

Disk and FLARE OE Matrix

P/N 300-007-437

REV A17

February 22, 2011

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

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



CAUTION

Verify that the proper version of FLARE OE is running on the storage system before installing any disk 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 disk in a storage system, use 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 revision required for the disk, as listed in [Table 1](#), [Table 2](#), [Table 3](#), or [Table 4](#), you must upgrade FLARE OE on the storage system before installing the disk. We recommend that you upgrade FLARE OE with the CLARiON Software Assistant in the Navisphere Service Taskbar (NST), though you can use the Navisphere Secure CLI.

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

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

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

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



CAUTION

If you install a 2 Gb legacy disk in a DAE on a 4 Gb bus, you cannot use the disk 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 SPs.

CX3 to CX4 conversions

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

Power savings disks

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

Available disk space

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

Supported disk-array enclosures

[Table 7](#) lists the disk-array enclosures (DAEs) supported for CLARiiON storage systems, and [Table 8](#) lists the disk models supported for these DAEs.

Changes and additions in the tables since the last revision of this document are noted in bold blue type.
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Table 1 Standard Fibre Channel interface disk modules - Minimum FLARE OE revisions required

Disk capacity	Model number	Part number	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
2 TB	CX-SA07-020	PN005049058 PN005049061	CO CO	4 Gb FC	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-LP05-020	PN005049085	CO	4 Gb FC	5.4K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
1 TB	CX-SA07-010	PN005048797 PN005048829 PN005049238	CO CO CO	4 Gb FC	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	Spare ONLY for CX4-LP010-15 or CX4-LP010-15U ²	PN005048853	CO	4 Gb FC	5.4K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
600 GB	CX-4G15-600	PN005048952 PN005049033 PN005049118 PN005049160	CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-4G10-600	PN005048955 PN005049116 PN005049166	CO CO CO	4 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
450 GB	CX-4G15-450	PN005048849 PN005048970 PN005048951 PN005049032 PN005049120 PN005049158	CO CO CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

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

² The 1 TB 5.4K rpm disk 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 disks. These DAE models can not be the DAE-OS, which is DAE enclosure 0 on bus 0.

Disk capacity	Model number	Part number	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
	CX-4G10-450	PN005048954 PN005049115 PN005048974 PN005049164	CO CO CO CO	4 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
400 GB	CX-4G10-400	PN005048775 PN005048837	CO CO	4 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
300 GB	CX-4G15-300	PN005048731 PN005048741 PN005048848 PN005048926 PN005048950 PN005049031 PN005049119 PN005048840 PN005048835 PN005048969 PN005049156 PN005048856	CO CO CO CO CO CO CO CO CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
146 GB	CX-4G15-146	PN005048619 PN005048660 PN005048701 PN005048730 PN005048740 PN005048847 PN005048839 PN005048834 PN005048846 PN005048968 PN005049424 PN005048730 PN005048844 PN005048855 PN005049431	NC CO CO CO CO CO CO CO CO CO CO CO CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

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

Disk capacity	Model number	Part number	RoHS ³	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
400 GB	CX-FC04-400	PN005048999	CO	4 Gb SSD FC	N/A	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.501
200 GB	CX-FC04-200	PN005048998	CO	4 Gb SSD FC	N/A	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.501
200GB	CX-AF04-200	PN005049076	CO	4Gb SSD FC	N/A	CX4-120 CX4-240 CX4-480 CX4-960	04.30.000.5.003
100GB	CX-AF04-100	PN005049074	CO	4Gb SSD FC	NA	CX4-120 CX4-240 CX4-480 CX4-960	04.30.000.5.003
73 GB	CX-FC04-073	PN005048920 PN005048941	CO CO	4 Gb SSD FC	N/A	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.501

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

Disk capacity	Model number	Part number	RoHS ⁴	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
750 GB	CX-SA07-750	PN005048726 PN005048796 PN005048828 PN005048889	CO CO CO CO	4 Gb FC	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
500 GB	CX-SA07-500	PN005048608 PN005048720 PN005048795 PN005048886	CO CO CO CO	4 Gb FC	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

³ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

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

Disk capacity	Model number	Part number	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
	CX-2G72-500	PN005048596 PN005048696 PN005048809	CO CO CO	2 Gb FC	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
300 GB	CX-4G15-300	PN005048731 PN005048741 PN005048848 PN005048926 PN005048950 PN005049031 PN005049119 PN005049840 PN005048835 PN005048969 PN005049156 PN005048856	CO CO CO CO CO CO CO CO CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-4G10-300	PN005048751 PN005048836 PN005048953 PN005048841 PN005048972 PN005049162 PN005048842 PN005049117	CO CO CO CO CO CO CO CO	4 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

Disk capacity	Model number	Part number	RoHS ⁴	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
	CX-2G10-300	PN005048532 PN005048597 PN005048633 PN005048564 PN005048582 PN005048616 PN005048625 PN005048699 PN005048703 PN005048751 PN005048808 PN005048836 PN005048953 PN005049117 PN005048841 PN005048972 PN005049162 PN005048842	NC NC NC NC CO NC NC CO NC NC CO CO CO CO CO CO CO CO CO	2 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
146 GB	CX-4G15-146	PN005048619 PN005048660 PN005048701 PN005048730 PN005048740 PN005048847 PN005048839 PN005048834 PN005048846 PN005048968 PN005048844 PN005048855	NC CO CO CO CO CO CO CO CO CO CO CO CO	4 Gb F'C	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-4G15-146 CX-2G15-146	PN005048730 PN005048847 PN005048740 PN005048839 PN005048834 PN005048846 PN005048968 PN005048844 PN005048855	CO CO CO CO CO CO CO CO CO CO	4/2 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

Disk capacity	Model number	Part number	RoHS ¹	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
	CX-2G15-146	PN005048534 PN005048584 PN005048588 PN005048602 PN005048618 PN005048627	NC CO NC NC NC CO	2 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-2G10-146	PN005048031 PN005048128 PN005048255 PN005048442 PN005048491 PN005048495 PN005048531 PN005048563 PN005048581 PN005048598 PN005048604 PN005048615 PN005048624 PN005048632 PN005048698 PN005048702 PN005048807 PN005048971	NC CO NC NC NC CO NC NC CO CO NC NC CO NC CO CO CO CO	2 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
73 GB	CX-4G15-73	PN005048646 PN005048659 PN005048700 PN005048729 PN005048739 PN005048833 PN005048845 PN005049015 PN005048843 PN005048854	NC CO CO CO CO CO CO CO CO CO	4 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

Disk capacity	Model number	Part number	RoHS ⁴	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
73 GB	CX-2G15-73	PN005048290	NC	2 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
		PN005048533	NC				
		PN005048583	CO				
PN005048589		NC					
PN005048600		NC					
PN005048617		NC					
PN005048626		CO					
73 GB	CX-2G10-73	PN005047873	NC	2 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
		PN005048129	NC				
		PN005048257	NC				
		PN005048443	NC				
		PN005048492	NC				
		PN005048496	CO				
		PN005048516	NC				
		PN005048519	NC				
		PN005048530	NC				
		PN005048538	CO				
		PN005048580	CO				
		PN005048562	NC				
		PN005048614	NC				
		PN005048623	CO				
		PN005048631	NC				
PN005048806	CO						
PN005048812	CO						
73 GB	CX-4G15-73 CX-2G15-73	PN005048729	CO	4/2 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
		PN005048843	CO				
		PN005049015	CO				
		PN005048845	CO				
		PN005048833	CO				
36 GB ⁵	CX-2G15-36	PN005047879	NC	2 Gb FC	15K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
		PN005048293	NC				
		PN005048539	NC				
		PN005048610	NC				
		PN005048611	CO				
		PN005049098	CO				

⁵ Cannot be used as a vault disk.

Disk capacity	Model number	Part number	RoHS ⁴	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
36 GB ⁶	CX-2G10-36	PN005047874 PN005048357 PN005048360 PN005048498 PN005048556 PN005048566 PN005048636	NC CO NC NC NC NC NC	2 Gb FC	10K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

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

Disk capacity	Model number	Part number	RoHS ⁷	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
1 TB	CX-AT07-010	PN005048800 PN005048823	CO CO CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
750 GB	CX-AT07-750	PN005048723 PN005048799 PN005048822 PN005048828	CO CO CO CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
500 GB	CX-AT07-500	PN005048574 PN005048697 PN005048716 PN005048798 (All part numbers spares for CX-AT05-320)	NC CO CO CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

⁶ Cannot be used as a vault disk.

⁷ In the RoHS column, CO = RoHS compliant; NC = not RoHS compliant.

Disk capacity	Model number	Part number	RoHS ⁷	Drive type	Spindle speed	Platform	Minimum FLARE OE software revision
320 GB	CX-AT05-320	PN005048012	NC	ATA	5.4K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	Spare for CX-AT05-320	PN005048715	CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
250 GB	CX-AT05-250	PN005047939	NC	ATA	5.4K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	CX-AT07-250	PN005048427 PN005048821	NC CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003
	Spare for CX-AT05-250 or CX-AT07-250	PN005048711	CO	SATA	7.2K rpm	CX4-120 CX4-240 CX4-480 CX4-960	04.28.000.5.003

Table 5 Disks that support power savings

Disk capacity	Model number	Part number
2 TB	CX-LP05-020	PN005049085
1 TB	CX-SA07-010 ⁸	PN005048797 PN005048829
	Spare only for CX4-LP010-15 and CX4-LP010-15U ⁹	PN005048853

Table 6 Usable disk space

Listed capacity ¹⁰	Usable space per disk ¹¹		
	Disk	CX4-120	CX4-120, CX4-240, CX4-960
2 TB	Disk 0-4 (vault disk)	1761.5965 GB	Not supported as vault disk
	Other disk	1823.5632 GB	1823.5632 GB
1 TB	Disk 0-4 (vault disk)	855.1824 GB	Not supported as vault disk
	Other disk	917.1492 GB	917.1492 GB
600 GB	Disk 0-4 (vault disk)	474.8083 GB	474.8083 GB
	Other disk	536.7751 GB	536.7751 GB
450 GB	Disk 0-4 (vault disk)	340.6062 GB	340.6062 GB
	Other disk	402.5730 GB	402.5730 GB
400 GB	Disk 0-4 (vault disk)	304.7978 GB	304.7978 GB

⁸ The 1 TB 7.2K rpm disk modules can be vault disks (disks 0-4 in the DAE-OS) only in a CX4-120 storage system.

⁹ The 1 TB 5.4K rpm disk 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 disks. These DAE models cannot be the DAE-OS, which is DAE enclosure 0 on bus 0.

¹⁰ The listed capacity is the disk capacity listed for the disks in Table 1 and Table 2.

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

Listed capacity ¹⁰	Usable space per disk ¹¹		
	Disk	CX4-120	CX4-120, CX4-240, CX4-960
	Other disk	366.7646 GB	366.7646 GB
300 GB	Disk 0-4 (vault disk)	206.4041 GB	206.4041 GB
	Other disk	268.3709 GB	268.3709 GB
200 GB	Disk 0-4 (vault disk)	121.4444 GB	121.4444 GB
	Other disk	1832.4112 GB	1832.4112 GB
146 GB	Disk 0-4 (vault disk)	71.6806 GB	71.6806 GB
	Other disk	133.6473 GB	133.6473 GB
73 GB	Disk 0-4 (vault disk)	Not supported as vault disk	Not supported as vault disk
	Other disk	66.6055 GB	66.6055 GB

Table 7 Supported disk-array enclosures (DAEs)

DAE type	Storage systems supported			
	CX200, CX400, CX600	CX300, CX500, CX700	CX3 series ¹²	CX4 series ¹³
DAE2	Yes	Yes	Yes	Yes ¹⁴
DAE2-ATA	Yes	Yes	Yes	Yes ¹⁴
DAE2P	No	Yes	Yes	Yes ¹⁴
DAE3P (DAE4P)	No	No	Yes	Yes

Table 8 Disk models supported for disk-array enclosures (DAEs)

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

¹² The CX3 series models are CX3-10c, CX3-20, CX3-20c, CX3-20f, CX3-40, CX3-40c, CX3-40f, and CX3-80.

¹³ The CX4 series models are CX4-120, CX4-240, CX4-480, and CX4-960.

¹⁴ 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.

¹⁵ You can mix CX-2G and CX-4G model disks in the same DAE, but the maximum speed will be 2 Gb/s for the buses connected to the DAE with both these model disks.

¹⁶ CX-AT model disks cannot co-exist with other disk models in the same DAE.

¹⁷ The specific CX-4G model disks supported for a DAE2P depend on the storage system with the DAE2P. This document lists the supported CX-4G model disks for CX4 series storage systems. The *EMC CX Series Storage Systems Disk and FLARE OE Matrix* and the *EMC CX3 UltraScale Series Storage Systems Disk and FLARE OE Matrix* list the supported CX-4G model disks for the CX series storage systems and the CX3 series storage systems, respectively.

¹⁸ CX-SA model disks cannot co-exist with other disk models in the same DAE.

¹⁹ This document lists the specific CX-4G model disks supported for the DAE3P in a CX4 series storage system.

²⁰ This document lists the specific CX-FC (EFDs) model disks supported for the DAE3P in a CX4 series storage system.

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