

Drive and FLARE OE Matrix

P/N 300-007-437

To function properly, drives in an EMC® CLARiiON® system require that each storage processor run minimum revisions of the FLARE® Operating Environment (FLARE OE). This document lists the drive part numbers supported for CX4 series storage systems and the minimum software revisions required for each drive model.

The drive part number (PN) appears on a label on the front of the drive carrier.



CAUTION

Verify that the proper version of FLARE OE is running on the storage system before installing any drives. Results ranging from non-recognition of the drives to data loss may occur if an improper FLARE OE version is installed.

CX4 series storage systems

Before installing a new drive in a storage system, use the EMC Navisphere® Manager to determine the FLARE OE revision running on the storage system. In Navisphere Manager, the FLARE OE revision appears on the **Software** tab of the **Storage System Properties** dialog box for the storage system. If this revision is lower than the minimum FLARE OE revision required for the drive as listed in [Table 1](#), [Table 2](#), [Table 3](#), or [Table 4](#), you must upgrade FLARE OE on the storage system before installing the drive. EMC recommends that you upgrade FLARE OE with the CLARiiON Software Assistant in the Navisphere Service Taskbar (NST) or use the Navisphere Secure Command Line Interface (CLI).

[Table 1](#) lists the standard Fibre Channel interface drive modules that you can order with CX4 series storage systems and the minimum FLARE OE required for each system.

[Table 2](#) lists the standard Enterprise Flash Drive (EFD) interface drive modules that you can order with CX4 series storage systems and the minimum FLARE OE required for each system.

[Table 3](#) lists the legacy Fibre Channel interface drive modules that you can re-purpose in CX4 series storage systems (move from CX series or CX3 series storage systems to CX4 series storage systems) and the minimum FLARE OE required for each system.

[Table 4](#) lists the legacy ATA interface drive modules that you can re-purpose in CX4 series storage systems (move from CX series or CX3 series storage systems to CX4 series storage systems) and the minimum FLARE OE required for each system.



CAUTION

If you install a 2 Gb legacy drive in a drive-array enclosure (DAE) on a 4 Gb bus, you cannot use the drive in a RAID group or thin pool until you change the bus speed to 2 Gb. You can change the bus speed with the Backend Bus Speed Reset Wizard, which is available

from the Service option on the Navisphere Manager Tools menu. The speed reset operation reboots the storage processors.

CX3 to CX4 conversions

All CX3 to CX4 conversions require FLARE OE version 04.28.000.5.501 or later.

Power savings drives

[Table 5](#) lists the drives that support the drive power savings feature in Navisphere Manager version 6.29 and later.

Available drive space

[Table 6](#) gives the usable space for the drives listed in [Table 1](#) and [Table 2](#).

Supported drive-array enclosures

[Table 7](#) lists the DAEs supported for CLARiiON storage systems. [Table 8](#) lists the drive models supported for these DAEs.

Note: Changes and additions in the tables since the last revision of this document are noted in **red** type.

Table 1 Standard Fibre Channel interface drive modules - Minimum FLARE OE revisions required

Note: NEBS models are shown in (parenthesis). Only those part numbers with a 'Yes' entry in the NEBS column may be used for NEBS models. NEBS parts may be used for non-NEBS models however non-NEBS parts cannot be used for NEBS.

Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
3 TB	CX-SA07-030	005049697 005050135 005051051	N/A	CO	4 Gb FC	7.2K rpm	All CX4 models	04.30.000.5.524
2 TB	CX-SA07-020	005049058 005049061 005049071 005049259 005049552 005050480 005051021 005050041 005049457	N/A	CO CO CO CO CO CO CO CO CO	4 Gb FC	7.2K rpm	All CX4 models	04.28.000.5.003
	CX-LP05-020	005049085 005049457 005050480 005051021	N/A	CO CO CO CO	4 Gb FC	5.4K rpm	All CX4 models	04.28.000.5.003

¹ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
1 TB	CX-SA07-010	005048797	N/A	CO	4 Gb FC	7.2K rpm	All CX4 models	04.28.000.5.003
		005048829		CO				
		005049238		CO				
		005049070		CO				
		005049520		CO				
		005049412		CO				
		005049700		CO				
		005049541		CO				
		005049687		CO				
		005049258		CO				
		005049542		CO				
		005049976		CO				
		005049520		CO				
		005051104		CO				
	005051105	CO						
	Spare ONLY for CX4-LP010-15 or CX4-LP010-15U ²	005048853	N/A	CO	4 Gb FC	5.4K rpm	All CX4 models	04.28.000.5.003
600 GB	CX-4G15-600	005048952	N/A	CO	4 Gb FC	15K rpm	All CX4 models	04.28.000.5.003
		005049033		CO				
		005049118		CO				
		005049160		CO				
		005049694		CO				
		005050919 005050920 ³	N/A	CO CO	4 Gb FC	15K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)
		CX-4G10-600	005048955	N/A	CO	4 Gb FC	10K rpm	All CX4 models
005049116	CO							
005049166	CO							
005049690	CO							
		005049683		CO				
		005050419		CO				
		005049743		CO				

² The 1 TB 5.4K rpm drive modules are available only as spares for DAE models CX4-LP010-15 and CX4-LP010-15U, which ship from the factory fully loaded with fifteen 1TB 5.4K rpm drives. These DAE models cannot be the DAE-OS, which is DAE enclosure 0 on bus 0.

³ If shipped from an EMC factory on or after 9/1/17, the minimum Flare OE revision is 04.28.000.5.003

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
		005049894 005050221	NA NA	CO CO	4 Gb FC	10K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)
450 GB	CX-4G15-450 (NB-4G15-450)	005048849	Yes	CO	4 Gb FC	15K rpm	All CX4 models	04.28.000.5.003
		005048970	Yes	CO				
		005048951	Yes	CO				
		005049032	No	CO				
		005049120	No	CO				
005049158		Yes	CO					
005049693	No	CO						
		005050918 ³ 005050917	NO NO	CO CO	4 Gb FC	15K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)
450 GB	CX-4G10-450	005048954	N/A	CO	4 Gb FC	10K rpm	All CX4 models	04.28.000.5.003
		005049115		CO				
		005048974		CO				
		005049164		CO				
		005049689		CO				
005049682		CO						
005050417		CO						
		005049893 005050220	N/A	CO CO	4 Gb FC	10K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)
400 GB	CX-4G10-400	005048775	N/A	CO	4 Gb FC	10K rpm	All CX4 models	04.28.000.5.003
		005048837		CO				
005049681		CO						
005050324		CO						
		005050104 005050219	N/A	CO CO	4 Gb FC	10K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision						
300 GB	CX-4G15-300 (NB-4G15-300)	005048731	Yes	CO	4 Gb FC	15K rpm	All CX4 models	04.28.000.5.003						
		005048741	No	CO										
		005048848	Yes	CO										
		005048926	No	CO										
		005048950	No	CO										
		005049031	No	CO										
		005049119	No	CO										
		005048840	No	CO										
		005048835	No	CO										
		005048969	Yes	CO										
		005049156	No	CO										
		005048856	No	CO										
		005049692	No	CO										
		005048750	Yes	CO										
		005048913	Yes	CO										
		005050916 ³ 005050915	N/A	CO CO	4 Gb FC	15K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)						
300 GB	CX-4G10-300 (NB-4G10-300)	005048751	Yes	CO	4 Gb FC	10K rpm	All CX4 Models	04.28.000.5.003						
		005048836	No	CO										
		005048953	No	CO										
		005048841	No	CO										
		005048972	No	CO										
		005049162	No	CO										
		005048842	Yes	CO										
		005049117	No	CO										
		005049691	No	CO										
		005049680	No	CO										
		005049679	No	CO										
		005050415	No	CO										
		005049741	No	CO										
				005049892 005050218					N/A N/A	CO CO	4 Gb FC	10K rpm	All CX4 models	04.30.000.5.525 (Zeus SP11)

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
146 GB	CX-4G15-146 (NB-4G15-146)	005048619	No	NC	4 Gb FC	15K rpm		04.28.000.5.003
		005048660	No	CO				
		005048701	No	CO				
		005048730	Yes	CO				
		005048740	No	CO				
		005048839	No	CO				
		005048834	No	CO				
		005048846	No	CO				
		005048968	No	CO				
		005048844	Yes	CO				
		005048855	No	CO				
		005049431	No	CO				
		005048749	Yes	CO				

Table 2 Standard enterprise flash drive (EFD) Fibre Channel interface drive modules - Minimum FLARE OE revisions required

Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁴	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
400 GB	CX-FC04-400	005048999	N/A	CO	4 Gb SSD FC	N/A	All CX4 Models	04.28.000.5.501
200 GB	CX-FC04-200	005048998 005049695	N/A	CO	4 Gb SSD FC	N/A		04.28.000.5.501
	CX-AF04-200	005049076 005049696 005049703 005049261 005049889	N/A	CO	4Gb SSD FC	N/A		04.30.000.5.003
		005050578	N/A	CO	4Gb SSD FC	NA		04.30.000.5.526 (Zeus SP12)
100GB	CX-AF04-100	005049074 005049702 005049260 005049888	N/A	CO	4Gb SSD FC	NA		04.30.000.5.003
		005050577	N/A	CO	4Gb SSD FC	NA		04.30.000.5.526 (Zeus SP12)
73 GB	CX-FC04-073	005048920 005048941	N/A	CO	4 Gb SSD FC	N/A		04.28.000.5.501

⁴ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

Table 3 Supported legacy Fibre Channel interface drive modules - Minimum FLARE OE revisions required

Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁵	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
750 GB	CX-SA07-750	005048726 005048796 005048828 005048889	N/A	CO CO CO CO	4 Gb FC	7.2K rpm	All CX4 Models	04.28.000.5.003
500 GB	CX-SA07-500	005048608 005048720 005048795 005048886	N/A	CO CO CO CO	4 Gb FC	7.2K rpm	All CX4 Models	04.28.000.5.003
		005048596 005048696 005048809	N/A	CO CO CO	2 Gb FC	7.2K rpm	All CX4 Models	04.28.000.5.003
	CX-2G10-300 (NB-2G10-300)	005048532	No	NC	2 Gb FC	10K rpm	All CX4 Models	04.28.000.5.003
		005048597	No	NC				
		005048633	No	NC				
		005048564	No	NC				
		005048582	Yes	CO				
		005048616	No	NC				
		005048625	Yes	NC				
		005048699	No	CO				
		005048703	No	NC				
		005048751	No	NC				
		005048808	No	CO				
005048836	No	CO						
005048953	No	CO						
005049117	No	CO						
005048841	No	CO						
005048972	No	CO						
005049162	No	CO						
005048842	Yes	CO						
005049691	No	CO						
005049680	No	CO						
005049679	No	CO						

⁵ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁵	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
146 GB	CX-4G15-146 (NB-4G15-146)	005048619	No	NC	4 Gb FC	15K rpm	All CX4 Models	04.28.000.5.003
		005048660	No	CO				
		005048701	No	CO				
		005048730	Yes	CO				
		005048740	No	CO				
		005048847	Yes	CO				
		005048839	No	CO				
		005048834	No	CO				
		005048846	No	CO				
		005048844	Yes	CO				
		005048855	No	CO				
		005048968	No	CO				
		005048749	Yes	CO				
	CX-4G15-146 (NB-4G15-146)	005048730	Yes	CO	4/2 Gb FC	15K rpm	All CX4 Models	04.28.000.5.003
		005048847	Yes	CO				
		005048740	No	CO				
		005048839	No	CO				
		005048834	No	CO				
		005048846	No	CO				
		005048968	No	CO				
		005048844	Yes	CO				
		005048855	No	CO				
		005048749	Yes	CO				
	CX-2G15-146 (NB-2G15-146)	005048534	No	NC	2 Gb FC	15K rpm	All CX4 Models	04.28.000.5.003
		005048584	Yes	CO				
		005048588	No	NC				
		005048602	No	NC				
005048618		No	NC					
005048627		Yes	CO					
005048730		No	CO					

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁵	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
146 GB	CX-2G10-146 (NB-2G10-146)	005048031	No	NC	2 Gb FC	10K rpm	All CX4 Models	04.28.000.5.003
		005048128	No	CO				
		005048255	No	NC				
		005048442	No	NC				
		005048491	No	NC				
		005048495	No	CO				
		005048531	No	NC				
		005048563	No	NC				
		005048581	Yes	CO				
		005048598	No	CO				
		005048604	No	NC				
		005048615	No	NC				
		005048624	Yes	CO				
		005048632	No	NC				
		005048698	No	CO				
		005048702	No	CO				
005048807	No	CO						
005048971	No	CO						
73 GB	CX-4G15-73 (NB-4G15-73)	005048646	No	NC	4 Gb FC	15K rpm	All CX4 Models	04.28.000.5.003
		005048659	No	CO				
		005048700	No	CO				
		005048729	Yes	CO				
		005048739	No	CO				
		005048833	No	CO				
		005048845	No	CO				
		005049015	No	CO				
		005048843	Yes	CO				
		005048854	No	CO				
		005048748	Yes	CO				
		73 GB	CX-2G15-73 (NB-2G15-73)	005048290				
005048533	No			NC				
005048583	Yes			CO				
005048589	No			NC				
005048600	No			NC				
005048617	No			NC				
005048626	Yes			CO				
005048843	Yes			CO				
005048700	No			CO				
005048704	Yes			CO				

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁵	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
	CX-2G10-73 (NB-2G10-73)	005047873	No	NC	2 Gb FC	10K rpm	All CX4 Models	04.28.000.5.003
		005048129	No	NC				
		005048257	No	NC				
		005048443	No	NC				
		005048492	No	NC				
		005048496	No	CO				
		005048516	No	NC				
		005048519	No	NC				
		005048530	No	NC				
		005048538	No	CO				
		005048580	Yes	CO				
		005048562	No	NC				
		005048614	No	NC				
		005048623	Yes	CO				
		005048631	No	NC				
		005048806	No	CO				
	005048812	No	CO					
	005048707	No	CO					
	005048705	No	CO					
		CX-4G15-73 (NB-4G15-73) CX-2G15-73 (NB-2G15-73)	005048729	Yes	CO	4/2 Gb FC	15K rpm	All CX4 Models
005048843			Yes	CO				
005049015			No	CO				
005048845			No	CO				
005048833			No	CO				
005048748			Yes	CO				
005048854			No	CO				
005048704			No	CO				
36 GB ⁶	CX-2G15-36	005047879	N/A	NC	2 Gb FC	15K rpm	All CX4 Models	04.28.000.5.003
		005048293		NC				
		005048539		NC				
		005048610		NC				
		005048611		CO				
		005049098		CO				

⁶ Cannot be used as a vault drive.

Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁵	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
36 GB ⁷	CX-2G10-36	005047874 005048357 005048360 005048498 005048556 005048566 005048636	N/A	NC CO NC NC NC NC NC	2 Gb FC	10K rpm	All CX4 Models	04.28.000.5.003

Table 4 Supported legacy ATA interface drive modules - Minimum FLARE OE revisions required

Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ⁸	Drive type	Spindle speed	Platforms	Minimum FLARE OE software revision
1 TB	CX-AT07-010	005048800 005048823	N/A	CO CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003
750 GB	CX-AT07-750	005048723 005048799 005048822 005048828	N/A	CO CO CO CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003
500 GB	CX-AT07-500 (All part numbers spares for CX-AT05-320)	005048574 005048697 005048716 005048798	N/A	NC CO CO CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003

⁷ Cannot be used as a vault drive.

⁸ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

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Drive capacity	Model number (NEBS Model)	Part number	NEBS	RoHS ^a	Drive type	Spindle speed	Platforms	Minimum FLARE OE software revision
320 GB	CX-AT05-320	005048012	N/A	NC	ATA	5.4K rpm	All CX4 Models	04.28.000.5.003
	Spare for CX-AT05-320	005048715	N/A	CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003
250 GB	CX-AT05-250	005047939	N/A	NC	ATA	5.4K rpm	All CX4 Models	04.28.000.5.003
	CX-AT07-250	005048427 005048821	N/A	NC CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003
	Spare for CX-AT05-250 or CX-AT07-250	005048711	N/A	CO	SATA	7.2K rpm	All CX4 Models	04.28.000.5.003

Table 5 Power saving drives

Drive capacity	Model number	Part number
3 TB	CX-SA07-030	005049697
2 TB	CX-LP05-020	005049085
2TB	CX-SA07-020	005049058 005049061 005049071 005049259 005049552 005049457
1 TB	CX-SA07-010 ⁹	005048797 005048829 005049070 005049412 005049700 005049541 005049687 005049520
	Spare only for CX4-LP010-15 and CX4-LP010-15U ¹⁰	005048853

⁹ The 1 TB 7.2K rpm drive modules can be vault drives (drives 0-4 in the DAE-OS) only in a CX4-120 storage system.

¹⁰ The 1 TB 5.4K rpm drive modules are available only as spares for DAE models CX4-LP010-15 and CX4-LP010-15U, which ship from the factory fully loaded with fifteen 1TB 5.4K rpm drives. These DAE models cannot be the DAE-OS, which is DAE enclosure 0 on bus 0.

Table 6 Usable drive space

Listed capacity ¹¹	Usable space per drive ¹²		
	Drive	CX4-120	CX4-120, CX4-240, CX4-960
2 TB	Drive 0-4 (vault drive)	Not supported as vault drive	Not supported as vault drive
	Other drive	2751.4941 GB	2751.4941 GB
2 TB	Drive 0-4 (vault drive)	1761.5965 GB	Not supported as vault drive
	Other drive	1823.5632 GB	1823.5632 GB
1 TB	Drive 0-4 (vault drive)	855.1824 GB	Not supported as vault drive
	Other drive	917.1492 GB	917.1492 GB
600 GB	Drive 0-4 (vault drive)	474.8083 GB	474.8083 GB
	Other drive	536.7751 GB	536.7751 GB
450 GB	Drive 0-4 (vault drive)	340.6062 GB	340.6062 GB
	Other drive	402.5730 GB	402.5730 GB
400 GB	Drive 0-4 (vault drive)	304.7978 GB	304.7978 GB
	Other drive	366.7646 GB	366.7646 GB

¹¹ The listed capacity is the drive capacity listed for the drives in [Table 1](#) and [Table 2](#).

¹² 1 GB = 1,073,741,824 bytes (1024³).

Usable space per drive ¹²			
	Other drive	1832.4112 GB	1832.4112 GB
146 GB	Drive 0-4 (vault drive)	71.6806 GB	71.6806 GB
	Other drive	133.6473 GB	133.6473 GB
73 GB	Drive 0-4 (vault drive)	Not supported as vault drive	Not supported as vault drive
	Other drive	66.6055 GB	66.6055 GB
Listed capacity¹¹	Drive	CX4-120	CX4-120, CX4-240, CX4-960
300 GB	Drive 0-4 (vault drive)	206.4041 GB	206.4041 GB
	Other drive	268.3709 GB	268.3709 GB
200 GB	Drive 0-4 (vault drive)	121.4444 GB	121.4444 GB

Table 6 Usable drive space (continued)

Table 7 Supported drive-array enclosures (DAEs)

DAE type	Storage systems supported			
	CX200, CX400, CX600	CX300, CX500, CX700	CX3 series ¹³	CX4 series ¹⁴
DAE2	Yes	Yes	Yes	Yes ¹⁵
DAE2-ATA	Yes	Yes	Yes	Yes ¹⁴
DAE2P	No	Yes	Yes	Yes ¹⁴
DAE3P (DAE4P)	No	No	Yes	Yes

Table 8 Drive models supported for drive-array enclosures (DAEs)

DAE type	Storage systems supported				
	CX-SA	CX-2G ¹⁶	CX-4G ¹⁵	CX-AT ¹⁷	CX-FC (EFDs)
DAE2	No	Yes	Yes	No	No
DAE2-ATA	No	No	No	Yes	No
DAE2P	No	Yes	Some ¹⁸	No	No
DAE3P (DAE4P)	Yes ¹⁹	Yes	Yes ²⁰	No	Yes ²¹

¹³ The CX3 series models are CX3-10c, CX3-20, CX3-20c, CX3-20f, CX3-40, CX3-40c, CX3-40f, and CX3-80.

¹⁴ The CX4 series models are CX4-120, CX4-240, CX4-480, and CX4-960.

¹⁵ The DAE2, DAE2-ATA, and DAE2P are supported in CX4 series storage systems. If you repurpose any of these DAEs (that is, reuse them from an older storage system) in a CX4 series storage system, you may have to run "Refresh Management Server State" from the Navisphere Manager Setup page for the drives to come online, and, if that does not work, you will need to reboot the SPs. Knowledgebase solution emc200651 provides more information.

¹⁶ You can mix CX-2G and CX-4G model drives in the same DAE, but the maximum speed will be 2 Gb/s for the buses connected to the DAE with both these model drives.

¹⁷ CX-AT model drives cannot co-exist with other drive models in the same DAE.

¹⁸ The specific CX-4G model drives supported for a DAE2P depend on the storage system with the DAE2P. This document lists the supported CX-4G model drives for CX4 series storage systems. The *EMC CX Series Storage Systems Drive and FLARE OE Matrix* and the *EMC CX3 UltraScale Series Storage Systems Drive and FLARE OE Matrix* list the supported CX-4G model drives for the CX series storage systems and the CX3 series storage systems, respectively.

¹⁹ CX-SA model drives cannot co-exist with other drive models in the same DAE.

²⁰ This document lists the specific CX-4G model drives supported for the DAE3P in a CX4 series storage system.

²¹ This document lists the specific CX-FC (EFDs) model drives supported for the DAE3P in a CX4 series storage system.

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