

Personal Systems Reference IBM SCSI Disks and Controllers 1992 to 1999 - Withdrawn

June 2001 - Version 224



IBM SCSI Controllers (Micro Channel) - withdrawn

Controller		→ PS/2 SCSI-2 Adapter/A	
Implementation	Planar/card - old PS/2's	Adapter in 76s, 77s	Planar in Model 85 433, 466
,		1 2 4	Adapter in 95 466, 560, 566
			Adapter in Serv 500 non-array models
	Option (Options by IBM™)	Option	Option (Options by IBM)
SCSI type	SCSI-1	SCSI-2 Fast	SCSI-2 Fast/Wide
SCSI bus path / speed	8 bit / 5 MB/sec	8 bit / 10 MB/sec	16 bit / 20 MB/sec
I/O Architecture	Micro Channel®	Micro Channel	Micro Channel
I/O bus path / speed	32 bit / 16.6 MB/sec	16 bit / 3 MB/sec	32 bit / 40 MB/sec streaming
I/O features	32 Dit / 10.0 MB/Sec	10 511, 0 1112,000	Streaming data transfer
,			Address parity and data parity
RAID levels	None (use software)	None (use software)	None (use software)
Tagged Command Queuing	No	No	Yes
Processor	80188 at 16 MHz	None (PIO)	80C186 at 20 MHz
Size		Half length - Type 3	Type 3 (short)
Channels	Type 3 (long)	One (internal/external)	Two (one internal/one external)
Connectors	One (internal/external)	One internal; one external	Two internal for SCSI-1 or
Commodere	One internal; one external	ono momai, ono oxioma	SCSI-2 cabling (only one
			active); one external
Devices supported	7 de de como de de com	7 devices per adapter	7 devices per adapter
Devides supported	7 devices per adapter	7 devices per adapter	15 devices on Server 500 on
			one or two channels
Cache std / max	540 KD / 540 KD	0 KB / 0 KB (8 KB buffer)	0 KB / 0 KB (128 byte buffer)
Cache method	512 KB / 512 KB	N/A	N/A
Cache configurations	Two SIMMs	N/A	N/A
Cache write policy	N/A	N/A	N/A
Available date	Write-through	June 1994	September 1993
Price (retail USD)	March 1992	\$ 233	\$ 515
Part number	\$ 379	82G4868	70G8498 (old 6451280)
	70G8497 (old 6451133) ≫ SCSI-2 RAID Controller	⇒ SCSI-2 Fast/Wide Streami	, ,
Controller	> 3C3I-2 RAID CONTIONE	~ 5051-2 Fasi/Wide Streamin	ng KAID Adapter/A
Code name	Passplay	Cheetah	
Implementation	Adapter in Model 95 array models	Adapter in PC Server 500 and 7	720 array models
•	Not available as option	Option	
SCSI type	SCSI-2 Fast/Wide	SCSI-2 Fast/Wide	
SCSI bus path / speed	16 bit / 20 MB/sec	16 bit / 20 MB/sec	
I/O Architecture	Micro Channel	Micro Channel	
I/O bus path / speed	32 bit / 40 MB/sec streaming	32 bit / 40 MB/sec streaming (8	0 MB/sec on PC Server 720)
I/O features	Streaming data transfer	Streaming data transfer	,
RAID levels	Address parity and data parity	Address parity and data parity	
RAID levels	Address parity and data parity RAID 0, 1, Hybrid 1, 5	Address parity and data parity RAID 0, 1, Hybrid 1, 5	s
	Address parity and data parity	Address parity and data parity	s
Tagged Command Queuing	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array	s
Tagged Command Queuing Processor	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz	s
Tagged Command Queuing Processor Size	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95)	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length)	
Tagged Command Queuing Processor Size Channels	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal)	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz	or external) See Note 1
Tagged Command Queuing Processor Size	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95)	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal	or external) See Note 1 it wide (side card included except
Tagged Command Queuing Processor Size Channels	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include
Tagged Command Queuing Processor Size Channels Connectors	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices)	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors Devices supported Cache std / max	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices) 7 devices per adapter 4 MB / 64 MB (with parity)	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at 14 per adapter (7 per max per of	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors Devices supported Cache std / max Cache method	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices) 7 devices per adapter 4 MB / 64 MB (with parity) 4 sockets for 30 pin 80ns SIMMs	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at 14 per adapter (7 per max per c 4 MB / 4 MB (with parity) 60 ns	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors Devices supported Cache std / max Cache method Cache configurations	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices) 7 devices per adapter 4 MB / 64 MB (with parity) 4 sockets for 30 pin 80ns SIMMs 4, 16, or 64 MB only	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at 14 per adapter (7 per max per of 4 MB / 4 MB (with parity) 60 ns Soldered on adapter N/A	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors Devices supported Cache std / max Cache method Cache configurations Cache write policy	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices) 7 devices per adapter 4 MB / 64 MB (with parity) 4 sockets for 30 pin 80ns SIMMs 4, 16, or 64 MB only Write-through or write-back	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at 14 per adapter (7 per max per of 4 MB / 4 MB (with parity) 60 ns Soldered on adapter N/A Write-through or write-back	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time
Tagged Command Queuing Processor Size Channels Connectors Devices supported Cache std / max Cache method Cache configurations	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical arrays Yes i960 at 25 MHz Type 5 (only fits in Model 85 or 95) Two (both internal) Two internal only (can not attach external devices) 7 devices per adapter 4 MB / 64 MB (with parity) 4 sockets for 30 pin 80ns SIMMs 4, 16, or 64 MB only	Address parity and data parity RAID 0, 1, Hybrid 1, 5 4 ind (A,B,C,D) / 8 logical array Yes i960 at 25 MHz Type 3 (full length) Two (one internal; one internal Three total: Two internal - 16 b One external - 16 b Can only use two connectors at 14 per adapter (7 per max per of 4 MB / 4 MB (with parity) 60 ns Soldered on adapter N/A	or external) See Note 1 bit wide (side card included except bit wide PC Server 500 does not include t any one time

Note1: SCSI-2 Fast/Wide Streaming RAID Adapter/A

There are 3 connectors on adapter: one external and two internal.

One internal is the opposite end of the external and can only be used if external is

not used (this is first SCSI bus which has 2 connectors).

The other internal can go to internal devices or go to the standard sidecard (this is second SCSI bus which has 1 connector).

The sidecard ships standard and uses a Micro Channel slot. It is only used if want external devices on this bus (sidecard does not ship on PC Server 500 array models).

So only two connectors can be used at one time and can not mix internal and

external devices on the same bus.

It supports 8 drives as part of the same physical array spread across two SCSI buses

The 2 SCSI buses will be either ① both external or ② one internal and one external or ③ both internal.

IBM SCSI Controllers (PCI) - withdrawn

Controller >	SCSI-2 Fast PCI Adapter	SCSI-2 Fast PCI Adapter	≫ SCSI-2 Fast/Wide PCI Adapter Earlybloomer	≫ SCSI-2 Fast/Wide Controller
Vendor		Adaptec AHA-2940U (has custom BIOS)	IBM	Adaptec®
Implementation	Option (not supported in PC 700) Adapter in IBM PC Server 300 (0PT)	Adapter in IBM PC Server 310	Option for IBM PC Power Series	Planar of IBM PC Server 320 (PCI/MCA)
SCSI type SCSI bus path / speed I/O Architecture I/O bus path / speed	SCSI-2 Fast 8 bit / 10 MB/sec PCI 32 bit / up to 132 MB/sec	SCSI-2 Fast 8 bit / 10 MB/sec PCI 32 bit / up to 132 MB/sec	SCSI-2 Fast/Wide 16 bit / 20 MB/sec PCI 32 bit / up to 132 MB/sec	SCSI-2 Fast/Wide 16 bit / 20 MB/sec PCI 32 bit / up to 132 MB/sec
RAID levels Tagged Command Que Processor Size Channels Connectors	None (use software) Yes Intelligent SCSI processor PCI standard One (internal/external) One internal; one external	None (use software) Yes Intelligent SCSI processor PCI standard One (internal/external) Two total: One internal - 8 bit narrow One external - 8 bit narrow Can use two connectors at any one time	None (use software) Yes Intelligent SCSI processor) PCI (smaller than half size) One (internal and/or external) Three total: Two internal - 8 bit narrow	None (use software) Yes Chip on planar N/A One (internal and/or external) Three total: Two internal - 8 bit narrow - 16 bit wide One external - 16 bit wide Can use only one internal connector at one time; can use external connector at any time
Devices supported	7 devices per adapter	7 devices per adapter	15 devices total on one or both connectors	15 devices total on one or both connectors
Cache std / max Cache method Cache write policy	None (32 byte FIFO buffer) N/A N/A	None (32 byte FIFO buffer) N/A N/A	None (FIFO buffer) N/A N/A	None (FIFO buffer) N/A N/A
Available / withdra date Warranty Price (retail USD) Part number		October 1995 / Feb 1997 N/A N/A N/A	June 1995 / March 1996 3 year \$ 280 12H0823	July 1995/ April 1996 Same as PC Server N/A N/A
Controller		≫ SCSI-2 Fast/Wide PCI Adapter II		1 4 1 1
Code name Vendor / product Implementation SCSI type SCSI bus path / speed I/O Architecture I/O bus path / speed	Foxtown Adaptec / modification Option Adapter in PC Server 320 non-array SCSI-2 Fast/Wide 16 bit / 20 MB/sec PCI 32 bit / 132 MB/sec	of AHA-2940W	Savannah Mylex / modification of DAC960P Option Adapter in PC Server 320 array SCSI-2 Fast/Wide 16 bit / 20 MB/sec PCI 32 bit / 132 MB/sec	
RAID levels Tagged Command Quer Processor Size Channels Connectors	None (intelligent SCSI PCI standard One (internal and/or ex Three total: Two internal - one	xternal)	RAID 0, 1, Hybrid 1, 5 4 independent (A,B,C,D) / 8 logic i960 at 25 MHz PCI standard Two (one internal; one internal or Three total: Two internal - 16 bit wide in One external - 16 bit wide do	external) Pigtail cable and side card cluded except PC Server 320
Devices supported Cache std / max Cache method Cache write policy Available / withdra date Warranty Price (retail USD) Part number	One external - 16 b 15 devices total on on None (FIFO buffer) N/A N/A March 95 / Feb 96 1 year \$ 299 94G3771	pit wide	Can only use two connectors a 14 per adapter (7 max per channe 4 MB / 4 MB (with parity) 70 ns One 72 pin socket Write-through or write-back June 1995 / April 1997 1 year \$1,840 94G2764	at any one time

III UltraSCSI Controllers (RAID PCI) - withdrawn

Controller ✓ IBM® PC ServeRAID Adapter ✓ IBM PC ServeRAID II Ultra SCSI Adapter Vendor **IBM IBM** Implementation Adapter in some PC Server systems Available as an option for PC Servers ServeRAID-3H 32MB Batt-Backup Cache 28L1003 Available as an option for PC Servers ServeRAID II 8MB Battery-Backup Cache
ServeRAID II 8MB Battery-Backup Cache
1BM 1M Ext .8 mm (VHDCI) SCSI Cable
1BM 2M Ext .8 mm (VHDCI) SCSI Cable
1BM 3M Ext .8 mm (VHDCI) SCSI Cable
01K8028 SCSI type Wide Ultra SCSI Same SCSI bus path / speed 16-bit / 40MB/sec Same PCI / full length adapter / includes PCI-to-PCI bridge I/O Architecture Same 01K8028 I/O bus path / speed 32-bit / 132MB/sec Same IBM 4.3M Ext .8 mm (VHDĆI) SCSI Cable 01K8029 RAID levels Raid 0, 1, Hybrid 1, 5 **IBM Third Channel Cable** 76H5400 76H5399 DASD Status Cable (for 320, 330, 520, 720) 8 independent (A,B,C,D,E,F,G,H) / 8 logical arrays / IBM .8 mm to 68 pin SCSI Adapter (cable) 01K8017 array can span channels PowerPC 403GA RISC processor Chip architecture PowerPC 403GCX RISC processor Channels Three channels (can only use int or ext connctr on Channel 1) Three channels (can not use both internal Channel and corresponding external Channel at same time) Fourtotal: Connectors Five to six total: Three internal - 16-bit Channel 1 (not use if using external) Three internal - 16-bit Channel 1 - 68-pin - 16-bit Channel 2 - 68-pin - 16-bit Channel 2 - 68-pin - 16-bit Channel 3 - 68-pin - 16-bit Channel 3 - 68-pin One external - 16-bit Channel 1 (not use if using internal) Two external - 16-bit Channel 1 - 0.8 mm VHDCI - 16-bit Channel 2 - 0.8 mm VHDCI Optional ext Channel 3 (VHDCI) via Third Channel Cable 15 devices on each channel; 3 channels x 15 = 45 dev max Devices supported 15 devices on each channel: 3 channels x 15 = 45 dev max SCSI-1, SCSI-2, UltraSCSI SCSI-1, SCSI-2, UltraSCSI Supports a bootable CD-ROM **Features** Supports a bootable CD-ROM Busmaster DMA / ASPI compliant Busmaster DMA / ASPI compliant Logical Drive Migration (change from RAID 0 to 5 by adding Logical Drive Migration (change from RAID 0 to 5 by adding 1 disk; RAID 1 to 5 by adding 1 disk; increase free space 1 disk; RAID 1 to 5 by adding 1 disk; RAID 5 to 0 by in array; change size of logical drive) removing 1 disk; increase free space in array; change size of logical drive) Configuration stored on (1) NVRAM, (2) EEPROM, (3) disk Configuration stored on (1) NVRAM, (2) EEPROM, (3) disk Local and remote monitoring Local and remote monitoring Auto-Rearrange Drive Configuration Auto-Rearrange Drive Configuration Background Data Scrubbing / Hot Swap Rebuild One step init /sync / Resource Ultiization Monitor Cache std / max 4MB2 std / 4MB max (with parity) / write-through 4MB SO-DIMM std / 8MB max (with parity) / write-through or write-back / 60ns / EDO or write-back / 60ns / EDO SPCI connector for 8MB battery-backup cache (10 day) Avail / withdrawn date June 1996 / October 1997 September 1997 / April 1999 Limited warranty 3 years 3 years 70G8489 Part number 76H3584

All trademarks are the property of their respective owners

No warranties are expressed or implied in this summary (11SCSI) © IBM Corp. April 1999

運派 UltraSCSI Controllers (PCI) - withdrawn

SCSI type Wide Ultra SCSI SCSI bus path / speed 16-bit / 40MB/sec

I/O Architecture PCI

I/O bus path / speed 32-bit / 132MB/sec RAID levels None (use software)

Chip architecture AIC-7880 (intelligent SCSI processor)
Channels One (internal and/or external)

Connectors Three total:

Two internal - one is 8-bit narrow - one is 16-bit wide One external - 16-bit wide

Devices supported 15 devices total on one or both conctrs

SCSI-1, SCSI-2, UltraSCSI
Features Supports a bootable CD-ROM

SCAM Level 1 support

Busmaster DMA / ASPI compliant Flash BIOS / BIOS level 1.25

Includes internal wide and narrow cables

Cache std / max None (FIFO buffer) Avail / withdrawn date January 1997 / July 1999

Limited warranty³ 3 years Part number 76H3579 ➣ PC Server Ultra Wide SCSI PCI Adptr

Adaptec AHA-2940UW UltraWide Option for servers

Wide Ultra SCSI 16-bit / 40MB/sec

PCI

32-bit / 132MB/sec None (use software)

AIC-7880 (intelligent SCSI processor)
One (internal and/or external)

Three total:

Two internal - one is 8-bit narrow - one is 16-bit wide

One external - 16-bit wide
15 devices total on one or both conctrs
SCSI-1, SCSI-2, UltraSCSI
Supports a bootable CD-ROM
No SCAM Level 1 support

Busmaster DMA / ASPI compliant Flash BIOS / BIOS level 1.25 Supports scanners and SCO

None (FIFO buffer)

January 1997 / October 1998

3 years 76H5407 ➢ PCI Fast/Wide Ultra SCSI Adapter

Adaptec AHA-2940uW/B UltraWide Option for desktops and servers

Wide Ultra SCSI 16-bit / 40MB/sec

PCI

32-bit / 132MB/sec None (use software)

AIC-7880B (intelligent SCSI processor)

One (internal and/or external)

Three total:

Two internal - one is 8-bit narrow - one is 16-bit wide One external - 16-bit wide

15 devices total on one or both conctrs SCSI-1, SCSI-2, UltraSCSI

Supports a bootable CD-ROM PC 98 compliant

Busmaster DMA / ASPI compliant Flash BIOS / BIOS level 1.34

Includes internal wide cable
None (FIFO buffer)

March 1998 / December 2002

3 years 02K3454

Controller SCSI Adapter
Vendor Adaptec AHA-2940uW Ultra Wide
Implementation Option for desktops and servers

SCSI type Wide Ultra SCSI SCSI bus path / speed 16-bit / 40MB/sec I/O Architecture PCI I/O bus path / speed 32-bit / 132MB/sec

RAID levels None (use software)
Chip architecture AIC-7880B (intelligent

Chip architecture AIC-7880B (intelligent SCSI processor)
Channels One (internal and/or external)

Connectors Three total:

Devices supported

Two internal - one is 8-bit narrow - one is 16-bit wide

One external - 16-bit wide 15 devices total on one or both

connectors
Features SCSI-1, SCSI-2, UltraSCSI

Supports a bootable CD-ROM Busmaster DMA / ASPI compliant Flash BIOS / BIOS level 1.34.03

Includes 4-position, 68-pin internal ribbon cable with active UltraSCSI

Avail / withdrawn date January 1999 / July 2003 Limited warranty³ 3 years Part number 33L4999 ➢ PCI Wide Ultra2 SCSI Adapter

Adaptec AHA-2940U2B

Option for desktops and servers

Wide Ultra2 SCSI 16-bit / 80MB/sec

PCI

32-bit / 132MB/sec None (use software)

AIC-7890A

One (internal and/or external)

Two total:

One internal - 68-pin 16-bit One external - 68-pin 16-bit

15 devices total on one or both

connectors

SCSI-1, SCSI-2, UltraSCSI, Ultra2 SCSI (LVDS)

Supports a bootable CD-ROM Busmaster DMA / ASPI compliant

Flash BIOS

Includes Ultra2 5-drop, 68-pin internal ribbon cable

with active termination

Includes adapter to activity LED cable

None (FIFO buffer)

November 1999 / October 2000

3 years 33L5000

III Ultra2 SCSI Controllers (PCI) - withdrawn

Controller
Positioning
Vendor
Implementation

SCSI type

S= Netfinity® ServeRAID-3L Ultra2 SCSI Adapter
L for "light" small business or departmental applications
IBM
PCI adapter / full-length

Low Voltage Differential (LVD) Wide Ultra2 SCSI

SCSI bus path / speed 16-bit / 80MB/sec

I/O bus path 32-bit

RAID levels RAID 0, 1, 1E, and 5 (5E with firmware upgrade) 8 independent (A,B,C,D,E,F,G,H) / 8 logical arrays /

array can span channels

Chip architecture PCI-to-PCI bridge / PowerPC 403GCX RISC processor at

25MHz1/Symbios 53C895 controller

Channels One channel (can not split a channel between internal and

external devices)

Connectors Two total:

One internal - 16-bit Channel 1 - 68-pin

One external - 16-bit Channel 1 - 0.8 mm VHDCI

Devices supported 15 devices on each channel; 1 channel x 15 = 15 dev max

Features Hot-swap PCI support

I₂O™ enabled

Supports a bootable CD-ROM

Logical Drive Migration (change from RAID 0 to 5 by adding 1 disk; RAID 1 to 5 by adding 1 disk; RAID 5 to 0 by removing 1 disk; increase free space in array; change size of logical drive; add up to three physical

drives to an array at a time)

Configuration stored on (1) NVRAM, (2) EEPROM, (3) disk

Local and remote monitoring Auto-Rearrange Drive Configuration

Background Data Scrubbing / Hot Swap Rebuild

Resource Ultilization Monitor Automatic Synchronization Automatic Initialization

ServeRAID software contained on CD-ROM

Cache std / max 4MB SO-DIMM std / 4MB max (with parity) / write-through

or write-back / 60ns / EDO No battery-backup cache

Avail / withdrawn date September 1998 / May 2000

Limited warranty³ 3 years Part number 01K7364 ➢ Netfinity ServeRAID-3H Ultra2 SCSI Adapter

H for "high" advanced enterprise applications

IBM

PCI adapter / full-length

Low Voltage Differential (LVD) Wide Ultra2 SCSI

16-bit / 80MB/sec

64/32-bit

RAID 0, 1, 1E, and 5 (5E with firmware upgrade) 8 independent (A,B,C,D,E,F,G,H) / 8 logical arrays / array can span channels

PCI-to-PCI bridge / PowerPC 403GCX RISC processor at

40MHz¹/three Symbios 53C895 controllers

Three channels (can not split a channel between internal and

external devices)

Three total:

One internal - 16-bit Channel 3 - 68-pin

Two external - 16-bit Channel 1 - 0.8 mm VHDCI

- 16-bit Channel 2 - 0.8 mm VHDCI

Ships with "Channel 3 Cable Option" to allow internal channel 3 connector to be used with external devices via a

VHDCI connector

15 devices on each channel; 3 channels x 15 = 45 dev max

Hot-swap PCI support

I₂O enabled

Supports a bootable CD-ROM

Logical Drive Migration (change from RAID 0 to 5 by adding 1 disk; RAID 1 to 5 by adding 1 disk; RAID 5 to 0 by removing 1 disk; increase free space in array; change size of logical drive; add up to three physical drives to an array at a time)

Configuration stored on (1) NVRAM, (2) EEPROM, (3) disk

Local and remote monitoring Auto-Rearrange Drive Configuration

Background Data Scrubbing / Hot Swap Rebuild

Resource Ultilization Monitor Automatic Synchronization Automatic Initialization

ServeRAID software contained on CD-ROM

32MB SO-DIMM std / 32MB max (with parity) / write-through

or write-back / 60ns / EDO

SPCI connector for 32MB battery-backup cache (10 day)

September 1998 / September 1999

3 years 01K7207

OPTIONS

 ServeRAID-3H 32MB Battery Backup Cache
 28L1003

 IBM 1M Ext. 8 mm (VHDCI) SCSI Cable
 76H3589

 IBM 2M Ext. 8 mm (VHDCI) SCSI Cable
 01K8027

 IBM 3M Ext. 8 mm (VHDCI) SCSI Cable
 01K8028

 IBM 4.3M Ext. 8 mm (VHDCI) SCSI Cable
 01K8029

 DASD Status Cable (for 320,330,520,720)
 76H5399

 IBM .8 mm to 68 pin SCSI Adapter (cable)
 01K8017

 Netfinity 2 meter Ultra2 SCSI Cable
 03K9310

 Netfinity 4.2 meter Ultra2 SCSI Cable
 03K9311

 Netfinity 12 meter Ultra2 SCSI Cable
 03K9312

III Ultra2 SCSI Controllers (PCI) - 1999 - withdrawn

Controller > Netfinity ServeRAID-3HB Ultra2 SCSI Adapter

Positioning H for "high" advanced enterprise applications; B for Battery

Vendor IBM

Implementation PCI adapter / full-length

SCSI type Low Voltage Differential (LVD) Wide Ultra2 SCSI

SCSI bus path / speed 16-bit / 80MB/sec

I/O bus path 64/32-bit (supports 32-bit or 64-bit PCI slots)

RAID levels RAID 0, 1, 1E, 5, 5E

8 independent (A,B,C,D,E,F,G,H) / 8 logical arrays /

array can span channels

Chip architecture PCI-to-PCI bridge / PowerPC 403GCX RISC processor at

80/40MHz¹ / three Symbios 53C895 controllers

Channels Three channels (can not split a channel between internal and

external devices)

Connectors Three total:

One internal - 16-bit Channel 3 - 68-pin

Two external - 16-bit Channel 1 - 0.8 mm VHDCI - 16-bit Channel 2 - 0.8 mm VHDCI

Ships with "Channel 3 Cable Option" to allow internal

channel 3 connector to be used with external devices via a

VHDCI connector

Devices supported 15 devices on each channel; 3 channels x 15 = 45 dev max Features Hot-swap PCI support

eatures Hot-swap

I₂O enabled

Elimination of SCSI heartbeat cable for clusters

ServeRAID Manager (graphical Java-based enterprise moniotring program)

FlashCopy (high availability backup utility)

Supports a bootable CD-ROM

Logical Drive Migration (change from RAID 0 to 5 by adding 1 disk; RAID 1 to 5 by adding 1 disk; RAID 5 to 0 by removing 1 disk; increase free space in array;

change size of logical drive; add up to three physical

drives to an array at a time)

Configuration stored on (1) NVRAM, (2) Flash, (3) disk Local and remote monitoring via ServeRAID Manager

Auto-Rearrange Drive Configuration

Background Data Scrubbing / Hot Swap Rebuild

Resource Ultilization Monitor Automatic Synchronization Automatic Initialization

ServeRAID ROM Update Program

Cache std / max 32MB SO-DIMM std / 32MB max (with parity) / write-through

or write-back / 60ns / EDO / adaptive caching / chipkill memory correction technology

Battery 32MB of mirrored battery-backup cache (10 day life) / SPCI

Avail / withdrawn date July 1999 / December 2000

Limited warranty³ 3 years Part number 37L6086

OPTIONS

 ServeRAID-3H 32MB Battery Backup Cache
 28L1003

 IBM 1M Ext .8 mm (VHDCI) SCSI Cable
 76H3589

 IBM 2M Ext .8 mm (VHDCI) SCSI Cable
 01K8027

 IBM 3M Ext .8 mm (VHDCI) SCSI Cable
 01K8028

 IBM 4.3M Ext .8 mm (VHDCI) SCSI Cable
 01K8029

 DASD Status Cable (for 320,330,520,720)
 76H5399

 IBM .8 mm to 68 pin SCSI Adapter (cable)
 01K8017

 Netfinity 2 meter Ultra2 SCSI Cable
 03K9310

 Netfinity 12 meter Ultra2 SCSI Cable
 03K9311

 Netfinity 12 meter Ultra2 SCSI Cable
 03K9312

国域 SCSI Disks (up to 1.08 GB) - withdrawn

Capacity	≫ 170 MB	≈ 270 MB	≈ 340 MB	≈ 364 MB	≫ 540 MB
Interface	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fast
SCSI data path	8 bit	8 bit	8 bit	8 bit	8 bit
SCSI burst rate	10 MB/sec	10 MB/sec	10 MB/sec	10 MB/sec	10 MB/sec
Buffer size	64 KB	96 KB	64 KB	96 KB	256 KB
Buffer type (no. of segments)	Read ahead (1)	Adaptive	Read ahead (1)	Adaptive	Segmented (4)
Buffer write caching	No (read only)	Yes (read/write)	No (read only)	Yes (read/write)	No (read only)
Average seek time (ms)	13 ms	12 read / 14 wrt	13 ms	12 read / 14 wrt	8.7 ms
Average latency	7.5 ms	6.67 ms	7.5 ms	6.67 ms	4.76 ms
Rotational speed	4011 rpm	4500 rpm	4011 rpm	4500 rpm	6300 rpm
Media transfer rate	3.5 MB/sec	3.8 MB/sec	3.5 MB/sec	3.8 MB/sec	3.8 MB/sec
	3.3 IVID/SEC		3.5 MD/Sec		3.0 IVID/SEC
Sustained transfer rate		2.5 MB/sec		2.5 MB/sec	
Mean Time Between Failure	250,000 hrs	300,000 hrs	250,000 hrs	300,000 hrs	300,000 hrs
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL
Tagged Command Queueing	No	Yes	No	Yes	Yes
Automatic Defect Reallocation	Yes	Yes	Yes	Yes	Yes
Predictive Failure Analysis	No	No	No	No	No
Head technology	Metal in gap	Magneto-resistve	Metal in gap	Magneto-resistve	Metal in gap
0,	Conner	IBM	Conner	IBM	Maxtor
Vendor	COIIIIEI		Connet		IVIAXIOI
Code name	.	Satsuma	_	Satsuma	
Available date	February 1994	July 1994	February 1994	July 1994	July 1993
Warranty		2 years		2 years	
Withdrawal date	September 1994	January 1995	September 1994	May 1995	September 1994
Part number (old)	N/A	N/A	N/A	N/A	32G4151
Part number (new)	70G8480	94G2439	70G8481	94G2440	70G8491
Part number for 95 A or 3516	7000400	3402433	7000-01	None	7000431
	Mana	Nama	Nama	None	7007400
with carrier unit/housing	None	None	None	0.045	70G7163
Price (retail USD)	\$ 279	\$ 199	\$ 455	\$ 245	\$519
Price with carrier unit	N/A	N/A	N/A	N/A	\$ 609
Capacity	× 540 MB	≫ 728 MB	> 1 GB	≈ 1.08 GB Deskstar X	/DTM
Interface	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fast	u .
SCSI data path	8 bit	8 bit	8 bit	8 bit	
SCSI burst rate	10 MB/sec	10 MB/sec	10 MB/sec	10 MB/sec	
Buffer size	96 KB	96 KB	512 KB	512 KB	
Buffer type (no. of segments)	Adaptive	Adaptive	Segmented (16)	Adaptive	
Buffer write caching	Yes (read/write)	Yes (read/write)	Yes (read/write)	Yes (read/write)	
Average seek time (ms)	12 read / 14 wrt	12 read / 14 wrt	8.6 ms	10.5 ms	
Average latency	6.67 ms	6.67 ms	5.56 ms	5.56 ms	
	4500 rpm		5400 rpm		
Rotational speed	3.8 MB/sec	4500 rpm	4.8 MB/sec	5400 rpm	
Media transfer rate		3.8 MB/sec		4.97 to 6.88 MB/sec	
Sustained transfer rate	2.5 MB/sec	2.5 MB/sec	4.3 MB/sec	3.2 to 4.0 MB/sec	
Mean Time Between Failure	300,000 hrs	300,000 hrs	800,000 hrs	500,000 hrs	
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	
		Yes	Yes	Yes	
` ,	Yes	165	1		
Tagged Command Queueing			Yes	l Vac	
Tagged Command Queueing Automatic Defect Reallocation	Yes	Yes	Yes Yes	Yes	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis	Yes No	Yes No	Yes	No	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology	Yes No Magneto-resistve	Yes No Magneto-resistve	Yes Magneto-resistive	No Magneto-resistive	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor	Yes No Magneto-resistve IBM	Yes No Magneto-resistve IBM	Yes Magneto-resistive IBM	No Magneto-resistive IBM	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor	Yes No Magneto-resistve IBM Satsuma	Yes No Magneto-resistve	Yes Magneto-resistive IBM Spitfire	No Magneto-resistive	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name	Yes No Magneto-resistve IBM	Yes No Magneto-resistve IBM	Yes Magneto-resistive IBM	No Magneto-resistive IBM	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date	Yes No Magneto-resistve IBM Satsuma	Yes No Magneto-resistve IBM Satsuma July1994	Yes Magneto-resistive IBM Spitfire	No Magneto-resistive IBM Pegasus November 1994	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty	Yes No Magneto-resistve IBM Satsuma July 1994 2 years	Yes No Magneto-resistve IBM Satsuma July1994 2 years	Yes Magneto-resistive IBM Spitfire June 1993 5 years	No Magneto-resistive IBM Pegasus November 1994 3 years	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty Withdrawal date	Yes No Magneto-resistve IBM Satsuma July 1994 2 years March 1996	Yes No Magneto-resistve IBM Satsuma July1994 2 years June 1995	Yes Magneto-resistive IBM Spitfire June 1993 5 years Jan 1996	No Magneto-resistive IBM Pegasus November 1994 3 years July 1995	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty Withdrawal date Part number (old)	Yes No Magneto-resistve IBM Satsuma July 1994 2 years March 1996 N/A	Yes No Magneto-resistve IBM Satsuma July1994 2 years June 1995 N/A	Yes Magneto-resistive IBM Spitfire June 1993 5 years Jan 1996 N/A	No Magneto-resistive IBM Pegasus November 1994 3 years July 1995 N/A	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty Withdrawal date Part number (old) Part number (new)	Yes No Magneto-resistve IBM Satsuma July 1994 2 years March 1996 N/A 94G2441	Yes No Magneto-resistve IBM Satsuma July1994 2 years June 1995 N/A 94G2442	Yes Magneto-resistive IBM Spitfire June 1993 5 years Jan 1996 N/A N/A	No Magneto-resistive IBM Pegasus November 1994 3 years July 1995 N/A 94G3187	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty Withdrawal date Part number (old) Part number (new) Part number for 95 A or 3516	Yes No Magneto-resistve IBM Satsuma July 1994 2 years March 1996 N/A	Yes No Magneto-resistve IBM Satsuma July1994 2 years June 1995 N/A	Yes Magneto-resistive IBM Spitfire June 1993 5 years Jan 1996 N/A N/A N/A	No Magneto-resistive IBM Pegasus November 1994 3 years July 1995 N/A	
Tagged Command Queueing Automatic Defect Reallocation Predictive Failure Analysis Head technology Vendor Code name Available date Warranty Withdrawal date Part number (old)	Yes No Magneto-resistve IBM Satsuma July 1994 2 years March 1996 N/A 94G2441	Yes No Magneto-resistve IBM Satsuma July1994 2 years June 1995 N/A 94G2442	Yes Magneto-resistive IBM Spitfire June 1993 5 years Jan 1996 N/A N/A	No Magneto-resistive IBM Pegasus November 1994 3 years July 1995 N/A 94G3187	

ISM SCSI Disks (up to 1.27 GB) - withdrawn

Capacity	540 MB Deskstar	× 1 GB	★ 1 GB H for 95A	or 3516	✓ 1.08 GB Deskstar XF	ЭТМ	✓ 1.12 GB H Disk Drive	
Interface	SCSI-2 Fast	SCSI-2 Fast	SCSI-2 Fas		SCSI-2 Fast		SCSI-2 Fast/V	
SCSI data path		8 bit	16 bit	Surriac	8 bit		16 bit	vido
SCSI burst rate		10 MB/sec	20 MB/sec		10 MB/sec		20 MB/sec	
				•				
Buffer size		512 KB	512 KB	1/40\	512 KB		1 MB	
Buffer type (no. of segments)	Adaptive	Segmented (16)	Segmented	d (16)	Adaptive		Adaptive	
Buffer write caching	` '	Yes (read/write)	Yes (read/	write)	Yes (read/write)		Yes (read/writ	e)
Average seek time (ms)	I	8.6 ms	8.6 ms		10.5 ms		8.5 ms	
Average latency	6.67 ms	5.56 ms	5.56 ms		5.56 ms		4.17 ms	
Rotational speed	4500 rpm	5400 rpm	5400 rpm		5400 rpm		7200 rpm	
Media transfer rate	4.03 - 6.09MB/sec	4.8 MB/sec	4.8 MB/sec	2	4.87 to 6.88 MB/	/sec	None available	Э
Sustained transfer rate	2.5 - 3.7 MB/sec	4.3 MB/sec	4.3 MB/sec		2.9 to 4.0 MB/se		4.9 to 8.2 MB/	sec
Mean Time Between Failure	350,000 hrs	800,000 hrs	800,000 hr	-	500,000 hrs		800,000	
Form factor (width x height)	· ·	3.5" x 1" SL	3.5" x 1" S		3.5" x 1" SL		3.5" x 1" SL	
Tagged Command Queueing		Yes	Yes	_	Yes		Yes	
Automatic Defect Reallocation		Yes						
		Yes	Yes		Yes		Yes	
Predictive Failure Analysis	-		Yes		Lmtd media failu		Yes	
Head technology	0	Magneto-resistive	Magneto-re	esistive	Magneto-resistiv	/e	Unknown	
No-ID™ sector format		No	No		Yes		No	
Vendor		IBM	IBM		IBM		Quantum™	
Code name		Spitfire	Spitfire		Pegasus Enhan	ced	Atlas	
Available / withdrawn date		June 93 / Feb 97	August 94	/ 1996	July 95 / May 96		January 96 / A	April 97
Warranty	3 years	5 years	N/A		5 years		1 year	Same as
Part number (old)		32G4198	N/A		N/A		70G9861	07H0386
Part number (new)	I	70G8492	N/A		06H8891		N/A	except with
Part number for 95 A or 3516		None	70G9743		N/A		IN//N	•
with carrier unit/housing	140110	140110	7009743		IN/A		Ф 000	Hot-Swap
Price (retail USD)	\$ 225	\$ 799	# 000		# 005		\$ 829	Tray III
Trice (retail 03D)			\$809		\$ 325			
Capacity		ap ≈ 1.12 GB Ult for PC Serve			GB 00, 310, 320	×	1.27 GB	
Interface	SCSI-2 Fast/Wide	SCSI-2 Fast/M	, , , , , , , , , , , , , , , , , , ,		ast/Wide	SC	SI-2 Fast	
SCSI data path	16 bit	16 bit		16 bit		8 b		
SCSI burst rate	20 MB/sec	20 MB/sec		20 MB/se	20		MB/sec	
Buffer size	512 KB	512 KB		1 MB	50		8 KB	
Buffer type (no. of segments)	Adaptive	_		Adaptive			aptive	
buller type (110. or segments)	Adaptive	Adaptive		Auaptive		Au	aptive	
Buffer write caching	Yes (read/write)	Yes (read/write	e)	Yes (rea	d/write)		s (read/write)	
Average seek time (ms)	6.9 ms or 8.0 ms	6.9 ms		8.5 ms			ms	
Average latency	4.17 ms	4.17 ms		4.17 ms			66 ms	
Rotational speed	7200 rpm	7200 rpm		7200 rpn	۱	540	00 rpm	
Media transfer rate	9.95 to 12.58 or 8.4	9.95 to 12.58 N	/IB/sec	None ava	ailable	5.8	to 10.4 MB/sec	0
Sustained transfer rate	5.45 to 7.37 MB/sec				2 MB/sec		known	
Mean Time Between Failure	1,000,000 or 800,00			800,000		_	0,000	
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL		3.5" x 1"	SI I		5" x 1" SL	
Tagged Command Queueing	Yes	Yes		Yes	-	Ye		
Automatic Defect Reallocation		Yes		Yes		Ye		
Predictive Failure Analysis	Yes	Yes		Yes		Ye		
Head technology	Magneto-resistive	Magneto-resist	tive	Unknowr	1		in-Film	
No-ID™ sector format	No	No		No		No		
Vendor	IBM or Quantum	IBM		Quantum) [™]		antum™	
Code name	Starfire or Atlas	Starfire		Atlas			rrot 2s	
Available / withdrawn date	Oct 94 or Oct 95/ 1/	97 March 95 / Oct	tober 96	October	95 / October 96	Ma	y 96 / March 97	7
Warranty	5 years or 3 years	5 years		5 years		3 v	ears	
Part number	N/A	94G3052		07H0386	;	-	H8974	
Part number with Hot	94G2649	N/A		N/A		N/A		
Swap Drive Tray	- · - · · ·	1 4// 1				. 4//	-	
	A					\$3	45	
Price (retail USD)	\$ 829	\$ 850		\$ 850			45	

Fast/Wide disks require a 16 bit Wide SCSI-2 controller.

They will not operate on an 8 bit SCSI-1 controller. SCSI-1 or SCSI-2 devices will work with SCSI-2 16 bit Wide controllers as long as any 16 bit devices are between the SCSI-2 controller and the SCSI-1 devices (SCSI-1 8 bit devices should be at end of the daisy chain).

IIM UltraSCSI Disks (2GB) - withdrawn

Capacity	≈ 2.14GB² Wide Ultra for PC Server 704			≈ 2.16GB Ultrastar 2ES
Interface	Wide Ultra SCSI	Ultra SCSI	Wide Ultra SCSI	Ultra SCSI
SCSI data path	16-bit	8-bit	16-bit	8-bit
SCSI burst rate	40MB/sec	20MB/sec	40MB/sec	20MB/sec
Buffer size	Varies	512KB	512KB	512KB
Buffer type (no. of segments)	Varies	Adaptive	Adaptive	Adaptive
Buffer write caching	Varies	Yes (read/write)	Yes (read/write)	Yes (read/write)
Average seek time (ms)	8.0ms	8.5ms	8.5ms	8.5ms
Average latency	4.17ms	5.56ms	5.56ms	5.56ms
Rotational speed	7200 rpm	5400 rpm	5400 rpm	5400 rpm
Sustained transfer rate	Varies	3.8 to 5.7MB/sec	3.8 to 5.7MB/sec	5.0 to 8.0MB/sec
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL
Tagged Command Queueing	Yes	Yes	Yes	Yes
Automatic Defect Reallocation	Yes	Yes	Yes	Yes
SMART / PFA	SMART/PFA	SMART / PFA	SMART / PFA	SMART/PFA
				I .
Head technology	Varies	Magneto-resistive	Magneto-resistive	Magneto-resistive
No-ID™ sector format	Varies	Yes	Yes	Yes
Other features	80-pin SCA-2 connector			
	Includes hot-swap tray			
Vendor	Varies	IBM	IBM	IBM
Available / withdrawn date	April 1997 / October 1997	April 1996 / July 1997	April 1996 / July 1997	January 1997 / Dec 98
Limited warranty ³	3 years	5 years	5 years	3 years
Partnumber	94G7519	07H1126	07H1128	76H5809
Capacity	≈ 2.16GB Ultrastar 2ES			
Interface	Wide Ultra SCSI			
SCSI data path	16-bit			
SCSI burst rate	40MB/sec			
Buffer size	512KB			
Buffer type (no. of segments)	Adaptive			
Buffer write caching	Yes (read/write)			
Average seek time (ms)	8.5ms			
Average latency	5.56ms			
Rotational speed	5400 rpm			
Sustained transfer rate	5.0 to 8.0MB/sec			
Form factor (width x height)	3.5" x 1" SL			
Tagged Command Queueing	Yes			
Automatic Defect Reallocation				
SMART/PFA	SMART/PFA			
Head technology	Magneto-resistive			
No-ID™ sector format	Yes			
Other features				
Vendor	IBM			
Available / withdrawn date	March 1997 / Dec 98			
Limited warranty	3 years			
Partnumber	76H5813			

IBM SCSI Disks (2 GB to 2.25 GB) - withdrawn

∠ 2 GB

≫ 2 GB

Capacity

Capacity	≈ 2 GB	× 2 GB	~ 2.10	GB Ultrastar ES		× 2.14 GB 101
					Ultrastar XP	PC Server 704
Interface	SCSI-2 Fast	SCSI-2 Fast/Wide	SCSI-2	Fast	SCSI-2 Fast	SCSI-2 Fast/Wide
SCSI data path	8 bit	16 bit	8 bit		8 bit	16 bit
SCSI burst rate	10 MB/sec	20 MB/sec	10 MB/s	sec	10 MB/sec	20 MB/sec
Buffer size	512 KB	512 KB	512 KB		512 KB	512 KB
Buffer type (no. of segments)	-	Segmented (16)	Adaptiv		Adaptive	Segmented (4)
Buffer write caching	Yes (read/write)	Yes (read/write)	Vac (ra	ad/write)	Yes (read/write)	Yes (read/write)
Average seek time (ms)		9.5 ms	8.5 ms	au/wiite)	7.5 ms	9.0 ms
Average latency		5.56 ms	5.56 ms		4.17 ms	4.17 ms
Rotational speed						
		5400 rpm 5.22 MB/sec	5400 rp		7200 rpm	7200 rpm 6.08 to 10.9 MB/sec
Media transfer rate				.9 MB/sec	9.95 to 12.58 MB/sec	
Sustained transfer rate		5.2 MB/sec		.7 MB/sec	5.50 to 7.44 MB/sec	4.2 to 8.9 MB/sec
Mean Time Between Failure	/	750,000 hrs	800,00		1,000,000 hrs	1,000,000 hrs
Form factor (width x height)		3.5" x 1.6" HH	3.5" x 1	" SL	3.5" x 1" SL	3.5" x 1" SL
Tagged Command Queueing		Yes	Yes		Yes	Yes
Automatic Defect Reallocation		Yes	Yes		Yes	Yes
Predictive Failure Analysis		Yes		d std SMART	Yes	No
Head technology		Magneto-resistive		to-resistive	Magneto-resistive	Thin film-TPC
No-ID™ sector format	-	No	Yes		No	No
Other features		None	None		None	80 pin SCA connector
Vendor / code name	IBM / Allicat	IBM / Allicat	IBM / O	rion	IBM / Starfire	Conner
Available / withdrawn date	April 1993 / Mar 96	Sept 1993 / ?	Februa	ry 1996 / Mar 97	March 1995 / ?	CFP2107
Warranty	5 years	5 years	5 years		5 years	May 1996 / June 97
Part number (old)	32G4336	32G3796	N/A		N/A	3 years
Part number (new)	70G8493	70G8494	07H112	24	94G3054	94G5882
Price (retail USD)	\$1,199	\$1,275	\$ 369		\$ 925	\$1,125
Capacity		≈ 2.25 GB Hot-	Swap		≥ 2.25 GB	≫ 2.25 GB
	Ultrastar XP	Disk Drive III		Swap Ultrastar X		for 95,300,310,320
Interface	SCSI-2 Fast/Wide	SCSI-2 Fast/Wid	le	SCSI-2 Fast/Wid	I	SCSI-2 Fast/Wide
SCSI data path	16 bit	16 bit		16 bit	16 bit	16 bit
SCSI burst rate	20 MB/sec	20 MB/sec		20 MB/sec	20 MB/sec	20 MB/sec
Buffer size	512 KB	1 MB		512 KB	512 KB	1 MB
Buffer type (no. of segments)	Adaptive	Adaptive		Adaptive	Adaptive	Adaptive
, ,					,	
Buffer write caching	Yes (read/write)	Yes (read/write)		Yes (read/write)	Yes (read/write)	Yes (read/write)
Average seek time (ms)	7.5 ms	8.5 ms		7.5 ms	7.5 ms or 8.0 ms	8.5 ms
Average latency	4.17 ms	4.17 ms		4.17 ms	4.17 ms	4.17 ms
Rotational speed	7200 rpm	7200 rpm		7200 rpm	7200 rpm	7200 rpm
Media transfer rate	9.95 to 12.58 MB/sec	None available		9.95 to 12.58 MB		None available
Sustained transfer rate	5.50 to 7.44 MB/sec	4.9 to 8.2 MB/sec	С	5.50 to 7.44 MB/s	ec 5.50 to 7.44 MB/sec	4.9 to 8.2 MB/sec

✓ 2.16 GB Ultrastar ES

2.14 GB for

Fast/Wide disks require a 16 bit Wide SCSI-2 controller.

Mean Time Between Failure

Form factor (width x height)

Predictive Failure Analysis

Available / withdrawn date

Part number for 95 A, 3516, or

500 with Hot Swap Drive Tray

Head technology

Vendor

Code name

Part number

Price (retail USD)

Warranty

No-ID™ sector format

Tagged Command Queueing

Automatic Defect Reallocation

They will not operate on an 8 bit SCSI-1 controller. SCSI-1 or SCSI-2 devices will work with SCSI-2 16 bit Wide controllers as long as any 16 bit devices are between the SCSI-2 controller and the SCSI-1 devices (SCSI-1 8 bit devices should be at end of the daisy chain).

1,000,000 hrs

Magneto-resistive

March 1995 / July 97

3.5" x 1" SL

Yes

Yes

No

IBM

N/A

\$835

Starfire

5 years

94G3055

800,000

Yes

Yes

Yes

No

Atlas

1 year

N/A

\$850

70G9862

3.5" x 1" SL

Unknown

Quantum

January 1996 / Dec 97

Same as

07H0387

except with

Hot-Swap

Tray III

1,000,000 or 800,000

Magneto-resistive

IBM or Quantum™

Oct 94, Oct 95/Oct 97

Starfire or Atlas

3.5" x 1" SL

Yes

Yes

Yes

No

3 years

94G2650

N/A

\$850

1,000,000 hrs

Magneto-resistive

March 1995 / 1996

3.5" x 1" SL

Yes

Yes

Yes

No

IBM

N/A

Starfire

5 years

94G3056

\$1,079

800,000

Yes

Yes

Yes

No Quantum

Atlas

N/A

5 years

\$1,125

07H0387

3.5" x 1" SL

Unknown

October 1995 / 1996

ISM SCSI Disks (4.51 to 5.31 GB) - withdrawn

Capacity						≈ 4.51 GB			B Hot Swap
Interfere	COCI 0 F+/Wi-d-	_	Itrastar XP	Ultrast		COCL 0 = -+/M	': al a	Disk D	-
Interface	SCSI-2 Fast/Wide		-2 Fast	SCSI-2 Fa	st/wide	SCSI-2 Fast/W	ıae	SCSI-2 F	ast/wide
SCSI data path	16 bit	8 bit	- /	16 bit		16 bit		16 bit	
SCSI burst rate	20 MB/sec	_	B/sec	20 MB/sec	;	20 MB/sec		20 MB/se	C
Buffer size	512 KB	512 k		512 KB		1 MB		1 MB	
Buffer type (no. of segments)	Adaptive	Adap		Adaptive		Adaptive		Adaptive	
Buffer write caching	Yes (read/write)	,	read/write)	Yes (read/	write)	Yes (read/write)	Yes (read	l/write)
Average seek time (ms)	8.0 ms or 8.5 ms	8.0 m	ns .	8.0 ms		8.5 ms		8.5 ms	
Average latency	4.17 ms	4.17		4.17 ms		4.17 ms		4.17 ms	
Rotational speed	7200 rpm	7200	rpm	7200 rpm		7200 rpm		7200 rpm	
Media transfer rate	9.95 to 12.58 or 8.4	9.95	to 12.58 MB/sec	9.95 to 12.	58 MB/sec	None available		None ava	ilable
Sustained transfer rate	5.53 to 7.48 MB/sec	5.53	to 7.48 MB/sec	5.53 to 7.4	8 MB/sec	4.9 to 8.2 MB/s	ec	4.9 to 8.2	MB/sec
Mean Time Between Failure	1,000,000 or 800,000	1,000	0,000 hrs	1,000,000	hrs	800,000		800,000	
Form factor (width x height)	3.5" x 1.6" HH	3.5" >	(1.6" HH	3.5" x 1.6 "	НН	3.5" x 1.6" HH		3.5" x 1.6	" HH
Predictive Failure Analysis	Yes	Yes		Yes		Yes		Yes	
Headtechnology	Magneto-resistive	Magr	neto-resistive	Magneto-re	esistive	Unknown		Unknown	
Vendor	IBM or Quantum	IBM	1010 100101110	IBM	00101110	Quantum		Quantum	
Code name	Starfire or Atlas	Starfi	rα	Starfire		Atlas		Atlas	
Available / withdrawn date	Dec 1994 / May 1998			March 199	5 / July 07	Dec 1995 / Oct	06	Jan 1996	/ Apr 07
	3 years / Apr 97		,		37 July 97		90		•
Warranty	, ,	5 yea		5 years		5 years		1 year	Same as
Part number	N/A	94G3	0190	94G3057		07H0834			07H0834
Part number for 95 A, 3516, or	94G2651	N/A		N/A		N/A		N/A	except with
500 with Hot Swap Drive Tray									Hot-Swap
Price (retail USD)	\$ 1,035	\$ 839)	\$ 839		\$1,499		\$1,264	Tray III
Capacity				rastar 2XP		B F/W SCSI-2	><	4.51 GB F	/W SCSI-2
, ,	PC Server 704				SL Hot	t-Swap		SL Hot-Sv	vap Disk III
Interface	SCSI-2 Fast/Wide		SCSI-2 Fast/Wi	de	SCSI-2 Fa	•		SI-2 Fast/V	
SCSI data path / burst rate	16 bit / 20 MB/sec		16 bit / 20 MB/s		16 bit / 20			oit / 20 MB/	
Buffer size	512 KB		512 KB		512 KB	W.D/000	1	KB	
Buffer type	Adaptive		Segmented (16)		Segmente	d (16)	1 -	mented (1	6)
Buffer write caching	Yes (read/write)		Yes (read/write)		Yes (read/	` '		(read/writ	,
Average seek time (ms)	8.2 ms		7.5 ms		8.0 ms	write)	8.0	`	e)
			4.17 ms		4.17 ms			7 ms	
Average latency	4.17 ms						1		
Rotational speed	7200 rpm		7200 rpm	4D/	7200 rpm	5.40 MD/		0 rpm	NAD/
Media transfer rate	9.95 to 12.58 MB/sec		10.28 to 15.43 N			5.43 MB/sec	1	28 to 15.43	
Sustained transfer rate	5.53 to 7.48 MB/sec		6.7 to 10.3 MB/s	sec	6.7 to 10.3		1	to 10.3 ME	
Mean Time Between Failure	1,000,000 hrs		Not published		Notpublish		1	published	
Form factor (width x height)	3.5" x 1.6" HH		3.5" x 1.0" SL		3.5" x 1.0 "		1	' x 1.0" SL	
Predictive Failure Analysis	Yes		Yes (SMART)		Yes (SMA			(SMART)	
Headtechnology	Magneto-resistive		Magneto-resistiv		Magneto-r			gneto-resis	
No-ID™ sector format	No		No-ID™ sector for	ormat	No-ID™ se	ector format	No-	ID™ secto	r format
Other features	80 pin SCA-2 connec	ctor			Includes l	not swap trays	Inc	ludes hot	swap trays
Vendor	IBM		IBM		IBM		IBN	1	
Code name	Starfire		Scorpion		Scorpion		Sco	rpion	
Available / withdrawn date	October 1996 / June 1	1997	Dec 1996 / May	1998	December	r 1996 / Oct 97	Dec	1996 / De	ec 1997
Warranty	3 years		5 years		3 years		1	ears	
Partnumber	94G6679 (704 has tra	ıvs)	76H0945		94G6489		940	66494	
Price (retail USD)	\$ 1,035	, ,	\$ 799		\$1,035		\$ 79	99	
,			<u>'</u>	_			<u> </u>		
Capacity			≈ 5.31 GB Ultra			disks require a			
Interface	SCSI-2 Fast		SCSI-2 Fast/Wi			They will not op			
SCSI data path / burst rate	8 bit / 10 MB/sec		16 bit / 20 MB/se			SCSI-1 or SCSI			
Buffer size / type	512 KB / adaptive		512 KB / adaptiv			bit Wide control			
Buffer write caching	Yes (read/write)		Yes (read/write)		devices ar	e between the So	CSI-2	2 controller	and the
Average seek time (ms)	8.0 ms		8.0 ms		SCSI-1 de	vices (SCSI-18	bit de	vices shou	uld be at
Average latency	5.55 ms		5.55 ms		end of the	daisy chain).			
Rotational speed	5400 rpm		5400 rpm			•			
Media transfer rate	7.6 to 12.5 MB/sec		7.6 to 12.5 MB/s	ec					
	7.0 to 12.5 MD/Sec		4 4 t - 7 0 MD/						
Sustained transfer rate	4.4 to 7.6 MB/sec	I	4.4 to 7.6 MB/se	·C					
Sustained transfer rate Mean Time Between Failure			4.4 to 7.6 MB/se 1,000,000 hrs						
	4.4 to 7.6 MB/sec								
Mean Time Between Failure	4.4 to 7.6 MB/sec 1,000,000 hrs		1,000,000 hrs						
Mean Time Between Failure Form factor (width x height) Predictive Failure Analysis	4.4 to 7.6 MB/sec 1,000,000 hrs 3.5" x 1.6" HH Yes		1,000,000 hrs 3.5" x 1.6" HH Yes						
Mean Time Between Failure Form factor (width x height)	4.4 to 7.6 MB/sec 1,000,000 hrs 3.5" x 1.6" HH		1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistiv						
Mean Time Between Failure Form factor (width x height) Predictive Failure Analysis Head technology Vendor / code name	4.4 to 7.6 MB/sec 1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistive IBM / Starfire	96	1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistiv IBM / Starfire	⁄e					
Mean Time Between Failure Form factor (width x height) Predictive Failure Analysis Head technology Vendor / code name Available / withdrawn date	4.4 to 7.6 MB/sec 1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistive IBM / Starfire May 1995 / March 199	96	1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistiv IBM / Starfire May 1995 / Marc	⁄e					
Mean Time Between Failure Form factor (width x height) Predictive Failure Analysis Head technology Vendor / code name	4.4 to 7.6 MB/sec 1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistive IBM / Starfire	96	1,000,000 hrs 3.5" x 1.6" HH Yes Magneto-resistiv IBM / Starfire	⁄e					

IEM UltraSCSI Disks (4.33 to 4.51GB) - withdrawn

Capacity	★ 4.33GB² Ultrastar 2ES	★ 4.33GB Ultrastar 2ES		
Interfere	Lillana COOL	Wide Illere COO!	Wide Illere COO!	704
Interface	Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	8-bit / 20MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Buffer size	512KB	512KB	512KB	Varies
Buffer type (no. of segments)	Adaptive	Adaptive	Adaptive	Varies
Buffer write caching	Yes (read/write)	Yes (read/write)	Yes (read/write)	Varies
Average seek time (ms)	8.5ms	8.5ms	7.5ms	9.0ms or less
Average latency	5.56ms	5.56ms	4.17ms	4.17ms
Rotational speed	5400 rpm	5400 rpm	7200 rpm	7200 rpm
Sustained transfer rate	'	5.0 to 8.0MB/sec	6.5 to 10.0MB/sec	Varies
	5.0 to 8.0MB/sec			
Mean Time Between Failure	Not published	Not published	Not published	Varies
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL
SMART / PFA	SMART/PFA	SMART / PFA	SMART/PFA	SMART / PFA
Head technology	Magneto-resistive	Magneto-resistive	Magneto-resistive	Varies
No-ID™ sector format	Yes	Yes	Yes	Varies
Other features			1.00	80-pin SCA-2 connector
Other reatures				Includes hot-swap tray
Manadan	IDM	IDM	IDAA	
Vendor	IBM	IBM	IBM	Varies
Available / withdrawn date	January 1997 / Dec 98	February 1997 / Dec 98	February 1997 / Oct 1998	April 1997 / August 1999
Limited warranty	5 years	5 years	5 years	3 years
Part number	76H5811	76H5815	76H2687	94G7098
Canacity				
Capacity				
	SCSI HDD for 310,	SCSI Hot Swap for	SCSI Netfinity SCA-2	SCSI SCA-2
	315, 325, 330, N3000,	PC Server 330, 520,	Hot Swap for	Hot Swap for
	N3500, others	and 3518, 3519	Netfinity 7000	Netfinity 7000
Interface	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Buffer size	512KB	Varies	Varies	Varies
Average seek time (ms)	7.5ms	9.0ms or less	9.0ms or less	8.5ms or less
Average latency	4.2ms	4.17ms	4.17ms	2.99ms
Rotational speed	7200 rpm	7200 rpm	7200 rpm	10000 rpm
Sustained transfer rate	8 to 13MB/sec	Varies	Varies	15.2 to 21.1MB/sec
Form factor (width x height)	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL	3.5" x 1" SL
SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA
Head technology	Magneto-resistive	Magneto-resistive	Magneto-resistive	Magneto-resistive
No-ID™ sector format	Yes	Yes	Yes	Yes
Other features	103	Includes hot-swap tray	80 pin SCA-2 connector	80 pin SCA-2 connector
Other realures				
		(wide body Type III tray)	Includes hot-swap tray	Includes hot-swap tray
Available / withdrawn date	May 1998	May 1997 / August 1999	October 1997 / Aug 1999	February 1998 / July 1999
Limited warranty ³	3 years	3 years	3 years	3 years
Part number	01K1327	94G7491	94G7429	01K8009
Canacity	. 4 F1CD Wide Lilling	a	. 4 F1CB Foot Wide CC	01.0
Capacity		✓ 4.51GB Wide Ultra ✓ 5.75	4.51GB Fast Wide SC	51-2
	SCSI Netfinity EXP10/	SCSI Netfinity EXP	Hot-Swap SL	_
),
	15 Hot Swap (for	Hot Swap 10K (for	for PC Server 320, 500	,
	15 Hot Swap (for EXP10/15 exp unit)	EXP10/15 exp unit)	520, 720	,
Interface	• `			
	EXP10/15 exp unit)	EXP10/15 exp unit)	520, 720	,
SCSI data path / burst rate	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec	,
SCSI data path / burst rate Buffer size	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies	,
SCSI data path / burst rate Buffer size Average seek time (ms)	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less	,
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray)	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Nov 1997 / Aug 1999	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Dec 1997 / July 1999	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray) December 1998 / Aug 199	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date Limited warranty	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Nov 1997 / Aug 1999 3 years	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Dec 1997 / July 1999 3 years	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray) December 1998 / Aug 199 3 years	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Nov 1997 / Aug 1999	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Dec 1997 / July 1999	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray) December 1998 / Aug 199	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date Limited warranty	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Nov 1997 / Aug 1999 3 years	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Dec 1997 / July 1999 3 years	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray) December 1998 / Aug 199 3 years	
SCSI data path / burst rate Buffer size Average seek time (ms) Average latency Rotational speed Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date Limited warranty	EXP10/15 exp unit) Wide Ultra SCSI 16- bit / 40MB/sec Varies 9.0ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Nov 1997 / Aug 1999 3 years	EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec Varies 7.5ms or less 2.99ms 10000 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray Dec 1997 / July 1999 3 years	520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec Varies 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Magneto-resistive Yes Includes hot-swap tray (Type II tray) December 1998 / Aug 199 3 years	

IIM UltraSCSI Disks (9.1GB) - withdrawn

Capacity	≈ 9.1GB ² Ultrastar 2XP	≫ 9.1GB Wide Ultra SCSI	≫ 9.1GB Wide Ultra SCSI	≫ 9.1GB Wide Ultra SCSI
		for PC Server 704	Hot Swap for	SL Hot Swap for
			PC Server 330, 520,	PC Server 330
			and 3518, 3519	
Interface	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Buffer size	512KB	Varies	Varies	Varies
Buffer type (no. of segments)) Adaptive	Varies	Varies	Varies
Buffer write caching	Yes (read/write)	Varies	Varies	Varies
Average seek time (ms)	8.5ms	9.0ms or less	9.0ms or less	7.5ms or less
Average latency	4.17ms	4.17ms	4.17ms	4.17ms
Rotational speed	7200 rpm	7200 rpm	7200 rpm	7200 rpm
Sustained transfer rate	6.5 to 10.0MB/sec	Varies	Varies	Varies
Form factor (width x height)		3.5" x 1.6" HH	3.5" x 1.6" HH	3.5" x 1.0" SL
SMART/PFA	SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA
Head technology	Magneto-resistive	Varies	Magneto-resistive	Magneto-resistive
No-ID™ sector format	Yes	Varies	Yes	Yes
Other features		80-pin SCA-2 connector	Includes hot-swap tray	Includes hot-swap tray
		Includes hot-swap tray	(wide body Type III tray)	(wide body Type III tray)
Vendor	IBM	Varies	Varies	Varies
Avail / withdrawn date	February 1997 / Dec 98	April 1997 / Dec 2000	May 1997 / October 1998	April 1998 / December 2000
Limited warranty ³	5 years	3 years	3 years	3 years
Part number	76H2689	94G7099	94G7492	02K0477
Capacity	≫ 9.1GB Wide Ultra	≫ 9.1GB Wide Ultra SCSI		≈ 9.1GB 10K Wide Ultra
Capacity	SCSI HDD for	Netfinity SCA-2	SCSI SCA-2 SL	SCSI SCA-2
	310, 315, 325, 330	Hot Swap for	Hot Swap for	Hot Swap for
	N3000, N3500, others	Netfinity 7000	Netfinity 5500/7000	Netfinity 5500/7000
Interface	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Buffer size	512KB	Varies	Varies	Varies
Average seek time (ms)	7.5ms	9.0ms or less	7.5ms or less	8.5ms or less
Average latency	4.2ms	4.17ms	4.17ms	2.99ms
Rotational speed	7200 rpm	7200 rpm	7200 rpm	10000 rpm
Sustained transfer rate	8 to 13MB/sec	Varies	Varies	15.2 to 21.1MB/sec
Form factor (width x height)	3.5" x 1" SL	3.5" x 1.6" HH	3.5" x 1" SL	3.5" x 1.6" HH
SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA
Head technology	Magneto-resistive	Magneto-resistive	Magneto-resistive	Magneto-resistive
No-ID sector format	Yes	Yes	Yes	Yes
Other features		80-pin SCA-2 connector	80-pin SCA-2 connector	80-pin SCA-2 connector
		Includes hot-swap tray	Includes hot-swap tray	Includes hot-swap tray
Vendor		Varies	Varies	Varies
Avail / withdrawn date	May 1998 / July 1999	October 1997 / October 1998	April 1998 / Aug 2001	February 1998 / October 1998
Limited warranty	3 years	3 years	3 years	3 years
Part number	01K1328	94G7430	01K8053	01K8010
Capacity				
	Netfinity EXP10/15	Netfinity EXP10/15	Wide Ultra SCSI	Netfinity EXP10/15
	SCA-2 Hot Swap	SCA-2 Hot Swap	SCA-2 SL Hot Swap	SCA-2 SL Hot Swap
	(for EXP10/15 unit)	(for EXP10/15 exp unit)	(for 5500/7000)	(for EXP10/15 exp unit)
Interface	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Average seek time (ms)	9.0ms or less	8.5ms or less	6.0ms or less	6.0ms or less
Average latency	4.17ms	2.99ms	2.99ms	2.99ms
Rotational speed	7200 rpm	10000 rpm	10000 rpm	10000 rpm
Sustained transfer rate	Varies	15.2 to 21.1MB/sec	19 to 28.8MB/sec	19 to 28.8MB/sec
Form factor (width x height)	3.5" x 1.6" HH	3.5" x 1.6" HH	3.5" x 1" SL	3.5" x 1" SL
SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA	SMART / PFA
Head technology	Magneto-resistive	Magneto-resistive	Magneto-resistive	Magneto-resistive
No-ID sector format	Yes	Yes	Yes	Yes
Other features	80-pin SCA-2 connector	80-pin SCA-2 connector	80-pin SCA-2 connector	80-pin SCA-2 connector
	Includes hot-swap tray	Includes hot-swap tray	Includes hot-swap tray	Includes hot-swap tray
Avail / withdrawn date	Nov 1997 / Dec 2000	February 1998 / October 1998	July 1998 / August 1999	July 1998 / August 1999
Limited warranty	3 years	3 years	3 years	3 years
Part number	01K7959	01K7968	01K8054	01K8499
			i .	

IIX UltraSCSI Disks (9.1GB) - withdrawn

Netfii Interface Wide SCSI data path 16-bi Buffer size 1MB Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Ultra: Smal Avail /withdrawn date Augu Limited warranty³ 3 yea Part number 20L0 Capacity > 9. S Connector 80-pi Hot-swap Inclus Systems supported Netfii Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features	liStation M Pro 6889, 6898 inity 3500 e Ultra2 SCSI it / 80MB/sec (multisegmented) ns ms 00 rpm x 1" SL uRT / PFA 12 LVD Iller than 3.5" disks ust 1998 / November 1999 ars	Hot Swap SL HDD Connector in hot-swap tray Hot-Swap (Type II tray) PC Server 320, 500, 520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI 16-bit / 40MB/sec	68-pin No Most IntelliStation, 300GL, 300PL Netfinity 3000, 3500, PC Server 3xx Wide Ultra2 SCSI 16-bit / 80MB/sec 1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160 16-bit / 160MB/sec
Hot-swap No Systems supported Intellice Netfin Interface Wide SCSI data path 16-bit Buffer size 1MB Average read seek time Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Ultrail Small Avail /withdrawn date Augulatinited warranty³ 3 years Part number 20L0 Capacity \$\infty\$ S. Connector 80-pit Hot-swap Inclusives ScSI data path 16-bit Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Avail / withdrawn date July of SMART SMA Other features Avail / withdrawn date July of SMART SMA Other features Avail / withdrawn date July of Small / withdrawn date July of Smal	listation M Pro 6889, 6898 inity 3500 e Ultra2 SCSI it / 80MB/sec (multisegmented) ns ms 00 rpm x 1" SL uRT / PFA 12 LVD (ller than 3.5" disks ust 1998 / November 1999 ars 0539	Hot-Swap (Type II tray) PC Server 320, 500, 520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	No Most IntelliStation, 300GL, 300PL Netfinity 3000, 3500, PC Server 3xx Wide Ultra2 SCSI 16-bit / 80MB/sec 1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 > 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Systems supported Intelli Netfii Interface Wide SCSI data path 16-bi Buffer size 1MB Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Ultra: Smal Avail /withdrawn date Augu Limited warranty³ 3 yea Part number 20L0 Capacity > 9.	inity 3500 E Ultra2 SCSI it / 80MB/sec (multisegmented) is ms 00 rpm x 1" SL RT / PFA 12 LVD Iller than 3.5" disks Just 1998 / November 1999 ars 1539 1.1GB 10K-3 Wide Ultra CSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	PC Server 320, 500, 520, 720 SCSI-2 Fast Wide 16-bit / 20MB/sec 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	Most IntelliStation, 300GL, 300PL Netfinity 3000, 3500, PC Server 3xx Wide Ultra2 SCSI 16-bit / 80MB/sec 1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Interface Wide SCSI data path 16-bi Buffer size 1MB Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Ultra: Smal Avail /withdrawn date Limited warranty³ 3 year Part number 20L0 Capacity >< 9. Capacity \$< 9. SConnector 80-pi Hot-swap Inclusystems supported Netfin Unterface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Avail / withdrawn date Limited warranty³ 3 year size and size	e Ultra2 SCSI it / 80MB/sec it / 80MB/sec it (multisegmented) ins ims ims ims ims ims ims ims ims ims im	16-bit / 20MB/sec 7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	Wide Ultra2 SCSI 16-bit / 80MB/sec 1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553
SCSI data path Buffer size Average read seek time Average latency Rotational speed Average latency Rotational speed Form factor (width x height) SMART Other features Limited warranty³ Part number Capacity Capacity SCONNECTOR BO-pi Hot-swap Inclusystems supported Interface SCSI data path Buffer size Average read seek time Average latency Rotational speed Form factor (width x height) SMART Other features Avail / withdrawn date Limited warranty³ SMART Other features Avail / withdrawn date Limited warranty³ A year Average latency SMART Other features Avail / withdrawn date Limited warranty³ A year Average latency SMART Other features Avail / withdrawn date Limited warranty³ A year Average latency SMART Other features Avail / withdrawn date Limited warranty³ A year Average latency A year A y	it / 80MB/sec (multisegmented) is ms 00 rpm x 1" SL uRT / PFA 12 LVD Iller than 3.5" disks ust 1998 / November 1999 ars 0539 1.1GB 10K-3 Wide Ultra 6CSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553
Buffer size 1MB Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Ultra: Smal Avail /withdrawn date Augu Limited warranty³ 3 yea Part number 20L0 Capacity \$\infty\$ \$\mathbf{S}\$ Connector 80-pi Hot-swap Inclusystems supported Netfil Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 3 Limited warranty³ 3 yea Limited warranty³ 3 yea	(multisegmented) ins ims ion rpm ix 1" SL iRT / PFA i2 LVD iller than 3.5" disks iust 1998 / November 1999 ars ions ions ions ions ions ions ions ion	7.5ms or less 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	1MB (multisegmented) 7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553
Average read seek time Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART Other features Ultra: Smal Avail /withdrawn date Limited warranty³ Part number Capacity Capacity SConnector Hot-swap Inclusystems supported Interface SCSI data path Buffer size Average read seek time Average latency Rotational speed Form factor (width x height) 3.5" 3 SMART Other features Avail / withdrawn date Limited warranty³ 3 year Average Netfill SMART Other features Avail / withdrawn date Limited warranty³ 3 year Average Averag	ns ms 20 rpm x 1" SL uRT / PFA 12 LVD Iller than 3.5" disks ust 1998 / November 1999 ars 2539 1.1GB 10K-3 Wide Ultra 3.5SI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 SEXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	7.5ms 4.17ms 7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Ultra: Small Avail /withdrawn date Augu Limited warranty³ 3 year Part number 20L0 Capacity \$\infty\$ 9. Connector 80-pi Hot-swap Inclue Systems supported Netfill Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99m Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 7 Limited warranty³ 3 year	20 rpm x 1" SL xRT / PFA 12 LVD Iller than 3.5" disks ust 1998 / November 1999 ars 20539 2.1GB 10K-3 Wide Ultra CSI Hot-Swap SL HDD in SCA-2 connector rides hot-swap tray inity 5000, 5500, 7000	7200 rpm 3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 >EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	7200 rpm 3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Form factor (width x height) 3.5" 3 SMART SMART SMA Other features Ultrated Small Avail /withdrawn date Limited warranty³ 3 year Part number 20L0 Capacity ≈ 9. Capacity ≈ 9. Connector 80-pi Hot-swap Included Systems supported Netfin Systems supported Netfin Systems supported Netfin Buffer size Average read seek time 5.4m Average latency 2.99m Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMART SMA Other features Avail / withdrawn date Limited warranty³ 3 years small seed 10 years and seek time 5.4m Average latency 2.99m Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMART SMA Other features Avail / withdrawn date Limited warranty³ 3 years	x 1" SL ART / PFA ART / PF	3.5" x 1" SL SMART / PFA December 1998 / December 2000 3 years 36L9803 ** EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	3.5" x 1" SL SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
SMART SMA Other features Ultra: Smal Avail /withdrawn date Limited warranty³ 3 yea Part number 20L0 Capacity \$\infty\$ 9. Connector 80-pi Hot-swap Incluication Systems supported Netfin Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.9m Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 7 Limited warranty³ 3 yea	ART / PFA 12 LVD Iller than 3.5" disks 1998 / November 1999 1999 1999 1999 1999 1999 1999 199	SMART / PFA December 1998 / December 2000 3 years 36L9803 >> EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	SMART / PFA Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 > 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Other features Other features Other features Small Avail /withdrawn date Limited warranty³ Part number Capacity Capacity School Sepant Hot-swap Inclusives Systems supported Interface SCSI data path Buffer size Average read seek time Average latency Rotational speed Form factor (width x height) SMART Other features Avail / withdrawn date Limited warranty³ Support of the	22 LVD Iller than 3.5" disks ust 1998 / November 1999 ars 0539 1.1GB 10K-3 Wide Ultra GCSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000 E Ultra SCSI	December 1998 / December 2000 3 years 36L9803 EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	Ultra2 LVD 12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 > 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Avail /withdrawn date Limited warranty³ 3 yea Part number 20L0 Capacity ≈ 9. S Connector 80-pi Hot-swap Incluication Systems supported Netfin Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99m Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 7 Limited warranty³ 3 yea	LIGB 10K-3 Wide Ultra GCSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	3 years 36L9803	12-20MB/sec sustained data transfer rate March 1999 / September 2000 3 years 20L0553 > 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Avail /withdrawn date Limited warranty³ 3 yea Part number 20L0 Capacity ≈ 9. S Connector 80-pi Hot-swap Inclus Systems supported Netfin Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" x SMART SMA Other features Avail / withdrawn date Limited warranty³ 3 yea	ust 1998 / November 1999 ars 0539 .1GB 10K-3 Wide Ultra CCSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	3 years 36L9803	March 1999 / September 2000 3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Limited warranty³ 3 year Part number 20L0 Capacity ≈ 9. S Connector 80-pi Hot-swap Inclus Systems supported Netfin Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99m Rotational speed 1000 Form factor (width x height) 3.5" x SMART SMA Other features Avail / withdrawn date July x Limited warranty³ 3 year	ars 0539 2.1GB 10K-3 Wide Ultra 6CSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000 a Ultra SCSI	3 years 36L9803	3 years 20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Part number 20L0 Capacity > 9. S Connector 80-pi Hot-swap Inclus Systems supported Netfin Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 3 Limited warranty3 3 year	2.1GB 10K-3 Wide Ultra CCSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	36L9803 → EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	20L0553 ≈ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Capacity S Connector Hot-swap Inclus Systems supported Netfin Interface SCSI data path Buffer size Average read seek time Average latency Rotational speed Form factor (width x height) 3.5" x SMART Other features Avail / withdrawn date Limited warranty³ S S S S S S S S S S S S S S S S S S S	.1GB 10K-3 Wide Ultra GCSI Hot-Swap SL HDD in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000	➤ EXP 9.1GB 10K-3 Wide Ultra SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	 ≫ 9.1GB 10000 rpm Ultra160 SCSI HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Connector 80-pi Hot-swap Inclu Systems supported Netfil Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 7 Limited warranty3 3 year	in SCA-2 connector des hot-swap tray inity 5000, 5500, 7000	SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Connector 80-pi Hot-swap Inclu Systems supported Netfil Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5"; SMART SMA Other features Avail / withdrawn date July 1 Limited warranty3 3 year	in SCA-2 connector des hot-swap tray inity 5000, 5500, 7000	SCSI Hot-Swap HDD 80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	HDD 68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Connector 80-pi Hot-swap Inclu Systems supported Netfil Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 3 Limited warranty3 3 year	in SCA-2 connector ides hot-swap tray inity 5000, 5500, 7000 e Ultra SCSI	80-pin SCA-2 connector Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	68-pin No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Hot-swap Inclusive Systems supported Netfin Netfin Netfin Systems supported Netfin Net	ides hot-swap tray inity 5000, 5500, 7000 e Ultra SCSI	Includes hot-swap tray EXP10, EXP15 Wide Ultra SCSI	No IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Systems supported Netfin Interface SCSI data path Buffer size Average read seek time Average latency Rotational speed Form factor (width x height) SMART Other features Avail / withdrawn date Limited warranty³ Netfin Videa Videa Videa S.4m Videa Videa S.4m	nity 5000, 5500, 7000 e Ultra SCSI	EXP10, EXP15 Wide Ultra SCSI	IntelliStation 6867, 6893, 6868, 6889, 6865, 6866; Netfinity 3500 M10 Ultra160
Interface Wide SCSI data path 16-bi Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" SMART SMA Other features Avail / withdrawn date July 2 Limited warranty3 3 year	e Ultra SCSI	Wide Ultra SCSI	6865, 6866; Netfinity 3500 M10 Ultra160
SCSI data path 16-bit Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 2 Limited warranty3 3 year			Ultra160
SCSI data path 16-bit Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 2 Limited warranty3 3 year			
Buffer size Average read seek time 5.4m Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 2 Limited warranty ³ 3 year			
Average latency 2.99r Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 3 Limited warranty 3 3 year			2MB
Rotational speed 1000 Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 3 Limited warranty 3 3 years	าร	5.4ms	5.0ms
Form factor (width x height) 3.5" 3 SMART SMA Other features Avail / withdrawn date July 1 Limited warranty 3 3 years	ms	2.99ms	3.0ms
SMART SMA Other features Avail / withdrawn date Limited warranty³ 3 yea	00 rpm	10000 rpm	10000 rpm
Other features Avail / withdrawn date Limited warranty ³ July 7 3 yea	x 1" SL	3.5" x 1" SL	3.5" x 1" SL
Avail / withdrawn date July 2 Limited warranty ³ 3 yea	RT/PFA	SMART / PFA	SMART / PFA
Limited warranty ³ 3 year			14-25MB/sec sustained data transfer rate
	1999 / January 2002	July 1999 / December 2000	September 1999 / June 2000
Part number 36L9		3 years	3 years
	9806	36L9809	00N8071
	letfinity 9.1GB Wide Ultra2		
l .	in SCA 2 connector	SCSI Hot-Swap SL HDD	
	in SCA-2 connector ides hot-swap tray	80-pin SCA-2 connector Includes hot-swap tray	
•	nity 5600, 8500R, EXP200	Netfinity 5600, 8500R, EXP200	
Interface Wide	e Ultra2 SCSI	Wide Ultra2 SCSI	
	it / 80MB/sec	16-bit / 80MB/sec	
Buffer size			
Average read seek time 7.5m	ns or less	5.4ms or less	
Average latency 4.17r	ms	2.99ms	
) rpm	10000 rpm	
Form factor (width x height) 3.5"		3.5" x 1" SL	
	ART / PFA	SMART / PFA	
Other features			
	ember 1999 / Dec 2000	September 1999 / December 2000	
Limited warranty ³ 3 year		3 years	
Part number 36L9	A / A A	36L9748	

IIX UltraSCSI Disks (18.2GB) - withdrawn

Capacity	★ 18.2GB ² Wide Ultra SCSI *** *** ** ** ** ** ** ** ** ** ** *		Netfinity 18.2GB Wide Ultra SCSI
	Hot Swap for	Hot Swap SL for	Hot Swap SL for
	PC Server 330	PC Server 330	Netfinity 5000/5500/7000
Interfoce		Wide Ultra SCSI	Wide Ultra SCSI
Interface	Wide Ultra SCSI		
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Buffer size	Varies	Varies	
Average seek time (ms)	8.5ms or less	7.5ms or less	7.5ms or less
Average latency	4.17ms	4.17ms	4.17ms
Rotational speed	7200 rpm	7200 rpm	7200 rpm
Sustained transfer rate			
Form factor (width x height)	3.5" x 1.6" HH	3.5" x 1.0" SL	3.5" x 1.0" SL
SMART / PFA	SMART / PFA	SMART/PFA	SMART / PFA
Head technology	Magneto-resistive	Magneto-resistive	Magneto-resistive
No-ID™ sector format	Yes	Yes	Yes
Other features	Includes hot-swap tray	Includes hot-swap tray	80-pin SCA-2 connector
5 ii. 5 i 5 dia 6 5	(wide body Type III tray)	(wide body Type III tray)	Includes hot-swap tray
Available / withdrawn date	March 1998 / July 1999	February 1999 / December 2000	February 1999 / August 2001
imited warranty ³	•	_	3 years
	3 years	3 years	
Part number	02K0478	02K0439	02K0440
Capacity	≍ 18.2GB		≫ 18.2GB
. ,	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra SCSI
	SCA-2 Hot Swap for	SCA-2 Hot Swap for	for
	Netfinity 5500/7000	Netfinity 5500/7000	IntelliStation M Pro 6898, 6889
ntorfooo	Wide Ultra SCSI	-	,
nterface		Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec	16-bit / 40MB/sec
Average seek time (ms)	8.5ms or less	7.0ms or less	1MB (multi-segmented)
Average latency	4.17ms	2.99ms	7.5ms or less
Rotational speed	7200 rpm	10000 rpm	4.17ms
Sustained transfer rate		19 to 28.8MB/sec	7200 rpm
Form factor (width x height)	3.5" x 1.6" HH	3.5" x 1.6" HH	7.7 to 12.6MB/sec
SMART / PFA	SMART / PFA	SMART / PFA	3.5" x 1.6" HH
Head technology	Magneto-resistive	Magneto-resistive	SMART / PFA
No-ID™ sector format	Yes	Yes	Magneto-resistive
Other features	80-pin SCA-2 connector	80-pin SCA-2 connector	Yes
Other reatures	Includes hot-swap tray	Includes hot-swap tray	68-pin connector
Available / withdrawn date	March 1998 / July 1999	July 1998 / August 1999	July 1998
Limited warranty	3 years	3 years	3 years
Part number	01K8055	01K8503	01K1323
art number		0110303	011(1323
Capacity	≈ 18.2GB	≈ 18.2GB 10K	
	Wide Ultra SCSI	Wide Ultra SCSI	Wide Ultra2 SCSI
		SCA-2 Hot Swap	for
	SCA-2 Hot Swap	SCA-2 Hot Swap (for EXP10/15 exp unit)	for IntelliStation M Pro 6898, 6889
nterface	SCA-2 Hot Swap (for EXP10/15 unit)	(for EXP10/15 exp unit)	IntelliStation M Pro 6898, 6889
	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI	(for EXP10/15 exp unit) Wide Ultra SCSI	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI
SCSI data path / burst rate	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec
SCSI data path / burst rate Average seek time (ms)	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms
SCSI data path / burst rate Average seek time (ms) Average latency	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height)	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height)	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART
Interface SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART 68-pin connector 1MB (multi-segmented)
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART 68-pin connector 1MB (multi-segmented) Ultra2 LVD
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format Other features Available / withdrawn date	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray March 1998 / Aug 2001	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray July 1998 / August 1999	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART 68-pin connector 1MB (multi-segmented) Ultra2 LVD September 1998 / November 1999
SCSI data path / burst rate Average seek time (ms) Average latency Rotational speed Sustained transfer rate Form factor (width x height) SMART / PFA Head technology No-ID™ sector format	SCA-2 Hot Swap (for EXP10/15 unit) Wide Ultra SCSI 16-bit / 40MB/sec 8.5ms or less 4.17ms 7200 rpm 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	(for EXP10/15 exp unit) Wide Ultra SCSI 16-bit / 40MB/sec 7.0ms or less 2.99ms 10000 rpm 19 to 28.8MB/sec 3.5" x 1.6" HH SMART / PFA Magneto-resistive Yes 80-pin SCA-2 connector Includes hot-swap tray	IntelliStation M Pro 6898, 6889 Wide Ultra2 SCSI 16-bit / 80MB/sec 6.2ms 2.99ms 10000 rpm 3.5" x 1.6" HH SMART 68-pin connector 1MB (multi-segmented) Ultra2 LVD

IEM UltraSCSI Disks (18.2GB) - withdrawn

Capacity	18.2GB Wide Ultra2 SCSI HDD	
Connector	68-pin	68-pin
Hot-swap	No	No
Systems supported	Most IntelliStation, 300GL, 300PL,	IntelliStation 6867, 6893, 6868, 6889, 6865, 6866
Cystems supported	Netfinity 3000, 3500, PC Server 3xx	Netfinity 3500 M10
Interface	Wide Ultra2 SCSI	Ultra160 SCSI
SCSI data path	16-bit / 80MB/sec	16-bit / 160MB/sec
Buffer size	1MB (multisegmented)	2MB
Average read seek time	7.5ms	5.0ms
Average latency	4.17ms	3.0ms
Rotational speed	7200 rpm	10000 rpm
Form factor (width x height)		3.5" x 1" SL
SMART	SMART	SMART
Other features	Ultra2 LVD	Ultra2 LVD
	12-20MB/sec sustained data transfer rate	14-25MB/sec sustained data transfer rate
Avail / withdrawn date	March 1999 / September 2000	September 1999 / June 2000
Limited warranty ³	3 years	3 years
Part number	20L0554	00N8072
Capacity	★ 18.2GB 10K-3 Wide Ultra ★ 18.2GB 10K-3 Wide Ultra	⇒ EXP 18.2GB 10K-3 Wide Ultra
Connector	SCSI Hot-Swap SL HDD	SCSI Hot-Swap HDD
Connector	80-pin SCA-2 connector	80-pin SCA-2 connector
Hot-swap	Includes hot-swap tray Netfinity 5000, 5500, 7000	Includes hot-swap tray
Systems supported Interface	Wide Ultra SCSI	EXP10, EXP15 Wide Ultra SCSI
SCSI data path	16-bit / 40MB/sec	16-bit / 40MB/sec
Average read seek time	5.4ms	5.4ms
Average latency	2.99ms	2.99ms
Rotational speed	10000 rpm	10000 rpm
Form factor (width x height)	•	3.5" x 1" SL
SMART	SMART/PFA	SMART/PFA
Other features		
Avail / withdrawn date	July 1999	July 1999 / December 2000
Limited warranty ³	3 years	3 years
Part number	36L9807	36L9810
Capacity	Netfinity 18.2GB Wide Ultra2	≫ Netfinity 18.2GB 10K-3 Wide Ultra2
	SCSI Hot-Swap SL HDD	SCSI Hot-Swap SL HDD
Connector	80-pin SCA-2 connector	80-pin SCA-2 connector
Hot-swap	Includes hot-swap tray	Includes hot-swap tray
Systems supported	Netfinity 5600, 8500R, EXP200	Netfinity 5600, 8500R, EXP200
Interface	Wide Ultra2 SCSI	Wide Ultra2 SCSI
SCSI data path	16-bit / 80MB/sec	16-bit / 80MB/sec
Average latency	7.5ms or less	5.4ms or less
Average latency Rotational speed	4.17ms 7200 rpm	2.99ms 10000 rpm
Form factor (width x height)	•	3.5" x 1" SL
SMART	SMART/PFA	SMART/PFA
Other features	O	- Company (17)
Avail / withdrawn date	September 1999 / December 2000	September 1999 / December 2000
Limited warranty ³	3 years	3 years
Part number	36L9745	36L9749

III UltraSCSI Disks (36.4GB) - withdrawn

Capacity	Netfinity 36.4GB² Wide Ultra SCSI Hot Swap HDD	
Connector	80-pin SCA-2 connector	80-pin SCA-2 connector
Hot-swap	Includes hot-swap tray	Includes hot-swap tray
Systems supported	Netfinity 5000, 5500, 7000	EXP10, EXP15
Interface	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec
Average seek time (ms)	8.0ms or less	8.0ms or less
Average latency	4.17ms	4.17ms
,		7200 rpm
Rotational speed	7200 rpm	7200 ipin 3.5" x 1.6" HH
Form factor (width x height) SMART / PFA	3.5" x 1.6" HH SMART / PFA	
		SMART / PFA Magnete registive
Head technology No-ID™ sector format	Magneto-resistive Yes	Magneto-resistive Yes
	res	res
Other features	March 1000 / Cartambar 0000	Marsh 1000 / Danambar 0000
Available / withdrawn date	March 1999 / September 2000	March 1999 / December 2000
Limited warranty ³	3 years	3 years
Part number	02K0441	02K0442
Capacity		⇒ EXP 36.4GB 10K-3 Wide Ultra
- apaony	SCSI Hot-Swap HDD	SCSI Hot-Swap HDD
Connector	80-pin SCA-2 connector	80-pin SCA-2 connector
Hot-swap	Includes hot-swap tray	Includes hot-swap tray
Systems supported	Netfinity 5000, 5500, 7000	EXP10, EXP 15
Interface	Wide Ultra SCSI	Wide Ultra SCSI
SCSI data path / burst rate	16-bit / 40MB/sec	16-bit / 40MB/sec
Average seek time (ms)	6.0ms or less	6.0ms or less
Average latency	2.99ms	2.99ms
Rotational speed	10000 rpm	10000 rpm
Form factor (width x height)	3.5" x 1.6 " HH	3.5" x 1.6" HH
SMART / PFA	SMART/PFA	SMART/PFA
Other features	SMAITI / I I A	SWAITITIA
Available / withdrawn date	Third quarter 1999 / Sept 2000	Third quarter 1999 / December 2000
Limited warranty ³	3 years	3 years
Part number	36L9808	36L9811
i ait number	3013000	3014011
Capacity	Netfinity 36.4GB Wide Ultra2 SCSI Hot-Swap HDD	➢ Netfinity 36.4GB 10K-3 Wide Ultra2 SCSI Hot-Swap HDD
Connector	80-pin SCA-2 connector	80-pin SCA-2 connector
Hot-swap	Includes hot-swap tray	Includes hot-swap tray
Systems supported	Netfinity 5600, 8500R, EXP200	Netfinity 5600, 8500R, EXP200
Interface	Wide Ultra2 SCSI	Wide Ultra2 SCSI
SCSI data path / burst rate	16-bit / 80MB/sec	16-bit / 80MB/sec
Average seek time (ms)	8.0ms or less	6.0ms or less
Average latency	4.17ms	2.99ms
Rotational speed	7200 rpm	10200 rpm
Form factor (width x height)	3.5" x 1.6" HH	3.5" x 1.6 " HH
SMART / PFA	SMART / PFA	SMART/PFA
Other features	J 11171171	
Available / withdrawn date	October 1999 / December 2000	October 1999 / December 2000
Limited warranty ³	3 years	3 years
Part number	36L9746	36L9750
i dit ildiliboi	55257 40	0020700

- MHz only measures internal clock speed (or bus speed where indicated), not application performance. Many factors affect application performance.
- When referring to hard drive capacity, MB equals one million bytes, GB equals one billion bytes, and TB equals one trillion bytes. Total user-accessible capacity depends on operating environment.
- For terms and conditions or a copy of IBM's limited warranty, call 1 800 772-2227 in the U.S. or 1 800 465-7999 in Canada. Limited warranty includes International Warranty Service in those countries where this product is offered.

IBM and Netfinity are trademarks or registered trademarks of International Business Machines Corporation.

Microsoft is a trademark or registered trademark of Microsoft Corporation. Other trademarks, registered trademarks, company's product and service names are the properties of their respective companies.

IBM reserves the right to alter specifications and other product information without prior notice.

This publication was produced in the United States. IBM may not offer products, services or features discussed in this document in other countries and the information is subject to change without notice. Consult your local IBM representative for information on the products, services and features available in your area. International Business Machines provides this publication "as is" without warranty of any kind, either expressed of implied, including but not limited to, the implied warranties of merchantability or fitness for a particular purpose. Some jurisdictions do not allow disclaimer of express of implied warranties in certain transactions, therefore, this statement may not apply to you.



© Copyright International Business Machines Corporation, 2003. All rights reserved

IBM Personal Computing Division Department WY3A 3039 Cornwallis Road Research Triangle Park, NC 27709

July 2003 scwbook.pdf