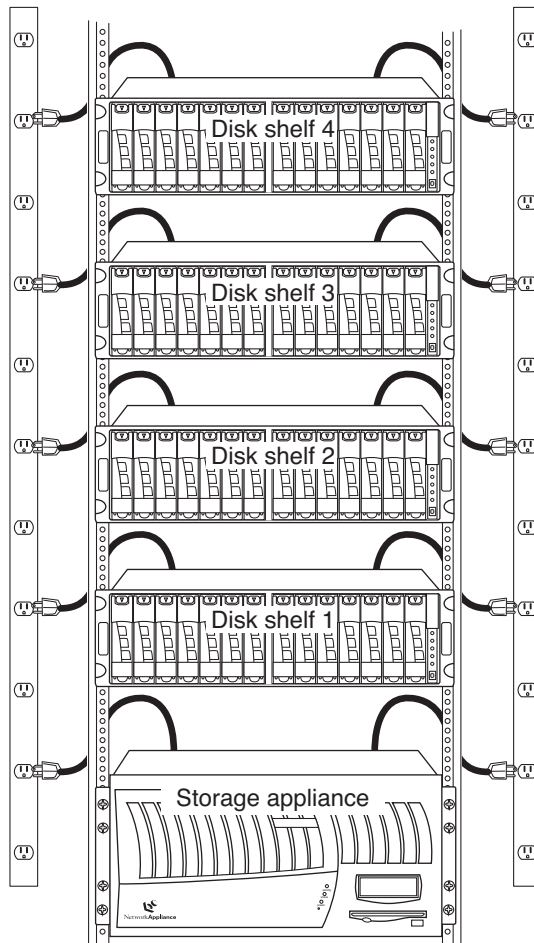
Each storage appliance and disk shelf must have both a primary power supply and a redundant power supply.

Caution

The total current draw *should not* exceed 80 percent of the circuit breaker’s rated service value (that is, 16A RMS for a 20A circuit breaker).

Power strip for
primary power

Power strip for
redundant power



Power connectors for the NetApp System Cabinet

The NetApp System Cabinet uses one of two types of power connectors, depending on your location in the world. The most current power connectors are the NEMA (North America) and the IEC 309 (Europe and the rest of the world).

Types of power connectors for 36U system cabinets

The following table lists the types of power connectors used in 36U system cabinets.

Current		Plug type	
Rated service	Derated (RMS)	North America	International
30A	24A	NEMA L6-30	IEC309-32
20A	16A	NEMA L6-20	IEC309-16

Note

For complete power redundancy, connect the power distribution units (PDU) to two separate AC circuits.

Types of power connectors for 42U system cabinets

The following table lists the types of power connectors used in 42U system cabinets.

Current		Plug type	
Rated service	Derated (RMS)	North America	International
20A	16A	NEMA L6-20	IEC309 16A

Note

For complete power redundancy, connect the power distribution units (PDUs) to four separate AC circuits.

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