



ServeRAID C100 and C105 Product Guide

The ServeRAID C100 and ServeRAID C105 are integrated SATA controllers with software RAID capabilities. They are a cost-effective way to provide reliability, performance, and fault-tolerant disk subsystem management to help safeguard your valuable data and enhance availability.

Figure 1 shows a screenshot from the configuration utility for ServeRAID C100 and C105 that displays information about the controller.

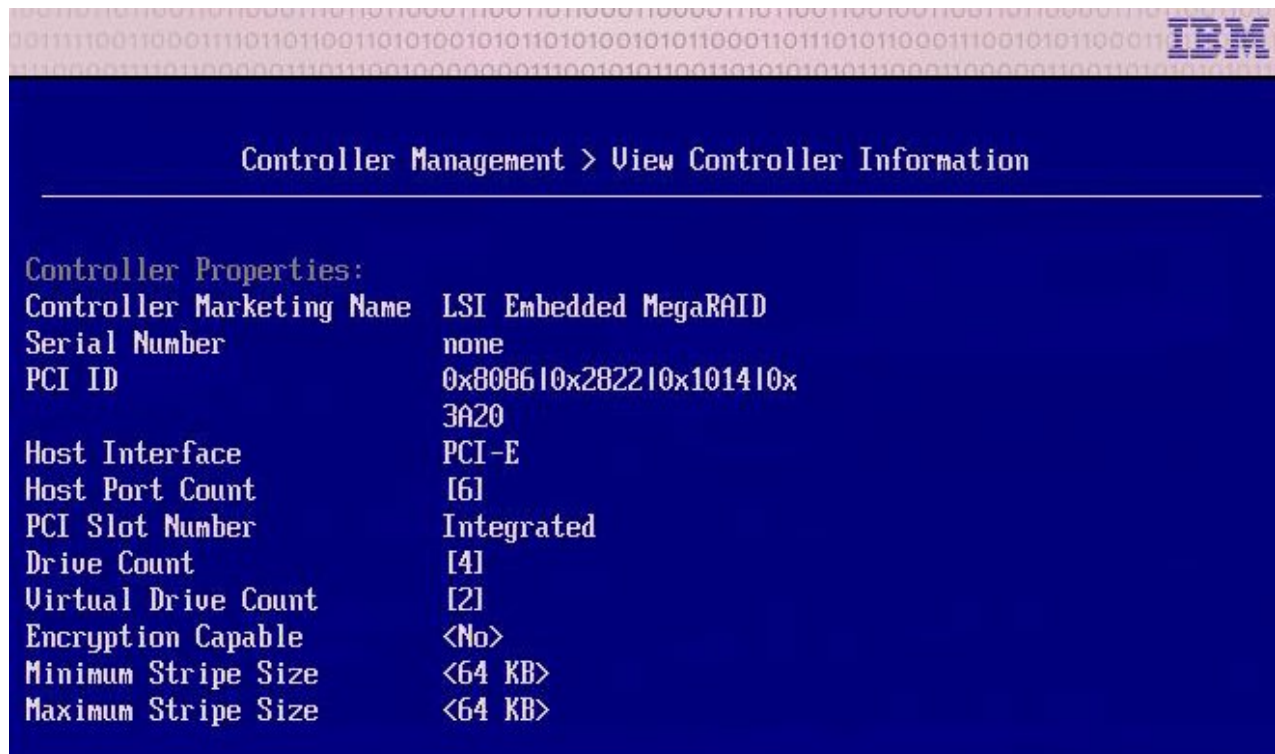


Figure 1. ServeRAID C100 and C105 configuration utility: Controller information

Did you know?

The ServeRAID C100 and C105 are integral function of the system planar. There is no additional hardware required. They can be enabled and disabled through the system Human Interface Infrastructure (HII) Configuration Utility, which is used to configure controllers, drive groups, and virtual drives, and to perform other configuration tasks in a pre-boot environment. Once enabled, the ServeRAID C100 and C105 take control of all devices that are connected to the planar SATA ports of the server, including the SATA optical drive, if present.

Part number information

The ServeRAID C100 and C105 are integrated SATA controllers that come standard with supported servers and cannot be ordered separately. The following table provides the ordering part numbers and feature codes for the additional options.

Table 1. Ordering part numbers and feature codes

Description	Part number	Feature code
ServeRAID C100	Onboard	Onboard
ServeRAID C105	Onboard	Onboard
ServeRAID C100 Series RAID 5 Upgrade-FoD*	81Y4406	A17U
8-Pack ServeRAID C105 Controller Enabler**	90Y4349	A2V7

* An FoD upgrade for ServeRAID C100 that enables support for RAID 5.

** An FoD upgrade for ServeRAID C105 that enables support for up to eight SATA HDDs.

The 8-pack Enabler and RAID 5 Upgrade option part numbers include the following items:

- Upgrade authorization letter
- Feature Activation Instructions

Features

The ServeRAID C100 and C105 have the following standard features:

- **Auto-resume on array rebuild or array reconstruction after loss of system power**
Auto-resume uses non-volatile RAM (NVRAM) to save rebuild progress during a host reboot or power failure to automatically resume from the last checkpoint. Auto-resume ensures that data integrity is maintained throughout the process.
- **Fast initialization for quick array setup**
Fast initialization quickly writes zeroes to the first and last sectors of the virtual drive. This function allows you to immediately start writing data to the virtual drive while the initialization is running in the background.
- **Consistency check for background data integrity**
Consistency check verifies that all stripes in a virtual disk with a redundant RAID level are consistent. The consistency check will mirror data when an inconsistent stripe is detected for a RAID 1.
- **Extensive online configuration options and advanced monitoring and event notification**
Management tools provide convenience for the configuration of logical volumes and alerting when errors have occurred or are about to occur.
- **Global Hot Spare support**
A hot spare rebuilds data from all virtual disks within the disk group in which it is configured. ServeRAID provides the ability to define a physical disk as a hot spare to replace a failed drive. A global hot spare allows any physical drive to be designated as a hot spare for all drive groups that are defined on the controller.
- **Human Interface Infrastructure (HII) Configuration Utility for pre-boot array configuration and management**
HII Configuration Utility is a utility that allows you to configure drive groups and logical drives before installing or booting the operating system.
- **MegaRAID Storage Manager management software**
MegaRAID Storage Manager is an easy-to-use advanced RAID management application that is used across the entire family of ServeRAID controllers. It allows you to configure, monitor, and maintain drive groups, virtual drives, and advanced features with an intuitive GUI reducing administrative efforts and simplifying troubleshooting.

Technical specifications

The following table lists specifications for the ServeRAID C100 and C105 controllers.

Table 2. ServeRAID C100 and C105 specifications

Specification	C100 (M4 1-socket servers)	C100 (M5 1-socket servers)	C100 (nx360 M4)	C105 (M4 2-socket servers)	C100 (Blade servers)	C105 (Blade servers)
Interface type	SATA	SATA	SATA	SATA	SATA	SATA
Number of ports	Up to 6*	Up to 6*	4	Up to 8**	2	2
Port speed	3 Gbps	6 Gbps	2x 3 Gbps, 2x 6 Gbps	3 Gbps	3 Gbps	3 Gbps
Number of physical drives supported#	Up to 4	Up to 4	Up to 4	Up to 8**	Up to 2	Up to 2
Number of virtual drives supported	Up to 8	Up to 8	Up to 8	Up to 8	Up to 8	Up to 8
Virtual drive size support	> 2 TB	> 2 TB	> 2 TB	> 2 TB	> 2 TB	> 2 TB
Stripe unit size	64 KB fixed	64 KB fixed	64 KB fixed	64 KB fixed	64 KB fixed	64 KB fixed
RAID levels	0, 1, 10	0, 1, 10, 5†	0, 1, 10	0, 1, 10	0, 1, 10	0, 1, 10
SAS HDD support	No	No	No	No	No	No
SATA HDD support	Yes	Yes	Yes	Yes	Yes	Yes
SAS SSD support	No	No	No	No	No	No
SATA SSD support	No	No	Yes	No	Yes	No
Simple-swap support	Yes	Yes	Yes	Yes	Yes	No
Hot-swap support	No	No	No	Yes	Yes	Yes
Optical drive support	Yes	Yes	No	No	No	No
Tape drive support	Yes	Yes	No	No	No	No
Internal connector type	Up to six 7-pin L-shape SATA	Up to six 7-pin L-shape SATA	1x Mini-SAS	2x Mini-SAS (SFF-8087) x4	2x Drive connectors	2x Drive connectors
Supported servers	x3100 M4, x3250 M4	x3100 M5, x3250 M5	nx360 M4	x3300 M4, x3530 M4, x3630 M4	x222	HS23E, x220

* Up to four ports are used to connect hard drives, and up to two ports are used to connect optical or tape drives (server dependent).

** Eight HDD support requires optional 8-pack Enabler Features on Demand (FoD) upgrade, 90Y4349.

The maximum number of physical drives supported depends on the server model.

† RAID 5 support requires optional C100 Series RAID 5 FoD upgrade, 81Y4406.

Supported servers

The following table lists the support information for the ServeRAID C100 and C105 controllers and System x®, iDataPlex®, and NeXtScale servers.

Table 3. System x, iDataPlex, and NeXtScale compatibility (Part 1)

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3550 M5 (5463)	x3650 M5 (5462)	nx360 M5 (5465)
Onboard	ServeRAID C100	Y	Y	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N
81Y4406	ServeRAID C100 Series RAID 5 Upgrade	Y	Y	N	N	N
90Y4349	8-Pack ServeRAID C105 Controller Enabler	N	N	N	N	N

Table 3. System x, iDataPlex, and NeXtScale compatibility (Part 2)

Part number	Description	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 (7915, E5-2600 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	x3750 M4 (8752)	x3850 X6/x3950 X6 (3837)	dx360 M4 (7912, E5-2600 v2)	nx360 M4 (5455)
Onboard	ServeRAID C100	N	N	N	N	N	N	N	N	N	N	Y
Onboard	ServeRAID C105	N	Y	N	Y	N	N	N	N	N	N	N
81Y4406	ServeRAID C100 Series RAID 5 Upgrade	N	N	N	N	N	N	N	N	N	N	N
90Y4349	8-Pack ServeRAID C105 Controller Enabler	N	Y	N	Y	N	N	N	N	N	N	N

Table 3. System x, iDataPlex, and NeXtScale compatibility (Part 3)

Part number	Description	x3100 M4 (2582)	x3250 M4 (2583)	x3300 M4 (7382)	x3500 M4 (7383, E5-2600)	x3530 M4 (7160, E5-2400)	x3550 M4 (7914, E5-2600)	x3630 M4 (7158, E5-2400)	x3650 M4 (7915, E5-2600)	x3690 X5 (7147)	x3750 M4 (8722)	x3850 X5/x3950 X5 (7143)	dx360 M4 (7912, E5-2600)
Onboard	ServeRAID C100	Y	Y	N	N	N	N	N	N	N	N	N	N
Onboard	ServeRAID C105	N	N	Y	N	Y	N	Y	N	N	N	N	N
81Y4406	ServeRAID C100 Series RAID 5 Upgrade	N	N	N	N	N	N	N	N	N	N	N	N
90Y4349	8-Pack ServeRAID C105 Controller Enabler	N	N	Y	N	Y	N	Y	N	N	N	N	N

The following table lists the compatibility information for the ServeRAID C100 and C105 controllers and BladeCenter® and Flex System® servers.

Table 4. BladeCenter and Flex System compatibility

Part number	Product description	HS12 (8028)	HS22 (7870)	HS22V (7871)	HS23 (7875, E5-2600)	HS23 (7875, E5-2600 v2)	HS23E (8038)	HX5 (7872)	HX5 (7873)	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x440 (7917)
Onboard	ServeRAID C100	N	N	N	N	N	N	N	N	N	Y	N	N	N
Onboard	ServeRAID C105	N	N	N	N	N	Y	N	N	Y	N	N	N	N
81Y4406	ServeRAID C100 Series RAID 5 Upgrade	N	N	N	N	N	N	N	N	N	N	N	N	N
90Y4349	8-Pack ServeRAID C105 Controller Enabler	N	N	N	N	N	N	N	N	N	N	N	N	N

See ServerProven® for the latest information about the System x servers that support each controller and upgrades: <http://ibm.com/servers/eserver/serverproven/compat/us/>

Supported operating systems

The ServeRAID C100 and C105 support the following operating systems:

- Microsoft Windows Server 2012
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Microsoft Windows Server 2008 Foundation
- Red Hat Enterprise Linux 6 Server Edition
- Red Hat Enterprise Linux 6 Server x64 Edition
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- SUSE Linux Enterprise Server 11 for AMD64/EM64T
- SUSE Linux Enterprise Server 11 for x86
- SUSE Linux Enterprise Server 10 for AMD64/EM64T
- SUSE Linux Enterprise Server 10 for x86

See the ServerProven website for the latest information about the specific versions and service levels supported and any other prerequisites:

<http://www.ibm.com/systems/info/x86servers/serverproven/compat/us/nos/matrix.shtml>

Supported drives

The ServeRAID C100 supports the SATA drives that are supported in the servers listed in Table 3. The maximum number of drives that can be connected to the controller is limited by the maximum number of internal drive bays for a supported server (either two or four). Supported simple-swap (SS) hard disk drives (HDDs) and solid-state drives (SSDs) and the ServeRAID C100-based servers with which they are supported are listed in the following table.

Table 5. ServeRAID C100: Supported drives

Part number	Description	x3100 M5 (5457)	x3250 M5 (5458)	x3100 M4 (2582)	x3250 M4 (2583)	nx360 M4 (5455)	x222 (7916)
1.8-inch SATA Enterprise SSDs							
00W1120	100GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	Y	Y
49Y6119	200GB SATA 1.8" MLC Enterprise SSD	N	N	N	N	N	Y
1.8-inch SATA Enterprise Value SSDs							
00AJ335	120GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ340	240GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ345	480GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ350	800GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ040	S3500 80GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ045	S3500 240GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ050	S3500 400GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
00AJ455	S3500 800GB SATA 1.8" MLC Enterprise Value SSD	N	N	N	N	N	Y
2.5-inch NL SATA SS HDDs							
81Y9734	250GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	N	Y	N	N
81Y9738	500GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	N	Y	N	N
81Y9742	1TB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	N	Y	N	N
2.5-inch NL SATA SS HDDs for x222							
90Y8974	500GB 7.2K 6Gbps SATA 2.5" G2SS HDD	N	N	N	N	N	Y
90Y8979	1TB 7.2K 6Gbps SATA 2.5" G2SS HDD	N	N	N	N	N	Y
2.5-inch NL SATA NHS HDDs for NeXtScale							
00AD030	250GB 7.2K 6Gbps SATA 2.5" HDD for NeXtScale	N	N	N	N	Y	N
00AD035	500GB 7.2K 6Gbps SATA 2.5" HDD for NeXtScale	N	N	N	N	Y	N
00AD040	1TB 7.2K 6Gbps SATA 2.5" HDD for NeXtScale	N	N	N	N	Y	N

2.5-inch SATA NHS Enterprise SSDs for x222							
90Y8994	100GB SATA 2.5" MLC Enterprise SSD for x222	N	N	N	N	N	Y
00AJ320	S3700 400GB SATA 2.5" MLC Enterprise SSD for x222	N	N	N	N	N	Y
00AJ325	S3700 800GB SATA 2.5" MLC Enterprise SSD for x222	N	N	N	N	N	Y
2.5-inch SATA NHS Enterprise Value SSDs for x222							
00AJ415	120GB SATA 2.5" MLC Enterprise Value SSD for x222	N	N	N	N	N	Y
00AJ420	240GB SATA 2.5" MLC Enterprise Value SSD for x222	N	N	N	N	N	Y
00AJ425	480GB SATA 2.5" MLC Enterprise Value SSD for x222	N	N	N	N	N	Y
00AJ430	800GB SATA 2.5" MLC Enterprise Value SSD for x222	N	N	N	N	N	Y
00AJ330	S3500 480GB SATA 2.5" MLC Enterprise Value SSD for x222	N	N	N	N	N	Y
2.5-inch SATA NHS Enterprise Value SSDs for NeXtScale							
00FN020	120GB SATA 2.5" MLC Enterprise Value SSD for NeXtScale	N	N	N	N	Y	N
00FN025	240GB SATA 2.5" MLC Enterprise Value SSD for NeXtScale	N	N	N	N	Y	N
00FN030	480GB SATA 2.5" MLC Enterprise Value SSD for NeXtScale	N	N	N	N	Y	N
00FN035	800GB SATA 2.5" MLC Enterprise Value SSD for NeXtScale	N	N	N	N	Y	N
00FN293	S3500 1.6TB SATA 2.5" MLC Enterpr. Value SSD for NeXtScale	N	N	N	N	Y	N
3.5-inch NL SATA SS HDDs							
81Y9802	500GB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	N	N	N	N
81Y9806	1TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	N	N	N	N
00FN118	2TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	N	N	N	N
81Y9810	2TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	N	N	N	N
00FN133	3TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	N	N	N	N
81Y9814	3TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	N	N	N	N
81Y9778	3TB 7.2K 6Gbps NL SATA 3.5" SS HDD	N	N	Y	Y	N	N
00FN148	4TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	N	Y	N	N	N	N
49Y6190	4TB 7.2K 6Gbps NL SATA 3.5" SS HDD	N	N	Y	Y	N	N
00FN163	5TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	N	Y	N	N	N	N
00FN178	6TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	N	Y	N	N	N	N
3.5-inch NL SATA NHS HDDs for NeXtScale							
00AD005	500GB 7.2K 6Gbps SATA 3.5" HDD for NeXtScale	N	N	N	N	Y	N
00AD010	1TB 7.2K 6Gbps SATA 3.5" HDD for NeXtScale	N	N	N	N	Y	N
00FN123	2TB 7.2K 6Gbps NL SATA 3.5" 512e HDD for NextScale	N	N	N	N	Y	N
00AD015	2TB 7.2K 6Gbps SATA 3.5" HDD for NeXtScale	N	N	N	N	Y	N
00FN138	3TB 7.2K 6Gbps NL SATA 3.5" 512e HDD for NextScale	N	N	N	N	Y	N
00AD020	3TB 7.2K 6Gbps SATA 3.5" HDD for NeXtScale	N	N	N	N	Y	N
00FN153	4TB 7.2K 6Gbps NL SATA 3.5" 512e HDD for NextScale	N	N	N	N	Y	N
00AD025	4TB 7.2K 6Gbps SATA 3.5" HDD for NeXtScale	N	N	N	N	Y	N
00FN168	5TB 7.2K 6Gbps NL SATA 3.5" 512e HDD for NextScale	N	N	N	N	Y	N
00FN183	6TB 7.2K 6Gbps NL SATA 3.5" 512e HDD for NextScale	N	N	N	N	Y	N

The ServeRAID C105 supports SATA simple-swap and hot-swap hard drives that are supported in the servers listed in Table 3. The maximum number of drives that can be connected to the C105 controller is eight. Supported simple-swap (SS) and hot-swap (HS) SATA HDDs and the ServeRAID C105-based servers with which they are supported are listed in the following table.

Table 6. ServeRAID C105: Supported HDDs

Part number	Description	x3300 M4 (7382)	x3530 M4 (7160, E5-2400)	x3530 M4 (7160, E5-2400 v2)	x3630 M4 (7158, E5-2400)	x3630 M4 (7158, E5-2400 v2)	HS23E (8038)	x220 (7906)
2.5-inch NL SATA HS HDDs								
81Y9722	250GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	N	N	Y	Y
81Y9726	500GB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	N	N	Y	Y
81Y9730	1TB 7.2K 6Gbps NL SATA 2.5" SFF HS HDD	Y	Y	Y	N	N	Y	Y
2.5-inch NL SATA SS HDDs								
81Y9734	250GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	Y	N	N	N	N
81Y9738	500GB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	Y	N	N	N	N
81Y9742	1TB 7.2K 6Gbps NL SATA 2.5" SFF SS HDD	N	Y	Y	N	N	N	N
3.5-inch NL SATA HS HDDs								
81Y9786	500GB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	N	N
81Y9790	1TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	N	N
00FN113	2TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	Y	Y	Y	Y	Y	N	N
81Y9794	2TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	N	N
00FN128	3TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	Y	Y	Y	Y	Y	N	N
81Y9798	3TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	N	N
00FN143	4TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	Y	Y	Y	Y	Y	N	N
49Y6002	4TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	Y	Y	Y	Y	Y	N	N
00FN158	5TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	Y	Y	Y	Y	Y	N	N
00FN173	6TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	Y	Y	Y	Y	Y	N	N
3.5-inch NL SATA SS HDDs								
81Y9802	500GB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	N	N
81Y9806	1TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	N	N
00FN118	2TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	Y	Y	Y	N	N
81Y9810	2TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	N	N
00FN133	3TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	Y	Y	Y	N	N
81Y9814	3TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	N	N
00FN148	4TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	Y	Y	Y	N	N
49Y6012	4TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	Y	Y	Y	Y	Y	N	N
00FN163	5TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	Y	Y	Y	N	N
00FN178	6TB 7.2K 6Gbps NL SATA 3.5" G2SS 512e HDD	Y	Y	Y	Y	Y	N	N

Related publications and links

For more information, see the following documents:

- *User's Guide for ServeRAID C100 and C105*
<http://www.ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5089055>
- System x RAID products home page:
http://www.ibm.com/systems/storage/product/systemx/scsi_raid.html
- ServeRAID software matrix:
<http://ibm.com/support/entry/portal/docdisplay?Indocid=SERV-RAID>
- System x Configuration and Options Guide:
<http://ibm.com/systems/xbc/cog/>

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