June 1999

Server Paper Configurator Guide

IBM Netfinity Servers

Racks

Storage Enclosures

Fibre Channel Solutions

Options

IBM Netfinity ServerProven

e-business tools

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Canada		
Audience	**Where to go**	**How to get**
Server Paper Configurator Guide		
Customers	http://www.pc.ibm.com/ca/netfinity/tech_library.html	Select "Technical Info."
Business Partners	http://www.ibm.com/pc/partner/ca	Select Sales Tools and then Marketing Essentials. User ID and Password required.
IBM Employees	Marketing Essentials	By Brand category --> IBM Netfinity or By Brand category --> PC Configurator
Feedback	http://www.ibm.com/pc/partner/ca/feedback.html	
Netfinity Rack Configurator		
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Latin America		
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Customers	http://www.pc.ibm.com/us/netfinity/tech_library.html	Select "Configuration Tools"
Business Partners	http://www.la.pc.ibm.com (Contact country channel representative for PIN number or to request a CD)	Spanish - Select "Asociados" then "Herramientas de Ventas" and finally, "Marketing Essentials". User ID and Password are required. Portuguese - Brazil select "Portugues" then "Business Partners" and finally "Produtos e Servicos". User ID and Password are required.
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IBM Employees	Marketing Essentials	By Brand category --> IBM Netfinity or By Brand category --> PC Configurator

1. ConfigXpert has features that are unique to a geographical region and should therefore be download from a source intended for use in that region.

See Next Page for United States and Additional URLs

United States

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Netfinity Rack Configurator		
Customers	http://www.pc.ibm.com/us/netfinity/tech_library.html	Select "Configuration Tools"
Business Partners	http://www.ibm.com/pc/partner/us/tools_config.html	Select Sales Tools and then Marketing Essentials. User ID and Password required.
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Feedback	E-mail ibm_netfinity_rack_configurator@vnet.ibm.com	
ConfigXpert[1] (updated bi-weekly)		
Customers	http://www.ibm.com/pc/us/configxpert	(US customers only) PIN# required. To request PIN#, e-mail name, company, telephone number and e-mail address to: pcconfig@us.ibm.com
Business Partners	http://www.ibm.com/pc/partner/us/tools_config.html	User ID and Password required.
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Feedback	E-mail pcconfig@us.ibm.com	
Latest Product & Technical Information		
Customers	http://www.ibm.com/pc/us/netfinity or call 1-800-772-2227	
Business Partners	http://www.ibm.com/pc/partner/us/products.html or call the 1-800-426-7763	User ID and Password required
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Additional URLs

Audience	Where to go	How to get
Technical spec sheets (PSREF)	http://www.pc.ibm.com/us/netfinity/tech_library.html	Select "Technical spec sheets(PSREF)"
Clustering (US, LA)	http://www.pc.ibm.com/us/netfinity/clustering.html	Select desired category or Server
Clustering (CAN)	http://www.pc.ibm.com/ca/netfinity/clustering.htm	Select desired category or Server
Benchmark Results	http://www.ibm.com/pc/us/techlink/srvperf.html	Select desired category or Server
Options/NOS/Server compatibility	http://www.ibm.com/pc/us/compat	From pulldown select desired category
NOS - Hot-Plug/Failover Support	http://www.ibm.com/pc/us/compat	From pulldown select "Netfinity Hotplug PCI and Failover Info".
IBM SSD Storage Products	http://www.ibm.com/storage	
Adobe® Acrobat® Reader V 3.0	http://www.adobe.com/prodindex/acrobat/readstep.html	Follow instrunctions.
Adv. Sys. Mgmt. Adapter Firmware	http://www.pc.ibm.com/us/netfinity	Select "Support", "Family", "Model", "Downloadable files" and "Advanced Systems Management".
Flash BIOS Updates	http://www.ibm.com/pc/support	Enter machine "Type-Model" in Quick Path. Select "Downloadable files then "BIOS".

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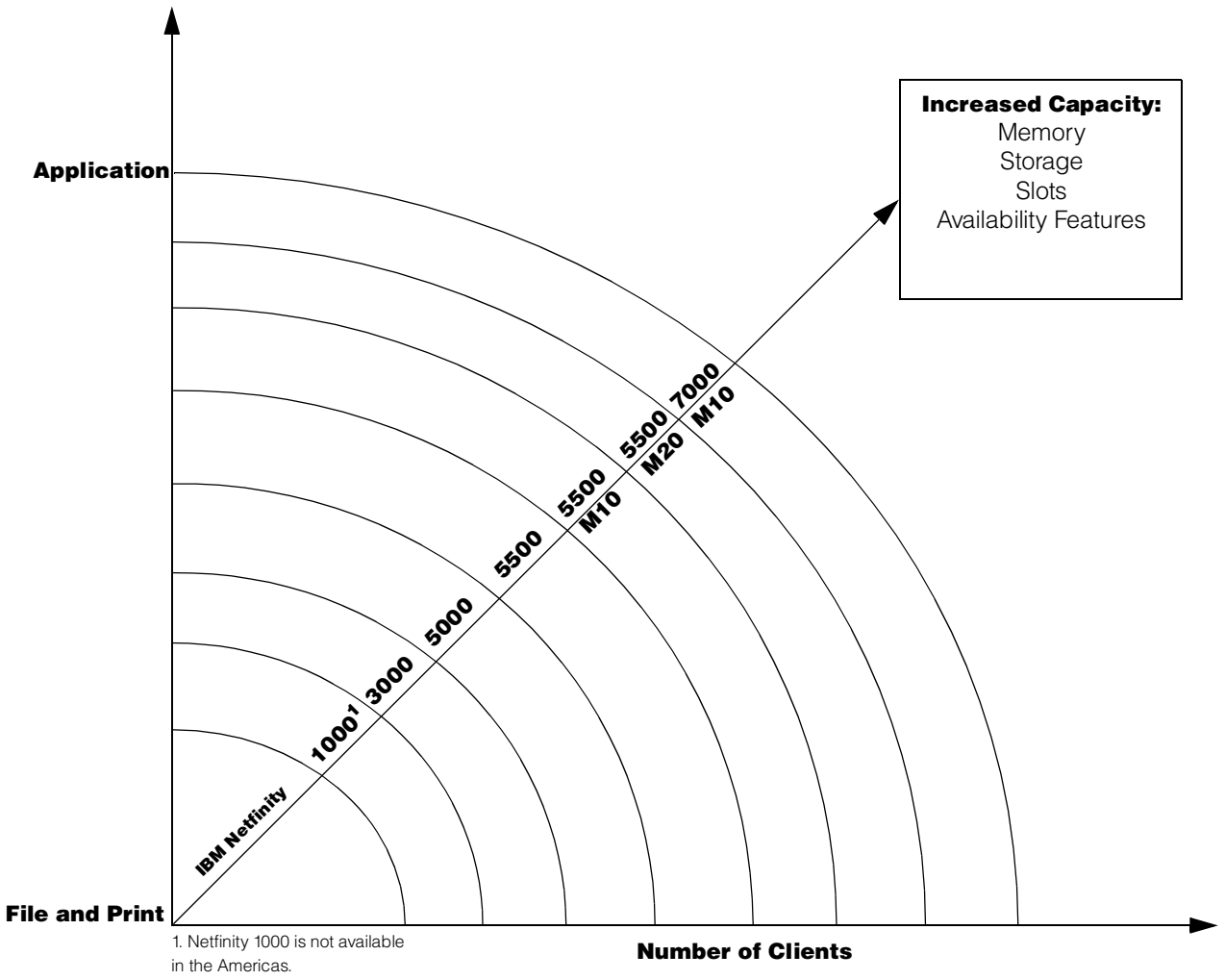
The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Server Product Positioning



1. Netfinity 1000 is not available in the Americas.

When in a competitive situation, this table suggests the appropriate IBM PC Server to bid against other vendors' equipment. However, as an IBM business partner, you may determine that customer specific requirements may make an alternative IBM solution a better choice.

Relative Competitive Positioning	Entry		Mainstream				High End
IBM 1st choice	Netfinity 1000[1]	Netfinity 3000	Netfinity 5000	Netfinity 5500	Netfinity 5500 M10	Netfinity 5500 M20	Netfinity 7000 M10
IBM 2nd choice	Netfinity 3000	Netfinity 5000	Netfinity 5500	Netfinity 5500 M10	Netfinity 5500 M20	Netfinity 7000 M10	RS/6000 AS/400
Compaq	NeoServer	ProSignia 200, 720 ProLiant 400	ProLiant 1850R, 1600, 1600R	ProLiant 3000, 3000R	ProLiant 3000, 3000R, 5500, 5500R	ProLiant 5500, 5500R, 6500	ProLiant 6500/ 7000
HP	NetServer E60	NetServer E60	NetServer LHII, LH Pro, LC3	NetServer LH3	NetServer LH3, LH4	NetServer LH4/4r	NetServer LXr, LXr Pro
Dell	PowerEdge 1300	PowerEdge 1300	PowerEdge 2300, 4350	PowerEdge 4300, 4350	PowerEdge 4300, 6350	PowerEdge 6300, 6350	PowerEdge 6300

1. Netfinity 1000 is not available in the Americas.

Server Selection Guidance

This graph represents general guidelines for selecting the appropriate server based on the number of users that can be supported in a particular application environment. This chart is for general guidance since each customer environment is unique and is unlikely to be precisely represented by any of the specific applications in the chart, but by using the chart, a reasonable approximation can be derived. External Storage Units are utilized when internal capacities are exceeded. Utilize the chart by following the steps outlined on the following page. These are not published benchmark results. Access http://www.ibm.com/pc/us/techlink/srvperf.html to obtain benchmark data.

Application/ Expectation of Maximum # of Users		IBM Netfinity 1000[3] Uni-Pentium III 500 MHz/ 512KB	IBM Netfinity 3000 Uni-Pentium III 500 MHz/ 512KB	IBM Netfinity 5000 Dual Pentium III 500MHz/ 512KB	IBM Netfinity 5500 Dual Pentium III 500MHz/ 512KB	IBM Netfinity 5500 M10 Dual Pentium II Xeon 450MHz/ 1024KB	IBM Netfinity 5500 M20 Quad Pentium III Xeon 500MHz/ 1024KB	IBM Netfinity 7000 M10 Quad Pentium III Xeon 500MHz/ 2048KB
DB Transaction Processing Select, Update and Delete; Does not include image or Decision Support	**# of Users**	**950**	**950**	**2300**	**2400**	**2875**	**5150**	**5450**
	# of processors	1	1	2	2	2	4	4
	Memory (MB)	384	384	1GB	1GB	2GB	4GB	4GB
	# Hard Disk Drives	4 to 8	4 to 8	24 to 36	24 to 36	24 to 36	80 to 140	80 to 140
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	≥3	≥ 3	≥3	≥4	≥5
	#Network Connections	1	1	1	1	1	2 to 3	2 to 3
File and Print Application is stored Locally. (For server stored applications - cut number of users in half).	**# of Users**	**1000**	**1000**	**2000**	**2000**	**2400**	**2500**	**5000**
	# of Processors	1	1	2	2	2	2	2
	Memory (MB)	512	512	1GB	1GB	1 to 2GB	1 to 2GB	3 to 4GB
	# Hard Disk Drives	3 to 4	3 to 4	16 to 24	16 to 24	20 to 30	20 to 30	50 to 90
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	2	2	2	2	≥4
	# 100Mbps Ethernet Connections	≥ 2	≥ 2	4	4	4	4	8
Lotus Notes 10% Power Users 40% Mail 50% Mail & DB	**# of Users**	**525**	**525**	**1300**	**1425**	**1900**	**3350**	**3500**
	# of Processors	1	1	2	2	2	4	4
	Memory (MB)	384	384	1GB	1GB	2GB	3GB	3GB
	# Hard Disk Drives	3 to 4	3 to 4	18	18	10 to 20	20 to 30	20 to 30
	# RAID Adapters	≥ 1 SCSI	≥ 1 SCSI	1	1	2	2	2
	# Network Connections	≥ 1	≥ 1	≥2	≥ 2	≥1	≥1	≥1
SAP Distributed Ver 3.1x Processing Sales and Distribution Application (Minimum of 16-20 Servers)	**# of Users**	-	-	-	-	**1275**	**3050**	**3300**
	# of Processors	-	-	-	-	2	4	4
	Memory (MB)	-	-	-	-	1GB	2-4GB	≥4GB
	# Hard Disk Drives	N/A	N/A	N/A	N/A	24 to 36	48 to 60	48 to 60
	# RAID Adapters	-	-	-	-	≥2	≥3	≥3
	# Network Connections	-	-	-	-	1	1	1
SAP Central Version 4.x Sales and Distribution Application (One Server)	**# Users**	-	-	**90**	**95**	**93**	**200**	**212**
	# Processors	-	-	2	2	2	4	4
	Memory (MB)	-	-	1GB	1GB	1GB	≥2GB	≥2GB
	# Hard Disk Drives	N/A	N/A	12 to 24	12 to 24	12 to 24	24 to 36	24 to 36
	# RAID Adapters	-	-	≥1	≥ 1	≥1	≥2	≥2
	# Network Connections	-	-	1	1	1	1	1
High Availability Features	Hot-Swap HDD Bays	-	-	X	X	X	X	X
	Hot-Plug PCI Slots	-	-	-	X	X	X	X
	Hot-Swap Power	-	-	X	X	X	X	X
	Hot-Swap Fans	-	-	-	X	X	X	X
	RAID	Opt.	Opt.	Opt.	X	X	X	Opt.
	Clustering Support	-	-	X	X	X	X	X
	Sys. Mgt. Processor	Opt.	Opt.	X	X	X	X	X
Other Distinquishing Features	Max # Processors	1	1	2	2	2	4	4
	Max Memory (MB)	768	768	2GB	1GB	2GB	4GB	8GB
	Max Int. Storage (GB)	72.8	72.8	91	109, 473[1]	109, 473[1]	109, 473[1]	72.8
	Max Int. Storage (GB) with Int. Tape drive	54.6	54.6	91	109, 473[1]	109, 473[1]	109, 473[1]	N/A
	Available PCI Slots	2	2	6	6	6	5	12
	19" Rack Models	-	-	X	X	X	X	X
	NetBAY3 Support	-	-	-	X	X	X	X[2]

1. With a single Netfinity EXP15 Storage unit installed in the standard NetBAY3 included with tower models.
2. With a Rack-to-Tower Conversion Kit installed.
3. Netfinity 1000 is not available in the Americas.

Procedure for Server Selection Guidance Chart

File and Print numbers are Novell Netware-based with all others based on Microsoft Windows NT. Other Networking Operating System (NOS) results could vary.
Extensive SAP sizings are available from IBM/SAP Competency Centers. Contact your IBM Marketing Representative for additional information.

Step 1: Determine which application (row) most closely represents the customer's environment.
Step 2: Move from left to right along the row (chosen in Step 1) noting which columns contain numbers that are equal to or greater than the maximum customer's planned number of users.
Step 3: Move up the columns (chosen in Step 2) to the top row to determine which IBM Netfinity or PC Servers should be considered as possible solutions.
Step 4: Evaluate other features such as storage, memory capacity, high availability components, number of available expansion slots, etc., which are unique to each server, in order to determine which is the most appropriate to recommend.
For your reference, configuration information corresponding to the number of users is also provided.

IBM Netfinity 1000 Configurator

Part Number	Processor Speed (MHz)	L2 ECC Cache. (KB)	Memory: std./max. (MB), 100MHz	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	CD-ROM (IDE)	Slots: total, available	Bays: total, available	Ethernet (Mbps)	Memory Type
8477-11Y[4]	400[2]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[1]	6, 5	6, 4	10/100	ECC SDRAM
8477-21Y[4]	500[3]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[1]	6, 5	6, 4	10/100	ECC SDRAM

1. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
2. Intel Pentium II processor with 100MHz access to memory.
3. Intel Pentium III processor with 100MHz access to memory.
4. Netfinity 1000 is not available in the Americas.

Netfinity 1000 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	Processor Upgrade Support[1]
36L9673	Netfinity 500MHz/512KB Upgrade with Pentium III Processor	All 1xY

1. Requires removal of the standard processor. A maximum of one processor may be installed. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 1000 Memory

DIMM Socket
DIMM Socket
DIMM Socket

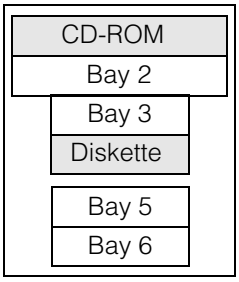
Part Numbers	Memory Description
01K1133	32MB 100MHz ECC SDRAM DIMM
01K1130	64MB 100MHz ECC SDRAM DIMM
01K1131	128MB 100MHz ECC SDRAM DIMM
01K1132	256MB 100MHz ECC SDRAM Registered RDIMM[1]

1. P/N 01K1132 is a registered DIMM and is not compatible with 01K1130, 01K1131, or 01K1133. Installation of this RDIMM requires replacement of the standard DIMM.

Total Memory	All Models
32MB	N/A
64MB	64MB DIMM Standard
128MB	1 x 01K1130
192MB	1 x 01K1131
256MB	1 x 01K1131, 1 x 01K1130
320MB	2 x 01K1131
384MB	3 x 01K1131[1]
512MB	2 x 01K1132[1]
768MB (max)	3 x 01K1132[1]

This table does not represent all possible memory configurations.
1. Replace standard DIMM.

Netfinity 1000 Hard Disk Drive (HDD) Storage



Total Internal Disk Storage[1]	All Models
0GB	Standard
4.5GB	1 x 01K1327
9.1GB	1 x 20L0553[2]
13.6GB	1 x 20L0553[2], 1 x 01K1327
18.1GB	4 x 01K1327
22.7GB	1 x 20L0554, 1 x 01K1327
27.3GB	3 x 20L0553[2]
31.8GB	3 x 20L0553[2], 1 x 01K1327
36.4GB	2 x 20L0554
45.5GB	2 x 20L0554, 1 x 20L0553[2]
54.6GB	3 x 20L0554
63.7GB	3 x 20L0554, 1 x 20L0553[2]
72.8GB (max)	4 x 20L0554

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.
2. Either 01K1328 or 20L0553 may be utilized.3.

Bays	Form Factor	Height	Front Access	Usage
1	5.25"	HH	yes	IDE CD-ROM
2	5.25"[1]	HH	yes	open
3	3.5"	SL	yes	open
4	3.5"	SL	yes	diskette
5	3.5"	SL[2]	no	open
6	3.5"	SL[2]	no	open

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" devices.
2. Two slim-line bays can be combined to support a single half-high device.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
Internal Hard Disk Drives (HDD)					
01K1327	IBM 4.5GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
01K1328	IBM 9.1GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
20L0553	IBM 9.1GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4
20L0554	IBM 18.2GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4
External Storage Expansion Units[2]		Form Factor			
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower			
3518001	IBM PC Server Enterprise Expansion Tower	Tower			

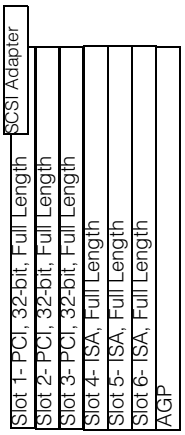
1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra-2 device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.

Internal SCSI Cabling

Netfinity 1000 systems have an IBM PCI Fast/Wide Ultra SCSI Adapter and support up to four internal SCSI devices through the 16-bit internal connector or 15 external SCSI devices through the 16-bit external 68-pin High Density connector; however, when internal SCSI devices are installed to the internal connector, only one SCSI device can be supported from the external connector. All models are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end. The other end is attached to the internal 68-pin single-ended connector of the SCSI adapter. On the drive models, the hard disk drive (HDD) is attached to the cable connector closest to the active terminator. On open bay models the first disk drive installed should be attached in the same manner. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.

Netfinity 1000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
	Storage Controllers[1]			
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[2]	Full	32-bit	3
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[3]	Full	32/64-bit	3
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[4]	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1, 2, 3
	Networking[5]			
	Ethernet			
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1, 2, 3
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1, 2, 3
34L0301	Netfinity Gigabit Ethernet SX Adapter		32/64-bit	1, 2, 3
	Token Ring			
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1, 2, 3
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1, 2, 3
	Communications			
7852400	External V.34 Data/Fax Modem[6]	-	-	
37L1414	Serial I/O SST8P DB Adapter[7]	Half	32-bit	1, 2, 3
37L1415	Serial I/O SST16P RJ Adapter[7]	Half	32-bit	1, 2, 3
37L1423	Serial I/O SST16P DB Adapter[7]	Half	32-bit	1, 2, 3
	Systems Management[8]			
94G7578	PC Server Advanced Systems Management Adapter	Full	ISA	4, 5, 6
94G5571	Advanced Systems Management Power Unit[9]	-	-	-



1. Netfinity1000 includes a single Wide Ultra SCSI PCI adapter.
2. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external LVDS SCSI channel.
3. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and 2 external LVDS SCSI channels. The internal channel can be configured for external usage providing a total of 3 external LVDS SCSI channels.
4. Installs on ServeRAID-3H (P/N 01K7207) to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
5. Netfinity 1000 has an integrated 10/100PCI Ethernet Controller.
6. Due to homologation variances, modem availability may differ by country.
7. See Appendix E for details on Serial I/O options and configuration limitations.
8. Netfinity 1000 provides the following integrated system management features - Vital Product Data (VPD) plus thermal, voltage, and fan sensors. For additional functions, optional PC Server Advanced Systems Management (P/N 94G7578) may be utilized. To enable the adapter's Automated Restart and Alerting as well as Remote Power On/Off features, Advanced Systems Management Power Unit (P/N 94G5571) is required.
9. Provides continuous power to the PC Server Advanced Systems Management Adapter (P/N 94G7578) even when the system is powered off.

Netfinity 1000 Power, Monitor & Accessories

Part Number	Description
	Power[1]
	Uninterruptible Power Supply (UPS)[2]
94G3134	APC Smart-UPS 700 (32 min. runtime at 160 VA)
94G3135	APC Smart-UPS 1000 (51 min. runtime at 160 VA)
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
6549AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

1.Netfinity 1000 includes a 330 W voltage sensing power supply.
2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

Netfinity 1000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures[1]
01K1282	IBM12/24GB DDS/3 4mm Internal Tape Drive	2	8	3.5" HH or 5.25" HH	Y[3]	Y	3510020
06H9716	IBM 4/8GB TR4 Internal SCSI Tape Drive[2]	2, 3	8	3.5" SL or 5.25" HH	Y[3]	N	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	2, 3	8	3.5" SL or 5.25" HH	Y[3]	Y	3510020
	Associated Options						
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	-
36L9636	Netfinity Two-Drop Internal SCSI Cable[5]	-	16	Internal	Y	N	-
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[4]	-	8/16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.
2. SCSI 68-pin to 50-pin Converter (P/N 32G3925) is required unless installed in a 3510020.
3. Tape drive is capable of self termination.
4. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 1000 when the internal hard disk drives are attached to a RAID controller

NOTE: SCSI support is provided by system unit onboard (standard) controller (no RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Workgroup Intranet Server

Description	Quantity	Part Number
IBM Netfinity 1000 (Pentium III 500/64MB/0GB)	1	8477-21Y
64MB 100MHz ECC SDRAM DIMM [1]	1	01K1130
IBM 9.1GB Wide Ultra-2 SCSI HDD	3	20L0553
IBM 10/20 GB NS Internal SCSI Tape Drive	1	01K1319
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1000	1	94G3135

1. For a total of 128MB of system memory.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider(ISP), instead of many clients like a file server does.

With this in mind, the IBM Netfinity 1000 was selected to provide an affordable price point for the growing Internet server market with Pentium III processing, 128MB of system memory (expandable to 768MB), integrated 10/100 ethernet controller, and high-performance storage, and power protection with an APC Smart-UPS. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

File and Print Server

Description	Quantity	Part Number
IBM Netfinity 1000 (Pentium II 400/64MB/0GB)	1	8477-11Y
64MB 100MHz ECC SDRAM DIMM[1]	1	01K1130
IBM 4.51GB Wide Ultra SCSI HDD 7200RPM	2	01K1327
IBM 10/20 GB NS Internal SCSI Tape Drive	1	01K1319
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 700	1	94G3134

1. For a total of 128MB of system memory.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 50 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 1000 with 96MB of memory and 9GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional internal storage expansion still available. Demanding network traffic is effectively handled by the standard 100Mbps Ethernet connection.
This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected from power surges and outages.

IBM Netfinity 3000 Configurator

Part Number	Withdrawal Date (mmddyy)[6]	Processor Speed (MHz)	L2 ECC Cache. (KB)	Memory: std./max. (MB), 100MHz	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	CD-ROM (IDE)	Slots: total, available	Bays: total, available	Ethernet (Mbps)	Memory Type
8476-15U	022699	300[3]	512	32/768	Tower	-	72.8	PCI Adapter	32X-14X[2]	6, 5	6, 4	10/100	ECC SDRAM
8476-16U	022699	300[3]	512	64/768	Tower	4.5, 7200	72.8[1]	PCI Adapter	32X-14X[2]	6, 5	6, 3	10/100	ECC SDRAM
8476-20U	043099	350[4]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[2]	6, 5	6, 4	10/100	ECC SDRAM
8476-21U	043099	350[4]	512	64/768	Tower	4.5, 7200	72.8[1]	PCI Adapter	32X-14X[2]	6, 5	6, 3	10/100	ECC SDRAM
8476-30U	-	400[4]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[2]	6, 5	6, 4	10/100	ECC SDRAM
8476-31U	-	400[4]	512	64/768	Tower	9.1, 7200	72.8[1]	PCI Adapter	32X-14X[2]	6, 5	6, 3	10/100	ECC SDRAM
8476-40U	-	450[4]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[2]	6, 5	6, 4	10/100	ECC SDRAM
8476-41U	-	450[4]	512	64/768	Tower	9.1, 7200	72.8[1]	PCI Adapter	32X-14X[2]	6, 5	6, 3	10/100	ECC SDRAM
8476-50U		500[5]	512	64/768	Tower	-	72.8	PCI Adapter	32X-14X[2]	6, 5	6, 4	10/100	ECC SDRAM
8476-51U		500[5]	512	64/768	Tower	9.1, 7200	72.8[1]	PCI Adapter	32X-14X[2]	6, 5	6, 3	10/100	ECC SDRAM

1. Maximum internal capacities assume replacement of standard hard disk drives with the largest supported IBM hard disk drives.
2. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Intel Pentium II processor with 66MHz access to memory.
4. Intel Pentium II processor with 100MHz access to memory.
5. Intel Pentium III processor with 100MHz access to memory.
6. Not available from IBM after this date. Business Partner inventory may be available.

Netfinity 3000 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	Processor Upgrade Support[1]
10L5886	Netfinity 300MHz Upgrade with Pentium II Processor	10U, 11U
10L5883	Netfinity 350/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 1xU
10L5884	Netfinity 400/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 1...2xU
10L5900	Netfinity 450/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 1...3xU
36L9673	Netfinity 500MHz/512KB Upgrade with Pentium III Processor	All 1...4xU

1.Requires removal of the standard processor. A maximum of one processor may be installed. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 3000 Memory

DIMM Socket
DIMM Socket
DIMM Socket

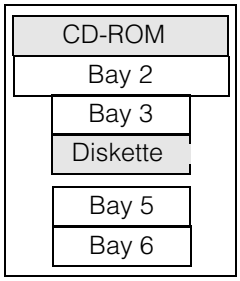
Part Numbers	Memory Description
01K1133	32MB 100MHz ECC SDRAM DIMM
01K1130	64MB 100MHz ECC SDRAM DIMM
01K1131	128MB 100MHz ECC SDRAM DIMM
01K1132	256MB 100MHz ECC SDRAM RDIMM[1]

1. 01K1132 is a registered DIMM and is not compatible with 01K1130, 01K1131, or 01K1133. Installation of this RDIMM requires replacement of the standard DIMM.

Total Memory	Model 15U	Models 16U, 2xU, 3xU, 4xU, 5xU
32MB	32MB DIMM Standard	N/A
64MB	1 x 01K1133	64MB DIMM Standard
128MB	1 x 01K1133, 1 x 01K1130	1 x 01K1130
192MB	1 x 01K1131, 1 x 01K1133	1 x 01K1131
256MB	1 x 01K1132[1]	1 x 01K1131, 1 x 01K1130
320MB	-	2 x 01K1131
384MB	3 x 01K1131[1]	3 x 01K1131[1]
512MB	2 x 01K1132[1]	2 x 01K1132[1]
768MB (max)	3 x 01K1132[1]	3 x 01K1132[1]

This table does not represent all possible memory configurations.
1. Replace standard DIMM.

Netfinity 3000 Hard Disk Drive (HDD) Storage



Total Internal Disk Storage[1]	Models 15U, 20U, 30U, 40U, 50U	Models 16U, 21U	Models 31U, 41U, 51U
0GB	Standard	N/A	N/A
4.5GB	1 x 01K1327	Standard	N/A
9.1GB	1 x 20L0553[3]	1 x 01K1327	Standard
13.6GB	1 x 20L0553[3], 1 x 01K1327	1 x 20L0553[3]	1 x 01K1327
18.1GB	4 x 01K1327	3 x 01K1327	1 x 20L0553[3]
22.7GB	1 x 20L0554, 1 x 01K1327	1 x 20L0554	1 x 20L0553[3], 1 x 01K1327
27.3GB	3 x 20L0553[3]	1 x 20L0554, 1 x 01K1327	1 x 20L0554
31.8GB	3 x 20L0553[3], 1 x 01K1327	3 x 20L0553[3]	1 x 20L0554, 1 x 01K1327
36.4GB	2 x 20L0554	1 x 01K1327, 1 x 20L0553[3], 1 x 20L0554	3 x 20L0553[3]
45.5GB	2 x 20L0554, 1 x 20L0553[3]	1 x 01K1327, 2 x 20L0554	2 x 20L0554
54.6GB	3 x 20L0554	-	1 x 20L0553[3], 2 x 20L0554
63.7GB	3 x 20L0554, 1 x 20L0553[3]	3 x 20L0554, 1 x 20L0553[2, 3]	3 x 20L0554
72.8GB (max)	4 x 20L0554	4 x 20L0554[2]	4 x 20L0554[2]

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.
2. Requires replacement of standard hard disk drive with largest optional supported hard disk drive.
3. Either 01K1328 or 20L0553 may be utilized.

Bays	Form Factor	Height	Front Access	Usage
1	5.25"	HH	yes	IDE CD-ROM
2	5.25"[1]	HH	yes	open
3	3.5"	SL	yes	open
4	3.5"	SL	yes	diskette
5	3.5"	SL[2]	no	open
6	3.5"	SL[2]	no	HDD on Drive Models

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" devices.
2. Two slim-line bays can be combined to support a single half-high device.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
	Internal Hard Disk Drives (HDD)				
01K1327	IBM 4.5GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
01K1328	IBM 9.1GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
20L0553	IBM 9.1GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4
20L0554	IBM 18.2GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4
	External Storage Expansion Units[2]	**Form Factor**			
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower			
3518001	IBM PC Server Enterprise Expansion Tower	Tower			

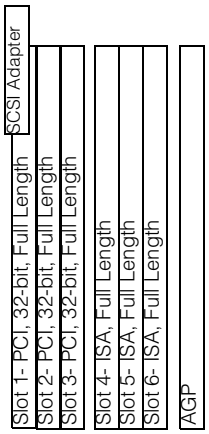
1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra-2 device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.

Internal SCSI Cabling

Netfinity 3000 systems have an IBM PCI Fast/Wide Ultra SCSI Adapter and support up to four internal SCSI devices through the 16-bit internal connector or 15 external SCSI devices through the 16-bit external 68-pin High Density connector; however, when internal SCSI devices are installed to the internal connector, only one SCSI device can be supported from the external connector. All models are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end. The other end is attached to the internal 68-pin single-ended connector of the SCSI adapter. On the drive models, the hard disk drive (HDD) is attached to the cable connector closest to the active terminator. On open bay models the first disk drive installed should be attached in the same manner. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group

Netfinity 3000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
	Storage Controllers[1]			
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[2]	Full	32-bit	3
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[3]	Full	32/64-bit	3
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[4]	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1, 2, 3
	Networking[5]			
	Ethernet			
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1, 2, 3
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1, 2, 3
34L0301	Netfinity Gigabit Ethernet SX Adapter		32/64-bit	1, 2, 3
	Token Ring			
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1, 2, 3
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1, 2, 3
	Communications			
7852400	External V.34 Data/Fax Modem[6]	-	-	
37L1414	Serial I/O SST8P DB Adapter[7]	Half	32-bit	1, 2, 3
37L1415	Serial I/O SST16P RJ Adapter[7]	Half	32-bit	1, 2, 3
37L1423	Serial I/O SST16P DB Adapter[7]	Half	32-bit	1, 2, 3
	Systems Management[8]			
94G7578	PC Server Advanced Systems Management Adapter	Full	ISA	4, 5, 6
94G5571	Advanced Systems Management Power Unit[9]	-	-	-



1. Netfinity 3000 includes a single Wide Ultra SCSI PCI adapter.
2. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or external LVDS SCSI channel.
3. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and 2 external LVDS SCSI channels. The internal channel can be configured for external usage providing a total of 3 external LVDS SCSI channels.
4. Installs on ServeRAID-3H (P/N 01K7207) to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
5. Netfinity 3000 has an integrated 10/100 PCI Ethernet Controller.
6. Due to homologation variances, modem availability may differ by country.
7. See Appendix E for details on Serial I/O options and configuration limitations.
8. Netfinity 3000 provides the following integrated system management features - Vital Product Data (VPD) plus thermal, voltage and fan sensors. For additional functions, optional PC Server Advanced Systems Management Adapter (P/N 94G7578) may be utilized. To enable the adapter's Automated Restart and Alerting as well as Remote Power On/Off features, Advanced Systems Management Power Unit (P/N 94G5571) is required.
9. Provides continuous power to the PC Server Advanced Systems Management Adapter (P/N 94G7578) even when the system is powered off.

Netfinity 3000 Power Monitor & Accessories

Part Number	Description
	Power[1]
	Uninterruptable Power Supply (UPS)[2]
94G3134	APC Smart-UPS 700 (32 min. runtime at 160 VA)
94G3135	APC Smart-UPS 1000 (51 min. runtime at 160 VA)
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

1. Netfinity 3000 includes a 330 W voltage sensing power supply.
2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

Netfinity 3000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures[1]
01K1282	IBM12/24GB DDS/3 4mm Internal Tape Drive	2	8	3.5" HH or 5.25" HH	Y[3]	Y	3510020
06H9716	IBM 4/8GB TR4 Internal SCSI Tape Drive[2]	2, 3	8	3.5" SL or 5.25" HH	Y[3]	N	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	2, 3	8	3.5" SL or 5.25" HH	Y[3]	Y	3510020
	Associated Options						
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	-
36L9636	Netfinity Two-Drop Internal SCSI Cable[5]	-	16	Internal	Y	N	-
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[4]	-	8/16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.
2. SCSI 68-pin to 50-pin Converter (P/N 32G3925) is required unless installed in a 3510020.
3. Tape drive is capable of self termination.
4. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 3000 when the internal hard disk drives are attached to a RAID controller

NOTE: SCSI support is provided by system unit onboard (standard) controller (no RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Workgroup Intranet Server

Description	Quantity	Part Number
IBM Netfinity 3000 (Pentium III 500/64MB/9.1GB)	1	8476-51U
64MB 100MHz ECC SDRAM DIMM [1]	1	01K1130
IBM 9.1GB Wide Ultra-2 SCSI HDD	2	20L0553
IBM 10/20 GB NS Internal SCSI Tape Drive	1	01K1319
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1000	1	94G3135

1. For a total of 128MB of system memory.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet Service Provider(ISP), instead of many clients like a file server does.

With this in mind, the IBM Netfinity 3000 was selected to provide an affordable price point for the growing Internet server market with Pentium III processing, 128MB of system memory (expandable to 768MB), integrated 10/100 ethernet controller, and high-performance storage, and power protection with an APC Smart-UPS. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

File and Print Server

Description	Quantity	Part Number
IBM Netfinity 3000 (Pentium II 400/64MB/0GB)	1	8476-30U
64MB 100MHz ECC SDRAM DIMM[1]	1	01K1130
IBM 4.51GB Wide Ultra SCSI HDD 7200RPM	2	01K1327
IBM 10/20 GB NS Internal SCSI Tape Drive	1	01K1319
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 700	1	94G3134

1. For a total of 128MB of system memory.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 50 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.
The sample configuration above consists of an IBM Netfinity 3000 with 96MB of memory and 9GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional internal storage expansion still available. Demanding network traffic is effectively handled by the standard 100Mbps Ethernet connection.
This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected from power surges and outages.

IBM Netfinity 3500 Configurator

Part Number	Withdrawal Date (mmddyy)[1]	Processor Type/Speed (MHz)	L2 ECC Cache. (KB)	Memory: std./max. (MB), speed (MHz)	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Hard Drive Controller Type	Slots: total, available	Bays: total, available	Ethernet (Mbps)	Memory Type
8644-30U	022699	Pentium II/333	512	64/512, 66	-	72.8[2]	Dual Channel Wide Ultra SCSI	6, 5	6, 4	10/ 100	ECC SDRAM

1. Not available from IBM after this date. Business Partner inventory may be available.
2. Maximum internal capacities assume replacement of standard hard disk drive with the largest supported IBM hard disk drives.

Netfinity 3500 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	SMP Support[1]	Processor Speed Upgrade[2]
01K6599	Netfinity 233MHz Upgrade with Pentium II Processor	10U	-
01K6600	Netfinity 266MHz Upgrade with Pentium II Processor	20U, 21U	10U
01K8025	Netfinity 333MHz Upgrade with Pentium II Processor	30U	10U[3], 20U[3], 21U[3]

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Contact your IBM authorized dealer for additional information if your system board FRU# is 93H7269.

Netfinity 3500 Memory

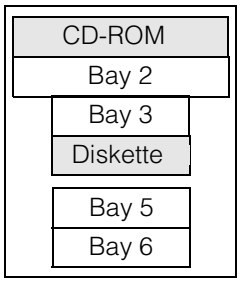
DIMM Socket
DIMM Socket
DIMM Socket
DIMM Socket

Part Number	Memory Description
04K0073	32MB 66MHz ECC SDRAM DIMM 3.3V
04K0074	64MB 66MHz ECC SDRAM DIMM 3.3V
04K0075	128MB 66MHz ECC SDRAM DIMM 3.3V

Total Memory	Model 30U
64MB	64MB DIMM standard
96MB	1 x 04K0073
128MB	1 x 04K0074
224MB	1 x 04K0073, 1 x 04K0075
256MB	1 x 04K0074, 1 x 04K0075
288MB	1 x 04K0073, 1 x 04K0074, 1 x 04K0075
512MB max	4 x 04K0075[1]

This table does not represent all possible memory configurations.
1. Replace standard DIMM.

Netfinity 3500 Hard Disk Drive (HDD) Storage



Total Internal Disk Storage[1]	Model 30U
0GB	Standard
4.5GB	1 x 01K1327
9.1GB	1 x 20L0553[2]
13.6GB	1 x 20L0553[2], 1 x 01K1327
18.1GB	4 x 01K1327
22.7GB	1 x 20L0554, 1 x 01K1327
27.3GB	3 x 20L0553[2]
31.8GB	3 x 20L0553[2], 1 x 01K1327
36.4GB	2 x 20L0554
45.5GB	2 x 20L0554, 1 x 20L0553[2]
54.6GB	3 x 20L0554
63.7GB	3 x 20L0554, 1 x 20L0553[3]
72.8GB (max)	4 x 20L0554

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.
2. Either 01K1328 or 20L0553 may be utilized.

Bay	Form Factor	Height	Front Access	Usage
1	5.25"	HH	yes	IDE CD-ROM
2	5.25"[1]	HH	yes	open
3	3.5"	SL	yes	open
4	3.5"	SL	yes	diskette
5	3.5"	SL[2]	no	open
6	3.5"	SL[2]	no	open

1. A 3.5" conversion kit is standard in Bay 2 for installation of 3.5" devices.
2. Two slim-line bays can be combined to support a single half-high device.

Part Number	Description	RPM	Height	Bays Supported	Max Qty.
	Internal Hard Disk Drives (HDD)				
01K1327	IBM 4.5GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
01K1328	IBM 9.1GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
76H2687	IBM Ultrastar 2XP 4.51GB Wide Ultra SCSI HDD	7200	SL	2,3,5,6	4
20L0553	IBM 9.1GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4
20L0554	IBM 18.2GB Wide Ultra-2 SCSI HDD[1]	7200	SL	2,3,5,6	4

External Storage Expansion Units[2]		Form Factor
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower

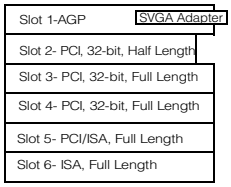
1. Performs as a Wide Ultra SCSI device when attached to the standard or an optional Wide Ultra SCSI adapter or when sharing a cable with a non-Ultra-2 device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers

Internal SCSI Cabling

Netfinity 3500 systems have a dual channel Wide Ultra SCSI controller supporting up to four internal SCSI devices through the 16-bit internal connector and 15 external SCSI devices through the 16-bit external 68-pin High Density Connector. All Netfinity models are cabled internally with a four-drop, 16-bit wide SCSI cable with a built-in active terminator at one end of the cable. The other end of the cable is attached to the internal 68-pin single-ended connector (channel A) of the 7895 Wide Ultra SCSI controller. The first disk drive installed should be attached to the cable connector closest to the active terminator. If connecting narrow devices to this cable additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.

Netfinity 3500 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
	Storage Controllers[1]			
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[2]	Full	32-bit	3, 4, 5
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[3]	Full	32/64-bit	3, 4, 5
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[4]	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter[5]	Half	32-bit	2, 3, 4, 5
	Networking[6]			
	Ethernet			
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	2, 3, 4, 5
	Token Ring			
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	2, 3, 4, 5
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	2, 3, 4, 5
	Communications			
7852400	External V.34 Data/Fax Modem[7]	-	-	
37L1414	Serial I/O SST8P DB Adapter[8]	Half	32-bit	2, 3, 4, 5
37L1415	Serial I/O SST16P RJ Adapter[8]	Half	32-bit	2, 3, 4, 5
37L1423	Serial I/O SST16P DB Adapter[8]	Half	32-bit	2, 3, 4, 5
	Systems Management[8]			
94G7578	PC Server Advanced Systems Management Adapter[9]	Full	ISA	5, 6
94G5571	Advanced Systems Management Power Unit[10]	-	-	-



1. Netfinity 3500 has an integrated dual channel Wide Ultra SCSI PCI adapter.
2. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.
3. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and 2 external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8mm VHDCI) providing a total of 3 external LVDS SCSI channels.
4. Installs on ServeRAID-3H P/N 01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
5. For attachment of external devices only.
6. Netfinity 3500 has an integrated 10/100 PCI Ethernet Controller.
7. Due to homologation variances, modem availability may differ by country.
8. See Appendix E for details on Serial I/O options and configuration limitations.
9. Requires Advanced Systems Management Power Unit (P/N 94G5571) to enable automated restart and alerting as well as remote power on/off, reset.
10. Provides continuous power to the PC Server Advanced Systems Management Adapter (P/N 94G7578) even when the system is powered off.

Netfinity 3500 Power, Monitor & Accessories

Part Number	Description
	Power[1]
	Uninterrupted Power Supply (UPS)[2]
94G3134	APC Smart-UPS 700 (25 min. runtime at 265 VA)
94G3135	APC Smart-UPS 1000 (42 min. runtime at 265 VA)
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black

1. Netfinity 3500 includes a 330 W voltage sensing power supply.
2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.

Netfinity 3500 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures[1]
01K1282	IBM12/24GB DDS/3 4mm Internal Tape Drive	2	8	3.5" HH or 5.25" HH	Y[5]	Y	3510020
06H9716	IBM 4/8GB TR4 Internal SCSI Tape Drive[2]	2,3	8	3.5" SL or 5.25" HH	Y[5]	N	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	2,3	8	3.5" SL or 5.25" HH	Y[5]	Y	3510020
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	2	16	5.25"HH	N[6]	N	3510020[3]
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020
32G3925	SCSI 68-pin to 50-pin Converter	-	8-16	Internal	N	Y	-
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[4]	-	8/16	Desktop	N	N	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables-Storage Units-Controllers.
2. SCSI 68-pin to 50-pin Converter (P/N 32G3925) is required unless installed in a 3510020.
3. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
4. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Tape drive is capable of self termination.
6. Termination is provided by the system unit's standard 4-drop SCSI cabling.

NOTE: SCSI support is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Application-Internet Server

Description	Quantity	Part Number
IBM Netfinity 3500 (Pentium II 333/64MB/0GB)	1	864430U
128MB 66MHz ECC SDRAM DIMM 3.3V[1]	2	04K0075
IBM Netfinity 333MHz Upgrade with Pentium II Processor	1	01K8025
IBM 4.51GB Wide Ultra SCSI HDD	3	01K1327
IBM ServeRAID-3L Ultra2 SCSI Adapter	1	01K7364
IBM 12/24GB DDS3 4mm Internal Tape Drive	1	01K1282
IBM Netfinity 10/100 Fault Tolerant Adapter	2	08L3341
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1000	1	94G3135

1. For a total of 320MB of system memory.
2. For a total of 13.5GB of RAID protected Hot-Swap external storage with capacity to grow.

An Internet server is a server that handles all requests from the Internet (Intranet or Extranet). Usually, this type of server has the same characteristics as a normal file server. The main difference is that an Internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an Internet server, the server itself talks mostly to just one client, the Internet provider, instead of many clients like a file server does.

With this in mind, the IBM Netfinity 3500 was selected to provide an affordable price point for the growing internet server market with two way Pentium II processing, 320MB of system memory (expandable to 512MB), multiple ethernet adapters, and availability features such as RAID protected storage and power protection with an APC Smart-UPS.

The network configuration depends on the method that will be used to connect the server to the internet. Usually fast Ethernet routers are used, but if other methods are used, you can add the appropriate adapter. The configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

File and Print Server

Description	Quantity	Part Number
IBM Netfinity 3500 (Pentium II 333/64MB/0GB)	1	864430U
128MB 66MHz ECC SDRAM DIMM 3.3V[1]	1	04K0075
IBM 4/8GB TR4 Internal SCSI Tape Drive[2]	1	06H9716
SCSI 68-pin to 50-pin Converter	1	32G3925
IBM 4.51GB Wide Ultra SCSI HDD	2	01K1327
G54 Color Monitor 15" (13.7" Viewable Image Size)Stealth black	1	65464AN
APC Smart-UPS 700	1	94G3134

1. For a total of 192MB of system memory.
2. Requires SCSI 68-pin to 50-pin converter (P/N 32G3925)

A small business or departmental server is usually required to perform all typical server functions while servicing up to 50 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 3500 with 192MB of memory and 8.6GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional internal storage expansion still available. Demanding network traffic is effectively handled by the standard 100Mbps Ethernet connection.

This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected from power surges and outages.

IBM Netfinity 5000 Configurator

Part Number	Withdrawal Date (mmddyy)[9]	Processor Speed (MHz)	SMP Enabled	L2 ECC Cache. (KB)	Memory: std./max. (MB)	Memory Type: 100 MHz SDRAM[3]	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	Slots[4] (Total/Avail)	Bays: (Total/Avail)	Available Removable Media Bays[5]	Advanced System Management Processor	Hot-Swap Components[5]	Redundancy	Ethernet (Mbps)	CD-ROM[2]
8659-12Y	043099	350[6]	2-way	512	64/2048	ECC	Tower	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-1SY[1]	043099	350[6]	2-way	512	64/2048	ECC	Rack(5U)	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-22Y	-	400[6]	2-way	512	64/2048	ECC	Tower	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-2SY[1]	-	400[6]	2-way	512	64/2048	ECC	Rack(5U)	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-31Y[1]	-	450[6]	2-way	512	64/2048	ECC	Tower	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD BAYS	Power[8]	10/100	32X IDE
8659-3RY[1]	-	450[6]	2-way	512	64/2048	ECC	Rack(5U)	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-41Y	-	500[7]	2-way	512	128/2048	ECC	Tower	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE
8659-4RY[1]	-	500[7]	2-way	512	128/2048	ECC	Rack(5U)	-	91	Dual Channel	5/5	8, 6	1 x 5.25" HH	Y	5 x HDD Bays	Power[8]	10/100	32X IDE

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. Requires IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200) or industry standard 19" Rack, EIA-310D, with a minimum depth of 28 inches.
2. 32X/14X CD-ROM variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Memory modules are Registered DIMMs (RDIMM).
4. Three 32-bit PCI slots and two combination slots (32-bit PCI/16-bit ISA).
5. Definitions: Half High (HH), Hard Disk Drive (HDD).
6. Intel Pentium II processor with 100MHz access to memory.
7. Intel Pentium III processor with 100MHz access to memory.
8. Robust configurations may require optional Netfinity 175W Redundant Power Supply (P/N 10L7007) for redundancy. See Netfinity 5000 Power Supply Redundancy Requirements table for additional information.
9. Not available from IBM after this date. Business Partner inventory may be available.

Netfinity 5000 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	SMP Support[1]	Processor Speed Upgrade[2]
10L5883	Netfinity 350/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 1xY	-
10L5884	Netfinity 400/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 2xY	All 1xY
10L5900	Netfinity 450/100MHz, 512 KB Processor Upgrade with Pentium II Processor	All 3xY	All 1...2xY
36L9673	Netfinity 500MHz/512 KB Upgrade with Pentium III Processor	All 4xY	All 1...3xY

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 5000 Memory

RDIMM Socket - J15	Std. RDIMM
RDIMM Socket - J16	
RDIMM Socket - J17	
RDIMM Socket - J22	

Part Number	Memory Description
01K7241	Netfinity 64MB SDRAM ECC RDIMM
01K7262	Netfinity 128MB SDRAM ECC RDIMM
01K8043	Netfinity 256MB SDRAM ECC RDIMM
01K7263	Netfinity 512MB SDRAM ECC RDIMM

Total Memory	Models 1xY, 2xY, 3xY	Model 4xY
64MB	64MB RDIMM Standard	-
128MB	1 x 01K7241	128MB RDIMM Standard
192MB	1 x 01K7262	1 x 01K7241
256MB	1 x 01K7262, 1 x 01K7241	1 x 01K7262
320MB	1 x 01K8043	1 x 01K7262, 1 x 01K7241
384MB	1 x 01K8043, 1 x 01K7241	1 x 01K8043
512MB	1 x 01K8043, 1 x 01K7262, 1 x 01K7241	1 x 01K8043, 1 x 01K7262
576MB	1 x 01K7263	-
640MB	1 x 01K7263, 1 x 01K7241	1 x 01K7263
1088MB	2 x 01K7263	-
1152MB	2 x 01K7263, 1 x 01K7241	2 x 01K7263
1600MB	3 x 01K7263	-
1664MB	-	3 x 01K7263
2048MB (max)	4 x 01K7263[1]	4 x 01K7263[1]

This table does not represent all possible memory configurations.
1. Replace standard RDIMM.

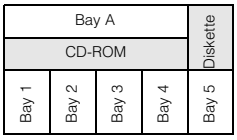
Internal SCSI Cabling

Netfinity 5000 systems contain a backplane supporting five hot-swap drive bays. The backplane has an integrated SCSI terminator and is connected to one of the two integrated dual-channel SCSI controller connectors by a two drop 16-bit SCSI cable. The second drop is available for supporting an internal removable media device. In the event the standard two drop cable is attached to a RAID controller and a dedicated removable media attachment to the onboard controller is required, an optional, terminated, 16-bit cable is available (Netfinity Two-Drop Internal SCSI Cable P/N 36L9636). The second SCSI channel is available for external device attachment through a rear panel 68-pin high density connector.

Netfinity 5000 Hard Disk Drive (HDD) Storage

Total Int. Disk Storage[1]	7200RPM Hard Disk Drives (HDDs)				10,000RPM HDDs		
	4.5GB	9.1GB	18.2GB	36.4GB	4.5GB	9.1GB	18.2GB
0GB	Standard on Base Models				Standard on Base Models		
4.5GB	1 x 94G7429	-	-	-	1 x 01K8009	-	-
9.1GB	2 x 94G7429 or	1 x 01K8053	-	-	2 x 01K8009 or	1 x 01K8054	-
13.5GB	3 x 94G7429	-	-	-	3 x 01K8009	-	-
18.2GB	4 x 94G7429 or	2 x 01K8053 or	1 x 01K8055	-	4 x 01K8009 or	2 x 01K8054 or	1 x 01K8503
22.5GB	5 x 94G7429	-	-	-	5 x 01K8009	-	-
27.2GB	-	3 x 01K8053	-	-	-	3 x 01K8054	-
36.4GB	-	4 x 01K8053 or	2 x 01K8055	1 x 02K0441	-	4 x 01K8054 or	2 x 01K8503
45.5GB	-	5 x 01K8053	-	-	-	5 x 01K8054	-
54.6GB	-	-	3 x 02K0440	-	-	-	-
72.8GB	-	-	3 x 02K0440 or	2 x 02K0441	-	-	-
91GB (max)	-	-	5 x 02K0440	-	-	-	-

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.



Bay	Form Factor	Height	Front Access	Usage
A	5.25”	HH[1]	Yes	Open
B	5.25”	HH[1]	Yes	IDE CD-ROM
C	3.5”	SL	Yes	Diskette
1…5	HS[1]	SL[3]	Yes	Open

1. Definitions: Half High (HH), Slim-Line (SL), Hot-Swap (HS)
2. Removable Media (RM) devices only.
3. Two slim-line (SL) can be combined to support a single half-high device.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
	Internal Hard Disk Drives (HDD)				
94G7429	4.51GB Wide Ultra SCSI hot-swap Hard Disk Drive	7200	SL	1…5	5
01K8053	IBM Netfinity 91GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1…5	5
01K8055	IBM Netfinity 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	HH[1]	1/2, 2/3, 3/4, 4/5	2
02K0440	IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1…5	5
02K0441	IBM Netfinity 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	HH[1]	1/2, 2/3, 3/4, 4/5	2
01K8009	IBM Netfinity 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	SL	1…5	5
01K8054	IBM Netfinity 91GB 10K Wide Ultra SCSI SCA-2 SL HDD	10,000	SL	1…5	5
01K8503	IBM Netfinity 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	HH[1]	1/2, 2/3, 3/4, 4/5	2

	External Storage Expansion Units[2]	Form Factor
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower
35202RU	IBM Netfinity EXP15 Storage Expansion Unit	Rack (3U)
3527001[3]	SSA Entry Storage Subsystem for PC Servers	Tower

1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. External Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unti section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.
3. A preconfigured 3527001 (3527-PRO) contains five 91GB HDDs (P/N 21H8734) and a 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

Netfinity 5000 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported
	Storage Controllers[1]			
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[2]	Full	32-bit	1...5
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[3]	Full	32/64-bit	1...5
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[4]	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1...5
01K7297	Netfinity Fiber Channel PCI Adapter[5]			
32H3811	IBM SSA RAID Adapter for PC Servers[6]	Full	32-bit	1...5
09L2123	IBM Advanced SerialRAID/X Adapter[7]	Full	32-bit	1...6[8]
	Networking[9]			
	Ethernet			
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1...5
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1...5
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1...5
	Token Ring			
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1...5
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1...5
	Communications			
7852400	External V.34 Data/Fax Modem[10]	-	-	
37L1414	Serial I/O SST8P DB Adapter[11]	Half	32-bit	1...5[11]
37L1415	Serial I/O SST16P RJ Adapter[11]	Half	32-bit	1...5[11]
37L1423	Serial I/O SST16P DB Adapter[11]	Half	32-bit	1...5[11]
37L1416	Serial I/O SST128P Expandable Adapter[11]	Half	32-bit	1...5[11]
37L1417	Serial I/O PM16RJ Port Module[11]	-	-	-
37L1418	Serial I/O PM16DB Port Module[11]	-	-	-
37L1419	Serial I/O 16RJ Multiplexer Set[11]	-	-	-
37L1420	Serial I/O 16DB Multiplexer Set[11]	-	-	-
37L1421	Serial I/O PS4 Power Supply[11]	-	-	-
	Systems Management[12]			
01K7209	Netfinity Advanced System Management PCI Adapter[13]	Full	32-bit	1...5[14]
03K9309	Netfinity Advanced System Management Interconnect Cable Kit[15]	-	-	-
36L9654	Netfinity Advanced System Management Token-RIng Connection[16]	-	-	-
	Host Attach			
9086001	IBM Netfinity ESCON Adapter[17]	Full	32-bit	1...5[18]

Slot 5- PCI, 32-bit, Full Length
Slot 4- PCI, 32-bit, Full Length
Slot 3- PCI, 32-bit, Full Length
Slot 2- PCI/ISA, Full Length
Slot 1- PCI/ISA, Full Length

1. Netfinity 5000 has two integrated Wide Ultra SCSI channels. One is internal and the other is external with a 68-pin High Density connector.
2. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.
3. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage providing a total of three external (0.8 mm VHDCI connectors) LVDS SCSI channels.
4. Installs on ServeRAID-3H P/N 01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
5. See Netfinity Fibre Channel Solutions section for additional configuration information.
6. System units with greater than 2 GB of system memory are limited to RAID 5 operation only.
7. Requires system BIOS level of 7.0 or higher which can be found on BIOS Flash Update Diskette version 1.04 or higher. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine "Type-Model" in Quick Path. Select "Downloadable files" then "BIOS".
8. A maximum quantity of four is supported.
9. Netfinity 5000 has an integrated 10/100 PCI Ethernet Controller.
10. Due to homologation variances, modem availability may differ by country.
11. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
12. The Netfinity Advanced Systems Management Processor and Interconnect Bus integrated into Netfinity 5000 works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible.
13. Includes PCI adapter, Netfinity Advanced System Management Interconnect Cable Kit components and 56-watt AC adapter which requires a separate power source. Provides an integrated 10/100 Ethernet port and PCMCIA slot to support optional Netfinity Advanced System Management Token-Ring Connection (P/N 36L9654).
14. A maximum quantity of one is supported.
15. Required for all Netfinity 5000, 5500 5xU and 6xU, 5500 Mxx, and 7000 M10's (except those with option 01K7209 installed) that are to be interconnected for system management support through a LAN or modem connection. Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (1 service processor per Netfinity 5000, 5500, 5500 Mxx plus 1 per Netfinity Advanced System Management PCI Adapter) with an aggregate connection length of no more than 300 feet (91.4 meters).
16. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.
17. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.
18. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

Netfinity 5000 Power, Monitor & Accessories

Part Number	Description
	Power[1]
10L7007	Netfinity 175 W Redundant Power Supply
	Uninterruptable Power Supply (UPS)[2]
94G3135	APC Smart-UPS 1000 (19min. runtime at 330 VA)
94G3136	APC Smart-UPS 1400 (30min. runtime at 330 VA)
94G6674	APC Smart-UPS 1400 RMB (23min. runtime at 330 VA)[3]
94G6676	APC Smart-UPS 3000 RMB (62min. runtime at 330 VA)[3]
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black[4]
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black[4]

1. Netfinity 5000 includes redundant 175W power supplies within a single 350W unit. This 350W unit is sufficient to operate fully configured systems, however optional Netfinity 175W Redundant Power Supply (P/N 10L7007) is required to preserve N+1 redundancy if any of the following are exceeded:
 - 512MB of memory
 - Three hard disk drives and/or tape drives
 - Two PCI or ISA adapters

An additional power cord is incuded with 10L7007 but is not intended to provide a redundant power source. Utilization of two UPS's does not provide additional protection.
2. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.
3. Mounts in Netfinity Rack (9306900, NetBAY22 (9306200, or industry standard 19" rack, EIA-310D. (Height = 3U).
4. Not supported for installation in a 19" rack.

Part Number	Description
	Conversion Kits
10L6972	IBM Netfinity 5000 Rack-to-Tower Kit
10L7006	IBM Netfinity 5000 Tower-to-Rack Kit
	Rack and NetBAY[1]
9306900	IBM Netfinity Rack[2]
9306200	IBM Netfinity NetBAY22[2]
	Keyboard and Mouse[3]
28L3640	Space Saver Keyboard
84G6537	TrackPoint Caps
01K1260	TrackPoint IV 104-Key Black Keyboard
12J3615	Black Sleek Mouse

1. Netfinity 500 rack models are housed in a 19" rack mountable drawer and require IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or an industry standard 19" rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm).
2. See IBM Netfinity Rack Cabinet and Options section for supported devices.
3. Tower models include both a mouse and keyboard. Rack models include neither.

Netfinity 5000 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Enclosures[1]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	A	8	3.5" HH or 5.25" HH	Y[2]	Y	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	A	8	3.5" SL or 5.25" HH	Y[2]	Y	3510020, 3551001
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	A	16	5.25" HH	N[3]	N	3510020[4], 3551001
01K1320	IBM 20/40GB DLT SCSI Tape Drive	N/A[10]	8	5.25" FH	Y[2]	Y	3503B0X[4], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	N/A[10]	16	5.25" FH	N[3]	N	3503B0X[4], 3551001
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020
36L9636	Netfinity Two-Drop Internal SCSI Cable[5]	-	16	Internal	Y	N	-
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[6]	-	8/16	Desktop	N	N	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[7]	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter[9]	-	16	-	N	N	3551001
3503B0X	IBM DLT External SCSI Enclosure[11]	-	16	Desktop	N	N	-
	External Tape Libraries[8]						
3447xxx	3447 Digital Linear Library (desktop-105, rack-106)	-	16	Desktop or Rack	Y	-	-
3449xxx	3449 8mm Tape Library (deskside-355, rack-356)	-	Diff.	Deskside or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure, then refer to Appendix D: Cables-Storage Units-Controllers.
2. Tape drive is capable of self termination.
3. Termination is provided by the system unit's standard SCSI cabling.
4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 5000 when the hot-swap backplane is attached to a RAID controller.
6. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918)
7. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8mm VHDCI.
8. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes
9. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
10. Supported in an external tape enclosure only.
11. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. When standard cabling is connected to a RAID controller, tape drives must utilize terminated Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636), and attach to the onboard or other supported controller. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

For a complete list of all IBM and non-IBM option compatibility with Network Operating Systems and IBM Netfinity Servers, access the ServerProven™ compatibility pages on the Web at URL http://www.ibm.com/pc/us/compat

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Internet Server

Description	Quantity	Part Number
IBM Netfinity 5000 (Pentium II 450/64MB/Open Bay)	1	8659-31Y
Netfinity 128MB SDRAM ECC RDIMM[1]	1	01K7262
IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter	1	01K7364
4.51GB Wide Ultra SCSI hot-swap Hard Disk Drive[2]	4	94G7429
IBM 20/40GB 8mm SCSI Tape Drive	1	01K1325
Netfinity Two-Drop Internal SCSI Cable	1	36L9636
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1000	1	94G3135
Netfinity 175 W Redundant Power Supply	1	10L7007

1. For a total of 192MB of system memory.
2. For a total of 18.0GB of RAID protected Hot-Swap internal storage.

An internet server is a server that handles all requests from the internet (intranet or extranet). Usually, this type of server has the same characteristics as a file server. The main difference is that an internet server talks a different language (TCP/IP vs. NETBEUI or IPX/SPX) and often needs to do an extra security check (Firewall). In the case of an internet server, the server itself talks mostly to just one client, the Internet Service Provider (ISP), instead of many clients like a file server does.

With this in mind the IBM Netfinity 5000 was selected to provide an affordable price point for the growing internet server market with two way Pentium II processing, 192MB of system memory (expandable to 2GB), and availability features such as RAID protected internal hot-swap storage and power protection with an APC Smart-UPS.

The network configuration depends on the method that will be used to connect the server to the internet. Usually fast Ethernet routers are used, but if other methods are used, you can add the appropriate adapter. the configuration includes a tape backup unit for secure backup of critical data in the event of a system or storage failure.

File and Print Server

Description	Quantity	Part Number
IBM Netfinity 5000 (Pentium II 400/64MB/Open Bay)	1	8659-22Y
Netfinity 128MB SDRAM ECC RDIMM[1]	1	01K7262
IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter	1	01K7364
4.51GB Wide Ultra SCSI hot-swap Hard Disk Drive[2]	5	94G7429
IBM 20/40GB 8mm SCSI Tape Drive	1	01K1325
Netfinity Two-Drop Internal SCSI Cable	1	36L9636
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1000	1	94G3135

1. For a total of 192MB of system memory.
2. For a total of 22.5GB of RAID protected Hot-Swap internal storage.

A small business or departmental server is usually required to perform all typical server functions while servicing up to 100 users in a normal workgroup computing environment, but doesn't require the high-end performance and fault tolerance properties of larger servers.

The sample configuration above consists of an IBM Netfinity 5000 with 192MB of memory and 22.5GB of hard disk space. It has enough processor power and memory to run most current network operating systems comfortably and enough hard disk drive space to store a significant amount of data with additional external storage expansion still available. Demanding network traffic is effectively handled by the standard 100 Mbps Ethernet connection.

This configuration also includes a tape backup unit, monitor, and a UPS to keep the system protected during power surges and outages.

Rack Mounted Application Server

Description	Quantity	Part Number
IBM Netfinity 5000 (Pentium III 500/128MB/Open Bay/Rack)	1	8659-4RY
Netfnity 256MB SDRAM ECC RDIMM[1]	1	01K8043
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter	1	01K7207
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD[2]	5	01K8054
IBM 20/40GB 8 mm SCSI Tape Drive	1	01K1325
Netfinity Two-Drop Internal SCSI Cable	1	36L9636
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN
APC Smart-UPS 1400RMB	1	94G6674
Netfinity 175 W Redundant Power Supply	1	10L7007
Industry Standard 19" Rack, EIA-310D, Min. depth of 28" (711 mm)		
IBM Netfinity NetBAY22	1	9306200
Space Saver Keyboard	1	28L3640
Blank Filler Kit	2	94G6670

1. For a total of 384MB of system memory.
2. For a total of 36.4GB usable RAID 5 storage (45.5GB total disk).

An application server differs from a File and Print server in that it has a higher work load, in providing application serving requirements for users. With this in mind the IBM Netfinity 5000 was selected to provide an affordable price point for an application server, with two way Pentium III processing, 384MB of system memory (expandable to 2GB), and availability features such as RAID protected internal Hot-Swap storage and power protection with an APC Smart-UPS.

IBM Netfinity 5500 Configurator

Part Number	Withdrawal Date (mmddyy)[10]	Processor Speed (MHz)	SMP Enabled	L2 ECC Cache. (KB)	Memory: std./max. (MB)[5] (R=RDIMM)	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	CD-ROM (IDE)	32 bit PCI Slots (Total/Avail)	16 bit ISA Slots	Advanced System Management Processor	Hot-Swap Components	Redundancy	Bays: (total, avail)	Ethernet (Mbps)
8660-11U	043099	350[7]	2-way	512	128/1024[6]	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-1RU[1]	043099	350[7]	2-way	512	128/1024[6]	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-41U	052799	400[7]	2-way	512	128/1024[6]	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-4RU[1]	052799	400[7]	2-way	512	128/1024[6]	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-42U	052799	400[7]	2-way	512	256[R]/1024	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-4SU[1]	052799	400[7]	2-way	512	256[R]/1024	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-51U	-	450[7]	2-way	512	128/1024[6]	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-5RU[1]	-	450[7]	2-way	512	128/1024[6]	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-52U	-	450[7]	2-way	512	256[R]/1024	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-5SU[1]	-	450[7]	2-way	512	256[R]/1024	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-61U	-	500[8]	2-way	512	128[R]/1024	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-6RU[1]	-	500[8]	2-way	512	128[R]/1024	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-62U[9]	-	500[8]	2-way	512	256[R]/1024	Tower[3]	-	109 (473)[4]	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8660-6SU[1, 9]	-	500[8]	2-way	512	256[R]/1024	Rack (8U)	-	109	Dual Channel RAID	(32X-14X)[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. Requires IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or industry standard 19" Rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm) and rack rail to front door clearance of 3 inches (75.4 mm).
2. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Tower models come equipped with a single NetBAY3, 3U stackable enclosure. Up to a maximum of three are supported.
4. With a single Netfinity EXP15 installed in the standard NetBAY3.
5. Netfinity 5500 models which have Netfinity Upgrade for Pentium II Xeon Processors (P/N 01K8049) installed have a maximum memory capacity of 2GB. With Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) the maximum memory is 4GB.
6. The memory DIMM shipped with this model is NOT compatible with Registered DIMMs (RDIMMs), Netfinity Upgrade for Pentium II Xeon Processors (P/N 01K8049) or Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) and must be replaced if either upgrade is installed.
7. Intel Pentium II Processor with 100MHz access to memory.
8. Intel Pentium III Processor with 100MHz access to memory.
9. Not available in the USA.
10. Not available from IBM after this date. Business Partner inventory may be available.

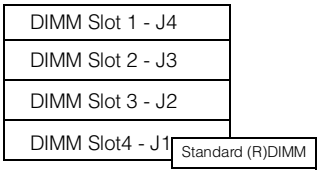
Netfinity 5500 Processor Upgrades

Part Number	Processor Upgrades with 512KB Cache	SMP Support[1]	Processor Speed/Cache Upgrade[2]
10L5883	Netfinity 350/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 1xU	-
10L5884	Netfinity 400/100MHz, 512KB Processor Upgrade with Pentium II Processor	All 4xU	All 1xU
10L5900	Netfinity 450/100MHz, 512 KB Processor Upgrade with Pentium II Processor	All 5xU	All 1…4xU
36L9673	Netfinity 500MHz/512KB Upgrade with Pentium III Processor	All 6xU	All 1…5xU
01K8049	Netfinity Upgrade for Pentium II Xeon Processors[3]	-	All[3]
28L1014	Netfinity Four-Way Processor Upgrade Kit[4]	-	All[4]

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed, and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Provides required components for upgrading an IBM Netfinity 5500 to a 2-way SMP Pentium II Xeon processor capable system. Key components include: two slot 2 processor sockets, 440Gx Host Bridge Controller, four RDIMM memory sockets, four VRM sockets, and a terminator card. Components that are NOT included and must be ordered separately: processors and memory. All Netfinity 5500 models require processor replacement. Standard memory DIMMs on models 8660-11U, 1RU, 41U, 4RU, 51U, and 5RU are not compatible and must be replaced. Refer to Netfinity 5500 M10 configurator for option compatibility with any 5500 containing upgrade P/N 01K8049. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
4. Provides required components for upgrading an IBM Netfinity 5500 to a 4-way Pentium II Xeon or Pentium III Xeon SMP capable system. Installation of P/N 28L1014 prevents the use of PCI slot 6 and shortens slot 5 to Half Length. Installation must be performed by an IBM trained servicer or IBM Customer Engineer. Installation is included in the purchase price. Key components include: memory card (4GB capacity), processor card assembly, power backplane, 500W power supply, assorted cables, LED card, and chassis hardware. Components that are NOT included and must be ordered separately: processors, memory and 500W redundant power supply.
All Netfinity 5500 models require processor replacement. Standard memory DIMMs on models 8660-11U, 1RU, 41U, 4RU, 51U, and 5RU are not compatible and must be replaced. Refer to Netfinity 5500 M20 configurator for option compatibility with any 5500 containing upgrade P/N 28L1014. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 5500 Memory

Total Memory	DIMM Models 8660-11U, 1RU, 41U, 4RU, 51U, 5RU	RDIMM Models 8660-61U, 6RU	RDIMM Models 8660-42U, 4SU, 52U, 5SU, 62U, 6SU
128MB	128MB DIMM Standard	128MB RDIMM Standard	-
192MB	1 x 01K8022	-	-
256MB	1 x 01K8023	1 x 01K7262	256MB RDIMM Standard
384MB	2 x 01K8023	1 x 01K8043	1 x 01K7262
512MB	3 x 01K8023	1 x 01K7262, 1 x 01K8043	1 x 01K8043
640MB	2 x 01K8043, 1 x 01K7262[1]	2 x 01K8043	1 x 01K8043, 1 x 01K7262
768MB	3 x 01K8043[1]	1 x 01K7262, 2 x 01K8043	2 x 01K8043
896MB	3 x 01K8043, 1 x 01K7262[1]	3 x 01K8043	2 x 01K8043, 1 x 01K7262
1024MB (max)	4 x 01K8043[1]	4 x 01K8043[1]	3 x 01K8043

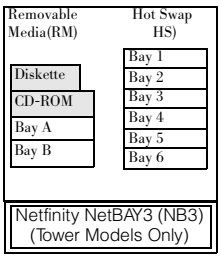


This table does not represent all possible memory configurations.
1. Replace standard DIMMs.

Part Number	Memory Description	Models 8660-11U, 1RU, 41U, 4RU, 51U, 5RU	All Other Models	Upgrade 01K8049 or 28L1014
01K8022	Netfinity 64MB SDRAM ECC DIMM[1]	X	X[3]	-
01K8023	IBM 128MB SDRAM ECC DIMM[1]	X	X[3]	-
01K7262	Netfinity 128MB SDRAM ECC RDIMM[1]	X[2]	X	X[4]
01K8043	Netfinity 256MB SDRAM ECC RDIMM[1]	X[2]	X	X[4]

1. DIMMs or RDIMMs must be installed in sequence beginning with slot 4 (J1) and ordered from largest to smallest.
2. Requires removal of standard DIMM. Cannot co-exist with 64MB (P/N 01K8022) or 128MB (P/N 01K8023) DIMMs.
3. Requires removal of standard RDIMM. Cannot co-exist with 128MB (P/N 01K7262) or 256MB (P/N 01K8043) RDIMMs.
4. Models with Netfinity Upgrade for Pentium II Xeon Processors (01K8049) installed should reference Netfinity 5500 M10 for compatibility and sample configurations. Models with Netfinity Four-Way Processor Upgrade Kit (28L1014) installed should reference Netfinity 5500 M20 for compatibility and sample configurations.

Netfinity 5500 Hard Disk Drive (HDD) Storage



Total Int. Disk Storage[1]	7200 RPM Hard Disk Drives (HDDs)				10,000 RPM HDDs		
	4.5GB	9.1GB	18.2GB	36.4GB	4.5GB	9.1GB	18.2GB
0GB	Standard on Base Models				Standard on Base Models		
4.5GB	1 x 94G7429	-	-	-	1 x 01K8009	-	-
9.1GB	2 x 94G7429 or	1 x 01K8053	-	-	2 x 01K8009 or	1 x 01K8054	-
13.5GB	3 x 94G7429	-	-	-	3 x 01K8009	-	-
18.2GB	4 x 94G7429 or	2 x 01K8053 or	1 x 01K8055		4 x 01K8009 or	2 x 01K8054 or	1 x 01K8503
22.5GB	5 x 94G7429	-	-	-	5 x 01K8009	-	-
27.2GB	6 x 94G7429 or	3 x 01K8053	-	-	6 x 01K8009 or	3 x 01K8054	-
36.4GB	-	4 x 01K8053 or	2 x 01K8055 or	1 X 02K0441	-	4 x 01K8054 or	2 x 01K8503
45.5GB	-	5 x 01K8053	-	-	-	5 x 01K8054	-
54.6GB	-	6 x 01K8053 or	3 x 01K8055	-	-	6 x 01K8054 or	3 x 01K8503
72.8GB	-	-	4 X 02K0440 or	2 X 02K0441	-	-	-
91Gb	-	-	5 X 02K0440	-	-	-	-
109GB(max)	-	-	6 X 02K0440 or	3 X 02K0441	-	-	-

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage
-	3.5"	SL	Yes	Diskette
-	5.25"	HH	Yes	IDE CD-ROM
A	5.25"	HH[1]	Yes	Open
B	5.25"	HH[1]	Yes	Open
1..6	HS	SL[2]	Yes	Open
NB3[3]	19" Rack	3U	Yes	Open

1. Two half-high (HH) bays can be combined to support a single full-high device.
2. Two slim-line (SL) bays can be combined to support a single half-high device.
3. One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
	Internal Hard Disk Drives (HDD)				
94G7429	4.51GB Wide Ultra SCSI Hot-Swap HDD	7200	SL	1..6	6
01K8053	IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..6	6
01K8055	IBM Netfinity 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	HH[1]	1/2, 3/4, 5/6	3
02K0440	IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..6	6
02K0441	IBM Netfinity 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	HH[1]	1/2, 3/4, 5/6	3
01K8009	IBM Netfinity 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	SL	1..6	6
01K8054	IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	10,000	SL	1..6	6
01K8503	IBM Netfinity 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	HH[1]	1/2, 3/4, 5/6	3

	External Storage Expansion Units[2]	Form Factor
3571002	IBM SCSI Multi-Storage Enclosure for IBM OC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower
35202RU	IBM Netfinity EXP15 Storage Expansion Unit	Rack (3U)
3527001[3]	SSA Entry Storage Subsystem for PC Servers	Tower

1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.
3. A preconfigured 3527001 (3527-PRO) contains five 91GB HDDs (P/N 21H8734) and a 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

Internal SCSI Cabling

Netfinity 5500 and 5500 M10 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. Optional Netfinity SCSI Controller Cable (P/N 03K9313) is a 16-bit cable that can be attached to the second RAID connector and routed to the rear panel cutout providing an external 16-bit VHDCI 0.8mm connector. If internal removable devices are required in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adapter connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.

Netfinity 5500 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported[1]	Hot-Plug[2]
	Storage Controllers[3]				
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[4]	Full	32-bit	1..6	X
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[5]	Full	32/64-bit	1..6	X
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[6]	-	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1..6	-
01K7297	Netfinity Fibre Channel PCI Adapter[7]	Half	32/64-bit	1..6	-
32H3811	IBM SSA RAID Adapter for PC Servers[8]	Full	32-bit	5, 6[9]	-
09L2123	IBM Advanced SerialRAID/X Adapter	Full	32-bit	1..6[10]	-
	Networking[11]				
	Ethernet				
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1..5	X
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1..5	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1..5	X
	Token Ring				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1..5	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1..5	-
	Communications				
7852400	External V.34 Data/Fax Modem[12]	-	-		-
37L1414	Serial I/O SST8P DB Adapter[13]	Half	32-bit	1..6[13]	-
37L1415	Serial I/O SST16P RJ Adapter[13]	Half	32-bit	1..5[13]	-
37L1423	Serial I/O SST16P DB Adapter[13]	Half	32-bit	1..6[13]	-
37L1416	Serial I/O SST128P Expandable Adapter[13]	Half	32-bit	1..5[13]	-
37L1417	Serial I/O PM16RJ Port Module[13]	-	-	-	-
37L1418	Serial I/O PM16DB Port Module[13]	-	-	-	-
37L1419	Serial I/O 16RJ Multiplexer Set[13]	-	-	-	-
37L1420	Serial I/O 16DB Multiplexer Set[13]	-	-	-	-
37L1421	Serial I/O PS4 Power Supply[13]	-	-	-	-
	Systems Management[14]				
01K7209	Netfinity Advanced System Management PCI Adapter[15]	Full	32-bit	1..6[16]	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit[17]	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Rlng Connection[18]	-	-	-	-
	Host Attach				
9086001	IBM Netfinity ESCON Adapter[19]	Full	32-bit	1..6[20]	-

ISA, Full Length
Slot 1- PCI, Hot- Plug, 32-bit, Full Length
Slot 2- PCI, Hot- Plug, 32-bit, Full Length
Slot 3- PCI, Hot- Plug, 32-bit, Full Length
Slot 4- PCI, Hot- Plug, 32-bit, Full Length
Slot 5- PCI, 32-bit, Primary Bus, Full Length
Slot 6- PCI, 32-bit Primary Bus, Full Length

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.
2. Hot Plug capable. For Network Operating System support access URL http://www.ibm.com/pc/us/compat.
3. Netfinity 5500 and 5500 Mxx have a dual channel ServeRAID II Wide Ultra SCSI controller.
4. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.
5. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI connectors) providing a total of three external LVDS SCSI channels.
6. Installs on ServeRAID-3H P/N01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
7. See Netfinity Fibre Channel Solutions section for additional configuration information.
8. System units with greater than 2GB of system memory are restricted to RAID 5 operation only.
9. One IBM SSA RAID Adapter for PC Servers (P/N 32H3811) is supported by either primary slot 5 or 6. The remaining primary slot 5 or 6 must remain unoccupied.
10. A maximum quantity of four is supported.
11. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.
12. Due to homologation variances, modem availability may differ by country.
13. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
14. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5..6xU) works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible. The following systems management options are NOT supported by Netfinity 5500 models 8660-1..4xU.: 01K7209, 03K9309 and 36L9654.
15. Includes PCI adapter, Netfinity Advanced Systems Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity 5500 models 8660-1..4xU.
16. A maximum quantity of one is supported.
17. Required for all Netfinity 5000, 5500 5...6xU, 5500 Mxx (except those with option 01K7209 installed) and 7000 M10s that are to be interconnected for system management support through a LAN or modem connection. Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (1 service processor per Netfinity 5000, 5500, 5500 Mxx plus 1 per Netfinity Advanced System Management PCI Adapter) with an aggregate connection length of no more than 300 feet (91.4 meters).
18. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.
19. Provides an ESCON MIC and DB9 Serial Port. Cables are not included. Contact your IBM representative for additional information.
20. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

Netfinity 5500 Power, Monitor & Accessories

Part Number	Description
	Power[1]
01K7951	IBM Netfinity 400 W Hot-Swap Redundant Power Supply II[2]
	Uninterruptible Power Supply (UPS)[3]
94G3136	APC Smart-UPS 1400 (26 min. runtime at 375 VA)
94G6674	APC Smart-UPS 1400RMB (21min. runtime at 375 VA)[4]
94G6676	APC Smart-UPS 3000RMB (55 min. runtime at 375 VA)[4]
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black[6]
9513AG1	T55A Flat Panel Colr Monitor (15.0" Viewable Image Size), stealth black[6]
	Cables
03K9313	IBM Netfinity SCSI Controller Cable (0.8 mm)[5]
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 and 5500 M10 include a single power supply which is sufficient to operate fully configured systems. If power supply redundancy is desired, optional power supply P/N 01K7951 is required.
2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.
3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
4. Mounts in Netfinity Rack (9306900), NetBAY22 (9306200), NetBAY3 (10L6912) or industry standard 19" Rack, EIA-310D (Height = 3U0).
5. Used for routing the second internal SCSI RAID channel to an external 0.8 mm connector. Can be used with IBM 0.8 mm to 68-pin SCSI Adapter (P/N 01K8017) to provide an external 68-pin high density connector.
6. Not supported for installation in a 19" rack.

Part Number	Description
	Conversion Kits
01K8021	IBM Netfinity 5500 Rack-to-Tower Kit[1]
01K8020	IBM Netfinity 5500 Tower-to-Rack Kit
	Rack and NetBAY[2]
9306900	IBM Netfinity Rack[3]
9306200	IBM Netfinity NetBAY22[3]
10L6912	IBM Netfinity NetBAY3[4]
10L6913	Netfinity Caster Set
	Keyboard and Mouse[5]
28L3640	Space Saver Keyboard
84G6537	TrackPoint Caps
01K1260	TrackPoint IV 104-Key Black Keyboard
28L3621	Preferred Keyboard (Stealth Black)
12J3615	Black Sleek Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
2.Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200),or an industry standard 19" rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm) and rack rail to front door clearance of 3 inches (75.4 mm). Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
3. See IBM Netfinity Rack Cabinet and Options section for supported devices.
4. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
5. Tower models include both a mouse and keyboard. Rack models include neither.

Netfinity 5500 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50- pin Converter Incl.	Ext. Tape Encl.[1]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y[6]	Y	3510020
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	A, B	16	5.25" HH	N[7]	N	3510020[2]
01K1320	IBM 20/40GB DLT SCSI Tape Drive	A/B[8]	8	5.25" FH	Y[6]	Y	3503B0X[2], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	A/B[8]	16	5.25" FH	N[7]	N	3503B0X[2], 3551001
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503B0X
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[3]	-	8/16	Desktop	N	N	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[4]	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter[10]	-	16	-	N	N	3551001
3503B0X	IBM DLT External SCSI Enclosure[5]	-	16	Desktop	N	N	-
	External Tape Libraries[9]						
3447xxx	3447 Digital Linear Library (desktop-105, rack-106)	-	16	Desktop or Rack	Y	-	-
3449xxx	3449 8mm Tape Library (deskside-355, rack-356)	-	Diff.	Deskside or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.
2. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
3. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
4. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8 mm VHDCI.
5. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6. Tape drive is capable of self termination.
7. Termination is provided by the system unit's standard SCSI cabling.
8. Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.
9. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.
10. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

High Availability

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 (Pentium III 500/128MB, Tower & NetBAY3)	1	8660-61U	
4.51GB Wide Ultra SCSI hot-swap HDD	2	94G7429	NOS on mirrored HDD's
IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	4	01K8053	RAID 5 with Hot-Spare
IBM 20/40GB DLT SCSI Tape Drive	1	01K1320	
External V.34 Data/Fax Modem	1	7852400	Remote Management
IBM Netfinity 400 W Hot-swap Redundant Power Supply II	1	01K7951	
IBM Netfinity NetBAY3	1	10L6912	Enclosure for second UPS
APC Smart-UPS 1400 RMB[1]	2	94G6674	Redundant UPS's
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	

1. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power, redundant UPS's for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back-up that all important asset.... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

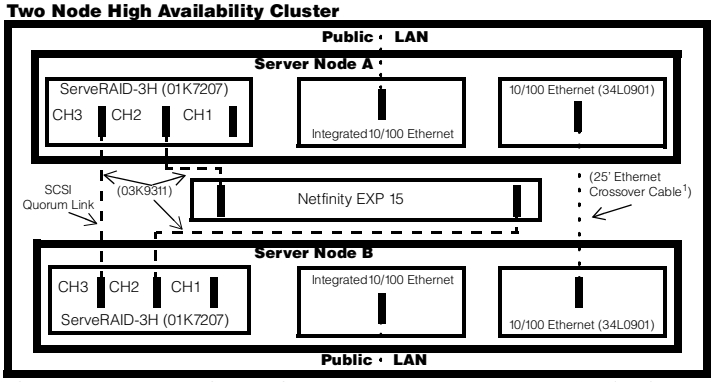
Web Server

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 (Pentium II 400/128MB, Tower & NetBAY3)	1	8660-41U	-
IBM 128MB SDRAM ECC DIMM	3	01K8023	Total Memory: 512MB
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	6	01K8054	RAID 5 Data Storage
High Speed ISDN connection[1]	1	footnote 1	Connection to WEB
IBM 20/40GB DLT SCSI Tape Drive	1	01K1320	-
PCI Fast/wide Ultra SCSI Adapter	1	02K3454	Tape Controller
IBM Netfinity SCSI Controller Cable	1	03K9313	Provides external RAID
IBM Netfinity NetBAY3	1	10L6912	Enclosure for EXP15
IBM Netfinity EXP15	1	35202RU	Provides additional 10 Bays
IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI SL SCA-2 HDD	5	01K8499	RAID 5 Data Storage
Netfinity 2M Ultra2 SCSI Cable	1	03K9310	Attaches EXP15 to 03K9313
IBM Netfinity 400 W Hot-Swap Redundant Power Supply II	1	01K7951	-
APC Smart-UPS 3000 RMB[2]	2	94G6676	Redundant UPS's
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-

1. Select from ServerProven options found on the WEB at URL http://www.ibm.com/pc/us/compat. Warranty and service for third party ServerProven products is provided for by the manufacturer, not IBM.
2. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower model is configured as the perfect Web presence for a company ready for eBusiness. With enough disk storage to host a large sales catalog, an optional hot-swap power supply and UPS so that your server is ready when your customers are ready to order, and an ISDN adapter to allow for a speedy connection into the Web infrastructure, on top of all the integrated high-availability features make this the ideal server for electronic commerce.

Two Node High Availability Cluster



1.Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (76 m).

Two Node High Availability Cluster[1]

Description	Qty.	Part Number	Usage
Server Nodes A & B			
IBM Netfinity 5500 (Pentium III 500/128MB, Rack) (8U)	2	8660-6RU	-
Netfinity 500/512KB Upgrade with Pentium III Processor	2	36L9673	Dual SMP Processing
Netfinity 128 MB SDRAM ECC RDIMM	2	01K7262	Total Memory: 256MB (each)
4.51GB Wide Ultra SCSI Hot-swap HDD	4	94G7429	NOS on mirrored HDD's
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter[3]	2	01K7207	2 Channnels for EXP15's
IBM Netfinity 10/100 Ethernet Adapter[2]	2	34L0901	Private Interconnect
IBM 35/70GB DLT SCSI Tape Drive	1	04K0149	-
PCI Fast/Wide Ultra SCSI Adapter	1	02K3454	Tape Drive Controller
External V.34 Data/Fax Modem	2	7852400	Remote Management
IBM Netfinity 400 W Hot-swap Redundant Power Supply II	2	01K7951	-
APC Smart-UPS 3000 RMB (3U)	2	94G6676	-
Storage Expansion Unit			
IBM Netfinity EXP15[3]	1	35202RU	-
IBM Netfinity EXP10 9.1GB Wide Ultra SCSI SCA-2 HDD[3]	5	01K7959	RAID 5 Shared Storage
Netfinity 4.2M Ultra2 SCSI Cable[3]	2	03K9311	Attach EXP15 to Servers
Shared (or single occurrence) Resources			
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard (1U)	1	28L3640	-
Netfinity 4.2M Ultra2 SCSI Cable	1	03K9311	SCSI Quorum Link
Industry Standard 19" Rack, EIA-310D, Min. depth of 28"			
IBM 9306-900 Netfinity Rack	1	9306900	-
Monitor Compartment (9U)	1	94G7444	-
Netfinity Rack Keyboard Tray	1	28L4707	-
Netfinity Console Server Selector Switch (4-port)	1	28L0542	-
Power Cable-Type A14[4]	3	94G6667	-
12ft. Console Cable Set	2	94G7447	-
Side Panel Kit	1	94G6669	-
Blank Filler Kit	1	94G6670	-

1. Certified for Microsoft Cluster Server.
2. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (76 m)
3. By replicating these items, up to a total quantity of four ServeRAID-3H Adapters (plus options) and eleven EXP15's can provide over 2 Terabytes of storage. Additional power and Rack space will be required.
4. Cable length requirements are dependant on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site http://www.pc.ibm.com/us/netfinity/tech_library.html "Configuration Tools"

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500, provides a high availability solution to keep you in touch with the key applications you need to run your business. High availability solutions are available from IBM to support NT, OS/2, and NetWare operating environments. By using the IBM Netfinity Rack, a high availability cluster with scalable storage expansion can be installed in less floor space.

This sample configuration consists of paired IBM Netfinity 5500 cluster nodes equipped with two-way SMP capability and redundant power supplies. Microsoft Cluster Server (MSCS) has been certified on IBM Netfinity 5500 servers, using the IBM ServeRAID-3H with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, an IBM EXP15 was selected and the IBM ServeRAID-3H Ultra2 SCSI Adapters provided the I/O control. MSCS requires a dedicated SCSI channel to act as a "SCSI heartbeat" connection. This connection, between the third channel of the ServeRAID-3H Adapter in each node, logically attaches the quorum disk which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL http://www.pc.ibm.com/us/netfinity/clustering.html.

IBM Netfinity 5500 M10 Configurator

Part Number	Withdrawal Date (mmddyy)[7]	Processor Speed (MHz)[6]	SMP Enabled	L2 ECC Cache. (KB)	Memory: std./max. (MB)[5]	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	CD-ROM (IDE)	32 bit PCI Slots (Total/Avail)	16 bit ISA Slots	Advanced System Management Processor	Hot-Swap Components	Redundancy	Bays: (total, avail)	Ethernet (Mbps)
8661-1RY[1]	02/26/99	400	2-way	512	128/2048	Rack(8U)	-	109	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100
8661-11Y	02/26/99	400	2-way	512	128/2048	Tower[3]	-	109, (473)[4]	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100
8661-2RY[1]	02/26/99	400	2-way	1024	128/2048	Rack(8U)	-	109	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100
8661-31Y	-	450	2-way	512	128/2048	Tower[3]	-	109, (473)[4]	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100
8661-3RY[1]	-	450	2-way	512	128/2048	Rack(8U)	-	109	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100
8661-4RY[1]	-	450	2-way	1024	128/2048	Rack(8U)	-	109	Dual Channel RAID	32X-14X[2]	6/6	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power(Opt.)	10, 8	10/100

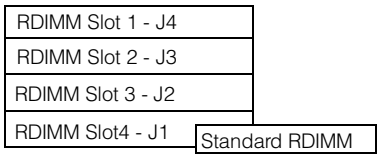
1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. Requires IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or industry standard 19" Rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm) and rack rail to front door clearance of 3 inches (75.4 mm).
2. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Tower models come equipped with a single NetBAY3, 3U stackable enclosure. Up to a maximum of three are supported.
4. With a single Netfinity EXP15 installed in the standard NetBAY3.
5. All memory is 100 MHz ECC SDRAM Registered DIMMs (RDIMMs) and is compatible with Netfinity Four-Way Processor Upgrade Kit (P/N 28L1014) which increases the maximum memory to 4GB.
6. Intel Pentium II Xeon® processors perform external operations to memory and the I/O bus subsystems at 100MHz.
7. Not available from IBM after this date. Business Partner inventory may be available.

Netfinity 5500 M10 Processor Upgrades

Part Number	Processors Upgrades with 512KB or 1MB Cache	SMP Support[1]	Processor Speed/ Cache Upgrade[2]	Upgrade 28L1014 Compatible
01K7264	Netfinity 5500 400MHz/512KB Upgrade with Pentium II Xeon Processor	All 1xY	-	-
10L5894	Netfinity 5500 400MHz/1MB Upgrade with Pentium II Xeon Processor	All 2xY	All 1xY	-
10L5901	Netfinity 5500 450MHz/512KB Upgrade with Pentium II Xeon Processor	All 3xY	All 1...2xY	X
10L5902	Netfinity 5500 450MHz/1MB Upgrade with Pentium II Xeon Processor	All 4xY	All 1...3xY	X
28L1014	Netfinity Four-Way Processor Upgrade Kit[3, 4]	-	All	-

1. One additional processor may be installed, providing a maximum of two. All processors must be identical in type, speed and cache size.
2. Requires removal of the standard processor. A maximum of two processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Provides required components for upgrading an IBM Netfinity 5500 or 5500 M10 to a 4-way SMP capable system. Installation of P/N 28L1014 prevents the use of PCI slot 6 and shortens slot 5 to Half Length. Installation must be performed by an IBM trained servicer or IBM Customer Engineer. Installation is included in the purchase price. Key components include: memory card (4GB capacity), processor card assembly, power backplane, 500 W power supply, assorted cables, led card, and chassis hardware. Components that are NOT included and must be ordered separately: processors, additional memory and 500 W redundant power supply.
4. Processors from 8661-1xY and 8661-2xY are not supported after installation of P/N 28L1014 and must be replaced. Refer to Netfinity 5500 M20 configurator for option compatibility with any 5500 or 5500 M10 containing upgrade P/N 28L1014. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 5500 M10 Memory



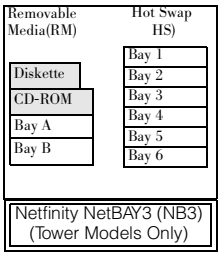
Part Number	Memory Description
01K7262	Netfinity 128MB SDRAM ECC RDIMM[1]
01K8043	Netfinity 256MB SDRAM ECC RDIMM[1]
01K7263	Netfinity 512MB SDRAM ECC RDIMM[1]

1. RDIMMs must be installed in sequence beginning with Slot 4 (J1) and ordered from largest to smallest.

Total Memory	All Models	All Models (Alternative Approach)[2]
128MB	128MB RDIMM Standard	128MB RDIMM Standard
256MB	1 x 01K7262	1 x 01K7262
384MB	1 x 01K8043	1 x 01K8043
640MB	1 x 01K7263	2 x 01K8043
896MB	1 x 01K8043, 1 x 01K7263	3 x 01K8043
1152MB	2 x 01K7263	
1664MB	3 x 01K7263	
2048MB (max)	4 x 01K7263[1]	

This table does not represent all possible memory configurations.
1. Replace standard RDIMM.
2. Memory modules may vary in price per MB. This column typically provides the most cost effective alternative to using the largest RDIMMs and should be considered when anticipated future memory is 1GB or less.

Netfinity 5500 M10 Hard Disk Drive (HDD) Storage



Total Int. Disk Storage[1]	7200 RPM Hard Disk Drives (HDDs)				10,000 RPM HDDs		
	4.5GB	9.1GB	18.2GB	36.4GB	4.5GB	9.1GB	18.2GB
0GB	Standard on Base Models				Standard on Base Models		
4.5GB	1 x 94G7429	-	-	-	1 x 01K8009	-	-
9.1GB	2 x 94G7429 or	1 x 01K8053	-	-	2 x 01K8009 or	1 x 01K8054	-
13.5GB	3 x 94G7429	-	-	-	3 x 01K8009	-	-
18.2GB	4 x 94G7429 or	2 x 01K8053 or	1 x 01K8055		4 x 01K8009 or	2 x 01K8054 or	1 x 01K8503
22.5GB	5 x 94G7429	-	-	-	5 x 01K8009	-	-
27.2GB	6 x 94G7429 or	3 x 01K8053	-	-	6 x 01K8009 or	3 x 01K8054	-
36.4GB	-	4 x 01K8053 or	2 x 01K8055 or	1 X 02K0441	-	4 x 01K8054 or	2 x 01K8503
45.5GB	-	5 x 01K8053	-	-	-	5 x 01K8054	-
54.6GB	-	6 x 01K8053 or	3 x 01K8055	-	-	6 x 01K8054 or	3 x 01K8503
72.8GB	-	-	4 X 02K0440 or	2 X 02K0441	-	-	-
91Gb	-	-	5 X 02K0440	-	-	-	-
109GB(max)	-	-	6 X 02K0440 or	3 X 02K0441	-	-	-

This table does not represent all possible hard drive configurations.
1. Total internal storage listed is within ± 0.2GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage
-	3.5”	SL	Yes	Diskette
-	5.25”	HH	Yes	IDE CD-ROM
A	5.25”	HH[1]	Yes	Open
B	5.25”	HH[1]	Yes	Open
1..6	HS	SL[2]	Yes	Open
NB3[3]	19” Rack	3U	Yes	Open

1. Two half-high (HH) bays can be combined to support a single full-high device.
2. Two slim-line (SL) bays can be combined to support a single half-high device.
3. One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
	Internal Hard Disk Drives (HDD)				
94G7429	4.51GB Wide Ultra SCSI Hot-swap HDD	7200	SL	1..6	6
01K8053	IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..6	6
01K8055	IBM Netfinity 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	HH[1]	1/2, 3/4, 5/6	3
02K0440	IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..6	6
02K0441	IBM Netfinity 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	HH[1]	1/2, 3/4, 5/6	3
01K8009	IBM Netfinity 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	SL	1..6	6
01K8054	IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	10,000	SL	1..6	6
01K8503	IBM Netfinity 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	HH[1]	1/2, 3/4, 5/6	3

	External Expansion Units[2]	**Form Factor**
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower
35202RU	IBM Netfinity EXP15 Storage Expansion Unit	Rack (3U)
3527001[3]	SSA Entry Storage Subsystem for PC Servers	Tower

1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.
3. A preconfigured 3527001 (3527-PRO) contains five 9.1GB HDDs (P/N 21H8734) and a 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

Internal SCSI Cabling

Netfinity 5500 and 5500 M10 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. Optional Netfinity SCSI Controller Cable (P/N 03K9313) is a 16-bit cable that can be attached to the second RAID connector and routed to the rear panel cutout providing an external 16-bit VHDCI 0.8mm connector. If internal removable devices are required in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adapter connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.

Netfinity 5500 M10 I/O Options

Part Number	Description	Adapter Length	PCI Support	Slots Supported[1]	Hot-Plug[2]
	Storage Controllers[3]				
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[4]	Full	32-bit	1...6	X
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[5]	Full	32/64-bit	1...6	X
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[6]	-	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1...6	-
01K7297	Netfinity Fibre Channel PCI Adapter[7]	Half	32/64-bit	1...6	-
32H3811	IBM SSA RAID Adapter for PC Servers[8]	Full	32-bit	5, 6[9]	-
09L2123	IBM Advanced SerialRAID/X Adapter	Full	32-bit	1...6[10]	-
	Networking[11]				
	Ethernet				
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1...5	X
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1...5	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1...5	X
	Token Ring				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1...5	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1...5	-
	Communications				
7852400	External V.34 Data/Fax Modem[12]	-	-		-
37L1414	Serial I/O SST8P DB Adapter[13]	Half	32-bit	1...6[13]	-
37L1415	Serial I/O SST16P RJ Adapter[13]	Half	32-bit	1...5[13]	-
37L1423	Serial I/O SST16P DB Adapter[13]	Half	32-bit	1...6[13]	-
37L1416	Serial I/O SST128P Expandable Adapter[13]	Half	32-bit	1...5[13]	-
37L1417	Serial I/O PM16RJ Port Module[13]	-	-	-	-
37L1418	Serial I/O PM16DB Port Module[13]	-	-	-	-
37L1419	Serial I/O 16RJ Multiplexer Set[13]	-	-	-	-
37L1420	Serial I/O 16DB Multiplexer Set[13]	-	-	-	-
37L1421	Serial I/O PS4 Power Supply[13]	-	-	-	-
	Systems Management[14]				
01K7209	Netfinity Advanced System Management PCI Adapter[15]	Full	32-bit	1...6[16]	-
03K9309	Netfinity Advanced System Management Interconnect Cable Kit[17]	-	-	-	-
36L9654	Netfinity Advanced System Management Token-Rlng Connection[18]	-	-	-	-
	Host Attach				
9086001	IBM Netfinity ESCON Adapter[19]	Full	32-bit	1...6[20]	-

ISA, Full Length
Slot 1- PCI, Hot- Plug, 32-bit, Full Length
Slot 2- PCI, Hot- Plug, 32-bit, Full Length
Slot 3- PCI, Hot- Plug, 32-bit, Full Length
Slot 4- PCI, Hot- Plug, 32-bit, Full Length
Slot 5- PCI, 32-bit, Primary Bus, Full Length
Slot 6- PCI, 32-bit Primary Bus, Full Length

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.
2. Hot Plug capable. For Network Operating System support access URL http://www.ibm.com/pc/us/compat.
3. Netfinity 5500 and 5500 Mxx have a dual-channel ServeRAID II Wide Ultra SCSI controller.
4. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.
5. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of three external LVDS SCSI channels.
6. Installs on ServeRAID-3H P/N 01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
7. See Netfinity Fibre Channel Solutions section for additional configuration information.
8. System units with greater than 2GB of system memory are restricted to RAID 5 operation only.
9. One IBM SSA RAID Adapter for PC Servers (P/N 32H3811) is supported by either primary slot 5 or 6. The remaining primary slot 5 or 6 must remain unoccupied.
10. A maximum quantity of four is supported.
11. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.
12. Due to homologation variances, modem availability may differ by country.
13. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
14. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5...6xU) and 5500 Mxx works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to12 service processors from a remote console through a single modem or LAN connection is possible. The following systems management options are NOT supported by Netfinity 5500 models 8660-1...4xU: 01K7209, 03K9309 and 36L9654..
15. Includes PCI adapter, Netfinity Advanced Systems Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity models 8660-1...4xU.
16. A maximum quantity of one is supported.
17. Required for all Netfinity 5000, 5500 5...6xU, 5500 Mxx (except those with option 01K7209 installed) and 7000 M10s that are to be interconnected for system management support through a LAN or modem connection. Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (1 service processor per Netfinity 5000, 5500, 5500 Mxx plus 1 per Netfinity Advanced System Management PCI Adapter) with an aggregate connection length of no more than 300 feet (91.4 meters).
18. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.
19. Provides an ESCON MIC and DB9 Serial Port. Cables are not included. Contact your IBM representative for additional information.
20. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

Netfinity 5500 M10 Power, Monitor & Accessories

Part Number	Description
	Power[1]
01K7951	IBM Netfinity 400 W Hot-Swap Redundant Power Supply II[2]
	Uninterruptible Power Supply (UPS)[3]
94G3136	APC Smart-UPS 1400 (26 min. runtime at 375 VA)
94G6674	APC Smart-UPS 1400 RMB (21 min. runtime at 375 VA)[4]
94G6676	APC Smart-UPS 3000 RMB (55 min. runtime at 375 VA)[4]
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9" Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black[6]
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black[6]
	Cables
03K9313	IBM Netfinity SCSI Controller Cable (0.8 mm)[5]
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 and 5500 M10 include a single 400W power supply which is sufficient to operate fully configured systems. For power supply redundancy, optional power supply P/N 01K7951 is required.
2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.
3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
4. Mounts in Netfinity Rack (9306900), NetBAY22 (9306200), NetBAY3 (10L6912) or industry standard 19" Rack, EIA-310D (Height = 3U).
5. Used for routing the second internal SCSI RAID channel to an external 0.8 mm connector. Can be used with IBM .08 mm to 68-pin SCSI Adapter (P/N 01K8017) to provide an external 68-pin high density connector.
6. Not supported for installation in a 19" rack.

Part Number	Description
	Conversion Kits
01K8021	IBM Netfinity 5500 Rack-to-Tower Kit[1]
01K8020	IBM Netfinity 5500 Tower-to-Rack Kit
	Rack and NetBAY[2]
9306900	IBM Netfinity Rack[3]
9306200	IBM Netfinity NetBAY22[3]
10L6912	IBM Netfinity NetBAY3[4]
10L6913	Netfinity Caster Set
	Keyboard and Mouse[5]
28L3640	Space Saver Keyboard
84G6537	TrackPoint Caps
01K1260	TrackPoint IV 104-Key Black Keyboard
12J3615	Black Sleek Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
2.Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or an industry standard 19" rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm) and rack rail to front door clearance of 3 inches (75.4 mm). Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
3. See IBM Netfinity Rack Cabinet and Options section for supported devices.
4. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
5. Tower models include both a mouse and keyboard. Rack models include neither.

Netfinity 5500 M10 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50- pin Converter Incl.	Ext. Tape Encl.[1]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y[6]	Y	3510020
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	A, B	16	5.25" HH	N[7]	N	3510020[2]
01K1320	IBM 20/40GB DLT SCSI Tape Drive	A/B[8]	8	5.25" FH	Y[6]	Y	3503B0X[2], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	A/B[8]	16	5.25" FH	N[7]	N	3503B0X[2], 3551001
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503B0X
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[3]	-	8/16	Desktop	N	N	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[4]	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter[10]	-	16	-	N	N	3551001
3503B0X	IBM DLT External SCSI Enclosure[5]	-	16	Desktop	N	N	-

External Tape Libraries[9]							
3447xxx	3447 Digital Linear Library (desktop-105, rack-106)	-	16	Desktop or Rack	Y	-	-
3449xxx	3449 8mm Tape Library (deskside-355, rack-356)	-	Diff.	Deskside or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.
2. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
3. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
4. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8 mm VHDCI.
5. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6. Tape drive is capable of self termination.
7. Termination is provided by the system unit's standard SCSI cabling.
8. Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.
9. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.
10. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

High Availability

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 M10 (Pentium II 450/128MB/0GB, Tower & NetBAY3)	1	8661-31Y	-
4.51GB Wide Ultra SCSI Hot-Swap HDD	2	94G7429	NOS on mirrored HDDs
IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	4	01K8053	RAID 5 with Hot-Spare
IBM 20/40GB DLT SCSI Tape Drive	1	01K1320	-
External V.34 Data/Fax Modem	1	7852400	Remote Management
IBM Netfinity 400 W Hot-Swap Redundant Power Supply II	1	01K7951	-
IBM Netfinity NetBAY3	1	10L6912	Enclosure for second UPS
APC Smart-UPS 1400 RMB[1]	2	94G6674	Redundant UPS
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-

1. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power and redundant UPSs for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back up that all important asset..... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

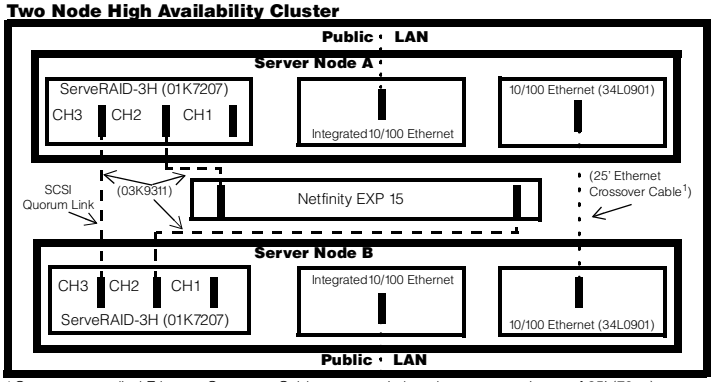
Web Server

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 M10 (Pentium II 450/128MB/0GB, Tower & NetBAY3)	1	8661-31Y	-
Netfinity 512MB SDRAM ECC RDIMM	1	01K7263	Total Memory: 640MB
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	6	01K8054	RAID 5 Data Storage
High Speed ISDN Connection[1]	1	footnote 1	Connection to Web
IBM 20/40GB DLT SCSI Tape Drive	1	01K1320	-
PCI Fast/Wide Ultra SCSI Adapter	1	02K3454	Tape Controller
IBM Netfinity SCSI Controller Cable	1	03K9313	Provides external RAID
IBM Netfinity NetBAY3	1	10L6912	Enclosure for EXP15
IBM Netfinity EXP15	1	35202RU	Provides additional 10 Bays
IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI SL SCA-2 HDD	5	01K8499	RAID 5 Data Storage
Netfinity 2 M Ultra2 SCSI Cable	1	03K9310	Attaches EXP15 to 03K9313
IBM Netfintiy 400 W Hot-Swap Redundant Power Supply II	1	01K7951	-
APC Smart-UPS 3000 RMB[2]	2	94G6676	Redundant UPS's
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-

1. Select from ServerProven options found on the Web at URL http://www.ibm.com/pc/us/compat. Warranty and service for third party ServerProven products is provided for by the manufacturer, not IBM.
2. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

This tower model is configured as the perfect Web presence for a company ready for eBusiness. With enough disk storage to host a large sales catalog, an optional hot-swap power supply and UPS so that your server is ready when your customers are ready to order, and an ISDN adapter to allow for a speedy connection into the Web infrastructure, on top of all the integrated high-availability features make this the ideal server for electronic commerce.

Two Node High Availability Cluster



1.Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (76 m).

Two Node High Availability Cluster[1]

Description	Qty.	Part Number	Usage
Server Nodes A & B			
IBM Netfinity 5500 M10 (Pentium II Xeon 450/1MB Cache/128MB/0GB, Rack) (8U)	2	8661-4RY	-
IBM Netfinity 5500 450MHz/1MB Upgrade	2	10L5902	Dual SMP Processing
Netfinity 128 MB SDRAM ECC RDIMM	2	01K7262	Total Memory: 256MB (each)
4.51GB Wide Ultra SCSI Hot-Swap HDD	4	94G7429	NOS on mirrored HDD's
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter[3]	2	01K7207	Two channels for EXP15's
IBM Netfinity 10/100 Ethernet PCI Adapter[2]	2	34L0901	Private Interconnect
IBM 35/70GB DLT SCSI Tape Drive	1	04K0149	-
PCI Fast/Wide Ultra SCSI Adapter	1	02K3454	Tape Drive Controller
External V.34 Data/Fax Modem	2	7852400	Remote Management
IBM Netfinity 400 W Hot-Swap Redundant Power Supply II	2	01K7951	-
APC Smart-UPS 3000 RMB (3U)	2	94G6676	-
Storage Expansion Unit			
IBM Netfinity EXP15[3]	1	35202RU	-
IBM Netfinity EXP10 9.1GB Wide Ultra SCSI SCA-2 HDD[3]	5	01K7959	RAID 5 Shared Storage
Netfinity 4.2 M Ultra2 SCSI Cable[3]	2	03K9311	Attach EXP15 to Servers
Shared (or single occurrence) Resources			
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard (1U)	1	28L3640	-
Netfinity 4.2 M Ultra2 SCSI Cable	1	03K9311	SCSI Quorum Link
Industry Standard 19" Rack, EIA-310D, Min. depth of 28"			
IBM 9306-900 Netfinity Rack	1	9306900	-
Monitor Compartment (9U)	1	94G7444	-
Netfinity Rack Keyboard Tray	1	28L4707	-
Netfinity Console Server Selector Switch (4-port)	1	28L0542	-
Power Cable-Type A14[4]	3	94G6667	-
12ft. Console Cable Set	2	94G7447	-
Side Panel Kit	1	94G6669	-
Blank Filler Kit	1	94G6670	-

1. Certified for Microsoft Cluster Server.
2. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (76 m).
3. By replicating these items, up to a total quantity of four ServeRAID-3H Adapters (plus options) and eleven EXP15s can provide over 2 Terabytes of storage. Additional power and rack space will be required.
4. Cable length requirements are dependant on component placement within the rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site http://www.pc.ibm.com/us/netfinity/tech_library.html "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500 M10, provides a high availability solution to keep you in touch with the key applications you need to run your business. High availability solutions are available from IBM to support NT, OS/2, and NetWare operating environments. By using the IBM Netfinity Rack, a high availability cluster with scalable storage expansion can be installed in less floor space.

This sample configuration consists of paired IBM Netfinity 5500 M10 cluster nodes equipped with two-way SMP capability and redundant power supplies. Microsoft Cluster Server (MSCS) has been certified on IBM Netfinity 5500 M10 servers, using the IBM ServeRAID-3H with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and

if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, an IBM EXP15 was selected and the IBM ServeRAID-3H Ultra2 SCSI Adapters provided the I/O control. MSCS requires a dedicated SCSI channel to act as a "SCSI heartbeat" connection. This connection, between the third channel of the ServeRAID-3H Adapter in each node, logically attaches the quorum disk which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL http://www.pc.ibm.com/us/netfinity/clustering.html.

IBM Netfinity 5500 M20 Configurator

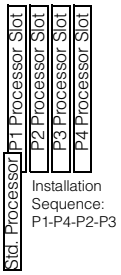
Part Number	Pentium III Xeon Processor Speed (MHz)[6]	SMP Enabled	L2 ECC Cache. (KB)	Memory: std./max. (MB)[5]	Form Factor	Hard Disk Drive: std. size, speed (RPM)	Internal Max. Hard Drive Capacity (GB)	Wide Ultra SCSI Controller	CD-ROM (IDE)	32 bit PCI Slots (Total/Avail)	16 bit ISA Slots	Advanced System Management Processor	Hot-Swap Components	Redundancy	Bays: (total, avail)	Ethernet (Mbps)
8662-31Y	500	4-way	512	256MB/4GB	Tower[3]	-	109, (473)[4]	Dual Channel RAID	32X-14X[2]	5/5	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8662-3RY[1]	500	4-way	512	256MB/4GB	Rack (8U)	-	109	Dual Channel RAID	32X-14X[2]	5/5	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8662-41Y	500	4-way	1024	256MB/4GB	Tower[3]	-	109, (473)[4]	Dual Channel RAID	32X-14X[2]	5/5	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100
8662-4RY[1]	500	4-way	1024	256MB/4GB	Rack (8U)	-	109	Dual Channel RAID	32X-14X[2]	5/5	1	Y	6 x HDD Bays 4 x PCI Slots Power & Fans	Fans, Power (Opt.)	10, 8	10/100

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. Requires IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or industry standard 19" Rack, EIA-310D, with a minimum depth of 28 inches (711.2mm) and rack rail to front door clearance of 3 inches (75.4mm).
2. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Tower models come equipped with a single NetBAY3 (3U) stackable enclosure. Up to a maximum of three are supported.
4. With a single Netfinity EXP15 installed in the standard NetBAY3.
5. All memory is 100 MHz ECC SDRAM Registered DIMMs (RDIMMs).
6. Intel Pentium III Xeon® processors perform external operations to memory and the I/O bus subsystems at 100MHz.

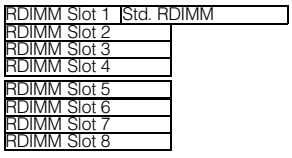
Netfinity 5500 M20 Processor Upgrades

Part Number	Processor Upgrades with 512KB or 1MB Cache	SMP Support[1]	Processor Speed/Cache Upgrade[2]
10L5901	IBM Netfinity 5500 450MHz/512KB Upgrade with Pentium II Xeon Processor[3]	-	Footnote 3
10L5902	IBM Netfinity 5500 450MHz/1MB Upgrade with Pentium II Xeon Processor[3]	-	Footnote 3
33L5053	Netfinity 500MHz/512KB Upgrade with Pentium III Xeon Processor	All 3xY	-
33L5054	Netfinity 500MHz/1MB Upgrade with Pentium III Xeon Processor	All 4xY	All 3xY

1. Up to three additional processors may be installed, providing a maximum of four. All processors must be identical in type, speed and cache size.
2. Requires removal of the standard processor. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".
3. Although supported by all Netfinity 5500 M20 models, these processors are intended for use with Netfinity Four-Way Processor Ugrade Kit (P/N 28L1014) to provide investment protection when upgrading 5500 M10 models already containing one or more of these processors.



Netfinity 5500 M20 Memory



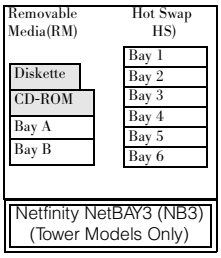
Part Number	Memory Description
01K7262	Netfinity 128MB SDRAM ECC RDIMM[1]
01K8043	Netfinity 256MB SDRAM ECC RDIMM[1]
01K7263	Netfinity 512MB SDRAM ECC RDIMM[1]

1. DIMMs should be installed in the following sequence beginning with Slot 1 and ordered from largest to smallest: 1-5-2-6-3-7-4-8.

Total Memory	All Models	All Models[2] (Alternative Approach)
256MB	256MB RDIMM Standard	256MB RDIMM Standard
384MB	1 x 01K7262	1 x 01K7262
512MB	1 x 01K8043	1 x 01K8043
768MB	1 x 01K7263	2 x 01K8043
1280MB	2 x 01K7263	4 x 01K8043
1792MB	3 x 01K7263	6 x 01K8043
2048MB	3 x 01K7263, 1 x 01K8043	7 x 01K8043
3072MB	5 x 01K7263, 1 x 01K8043	
4096MB (max)	8 x 01K7263[1]	

This table does not represent all possible memory configurations.
1. Replace standard DIMM.
2.Memory modules may vary in price per MB. This column typically provides the most cost effective alternative to using the largest RDIMMs and should be considered when anticipated future memory is 2GB or less.

Netfinity 5500 M20 Hard Disk Drive (HDD) Storage



Total Internal Disk Storage[1]	7200 RPM Hard Disk Drives (HDDs)				10,000 RPM HDDs		
	4.5GB	9.1GB	18.2GB	36.4GB	4.5GB	9.1GB	18.2GB
0GB	Standard on Base Models				Standard on Base Models		
4.5GB	1 x 94G7429	-	-	-	1 x 01K8009	-	-
9.1GB	2 x 94G7429 or	1 x 01K8053	-	-	2 x 01K8009 or	1 x 01K8054	-
13.5GB	3 x 94G7429	-	-	-	3 x 01K8009	-	-
18.2GB	4 x 94G7429 or	2 x 01K8053 or	1 x 01K8055		4 x 01K8009 or	2 x 01K8054 or	1 x 01K8503
22.5GB	5 x 94G7429	-	-	-	5 x 01K8009	-	-
27.2GB	6 x 94G7429 or	3 x 01K8053	-	-	6 x 01K8009 or	3 x 01K8054	-
36.4GB	-	4 x 01K8053 or	2 x 01K8055 or	1 X 02K0441	-	4 x 01K8054 or	2 x 01K8503
45.5GB	-	5 x 01K8053	-	-	-	5 x 01K8054	-
54.6GB	-	6 x 01K8053 or	3 x 01K8055	-	-	6 x 01K8054 or	3 x 01K8503
72.8GB	-	-	4 x 02K0440 or	2 X 02K0441	-	-	-
91GB	-	-	5 x 02K0440	-	-	-	-
109GB(max)	-	-	6 x 02K0440 or	3 X 02K0441	-	-	-

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage
-	3.5"	SL	Yes	Diskette
-	5.25"	HH	Yes	IDE CD-ROM
A	5.25"	HH[1]	Yes	Open
B	5.25"	HH[1]	Yes	Open
1...6	HS	SL[2]	Yes	Open
NB3[3]	19" Rack	3U	Yes	Open

1. Two half-high (HH) bays can be combined to support a single full-high device.
2. Two slim-line (SL) bays can be combined to support a single half-high device.
3. One NetBAY3 is included with tower models and a total of three are supported. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.

Part Number	Description	RPM	Height	Bays Supported	Max. Qty.
	Internal Hard Disk Drives (HDD)				
94G7429	4.51GB Wide Ultra SCSI Hot-Swap HDD	7200	SL	1...6	6
01K8053	IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1...6	6
01K8055	IBM Netfinity 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	HH[1]	1/2, 3/4, 5/6	3
02K0440	IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1...6	6
02K0441	IBM Netfinity 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	HH[1]	1/2, 3/4, 5/6	3
01K8009	IBM Netfinity 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	SL	1...6	6
01K8054	IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	10,000	SL	1...6	6
01K8503	IBM Netfinity 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	HH[1]	1/2, 3/4, 5/6	3

	External Storage Expansion Units[2]	Form Factor
3517002	IBM SCSI Multi-Storage Enclosure for IBM PC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower
35202RU	IBM Netfinity EXP15 Storage Expansion Unit	Rack (3U)

1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.

Internal SCSI Cabling

Netfinity 5500 M20 systems contain a backplane supporting six hot-swap drive bays. The backplane is connected to one of the two connectors of the integrated dual-channel ServeRAID controller through a 16-bit SCSI cable. A two-drop 16-bit SCSI cable, with an integrated terminator, is included with the server to support up to two internal removable media devices connected to the second RAID connector or a supported SCSI adapter. The standard cabling routes the second RAID connector to the rear panel cutout providing an external 16-bit VHDCI 0.8 mm connector. If internal removable media devices are required, in addition to external RAID device attachment, a supported SCSI adapter must be installed using the standard two-drop SCSI cable for device/adapter connection. If connecting narrow devices to this cable, additional 68-pin to 50-pin converters (P/N 32G3925) must be ordered. Some narrow devices include a converter in their ship group.

Netfinity 5500 M20 I/O Options

Part Number	Description	Adapter Length	PCI Bus Support	Slots Supported[1]	Hot-Plug[2]
	Storage Controllers[3]				
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[4]	Full	32-bit	1...4	X
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter[5]	Full	32/64-bit	1...4	X
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[6]	-	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1...5	-
01K7297	Netfinity Fibre Channel PCI Adapter[7]	Half	32/64-bit	1...5	-
	Networking[8]				
	Ethernet				
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1...5	X
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1...5	X
34L0301	Netfinity Gigabit Ethernet SX Adapter		32/64-bit	1...5	X
	Token Ring				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1...5	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1...5	-
	Communications				
7852400	External V.34 Data/Fax Modem[9]				
	Systems Management[10]				
01K7209	Netfinity Advanced System Management PCI Adapter[11]	Full	32-bit	1...4[12]	
03K9309	Netfinity Advanced System Management Interconnect Cable Kit[13]	-	-	-	-
36L9654	Netfinity Advanced System Management Token-RIng Connection[14]	-	-	-	-

ISA - Full Length
Slot 1- PCI, Hot- Plug, 32-bit, Full Length
Slot 2 - PCI, Hot- Plug, 32-bit, Full Length
Slot 3 - PCI, Hot- Plug, 32-bit, Full Length
Slot 4 - PCI, Hot- Plug, 32-bit, Full Length
Slot 5- PCI, Primary Bus, Half Length

1. PCI Slots 1, 2, 3 and 4 support Hot Plug devices.
2. Hot Plug capable. For Network Operating System support access URL http://www.ibm.com/pc/us/compat.
3. Netfinity 5500 and 5500 Mxx have a dual channel ServeRAID II Wide Ultra SCSI controller.
4. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mm VHDCI) LVDS SCSI channel.
5. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI connectors) providing a total of three external LVDS SCSI channels.
6. Installs on ServeRAID-3H P/N 01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
7. See Netfinity Fibre Channel Solutions section for additional configuration information.
8. Netfinity 5500 and 5500 Mxx have an integrated 10/100 PCI Ethernet Controller.
9. Due to homologation variances, modem availability may differ by country.
10. The Netfinity Advanced System Management Processor and Interconnect Bus integrated into Netfinity 5500 (8660-5...6xU) and 5500 Mxx works with Netfinity Manager to provide significant system management function. When used with optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209) and Netfinity Advanced System Management Interconnect Cable Kit (P/N 03K9309) additional management and control of up to 12 service processors from a remote console through a single modem or LAN connection is possible. The following systems management options are NOT supported by Netfinity 5500 models 8660-1...4xU.
11. Includes PCI adapter, Netfinity Advanced Systems Management Interconnect Cable Kit components and 56-watt AC adapter, which requires a separate power source. Provides an integrated 10/100 Ethernet port and a PCMCIA slot to support optional Netfinity Advanced Management Token-Ring Connection (P/N 36L9654). NOT supported by Netfinity models 8660-1...4xU.
12. A maximum quantity of one is supported.
13. Required for all Netfinity 5000, 5500 5...6xU, 5500 Mxx (except those with option 01K7209 installed) and 7000 M10s that are to be interconnected for system management support through a LAN or modem connection. Netfinity Advanced System Management PCI Adapter (P/N 01K7209) includes the contents of this option. Up to 12 service processors may be interconnected (1 service processor per Netfinity 5000, 5500, 5500 Mxx plus 1 per Netfinity Advanced System Management PCI Adapter) with an aggregate connection length of no more than 300 feet (91.4 meters).
14. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter (P/N 01K7209), and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together.

Netfinity 5500 M20 Power, Monitor & Accessories

Part Number	Description
	Power[1]
01K7953	IBM Netfinity 400 W Hot-Swap Redundant Power Supply II[2]
	Uninterruptible Power Supply (UPS)[3]
94G3136	APC Smart-UPS 1400 (20 min. runtime at 450 VA)
94G6674	APC Smart-UPS 1400RMB (15 min. runtime at 450 VA)[4]
94G6676	APC Smart-UPS 3000RMB (45 min. runtime at 450 VA)[4]
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15'' (13.6" Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15'' (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9 Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black[6]
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black[6]
	Cables[5]
32G3925	SCSI 68-pin to 50-pin Converter

1. Netfinity 5500 M20 includes a single 500W power supply which is sufficient to operate fully configured systems. For power supply redundancy, optional power supply P/N 01K7953 is required.
2. Includes a power cord which requires an additional power source. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.
3. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information see Appendix C: UPS Runtime Estimate.
4. Mounts in Netfinity Rack (9306900), NetBAY22 (9306200), NetBAY3 (10L6912) or industry standard 19" Rack, EIA-310D (Height = 3U).
5. Netfinity 5500 M20 comes with an external 0.8 mm VHDCI port cabled to the second onboard RAID SCSI port.
6. Not supported for installation in a 19" rack.

Part Number	Description
	Conversion Kits
01K8021	IBM Netfinity 5500 Rack-to-Tower Kit[1]
01K8020	IBM Netfinity 5500 Tower-to-Rack Kit
	Rack and NetBAY[2]
9306900	IBM Netfinity Rack[3]
9306200	IBM Netfinity NetBAY22[3]
10L6912	IBM Netfinity NetBAY3[4]
10L6913	Netfinity Caster Set
	Keyboard and Mouse[5]
28L3640	Space Saver Keyboard
84G6537	TrackPoint Caps
01K1260	TrackPoint IV 104-Key Black Keyboard
28L3621	Preferred Keyboard (Stealth Black)
12J3615	Black Sleek Mouse

1. Includes one Netfinity NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
2. Netfinity 5500 and 5500 Mxx rack models are housed in a 19" rack mountable drawer and require IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or an industry standard 19" rack, EIA-310D, with a minimum depth of 28 inches (711.2 mm) and rack rail to front door clearance of 3 inches (75.4 mm). Tower models include a single NetBAY3 with skid pads. Optional casters (P/N 10L6913) are available.
3. See IBM Netfinity Rack Cabinet and Options section for supported devices.
4. A maximum of three NetBAY3 enclosures (including the standard one) may be stacked beneath a supported Netfinity tower server. Casters are not included. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
5. Tower models include both a mouse and a keyboard. Rack models include neither.

Netfinity 5500 M20 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50- pin Converter Incl.	Ext. Tape Encl.[1]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	A, B	8	3.5" HH or 5.25" HH	Y[6]	Y	3510020
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	A, B	16	5.25" HH	N[7]	N	3510020[2]
01K1320	IBM 20/40GB DLT SCSI Tape Drive	A/B[8]	8	5.25" FH	Y[6]	Y	3503B0X[2], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	A/B[8]	16	5.25" FH	N[7]	N	3503B0X[2], 3551001
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503B0X
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[3]	-	8/16	Desktop	N	N	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[4]	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter[10]	-	16	-	N	N	3551001
3503B0X	IBM DLT External SCSI Enclosure[5]	-	16	Desktop	N	N	-
	External Tape Libraries						
3447xxx	3447 Digital Linear Library (desktop-105, rack-106)	-	16	Desktop or Rack	Y	-	-
3449xxx	3449 8mm Tape Library (deskside-355, rack-356)	-	Diff.	Deskside or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x	-	Diff.	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section, and the desired enclosure and then refer to Appendix D: Cables - Storage Units - Controllers.
2. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
3. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
4. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. External connector is 0.8 mm VHDCI.
5. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6. Tape drive is capable of self termination.
7. Termination is provided by the system unit's standard SCSI cabling.
8. Two Half-High (HH) bays can be combined to support a single Full-High (FH) device.
9. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.
10. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

NOTE: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes.

Sample Configurations

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

High Availability

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 M20 (Pentium III Xeon 500/512KB 256MB Tower & NetBAY3)	1	8662-31Y	-
4.51GB Wide Ultra SCSI hot-swap HDD	2	94G7429	NOS on mirrored HDD's
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	4	01K8054	RAID 5 with Hot-Spare
IBM 20/40GB DLT SCSI Tape Drive	1	01K1320	-
External V.34 Data/Fax Modem	1	7852400	Remote Management
IBM Netfinity 500 W Hot-Swap Redundant Power Supply	1	01K7953	-
IBM Netfinity NetBAY3	1	10L6912	Enclosure for second UPS
APC Smart-UPS 1400 RMB[1]	2	94G6674	Redundant UPS's
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-

1. Even though a second UPS provides a redundant power source, systems management software does not currently take advantage of its power outage alerts.

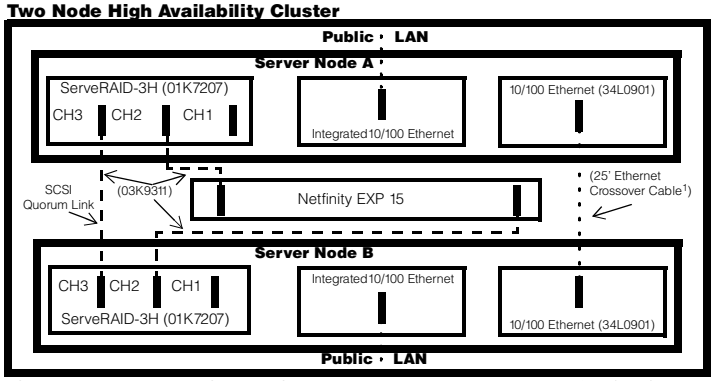
This tower server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. Configured with enough disk drives to mirror the operating system and provide a standard RAID 5 environment for data, optional hot-swap redundant power and redundant UPS's for power even during a blackout or in the event of a UPS or power cord failure, this server represents the leading edge in high availability. An internal tape drive is included to back-up that all important asset..... data, and a modem is included to allow out-of-band (non-LAN) system management utilizing the Netfinity Advanced System Management Processor.

Consolidation Server

Description	Quantity	Part Number	Usage
IBM Netfinity 5500 M20 (Pentium III Xeon 500/1MB 256MB Tower & NetBAY3)	1	8662-41Y	-
IBM Netfinity 500MHz/1MB Upgrade with Pentium III Xeon Processor	3	33L5054	-
IBM 512MB SDRAMM ECC RDIMM	3	01K7263	Total Memory: 2GB
IBM 256MB SDRAMM ECC RDIMM	1	01K8043	Total Memory: 2GB
IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	6	02K0440	> 100GB Interal Storage
IBM 35/70 GB DLT SCSI Tape Drive	1	04K0149	-
IBM Netfintiy 500 W Hot-Swap Redundant Power Supply	1	01K7953	-
APC Smart-UPS 3000 RMB	1	94G6676	Installed in NetBAY3
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-

This tower model is configured to meet the need of server consolidation. Many businesses are trying to get their arms around the dispersed departmental servers that have grown-up around the enterprise. By moving multiple servers onto one platform there is only one system to manage, both hardware and software. There is potentially less expensive for service, software licenses, etc., and there is no need to worry about putting all your eggs in one basket because the Netfinity 5500 M20 is deisigned for high availability. This configuration can accommodate over 100GB of data electricity loss, and an internal tape drive that backs up to 70GB per tape…in addition to all the standard features of the Netfinity 5500 M20.

Two Node High Availability Cluster



1.Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (7.6 m).

Two Node High Availability Cluster[1]

Description	Qty.	Part Number	Usage
Server Nodes A & B			
IBM Netfinity 5500 M20 (Pentium III Xeon 500/1MB 256MB Tower & NetBAY3)	2	8662-41Y	-
Netfinity 500MHz/1 MB Upgrade with Pentium III Xeon Processor	2	33L5054	Dual SMP Processing
Netfinity 128 MB SDRAM ECC RDIMM	2	01K7262	Total Memory: 384MB (each)
4.51GB Wide Ultra SCSI Hot-Swap HDD	4	94G7429	NOS on mirrored HDD's
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter[3]	2	01K7207	Two channels for EXP15's
Netfinity 10/100 Ethernet Adapter[2]	2	34L0901	Private Interconnect
IBM 35/70GB DLT SCSI Tape Drive	1	04K0149	-
PCI Fast/Wide Ultra SCSI Adapter	1	02K3454	Tape Drive Controller
External V.34 Data/Fax Modem	2	7852400	Remote Management
IBM Netfinity 500 W Hot-Swap Redundant Power Supply	2	01K7953	-
APC Smart-UPS 3000 RMB (3U)	2	94G6676	-
Storage Expansion Unit			
IBM Netfinity EXP15[3]	1	35202RU	-
IBM Netfinity EXP10 9.1GB Wide Ultra SCSI SCA-2 HDD[3]	5	01K7959	RAID 5 Shared Storage
Netfinity 4.2 M Ultra2 SCSI Cable[3]	2	03K9311	Attach EXP15 to Servers
Shared (or single occurrence) Resources			
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard (1U)	1	28L3640	-
Netfinity 4.2 M Ultra2 SCSI Cable	1	03K9311	SCSI Quorum Link
Industry Standard 19" Rack, EIA-310D, Min. depth of 28"			
IBM 9306-900 Netfinity Rack	1	9306900	-
Monitor Compartment (9U)	1	94G7444	-
Netfinity Rack Keyboard Tray	1	28L4707	-
Netfinity Console Server Selector Switch (4-port)	1	28L0542	-
Power Cable-Type A14[4]	3	94G6667	-
12ft. Console Cable Set	2	94G7447	-
Side Panel Kit	1	94G6669	-
Blank Filler Kit	1	94G6670	-

1. Certified for Microsoft Cluster Server.
2.Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (7.6 m).
3. By replicating these items, up to a total quantity of four ServeRAID-3H Adapters (plus options) and eleven EXP15's can provide over 2 Terabytes of storage. Additional power and rack space will be required.
4. Cable length requirements are dependent on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site http://www.pc.ibm.com/us/netfinity/tech_library.html "Configuration Tools".

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 5500 M20, provides a high availability solution to keep you in touch with the key applications you need to run your business. High availability solutions are available from IBM to support NT, OS/2, and NetWare operating environments. By using the IBM Netfinity Rack, a high availability cluster with scalable storage expansion can be installed in less floor space.

This sample configuration consists of paired IBM Netfinity 5500 M20 cluster nodes equipped with two-way SMP capability and redundant power supplies. Microsoft Cluster Server (MSCS) has been certified on IBM Netfinity 5500 M20 servers, using the IBM ServeRAID-3H with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, an IBM EXP15 was selected and the IBM ServeRAID-3H Ultra2 SCSI Adapters provided the I/O control. MSCS requires a dedicated SCSI channel to act as a "SCSI heartbeat" connection. This connection, between the third channel of the ServeRAID-3H Adapter in each node, logically attaches the quorum disk which allows arbitration when a failure occurs. Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL http://www.pc.ibm.com/us/netfinity/clustering.html.

IBM Netfinity 7000 M10 Configurator

Part Number	Withdrawal Date (mmddyy)[7]	Processor Speed (MHz)	SMP Processors std./max	L2 ECC Cache (KB)	Memory: std./max.[3]	Form Factor	Hot-Swap Power Supplies Std./max	Int. Hard Drive Storage Std./max(GB)	Wide Ultra SCSI Controller	CD-ROM IDE	32-bit Hot Plug PCI Slots (Total/Avail.)	64-bit Hot Plug PCI Slots (Total/Avail.)	Advanced Sys. Management Adapter	Hot Swap Components	Redundancy	Bays: (Tot/Avail.)
8680-1RU[1]	022699	400[5]	1/4-way	512	128MB/8GB	Rack (11U)	1/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans Optional-Power	6, 4
8680-2RU[1]	022699	400[5]	1/4-way	1024	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-3RU[1]	052799	450[5]	1/4-way	512	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-4RU[1]	052799	450[5]	1/4-way	1024	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-5RU[1]	052799	450[5]	1/4-way	2048	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-6RY[1]	-	500[6]	1/4-way	512	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-7RY[1]	-	500[6]	1/4-way	1024	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4
8680-8RY[1]	-	500[6]	1/4-way	2048	256MB/8GB	Rack (11U)	2/3	0/72.8	Dual Channel	32X-14X[2]	7/7	5/5	Y	4 x HDD Bays 12 x PCI Slots Power & Fans	Std.- Fans, Power[4]	6, 4

1. Housed in a 19" Rack mountable drawer and ships standard without a keyboard or mouse. Requires IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or industry standard 19" Rack, with a minimum depth of 29.23 inches (743mm).
2. Variable read rate. Actual playback speed will vary and is often less than the maximum possible.
3. Memory is four-way interleaved 50ns, EDO, ECC, 168-pin DIMMs. Properly configured memory options allow eight-way or greater interleaving.
4. Fully configured systems may require an optional 3rd power supply for redundancy. See footnote for Netfinity 400 W Hot-Swap Redundant Supply II (P/N 01K7951) for requirements.
5. Intel Pentium II Xeon® processor.
6. Intel Pentium III Xeon processor.
7. Not available from IBM after this date. Business Partner inventory may be available.

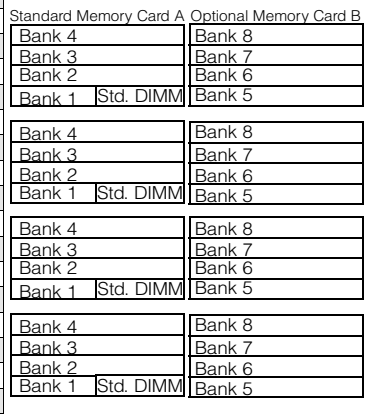
Netfinity 7000 M10 Processor Upgrades

Part Number	Processor Upgrades with 512KB, 1MB or 2MB Cache	SMP Support[1]	Processor Speed/Cache Upgrade[2]
01K8006	Netfinity 7000 M10 400MHz, 512KB Upgrade with Pentium II Xeon Processor	1RU	-
01K8007	Netfinity 7000 M10 400MHz, 1MB Upgrade with Pentium II Xeon Processor	2RU	All 1RU
10L5895	Netfinity 7000 M10 450MHz, 512KB Upgrade with Pentium II Xeon Processor	3RU	All 1…2RU
10L5896	Netfinity 7000 M10 450MHz, 1MB Upgrade with Pentium II Xeon Processor	4RU	All 1…3RU
10L5897	Netfinity 7000 M10 450MHz, 2MB Upgrade with Pentium II Xeon Processor	5RU	All 1…4RU
28L4733	Netfinity 7000 M10 500MHz/512KB Upgrade with Pentium III Xeon Processor	6RY	All 1…5RU
28L4734	Netfinity 7000 M10 500MHz/1MB Upgrade with Pentium III Xeon Processor	7RY	All 1…6Rx
28L4735	Netfinity 7000 M10 500MHz/2MB Upgrade with Pentium III Xeon Processor	8RY	All 1…7Rx

1. Up to three additional processors may be installed, providing a maximum of four. All processors must be identical in type, speed, and cache size.
2. Requires removal of the standard processor. A maximum of four processors may be installed. All processors must be identical in type, speed and cache size. Upgrades may require a BIOS update. To obtain the latest Flash BIOS, access http://www.ibm.com/pc/support and enter machine type "Type-Model" in Quick Path. Select "Downloadable files" and then "BIOS".

Netfinity 7000 M10 Memory

Total Memory	Model 1RU	All Models (except 1RU)
128MB	4 x 32MB DIMMs Std.	-
256MB	-	4 x 64MB DIMMs Std.
384MB	1 x 01K8044	-
512MB	-	1 x 01K8044[1]
640MB	1 x 01K8045	-
768MB	-	1 x 01K8045
896MB	3 x 01K8044	-
1024MB	-	3 x 01K8044[2]
1408MB	1 x 01K8044, 2 x 01K8045	-
1536MB	-	1 x 01K8044, 2 x 01K8045[1]
2048MB	4 x 01K8045[2, 3]	4 x 01K8045[2, 3]
3072MB	2 x 01K8045, 2 x 01K8046[1, 3]	2 x 01K8045, 2 x 01K8046[1, 3]
4096MB	4 x 01K8045, 2 x 01K8046, 1 x 01K8004[1, 3]	4 x 01K8045, 2 x 01K8046, 1 x 01K8004[1, 3]
5120MB	4 x 01K8044, 4 x 01K8046, 1 x 01K8004[4, 5]	3 x 01K8044, 4 x 01K8046, 1 x 01K8004[4]
6148MB	4 x 01K8045, 4 x 01K8046, 1 x 01K8004[4, 5]	4 x 01K8045, 4 x 01K8046, 1 x 01K8004[4, 5]
8GB (max)	8 x 01K8046, 1 x 01K8004[4, 5]	8 x 01K8046, 1 x 01K8004[4, 5]

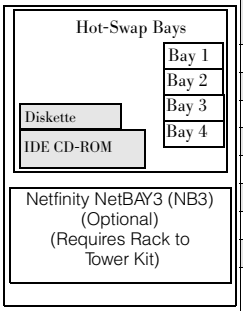


This table does not represent all possible memory configurations.
NOTE: 8-way interleaving can be obtained by installing identical memory in one or more of the following adjacent bank pairs: 1/2, 3/4, 5/6, 7/8 or by installing memory in both the standard and optional (P/N 01K8004) memory cards, both being identically configured. Greater than 8-way interleaving can be obtained by combining both 8-way interleaving methods (adjacent banks and identical memory cards). Netfinity 7000 M10 will recognize optimized configurations at boot-up and enable appropriate interleaving.
1. Can be configured for 8-way interleaving.
2. Can be configured for 8-way interleaving or greater than 8-way with Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004).
3. Assumes removal of standard memory DIMMs.
4. Can be configured for greater than 8-way interleaving.
5. Requires removal of standard memory DIMMs.

Part Number	Memory Description
01K8044	Netfinity 7000 M10 256MB Memory Expansion Kit - 4 x 64[1]
01K8045	Netfinity 7000 M10 512MB Memory Expansion Kit - 4 x 128[1]
28L4732	Netfinity 7000 M10 512MB Advanced Memory Expansion Kit - 4 x 128[1,2]
01K8046	Netfinity 7000 M10 1GB Memory Expansion Kit - 4 x 256[1]
01K8004	Netfinity 7000 M10 Memory Expansion Card[3]

1. DIMM size must be consistent within a Bank. DIMM sizes may vary from Bank to Bank.
2. Advanced ECC DIMMs not only detect and correct single 4-bit memory errors, but detect and correct two 4-bit errors as well. These advanced memory DIMMs significantly improve reliability up to 100 times over current ECC technology. In order to provide this increased reliability for all installed memory, co-existience with other Netfinity 7000 M10 memory is not recommended.
3. Required for installation of DIMMs in Banks 5...8.

Netfinity 7000 M10 Hard Disk Drive (HDD) Storage



Total Internal Disk Storage[1]	7200RPM Hard Disk Drives (HDDs)				10,000RPM HDDs		
	4.5GB	9.1GB	18.2GB	36.4GB	4.5GB	9.1GB	18.2GB
0GB	Standard on Base Models				Standard on Base Models		
4.5GB	1 x 94G7429	-	-		1 x 01K8009	-	-
9.1GB	2 x 94G7429 or	1 x 01K8053	-		2 x 01K8009 or	1 x 01K8054	-
13.5GB	3 x 94G7429	-	-		3 x 01K8009	-	-
18.2GB	4 x 94G7429 or	2 x 01K8053 or	1 x 01K8055 or		4 x 01K8009 or	2 x 01K8054 or	1 x 01K8503
27.2GB	-	3 x 01K8053	-		-	3 x 01K8054	-
36.4GB	-	4 x 01K8053 or	2 x 01K8055 or	1 x 02K0441	-	4 x 01K8054 or	2 x 01K8503
54.6GB	-	-	3 x 02K0440	-	-	-	-
72.8GB (max)	-	-	4 x 02K0440 or	2 x 02K0441			

This table does not represent all possible hard drive configurations.
1. Total Internal Storage listed is within ± 0.2GB unless otherwise noted.

Bay	Form Factor	Height	Front Access	Usage
-	3.5”	SL	Yes	Diskette
-	5.25”	HH	Yes	IDE CD-ROM
1..4	HS	SL[1]	Yes	Open
Optional NetBAY3[2]	19” Rack	3U	Yes	Open

1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. A total of three 3U NetBAY3s can be stacked beneath a Netfinity 7000 M10 which has Netfinity 7000 M10 Rack-to-Tower Conversion Kit installed. See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices

Part Number	Description	RPM	Height	Bays Supported	Max Qty.
	Internal Hard Disk Drives (HDD)				
94G7429	4.51GB Wide Ultra SCSI Hot-Swap HDD	7200	SL	1..4	4
01K8053	IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	7200	SL	1..4	4
01K8055	IBM Netfinity 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	HH[1]	1/2, 3/4	2
02K0440	IBM Netfinity 18.2GB Wide Ultra SCSI Hot-Swap SL HDD	7200	SL	1..4	4
02K0441	IBM Netfinity 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	HH[1]	1/2, 3/4	2
01K8009	IBM Netfinity 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	SL	1..4	4
01K8054	IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	10,000	SL	1..4	4
01K8503	IBM Netfinity 18.2GB 10K Wide Ultra SCA-2 HDD	10,000	HH[1]	1/2, 3/4	2

	External Expansion Units[2]	**Form Factor**
3517002	IBM SCSI Mutli-Storage Enclosure for IBM PC Servers	Tower
3518001	IBM PC Server Enterprise Expansion Tower	Tower
35202RU	IBM Netfinity EXP15 Storage Expansion Unit	Rack (3U)
3527001[3]	SSA Entry Storage Subsystem for PC Servers	Tower

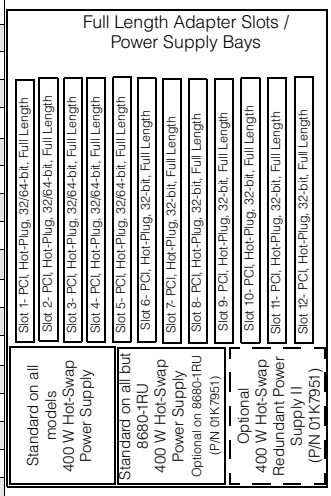
1. Two slim-line (SL) bays can be combined to support a single half-high device.
2. External Storage Expansion Units require storage controllers, external cables, and hard disk drives. For expansion unit features and options, including hard disk drives, see the specific expansion unit section. For other configuration requirements, see Appendix D: Cables-Storage Units-Controllers.
3. A preconfigured 3527001 (3527-PRO) contains five 9.1GB HDDs (P/N 21H8734) and a 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

Internal SCSI Cabling

Netfinity 7000 M10 systems contain a backplane supporting four Hot-Swap drive bays. The backplane is connected to one of the two onboard Ultra SCSI controllers through a 16-bit SCSI cable. If a RAID adapter or other supported SCSI adapter is installed for attachment to the internal hard disk drives, the 16-bit SCSI backplane cable is moved from the standard Ultra SCSI controller to the desired controller. The onboard external SCSI port contains a 0.8mm Very High Density Connection Interface (VHDCI) connector and can be used to attach up to 15 SCSI devices with the appropriate SCSI cable.

Netfinity 7000 M10 I/O Options

Part Number	Description	Adapter Length	PCI Bus Support	Slots Supported[1]	Hot-Plug[2]
	Storage Controllers[3]				
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter[4]	Full	32-bit	1...12[5]	X
01K7207	IBM Netfinity ServeRAID-3H Ultra2 Adapter SCSI Adapter	Full	32/64-bit	1...12[5]	X
28L1003	IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache[7]	-	-	-	-
02K3454	PCI Fast/Wide Ultra SCSI Adapter	Half	32-bit	1...12	-
01K7297	Netfinity Fibre Channel PCI Adapter[8]	Half	32/64-bit	1...12	-
32H3811	IBM SSA RAID Adapter for PC Servers[9]	Full	32-bit	1...12	-
09L2123	IBM Advanced SerialRAID/X Adapter	Full	32-bit	1...12[10]	-
	Networking[11]				
	Ethernet				
34L0901	Netfinity 10/100 Ethernet Adapter	Half	32-bit	1...12	X
08L3341	IBM Netfinity 10/100 Fault Tolerant Adapter	Half	32-bit	1...12	X
34L0301	Netfinity Gigabit Ethernet SX Adapter	Half	32/64-bit	1...12	X
	Token Ring				
34L0501	Token-Ring 100/16/4 High-Speed PCI Adapter	Half	32-bit	1...12	-
34L0601	Token-Ring 16/4 PCI Adapter 2	Half	32-bit	1...12	-
	Communications				
7852400	External V.34 Data/Fax Modem[12]				
37L1414	Serial I/O SST8P DB Adapter[13]	Half	32-bit	1...12[13]	-
37L1415	Serial I/O SST16P RJ Adapter[13]	Half	32-bit	1...12[13]	-
37L1423	Serial I/O SST16P DB Adapter[13]	Half	32-bit	1...12[13]	-
37L1416	Serial I/O SST128P Expandable Adapter[13]	Half	32-bit	1...12[13]	-
37L1417	Serial I/O PM16RJ Port Module[13]	-	-	-	-
37L1418	Serial I/O PM16DB Port Module[13]	-	-	-	-
37L1419	Serial I/O 16RJ Multiplexer Set[13]	-	-	-	-
37L1420	Serial I/O 16DB Multiplexer Set[13]	-	-	-	-
37L1421	Serial I/O PS4 Power Supply[13]	-	-	-	-
	Systems Management[14]				
03K9309	Netfinity Advanced System Management Interconnect Cable Kit[15]	-	-	-	-
36L9654	Netfinity Advanced System Management Token-RIng Connection[16]	-	-	-	-
02K6545	IBM UltraSlim 56W AC Adapter[17]				
	Host Attach				
9086001	IBM Netfinity ESCON Adapter[18]	Full	32-bit	1...6[20]	-



1. PCI Slots 1...5 support 64-bit or 32-bit operations. PCI Slots 6...12 support 32-bit operations.
2. All 12 PCI Slots are Hot Plug capable. For Network Operating System support access URL http://www.ibm.com/pc/us/compat.
3. Netfinity 7000 M10 includes two onboard Wide Ultra SCSI controllers, one internal connector and one external port with a 0.8 mm Very High Density Connection Interface (VHDCI), which can be used to attach up to 15 SCSI devices with the appropriate SCSI cable.
4. Netfinity ServeRAID-3L Ultra2 SCSI Adapter (P/N 01K7364) provides either one internal or one external (0.8 mmVHDCI) LVDS SCSI channel.
5. A total quantity of eight, in any combination of 01K7364 and 01K7207, is supported.
6. Netfinity ServeRAID-3H Ultra2 SCSI Adapter (P/N 01K7207) provides one internal and two external (0.8 mm VHDCI) LVDS SCSI channels. The internal channel can be configured for external usage (0.8 mm VHDCI) providing a total of three external LVDS SCSI channels.
7. Installs on ServeRAID-3H P/N 01K7207 to help protect against data loss in write-back cache mode in the event of a power outage or adapter maintenance. Cannot be used with shared ServeRAID logical drives in cluster configurations. Write-back cache mode can only be used with non-shared logical drives.
8. See Netfinity Fibre Channel Solutions section for additional configuration information.
9. System units with greater than 2GB of system memory are limited to RAID 5 operation only.
10. A maximum quantity of four is supported.
11. Netfinity 7000 M10 does not include an onboard network controller.
12. Due to homologation variances, modem availability may differ by country.
13. See Appendix E for details on Serial I/O options and configuration limitations. A maximum of four Serial I/O adapters (any combination of P/N 37L1414, 37L1415, 37L1416, 37L1423) may be installed.
14. Netfinity 7000 M10 ships standard with a Netfinity Advanced System Management PCI Adapter. Unlike optional Netfinity Advanced System Management PCI Adapter (P/N 01K7209), a 56-watt AC adapter and interconnect cable are NOT included and must be ordered separately if desired.
15. Required for each Netfinity 7000 M10 that is to be interconnected for system management support through a LAN or modem connection. Up to 12 service processors may be connected (one service processor per Netfinity 5000, 5500, 5500 Mxx plus one per Netfinity Advanced System Management Adapter) with an aggregate connection length of no more than 300 feet (91.4 meters).
16. Contains an IBM Turbo 16/4 Token-Ring PCI Card, which installs in the PCMCIA card slot of Netfinity Advanced System Management PCI Adapter and a PC Card to 9-pin D-Shell cable which is routed to a rear chassis cut-out. The Netfinity Advanced System Management PCI Adapter, integrated Ethernet port and Netfinity Advanced System Management Token-Ring Connection cannot be connected or used together. The firmware level of the integrated Netfinity Advanced System Management PCI Adapter must be at level 32A or later. To download the latest firmware, access URL http://www.pc.ibm.com/us/netfinity. Select "Server Support", "Family", "Model", "Downloadable Files" and finally "Advanced Sytem Management".
17. Although the 7000 M10 integrated Netfinity Advanced System Management PCI Adapter is powered continuously through the redundant power supply subsystem, an even higher level of availability is offered with the addition of IBM UltraSlim 56W AC Adapter by allowing an independent power source or connection to a separate optional UPS.
18. Provides an ESCON MIC and DB9 Serial Port. Cables are not included but are available through S/390 channels. Contact your IBM representative for additional information.
19. A maximum of two 9086001 adapters (installed in non-adjacent slots) are supported in a single Netfinity server.

Netfinity 7000 M10 Power, Monitor & Accessories

Part Number	Description
	Power[1]
01K7953	IBM Netfinity 400 W Hot-Swap Redundant Power Supply II[2]
01K7952	Netfinity 7000 M10 Dual Cord Power Unit[3]
	Uninterruptible Power Supply (UPS)[4]
94G6674	APC Smart-UPS 1400RMB (12 min. runtime at 525 VA)[5]
94G6676	APC Smart-UPS 3000RMB (35 min. runtime at 525 VA)[5]
	Monitors
654000N	G42 Color Monitor 14" (13.2" Viewable Image Size), pearl white
654102N	G51 Color Monitor 15" (13.6: Viewable Image Size), pearl white
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black
65474AN	G74 Color Monitor 17" (15.9 Viewable Image Size), stealth black
65494AN	G96 Color Monitor 19" (17.9" Viewable Image Size), stealth black[6]
9513AG1	T55A Flat Panel Color Monitor (15.0" Viewable Image Size), stealth black[6]

1. Netfinity 7000 M10 systems containing a single power supply (8680-1RU) do not provide power supply redundancy and require optional power supply 01K7951 when configurations contain one or more of the following:
 - Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004)
 - Three processors
 - Six PCI adapters

Netfinity 7000 M10m systems containing two power supplies (standard on all models except 8680-1RU) provide power supply redundancy and only require optional power supply 01K7951 when redundancy is required for configurations containing one or more of the following:
 - Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004)
 - Three processors
 - Six PCI adapters

2. Includes a power cord which is not used. No additional power source is required.
3. Provides power cord redundancy for the Netfinity 7000 M10. A second power source is required. Even though a second UPS may provide a redundant power source, systems management software doesn't currently take advantage of its power outage alerts.
4. Stated runtimes and power are for typical configurations (approximately 70% of maximum capacity). For additional information, see Appendix C: UPS Runtime Estimate.
5. Mounts in Netfinity Rack (9306900), NetBAY22 (9306200), or industry standard 19" rack, EIA-310D. (Height = 3U).
6. Not supported for installation in a 19" rack.

Part Number	Description
	Conversion Kits
01K8005	Netfinity 7000 M10 Rack-to-Tower Kit[1]
	Rack and NetBAY[2]
9306900	IBM Netfinity Rack[3]
9306200	IBM Netfinity NetBAY22[3]
10L6912	IBM Netfinity NeyBAY3[4]
	Keyboard and Mouse[5]
28L3640	Space Saver Keyboard
84G6537	TrackPoint Caps
01K1260	TrackPoint IV 104-Key Black Keyboard
12J3615	Black Sleek Mouse

1. Includes casters, which can also be used with NetBAY3.
2. All models of Netfinity 7000 M10 are housed in a 19" rack mountable drawer and require IBM Netfinity Rack (9306900), Netfinity NetBAY22 (9306200), or an industry standard 19" rack, EIA-310D, with a minimum depth of 29.23 inches (743 mm).
3. See IBM Netfinity Rack Cabinet and Options section for supported devices.
4. A maximum of three NetBAY3 enclosures may be stacked beneath a supported Netfinity tower server (conversion kit 01K8005 required). See IBM Netfinity NetBAY3 Stackable Enclosure section for supported devices.
5. Netfinity 700 M10 ships without a keyboard or mouse.

Netfinity 7000 M10 Tape Options

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Termination Included	68/50-pin Converter Incl.	Ext. Tape Encl.[1]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	N/A[7]	8	3.5"HH or 5.25"HH	Y[6]	Y	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	N/A[7]	8	3.5"SL or 5.25"HH	Y[6]	Y	3510020, 3551001
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	N/A[7]	16	5.25"HH	N	N	3510020[2], 3551001
01K1320	IBM 20/40GB DLT SCSI Tape Drive	N/A[7]	8	5.25"FH	Y[6]	Y	3503B0X[2], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	N/A[7]	16	5.25"FH	N	N	3503B0X[2], 3551001
	Associated Options						
32G3918	SCSI-2 16-bit Active Terminator	-	16	External	Y	N	3510020, 3503B0X
	External Tape Enclosures						
3510020	External Half High SCSI Storage Enclosure[3]	-	8/16	Desktop	N	N	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[4]	-	16	Rack	Y	N	-
10L7113	NetMEDIA Systems Management Adapter[9]	-	16	-	N	N	3551001
3503BOX	IBM DLT External SCSI Enclosure[5]	-	16	Desktop	N	N	-
	External Tape Libraries[8]						
3447xxx	3447 Digital Linear Library (desktop-105, rack-106)	-	16-bit	Desktop or Rack	Y	-	-
3449xxx	3449 8mm Tape Library (deskside-355, rack-356)	-	Differential	Deskside or Rack	Y	-	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x)	-	Differential	Rack	Y	-	-

1. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section and the desired enclosure, then refer to Appendix D: Cables - Storage Units - Controllers.
2. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
3. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either self-termination or SCSI-2 16-bit Active Terminator (P/N 32G3918).
4. Provides a black 3U, LVDS, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half high (HH) extended length 5.25" bays. Ext.I connector is 0.8mm VHDCI.
5. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
6.Tape drive is capable of self termination.
7. Netfinity 7000 M10 supports tape drives installed in external enclosures only. See External Tape Enclosure column.
8. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes.
9. Installs in 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.

NOTE: SCSI support is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454. Additional tape attributes can be found in Appendix A: Tape Drive Attributes

Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

High Availability-Rack

Description	Quantity	Part Number	Usage
IBM Netfinity 7000 M10 (PII Xeon 450-1MB/256MB/Rack)	1	8680-4RU	Power Redundancy standard
Netfinity 7000 M10 450MHz/ 1MB Upgrade	1	10L5896	Total SMP processors: Two
Netfinity 7000 M10 512MB Advanced Memory Expansion Kit- 4x128	1	28L4732	Total: 512MB[1]
IBM Netfinity 9.1GB Wide Ultra SCSI SCA-2 SL HDD	4	01K8053	-
Netfinity 10/100 Ethernet Adapter	1	34L0901	
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter	1	01K7207	RAID Controller
IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache	1	28L1003	-
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard	1	28L3640	Includes TrackPoint
APC Smart-UPS 3000 RMB	1	94G6676	-
External Storage			
IBM NetMEDIA Storage Expansion Unit EL	1	3551001	External Tape Drive Enclosure
IBM 35/70GB DLT SCSI Tape Drive	2	04K0149	Installs in 3551001
IBM Netfinity EXP15	1	35202RU	Provides additional 10 bays
Netfinity 2M Ultra2 SCSI Cable	3	03K9310	EXP15 to ServeRAID-3H, Tape to Onboard
IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI SL SCA-2 HDD	6	01K8499	RAID 5 with Hot-Spare in EXP15

Rack Options			
IBM Netfinity NetBAY22	1	9306200	Monitor and Keyboard mount on top
Blank Filler Panel Kit	1	94G6670	-

1. Advanced ECC DIMMs not only detect and correct single 4-bit memory errors but detect and correct two 4-bit errors as well. These advanced memory DIMMs significantly improve reliability up to 100 times over current ECC technology. In order to provide this increased reliability for all installed memory, co-existence with other Netfinity 7000 M10 memory is not recommended and has therefore been removed in this sample configuration.

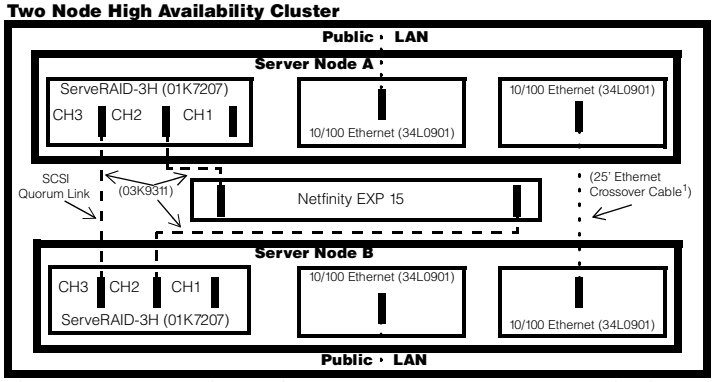
This high availability server is configured to act as the foundation for business critical applications, applications your business cannot afford to be without. The configuration includes enough disk drives to mirror the operating system and provide a RAID 5 data environment, power supply redundancy by the server and EXP15, a UPS for power even during a blackout. A rack mounted tape drive is included to back-up that all important asset……data. This server represents the leading edge in high availability.

Notes/Exchange-Stack

Description	Quantity	Part Number	Usage
IBM Netfinity 7000 M10 (PIII Xeon 500-1MB/256MB/Rack)	1	8680-7RY	-
Netfinity 7000 M10 500MHz/ 1MB Upgrade with Pentium III Xeon Processor	3	28L4734	Total SMP processors: Four
IBM 7000 M10 512MB Memory Expansion Kit - 4x128	2	01K8045	Total: 3GB[1], 8-way interleaved
Netfinity 7000 M10 1GB Memory Expansion Kit - 4x256	2	01K8046	Total: 3GB[1], 8-way interleaved
Netfinity 7000 M10 Memory Expansion Card	1	01K8004	Enables 8-way intleaving configuration
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	2	01K8054	-
Netfinity 10/100 Ethernet Adapter	2	34L0901	-
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter	1	01K7207	RAID Controller
IBM Netfinity ServeRAID-3H 32MB Battery-Backup Cache	1	28L1003	-
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard	1	28L3640	Includes TrackPoint
IBM Netfinity 400W Hot-Swap Redundant Power Supply II	1	01K7951	Required to preserve power redundancy
APC Smart-UPS 3000 RMB	1	94G6676	-
External Storage			
IBM NetMEDIA Storage Expansion Unit EL	1	3551001	External Tape Drive Enclosure
IBM 35/70GB DLT SCSI Tape Drive	2	04K0149	Installs in 3551001
IBM Netfinity EXP15	1	35202RU	Provides additional 10 bays
Netfinity 2M Ultra2 SCSI Cable	2	03K9310	EXP15 to ServeRAID-3H, Tape to System
IBM Netfinity EXP10 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10	01K8500	RAID 5 with Hot-Spare in EXP15
Stack Options			
Netfinity 7000 M10 Rack-to-Tower Conversion Kit	1	01K8005	Monitor and Keyboard mount on top
IBM Netfinity NetBAY3	3	10L6912	Provides space for EXP15, UPS and Tape

1. Configuration for 8-way interleaving with Netfinity 7000 M10 Memory Expansion Card (P/N 01K8004) requires removal of standard memory.

Two Node High Availability Cluster



1.Customer supplied Ethernet Crossover Cable may vary in length up to a maximum of 25' (7.6 m).

Two Node High Availability Cluster[1]

Description	Qty.	Part Number	Usage
Server Nodes A & B			
IBM Netfinity 7000 M10 (PIII Xeon 500-2MB/256MB/Rack) (11U)	2	8680-8RY	-
Netfinity 7000 M10 500MHz/2MB Upgrade with Pentium III Xeon Processor	6	28L4735	Total SMP processors: 4 each
Netfinity 7000 M10 256MB Memory Expansion Kit	2	01K8044	-
Netfinity 7000 M10 512MB Memory Expansion Kit	4	01K8046	Total: 1.5 GB, 8-way interleave capable
Netfinity 7000 M10 Memory Expansion Card	2	01K8004	Optimizes 8-way interleaving
IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter	2	01K7364	1 per node for NOS HDDs
IBM Netfinity 9.1GB 10K Wide Ultra SCSI SCA-2 SL HDD	4	01K8054	NOS on Mirrored HDD's
Netfinity 10/100 Ethernet Adapter[2]	4	34L0901	1 Private Interconnect, 1 public
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter[3]	2	01K7207	RAID Controller
IBM Netfinity 400W Hot-Swap Redundant Power Supply II	2	01K7951	Required to preserve power redundancy
Netfinity 7000 M10 Dual Power Cord Unit	2	01K7952	Allows redundant power sources
APC Smart-UPS 3000 RMB (3U)	2	94G6676	Provides redundant power sources
External Storage			
IBM NetMEDIA Storage Expansion Unit EL (3U)	1	3551001	External Tape Drive Enclosure
APC Smart-UPS 1400 RMB (3U)	1	94G6674	Provides UPS for tape unit
Netfinity 2M Ultra2 SCSI Cable[4]	1	03K9310	Attaches 3551001 to onboard SCSI
IBM 35/70GB DLT SCSI Tape Drive	2	04K0149	Installs in 3551001
IBM Netfinity EXP15 (3U)[3]	1	35202RU	-
IBM Netfinity EXP10 18.2GB 10K Wide Ultra SCSI SCA-2 HDD[3]	10	01K8500	RAID 5 Shared Storage
Netfinity 4.2 M Ultra2 SCSI Cable[3, 4]	2	03K9311	Attach EXP15 to ServeRAID-3H
Shared (or single occurrence) Resources			
G54 Color Monitor 15" (13.7" Viewable Image Size), stealth black	1	65464AN	-
Space Saver Keyboard (1U)	1	28L3640	Includes TrackPoint
Netfinity 4.2 M Ultra2 SCSI Cable	1	03K9311	SCSI Quorum Link
Industry Standard 19" Rack, EIA-310D, Min. depth of 29.23"			
IBM 9306-900 Netfinity Rack	2	9306900	Provides a total of 84U
Rack Attachment Kit	1	94G7446	Attaches the second rack to the first
Monitor Compartment (9U)	1	94G7444	-
Netfinity Rack Keyboard Tray	1	28L4707	-
Netfinity Console Server Selector Switch (4-port)	1	28L0542	-
Power Cable-Type A14[4]	5	94G6667	-
12 ft Console Cable Set	2	94G7447	-
Side Panel Kit	1	94G6669	-
Blank Filler Panel Kit	4	94G6670	-

1. Certified for Microsoft Cluster Server.
2. Requires customer supplied Ethernet Crossover Cable which may vary in length up to a maximum of 25' (7.6 m).
3. By replicating these items, up to a total quantity of four ServeRAID-3H Adapters (plus options) and eleven EXP15's can provide over 2 Terabytes of storage. Additional power and rack space will be required.
4. Cable length requirements are dependent on component placement within the rack or rack suite. To determine specific configuration requirements use the Netfinity Rack Configurator which is downloadable from Web site http://www.pc.ibm.com/us/netfinity/tech_library.html "Configuration Tools"

Clustering is a group of interconnected computers used as a single, unified computing resource. Clustering Netfinity servers, like the IBM Netfinity 7000 M10, provides a high availability solution to keep you in touch with the key applications you need to run your business. High availability solutions are available from IBM to support NT, OS/2, and NetWare operating environments. By using the IBM Netfinity Rack, a high availability cluster with scalable storage expansion can be installed in less floor space.

This sample configuration consists of paired IBM Netfinity 7000 M10 cluster nodes equipped with 4-way SMP capability and redundant power supplies. Microsoft Cluster Server (MSCS) has been certified on IBM Netfinity 7000 M10 servers, using the Netfinity ServeRAID-3H with the EXP15 Storage Expansion Unit. MSCS allows two configured servers, referred to as nodes, to be connected together to form a cluster. Providing system redundancy means that a complete server can fail and client access to server resources is largely unaffected. MSCS extends this theme by also allowing software failures at an application level as well as an operating system level. If the operating system fails, all applications and services can be restarted on another server, and if just one application fails, it can be managed by MSCS individually. An additional independent network connection is used to perform monitoring within the cluster. One or more disk subsystems are attached to both nodes. In the above example, an Netfinity EXP15 was selected and the Netfinity ServeRAID-3H Ultra2 SCSI Adapters provided the I/O control. MSCS requires a dedicated SCSI channel to act as a "SCSI heartbeat" connection. This connection, between the third channel of the ServeRAID-3H Adapter in each node, logically attaches the quorum disk which allows arbitration when a failure occurs.

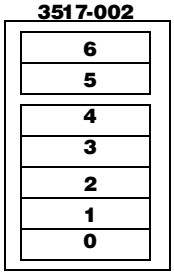
Additional information on IBM Netfinity and IBM PC Server Clustering Solutions may be found on the World Wide Web by accessing URL http://www.pc.ibm.com/us/netfinity/clustering.html.

IBM External Storage Expansion Unit Overview

Part Number	Withdrawal Date (mmddyy)[1]	Subsystem Type	Total Bays	Hot-Swap Bays: total, available	Maximum Internal Storage Capacity(GB)	Dimensions (in.) (W x D x H)	Form Factor	Max. Cfg. Wt. (lb)	Power Supply
3517002	-	SCSI	7	5, 5	45.5	7.75 x 19.0 x 16.0	Tower	-	480 Watts
3518001	-	SCSI	20	18, 18	163	13.9 x 29.7 x 24.5	Maxi-Tower	119	470 Watts
35202RU Netfinity EXP15	-	Ultra SCSI[2] LVDS	10	10, 10	364	17.6 x 22.5 x 5.1	Rack Drawer (3U)	92	Redundant 350 Watts
3527001[3]	-	SSA	5	5, 5	45.5	7.75 x 19.0 x 16.0	Tower	-	480 Watts

To attach a Storage Enclosure to an IBM Netfinity or PC Server, the following is required:
Attachment to an appropriate PC Server SCSI or SSA controller.
External Cable(s) - See Appendix D: Cables - Storage Units - Controllers.
SCSI Enclosures 3517 and 3518 should be operated at SCSI - 2 speeds.
1. Not available from IBM after this date. Business Partner inventory may be available.
2. See IBM Netfinity EXP15 Configurator Limitations section for additional information.
3. A preconfigured 3527001 (3527-PR0) contains five 9.1GB HDDs (P/N 21H8734) and a 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

IBM SCSI Multi-Storage Enclosure for IBM PC Servers (3517002) Configurator



Bay	Form Factor	Height	Front Access	Usage
6	5.25"	HH	yes	open (removable media only)
5	5.25"	HH	yes	open (removable media only)
4	HS	HH	yes	open
3	HS	HH	yes	open
2	HS	HH	yes	open
1	HS	HH	yes	open
0	HS	HH	yes	open

Total Disk Capacity	Part Number(s) Required
0GB	N/A
13.5GB	3 x 94G7491[1]
22.5GB	5 x 94G7491[1]
27.3GB	3 x 02K0477[1]
45.5(max)	5 x 02K0477[1]

This table does not represent all possible hard disk configurations.
1. 3517-001s with serial numbers between 01000 and 02499 require the Five-Pack upgrade kit 21H8767.

Part Number	Description[2]	Bays Supported	Qty Supported
94G7491	IBM PC Server 4.51GB Wide Ultra SCSI hot-swap HDD[1]	0-4	5
94G7492	IBM PC Server 9.1GB Wide Ultra SCSI hot-swap HDD[1]	0-4	5
02K0477	IBM 9.1GB Wide Ultra SCSI SL Hot-Swap Hard Disk Drive	0-4	5
21H8767	Five-Pack upgrade kit	-	1

1. 3517-001s with serial numbers between 01000 and 02499 require the Five-Pack upgrade kit 21H8767.
2. Ultra SCSI drives must be operated at SCSI-2 speeds in this enclosure.

Part Number	UPS[1]
94G3134	APC Smart-UPS 700 (20 min. runtime at 210VA)
94G3135	APC Smart-UPS1000 (36 min. runtime at 210VA)

1. Stated runtimes and power are for typical configurations (70% of maximum capacity).

Part Number	Cables
	See External Cable Configuration Table
70G9857	PC Server F/W to F/W External SCSI Cable
32G3925	SCSI 68-pin to 50-pin Converter
76H3589	IBM 1 M External .8mm SCSI Cable

Non-US Models require a power cord to be ordered

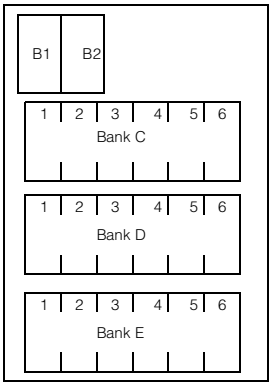
Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Representative for assistance with your specific configuration requirements.

Part Number	Amount Required	Description
3517002	1	PC Server Multi Storage Enclosure
94G7492	5	IBM PC Server 9.1GB Wide Ultra SCSI hot-swap HDD
94G3134	1	APC Smart-UPS 700
70G9857	1	PC Server F/W to F/W External SCSI Cable

The configuration above provides 45.5GB of storage capacity. The APC UPS provides protection against power problems.

IBM PC Server Enterprise Expansion Enclosure (3518001) Configurator



Part Number(s) Required	Total Disk Storage[3]
N/A	0GB
3 x94G7491	13.5GB
6 x 94G7491 or 3 x 02K0477	27.1GB
6 x 02K0477	54.6GB
1 Power supply and 1 additional backplane required	
12 x 94G7491, 1 x 94G4701[1], 1 x 76H2670	54.1GB[2]
12 x 02K0477, 1 x 94G4701[1], 1 x 76H2670	109.2GB[2]
1 Power supply and 2 additional backplanes required	
18 x 94G7491, 1 x 94G4701[1], 2 x 76H2670	81.1GB[2]
18 x 02K0477, 1 x 94G4701[1], 2 x 76H2670	163.8GB[2] (max. hot-swap)

1. Either 94G7593 or 94G4701 is required when installing the first optional 76H2670 backplane.
2. See "CABLING" section for required cables.
3. Total Disk Storage listed is within ± 0.2GB unless otherwise noted.
This table does not represent all possible hard disk configurations.

Bay	Form Factor	Height	Front Access	Usage
B1	5.25"	HH	yes	open
B2	5.25"	HH	yes	open
C1-6	HS	SL	yes	Std. backplane
D1-6	HS	SL	yes	no backplane
E1-6	HS	SL	yes	no backplane

Part Number	Description[2]	Bays Supported	Qty Supported
94G7491	IBM PC Server 4.51GB Wide Ultra SCSI hot-swap HDD	C -D - E (1-6)	18
94G7492	IBM PC Server 9.1GB Wide Ultra SCSI hot-swap HDD	C -D - E (1/2, 3/4, 5/6)	9
02K0477	IBM 9.1GB Wide Ultra SCSI SL Hot-Swap HDD	C-D-E (1-6)	18
76H2670	IBM PC Server hot-swap backplane III	Bank D, E	2
94G7593	PC Server Power Supply Upgrade II	Note 1	1
94G4701	780 Watt Redundant Power Option	Note 1	1

1. Either 94G7593 or 94G4701 is required when installing the first optional 76H2670 backplane.
2. Ultra SCSI drives must be operated at SCSI-2 speeds in this enclosure.

Internal Cables / Repeater[3]		
Part Number	**Description**	**Qty supported**
94G4070	Backplane to Backplane Cable Daisy chains with two backplanes	2
94G7585	PC Server SCSI-2 Fast/Wide Enhanced Repeater	4
70G9876	Expansion Enclosure Backplane Cable Connects a backplane to a repeater card or rear panel knockout	2
70G9864	Backplane to Media Bay Cable[1]	1
70G9877	Expansion Enclosure Media Bay Cable[2]	1
32G3925	68 to 50-pin SCSI converter	2

1. Includes one 68-50-pin converter. Connects 5.25-inch devices in the media bays to a backplane (share the SCSI channel with the hot-swap drives)
2. Includes one 68-50-pin converter 32G3925. Connects 5.25" devices in the media bays to the rear of the enclosure (use a dedicated SCSI channel).
3. See 3518 SCSI Channel Limitations and Example configurations for usage and requirements.

External Cables	
Part Number	**See External Cable Configuration Table**
	Security
70G9742	PC Server Security Cover
	UPS[1]
94G3135	APC Smart-UPS 1000
94G3136	APC Smart-UPS 1400
	Rack Related
94G5461	Single Slide Shelf[2]
94G4997	Series 500/700 Mounting Plate[2]

1. Stated runtimes and power are for typical configurations (70% of maximum capacity).
2. For use when installing the 3518001 tower in IBM Netfinity Rack 9306900(15U). Requires both Single Slide Shelf (P/N 94G5461) and Series 500/700 Mounting Plate (94G4997).

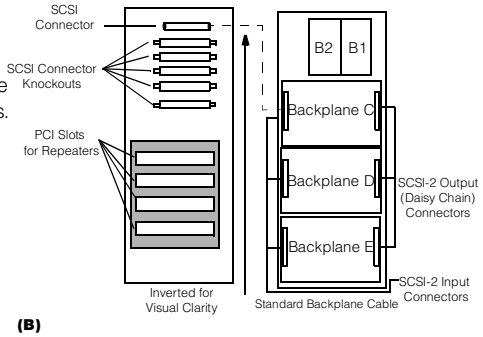
3518 SCSI Channel Limitations[1]								
Hot-Swap Hard Disk Drives per Single SCSI Channel	**Drive Height[2]**	**Number of Hot-Swap Backplanes Required**	**Non-Hot-Swap Devices**	**Total SCSI Devices**	**SCSI Repeater (94G7585) Required**	**All Supported SCSI Adapters**	**SCSI Cable Length**	**Example**
6	SL	1	0	6	N[6]	Y	≤ 1M	A
6	HH[3]	2	0	6	N[6]	Y	≤ 1M	B
5	SL	1	1[5]	6	N[6]	Y	≤ 1M	C, D
4	SL	1	2[5]	6	N[6]	Y	≤ 1M	C, D
0	SL	0	2[8]	2	N[6]	Y	≤ 1M	A
6	SL	1	1[5]	7	Y	Y	≤ 4.3M[6]	F
5	SL	1	2[5]	7	Y	Y	≤ 4.3M[6]	F
12	SL	2[4]	0	12	Y	N[9]	≤ 4.3M[6]	F
9	HH[3]	3[7]	0	9	Y	N[9]	≤ 4.3M[6]	E

1. The 3518 supports up to four SCSI channels (one per backplane and one for the Non-Hot-Swap bays) in a non-cluster environment. Cluster limitations are not addressed by this table.
2. Do not mix Slim-Line (SL) and Half-High (HH) Hot-Swap Hard Disk Drives on a SCSI channel.
3. Two Slim-Line (SL) bays are combined to support one Half-High (HH) device.
4. Requires one additional backplane (P/N 76H2670) and backplane to backplane cable (P/N 94G4070). Additional power supply (P/N 94G7593 or P/N 94G4701) is required when two or more hot-swap backplanes are installed.
5. Requires backplane to Media Bay Cable (P/N 70G9864) which includes one 68-pin to 50-pin converter (P/N 32G3925). All narrow (50-pin) devices require a 68-pin to 50-pin Converter (P/N 32G3925).
6. External cable lengths greater than 1 meter require installation of a PC Server SCSI-2 Fast/Wide Enhanced Repeater (P/N 94G7585).
7. Requires two additional backplanes (P/N 76H2670) and two backplane to backplane cables (P/N 94G4070). Additional power supply (P/N 94G7593 or P/N 94G4701) is required when two or more hot-swap backplanes are installed
8. Requires one Expansion Enclosure Media Bay Cable (P/N 70G9877) which includes one 68-pin to 50-pin (P/N 32G3925) . All narrow (50-pin) devices reqyuire a 68-pin to 50-pin Converter (P/N 32G3925).
9. Requires connection from PC Server SCSI-2 Fast/Wide Enhanced Repeater (P/N 94G7585) to either IBM ServeRAID adapter (P/N 01K7364, 01K7207 or 76H3584) or IBM PC Server Wide Ultra SCSI Adapter (P/N 02K3454, 76H3579 or 76H5407).

IBM PC Server Enterprise Enclosure (3518001) Non-Repeater Examples

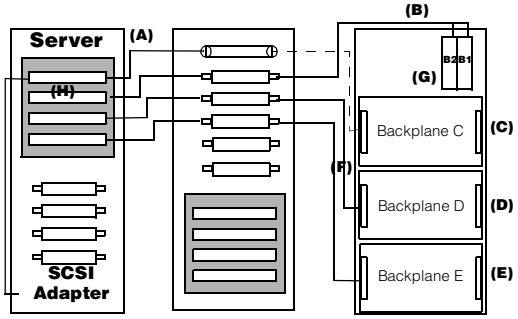
Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM representative for assistance with your specific configuration requirements.

3518 Standard Components Rear View



These sample configurations include most of the supported cables and their usage. There are many possible combinations which aren't presented here but can be derived from variations or combinations of these samples. Use the external Cable Configuration Table and Server Configuration pages to assure adapter and cable option compatibility.

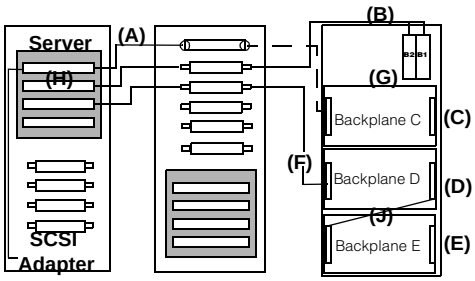
Example A



Additional Options Required (Dedicated SCSI Channels)

(A) 4 x External Cables - no repeater attached ≤ 1 meter long
(see external cable configuration table)
(B) 1 x 70G9877 Expansion Enclosure Media Bay Cable. Includes 1 x SCSI 68-pin to 50-pin converter.
Mixing Hot-Swap SL & HH HDD's on a single SCSI Channel is not supported
(C) 1 to 6 (SL) or 3 (HH) hot-swap HDD
(D) 1 to 6 (SL) or 3 (HH) hot-swap HDD
1 x 76H2670 IBM PC Server hot-swap backplane III
1 x 94G7593 or 94G4701 Power Supply
(E) 1 to 6 (SL) or 3 (HH) hot-swap HDD
1 x 76H2670 IBM PC Server hot-swap Backplane III
Additional Power Supply (D) Services both Backplane D and E
(F) 2 x 70G9876 Expansion Enclosure Backplane Cable
(G) Up to 2 non-hot-swap HDD and/or Removable Media Options
(H) Appropriate SCSI Adapter
(See External Cable Configuration Table and Specific Server Configuration sections)

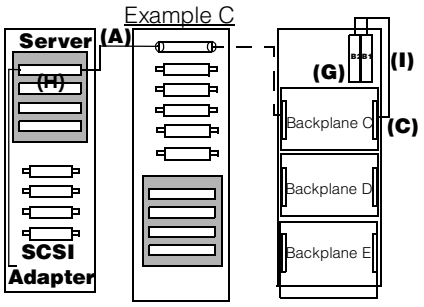
Example B



Additional Options Required (Dedicated and Daisy Chained SCSI Channels)

(A) 3 x External Cables - no repeater attached ≤ 1 meter long
(See External Cable Configuration Table)
(B) 1 x 70G9877 Expansion Enclosure Media Bay Cable
Includes 1 x SCSI 68 to 50-pin Converter
Mixing Hot-Swap SL & HH HDD's on a single SCSI channel is not supported
(C) 1 to 6 (SL) or 3 (HH) hot-swap HDD
Maximum of 6 SCSI devices per SCSI channel
(D) 1 to 3 (HH) hot-swap HDD
(E) 1 to 3 (HH) hot-swap HDD
2 x 76H2670 IBM PC Server hot-swap Backplane III
1 x 94G7593 or 94G4701 Power Supply
(F) 1 x 70G9876 Expansion Enclosure Backplane Cable
(G) Up to 2 non hot-swap HDD and/or Removable Media Options
(H) Appropriate SCSI Adapter
(See External Cable Configuration Table and Specific Server Configuration Sections)
(J) 1 x 94G4070 Backplane to Backplane Cable

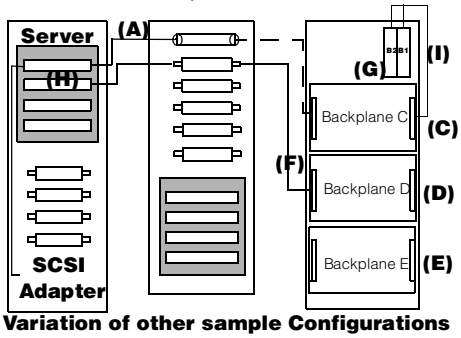
Example C



Additional Options Required (Shared SCSI Channel)

(A) 1 x External Cable - no repeater attached ≤ 1 meter long
(See External Cable Configuration Table)
Maximum of 6 SCSI devices per SCSI Channel
(C) 1 to 6 (SL) or 3 (HH) hot-swap HDD
(G) Up to 2 non-hot-swap HDD and/or removable media options
(H) Appropriate SCSI Adapter
(See External Cable Configuration and specific Server Configuration sections)
(I)1 x 70G9864 Backplane to Media Bay Cable
Includes 1 x SCSI 68 to 50-pin Converter
Supported on Backplanes "C" and "D" only

Example D



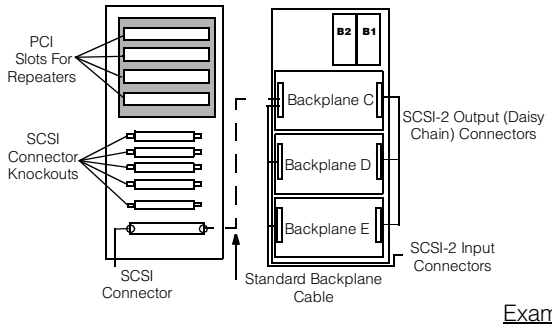
Variation of other sample Configurations

IBM PC Server Enterprise Enclosure (3518001) Repeater Examples

SCSI Repeater Examples

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Representative for assistance with your specific configuration requirements.

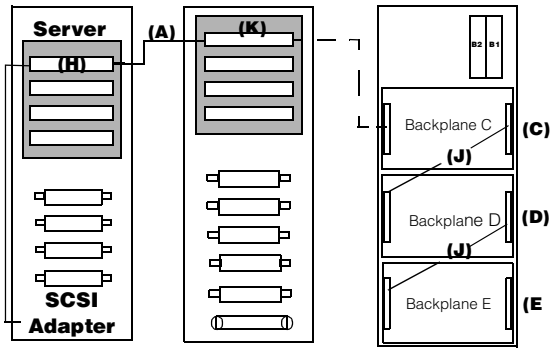
3518 Standard Components
Rear View



These sample configurations include most of the supported cables and their usage. There are many possible combinations which aren't presented here but can be derived from variations or combinations of these samples. Use the external Cable Configuration Table and Server Configuration pages to assure adapter and cable option compatibility.

Example E

SCSI Repeaters

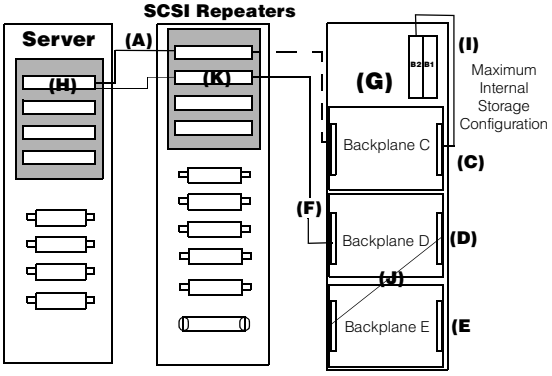


Additional Options Required

(A) 1 x External Cable- ≤ 4.3 meters long- Repeater Attached
(See External Cable Configuration Table)
Maximum of 12 SL or 9 HH SCSI hot-swap HDDs when attached to
76H3584 PC ServeRAID II or
76H5407 PC Server Wide Ultra SCSI PCI Adapter
Limits: 2 backplanes using SL HDDs
3 backplanes using HH HDDs-Mixing Hot-Swap SL & HH HDD's on a single SCSI channel is not supported.
Maximum of 7 when attached to other SCSI Adapters
Limits: 2 backplanes using HH HDDs
(C) 3 (HH) hot-swap HDD
(D) 3 (HH) hot-swap HDD
1 x 76H2670 IBM PC Server hot-swap Backplane III
1 x 94G7593 or 94G4701 Power Supply
(E) 1 to 3 (HH) hot-swap HDD(All HDD's must be HH).
1 x 76H2670 IBM PC Server hot-swap backplane III
Additional Power Supply (D) Services both Backplanes D and E
(H) Appropriate SCSI Adapter
(See External Cable Configuration and specific Server Configuration sections)
(J) 2 x 94G4070 Backplane to Backplane Cable
(K) 1 x 94G7585 IBM SCSI-2 F/W Enhanced Repeater

Example F

SCSI Repeaters



Additional Options Required

(A) 2 x External Cables - ≤ 4.3 meters long, Repeater Attached
(See External Cable Configuration Table)
Maximum of 7 SCSI devices when using Repeater 94G7585 and Bay devices.
Mixing Hot-Swap SL & HH HDD's on a single SCSI channel is not supported.
(C) 1 to 6 (SL) or 3 (HH) hot-swap HDD
(D) 1 to 6 (SL) or 3 (HH) hot-swap HDD
1 x 76H2670 IBM PC Server hot swap Backplane III
1 x 94G7593 or 94G4701 Power Supply
(E) 1 to 6 (SL) or 3 (HH) hot-swap HDD
1 x 76H2670 IBM PC Server hot-swap backplane III
Additional Power Supply (D) Services both Backplanes D and E
(F) 1 x 70H9876 Expansion Enclosure Backplane Cable
(H) 76H3584 PC ServeRAID II Ultra SCSI Adapter
(See External Cable Configuration Table and Specific Server Configuration sections)
(G) Up to 2 non-hot-swap HDD and/or removable media options
(I) 1 x 70G9864 Backplane to Media Bay Cable
Includes 1 x SCSI 68 to 50-pin Converter
Supported on Backplanes "C" and "D" only
(J)1 x 94G4070 Backplane to Backplane Cable
(K) 2 x 94G7585 IBM SCSI-2 F/W Enhanced Repeaters

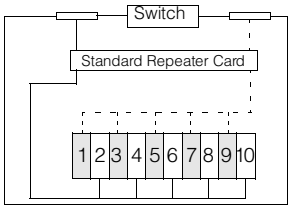
IBM Netfinity EXP15 (3520-2RU) Configurator

Hard Disk Drive Configurator

Netfinity EXP15 19" Rack Drawer[1]

3520-2RU

(0.8mm VHDCI Connectors)



Total Disk Capacity	Part Number(s) Required, 7,200 RPM	Part Number(s) Required, 10,000 RPM
0GB	Open Bay Standard on all Base Models	Open Bay Standard on all Base Models
22.5GB	5 x 01K7956	5 x 01K7960
45.1GB	10 x 01K7956	10 x 01K7960
45.5GB	5 x 01K7959	5 x 01K8499
91.0GB	10 x 01K7959	10 x 01K8499
182GB	10 x 01K8501	10 x 01K8500
364 (max)	10 x 02K0442	-

This table does not represent all valid hard disk drive configurations.
1. Requires installation in an IBM Netfinity Rack (9306900), NetfBAY22 (9306200), NetBAY3 (10L6912) or an Industry Standard 19 inch rack cabinet that meets EIA-310-D and a depth of at least 24 inches.

Bay	BUS	Form Factor	Height	Front Access	Usage
1,3,5,7,9	1	HS	HH	yes	open
2,4,6,8,10	2	HS	HH	yes	open

Part Number	Description	RPM	Bays Supported	Qty Supported
01K7956	IBM Netfinity EXP10 4.51GB Wide Ultra SCSI SCA-2 HDD	7200	All	10
01K7959	IBM Netfinity EXP10 9.1GB Wide Ultra SCSI SCA-2 HDD	7200	All	10
01K8501	IBM Netfinity EXP10 18.2GB Wide Ultra SCSI SCA-2 HDD	7200	All	10
02K0442	IBM Netfinity EXP 36.4GB Wide Ultra SCSI Hot-Swap HDD	7200	All	10
01K7960	IBM Netfinity EXP10 4.51GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	All	10
01K7968	IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	All	10
01K8499	IBM Netfinity EXP10 9.1GB 10K Wide Ultra SCSI SL SCA-2 HDD	10,000	All	10
01K8500	IBM Netfinity EXP10 18.2GB 10K Wide Ultra SCSI SCA-2 HDD	10,000	All	10

Limitations

The Netfinity EXP15 is not supported when the SCSI channel of the SCSI adapter to which it is attached is split between internal devices and external devices. Each Netfinity EXP15 must be attached to a dedicated SCSI channel of a supported SCSI adapter. Ultra SCSI mode is not supported when external cables are greater than 2.0 meters in length unless attached to a supported Ultra-2 SCSI adapter (other restrictions may apply; see Appendix D). Netfinity EXP15 is supported as a rack drawer and is not currently supported for stacking directly on top of one another. Netfinity EXP15 can be installed in Netfinity NetBAY3 storage units stacked up to three units high with a supported server on top.

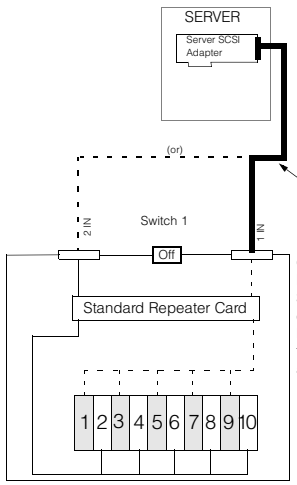
Cables and Controllers:
See Appendix D: Cables - Storage Units - Controllers

Sample Configurations

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.

Netfinity EXP15 One Independent SCSI Bus

To configure as a single 10 drive SCSI channel, attach one external cable from the SCSI adapter to either the 1 IN or 2 IN connectors in the EXP15. Set switch 1 to "Off" position.



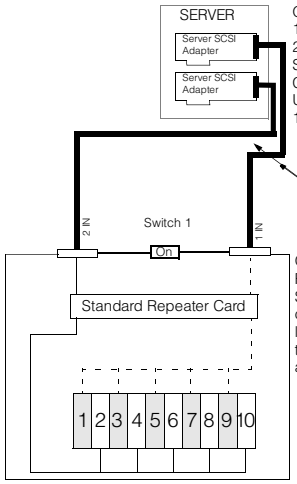
Order:
1 x 3520-2RU
1 x External Cable
See Cables - Storage Units - Controllers section
Up to 10 Disk Drives
19" Rack Space

External cable

Operational mode (SCSI F/W, Ultra SCSI, Ultra-2 SCSI) may be limited by controller, cable, cable length, or hard disk drive type. See Appendix D for additional information.

Netfinity EXP15 Two Independent SCSI Buses

To configure as two independent 5 drive SCSI channels, attach one external cable from the SCSI adapter to the SCSI bus 1 IN connector in the EXP15. Attach a second External SCSI cable from another SCSI adapter, in the same or separate server, to the 2 IN connector in the unit. Set switch 1 to "On" position.



Order:
1 x 3520-2RU
2 x External Cables
See Cables - Storage Units - Controllers section
Up to 10 Disk Drives
19" Rack Space

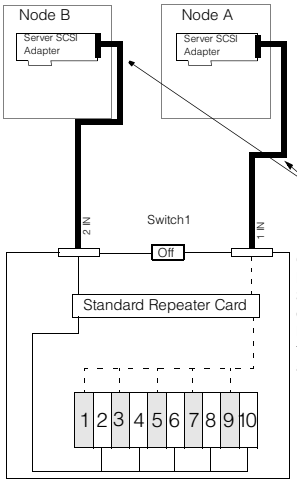
External cables

Operational mode (SCSI F/W, Ultra SCSI, Ultra-2 SCSI) may be limited by controller, cable, cable length, or hard disk drive type. See Appendix D for additional information.

Netfinity EXP15 One Independent SCSI Bus

High Availability Configuration

To configure a single 10 drive SCSI channel for clustering, attach one external cable from the SCSI adapter in Node A to the 1 IN connector in the EXP15. Connect a second external cable to a SCSI adapter in Node B and to the 2 IN connector in the EXP15.



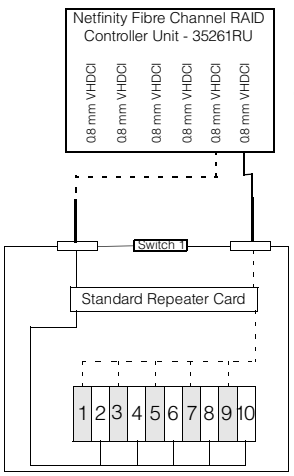
Order:
1 x 3520-2RU
2 x External Cables
See Cables - Storage Units - Controllers section
Up to 10 Disk Drives
19" Rack Space

External cables

Operational mode (SCSI F/W, Ultra SCSI, Ultra-2 SCSI) may be limited by controller, cable, cable length, or hard disk drive type. See Appendix D for additional information.

Netfinity Fibre Channel Solutions Configuration

To configure the Netfinity EXP15 for either cluster or non-cluster applications using a 35261RU, follow the same attachments outline above. Utilizing Fibre Solutions provides support for large amounts of high-performance, RAID protected data storage at distances of up to 10 KM (6 miles) from the server.



One Independant Bus
- 1 connection only
- Switch 1 off

Two Independant Bus
- 2 connections
- Switch 1 on

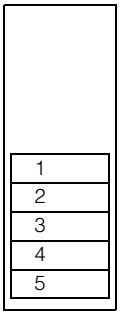
See Appendix D for cable selection

IBM SSA Entry Storage Subsystem for PC Servers (3527001) Configurator

To attach the 3527 SSA Entry Subsystem to an IBM Netfinity or IBM PC Server, the following is required:

- The SSA RAID Adapter installed in an IBM Netfinity or IBM PC Server
- SSA Cables

3527-001



Slot	Form Factor	Height	Front Access	Usage	Total Disk Cap.	Part Number(s) Required
1	SSA HS	HH	Yes	must contain a HDD	0GB	None[1]
2	SSA HS	HH	Yes	open	13.5GB	3 x 27H1062, 2 x 05J6411
3	SSA HS	HH	Yes	open	22.5GB	5 x 27H1062
4	SSA HS	HH	Yes	open	27.3GB	3 x 21H8734, 2 x 05J6411
5	SSA HS	HH	Yes	must contain a HDD	45.5GB	5 x 21H8734

1. A minimum of 2 hard disk drives are required. All slots must contain a hard disk drive or dummy module.
Note:This table does not represent all possible hard disk drive configurations.

Part Number	Description	Bays Supported	Qty Supported
27H1062	4.51GB SSA SL hot-swap HDD	1-5	5
21H8734[1]	9.1GB SSA hot-swap HDD	1-5	5
05J6411	Dummy Disk Drive Module	2,3,4	3

1. A preconfigured 3527001 (3527-PR0) contains five 9.1GB HDDs (P/N 21H8734) and 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

Limitations

All five disk drive slots in a 3527 must be filled with either an SSA disk drive or an SSA dummy disk drive module.
A maximum of three neighboring dummy disk drive modules can be connected in a particular SSA loop.
Hard disk drives must be installed in slots 1 and 5.
The maximum number of drives per RAID adapter is 48.
The maximum number of drives per RAID adapter is 96.
Each SSA loop must be connected to a valid pair of SSA adapter connectors (A1 and A2, or B1 and B2).
Only one of the two pairs of connectors on the RAID adapter can be connected in a particular SSA loop.
The 3527 can be placed a maximum of 25 meters from the server or adjacent 3527s in a particular loop.

Part Number	Server RAID Adapters
32H3811	IBM SSA RAID Adapter for PC Servers[1]
09L2123	IBM Advanced SerialRAID/X Adapter[2]
	UPS
94G3134	APC Smart-UPS 700
94G3135	APC Smart-UPS 1000:
94G3136	APC Smart-UPS 1400

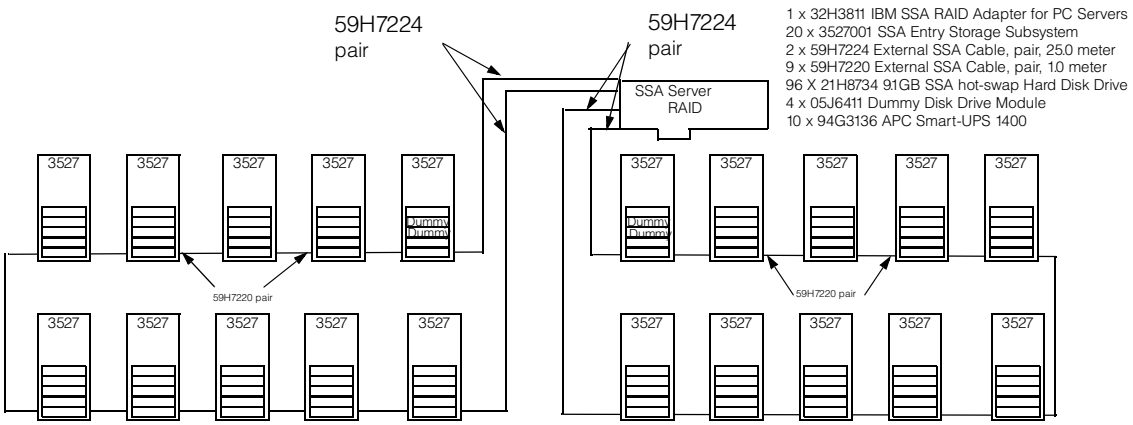
1. System units with greater than 2GB of system memory are restricted to RAID 5 operation only.
2. 09L2123 can address system memory of up to 4GB. Cannot coexist with 32H3811 on the same loop.

Part Number	External Cables
59H7220	External SSA Cable, pair, 1.0 meter
59H7221	External SSA Cable, pair, 2.5 meter
59H7222[1]	External SSA Cable, pair, 5.0 meter
59H7223	External SSA Cable, pair, 10.0 meter
59H7224	External SSA Cable, pair, 25.0 meter

1. A preconfigured 3527001 (3527-PR0) contains five 9.1GB HDDs (P/N 21H8734) and 5 M cable pair (P/N 59H7222). Order P/N 34H8388.

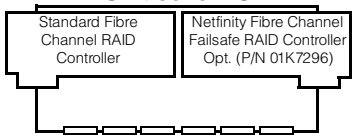
Maximum Configuration per SSA RAID Adapter

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM representative for assistance with your specific configuration requirements.



IBM Netfinity Fibre Channel Solutions

Netfinity Fibre Channel RAID Controller Unit 35261RU

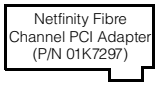


- Contains a single Short-Wave Fibre Connection (use cable group D) and six female 0.8 mm Very High Density Connection Interface (VHDCI) SCSI connectors (EXP15 - use cable group A, EXP10 - use cable group B)
- Hot-Swap Redundant Fans and Power Supplies
- Optional Netfinity Fibre Channel Failsafe RAID Controller (P/N 01K7296) provides a redundant RAID controller and second Short-Wave Fibre Connection (use cable group D).
- Attach directly to Netfinity Fibre Channel PCI Adapter(s) (P/N 01K7297) or indirectly through Netfinity Fibre Channel Hub (P/N 35231RU) using cables from cable group D
- Height is 4 U (1 U = 1.75 in or 44.45 mm)
- Requires Netfinity Rack, Netfinity NetBAY22 or 19-inch EIA-D Industry-Standard Rack. Mounting rails are included with the controller.
- For optimum performance no more than two RAID controller units (P/N 35261RU) should be attached to a single hub (P/N 35231RU).

Netfinity Fibre Channel Hub 35231RU

- Seven-port Fibre Channel Hub chassis
- Includes four standard Netfinity Fibre Channel Short-Wave GBIC's (GigaBit Interface Converters)
- GBIC's supported
  - Netfinity Fibre Channel Short-Wave GBIC (P/N 03K9308) supports Cable Group D
  - Netfinity Fibre Channel Long-Wave GBIC (P/N 03K9307) supports Cable Group E
- Supported Attachments (up to seven with available GBIC):
  - Netfinity Fibre Channel PCI Adapter (P/N 01K7297) requires cable group D with short-wave GBIC
  - Second Netfinity Fibre Channel Hub (P/N 35231RU) requires cable group D or E with corresponding GBIC
  - Netfinity Fibre Channel RAID Controller Unit 35261RU requires cable group D and short-wave GBIC
- Height is 1 U (1 U = 1.75 in or 44.45 mm). Two units can be mounted side-by-side in a 1 U space.
- Requires Netfinity Rack, Netfinity NetBAY22 or 19-inch EIA-D Industry-Standard Rack. Mounting hardware is included with the hub.
- For optimum performance no more than two RAID controller units (P/N 35261RU) should be attached to a single hub (P/N 35231RU)

Netfinity Fibre Channel PCI Adapter (P/N 01K7297)



- PCI to FCAL 64/32-bit host adapter
- Supported Attachments (use cable group D):
  - Netfinity Fibre Channel Hub (P/N 35231RU), requires available short-wave GBIC in hub
  - Netfinity Fibre Channel RAID Controller Unit 35261RU
  - Netfinity Fibre Channel Failsafe RAID Controller (P/N 01K7296)

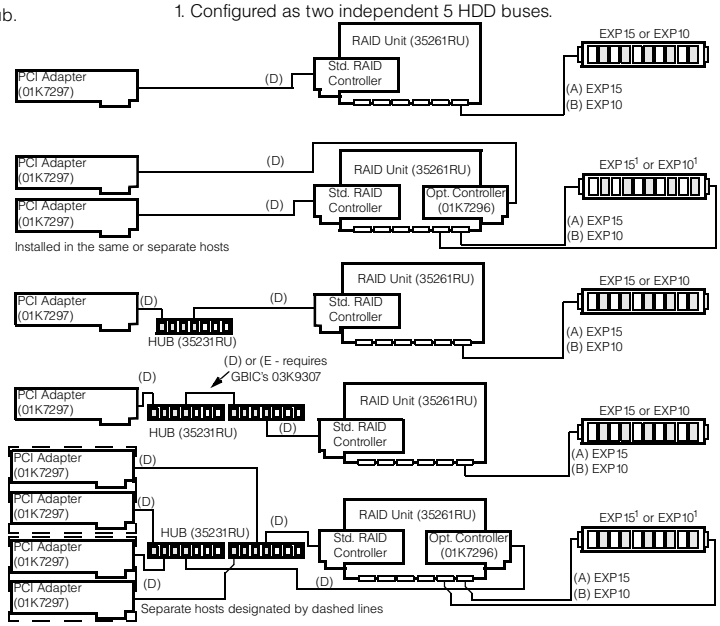
Part Number	Description
35261RU	Netfinity Fibre Channel RAID Controller Unit
35231RU	Netfinity Fibre Channel Hub
01K7296	Netfinity Fibre Channel Failsafe RAID Controller
01K7297	Netfinity Fibre Channel PCI Adapter
03K9305	Netfinity Fibre Channel 25 M Cable
03K9306	Netfinity Fibre Channel 5 M Cable
03K9307	Netfinity Fibre Channel Long-Wave GBIC
03K9308	Netfinity Fibre Channel Short-Wave GBIC

Supported Cable Groups	
Cable Group A (0.8 mm to 0.8 mm)	
03K9310	Netfinity 2 M Ultra2 SCSI Cable
03K9311	Netfinity 4.2 M Ultra2 SCSI Cable
03K9312	Netfinity 12 M Ultra2 SCSI Cable
Cable Group B (68-pin to 0.8 mm)	
76H3589	1 M External .8mm SCSI Cable[1]
01K8027	2 M External .8mm SCSI Cable
03K9352	3 M External Auto-Sensing Cable
01K8029	4.3 M External .8mm SCSI Cable
Cable Group D (Short-Wave Fibre)	
03K9306	Netfinity Fibre Channel 5 M Cable
03K9305	Netfinity Fibre Channel 25 M Cable
Customer supplied short-wave cable of up to 500 meters (0.31 miles)	
Cable Group E (Long-Wave Fibre)	
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)	
GBIC	
03K9308	Netfinity Fibre Channel Short-Wave GBIC[2]
03K9307	Netfinity Fibre Channel Long-Wave GBIC

1. Rack installation requires a minimum cable length of 2 meters.
2. Four Netfinity Fibre Channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU).

Configuration Examples - Cable Group ( )

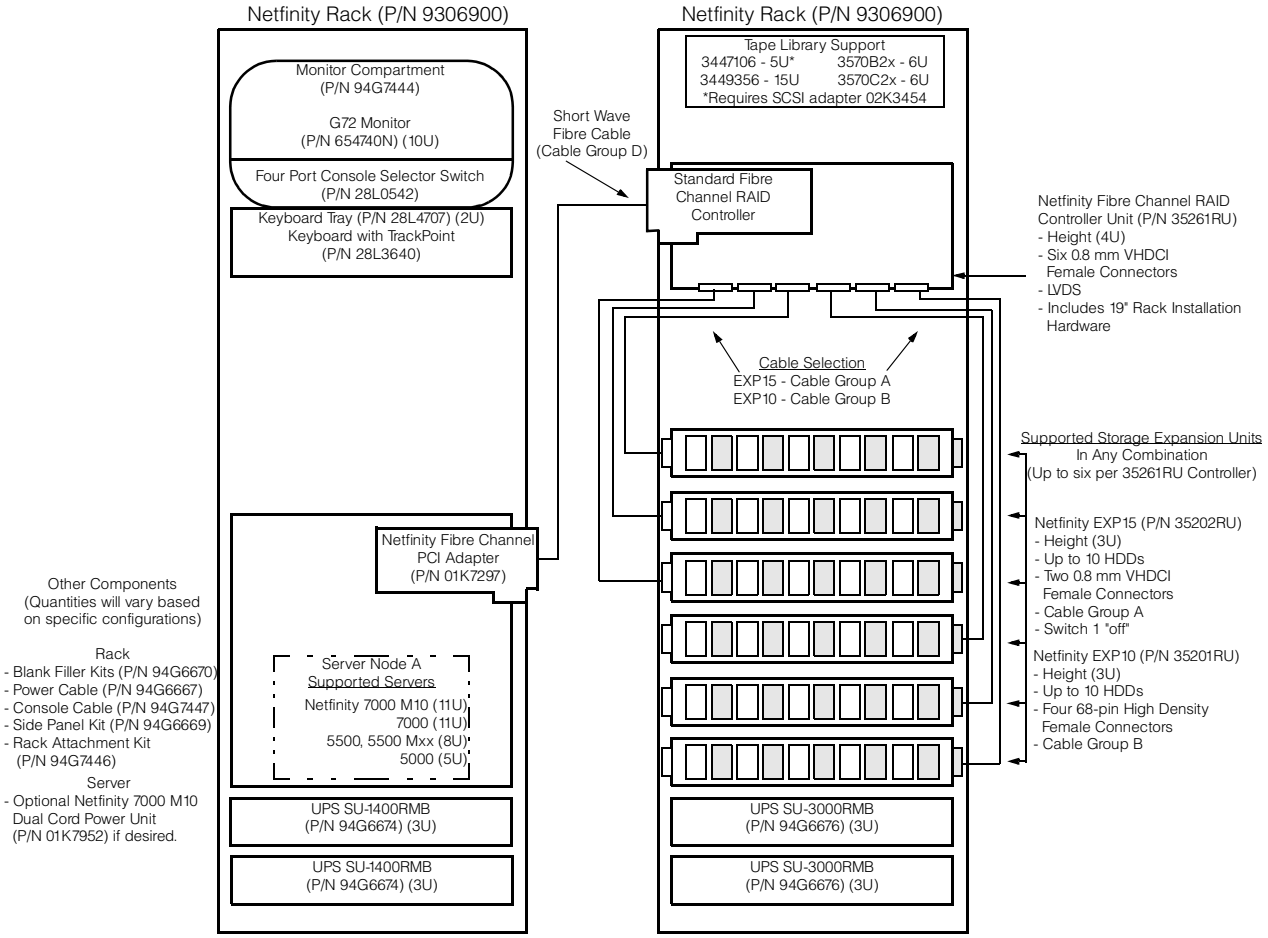
1. Configured as two independent 5 HDD buses.



IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

High-speed single-node Netfinity Fibre Channel Storage configuration offering performance, bandwidth & capacity



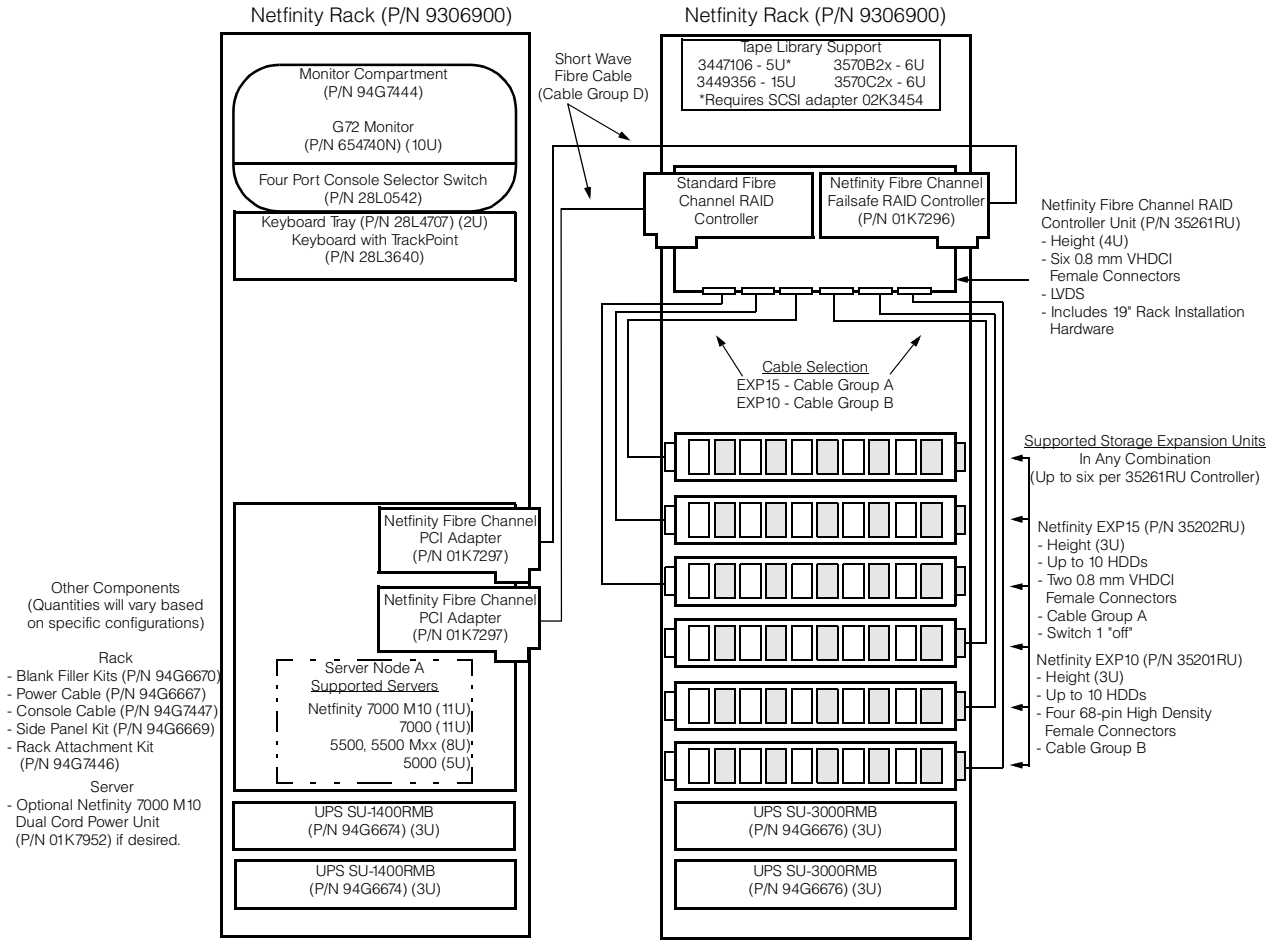
Additional Information and Configuration Tools Available
Clustering: WEB URL http://www.pc.ibm.com/us/netfinity/clustering.html
Rack Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
Paper Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
ConfigXpert: WEB URL http://www.ibm.com/pc/us/configXpert

Connector Types	Cable Group D (Short-Wave Fibre)
68-pin - High Density Connector	03K9306 - Netfinity Fibre Channel 5 M Cable
0.8 mm - Very High Density Connection Interface VHDCI	03K9305 - Netfintiy Fibre Channel 25 M Cable
	Customer supplied short-wave cable of up to 500 meters (0.31 miles)
Cable Group A (0.8 mm to 0.8 mm)	Cable Group E (Long-Wave Fibre)
03K9310 - Netfinity 2 M Ultra2 SCSI Cable	Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable	
03K9312 - Netfinity 12 M Ultra2 SCSI Cable	GBIC
	03K9308 - Netfinity Fibre Channel Short-Wave GBIC[2]
Cable Group B (68-pin to 0.8 mm)	03K9307 - Netfinity Fibre Channel Long-Wave GBIC
76H3589 - 1 M External .8mm SCSI Cable[1]	
01K8027 - 2 M External .8mm SCSI Cable	1. Rack installation requires a minimum cable length of 2 meters.
03K9352 - 3 M External Auto-Sensing Cable	2. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308)
01K8029 - 4.3 M External 0.8mm SCSI Cable	are included with Netfinity Fibre Channel Hub (P/N 35231RU)

IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

High-speed single-node Netfinity Fibre Channel Storage configuration with Microsoft NT failover support and RAID redundancy for availability, performance, capacity



Additional Information and Configuration Tools Available
Clustering: WEB URL http://www.pc.ibm.com/us/netfinity/clustering.html
Rack Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
Paper Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
ConfigXpert: WEB URL http://www.ibm.com/pc/us/configXpert

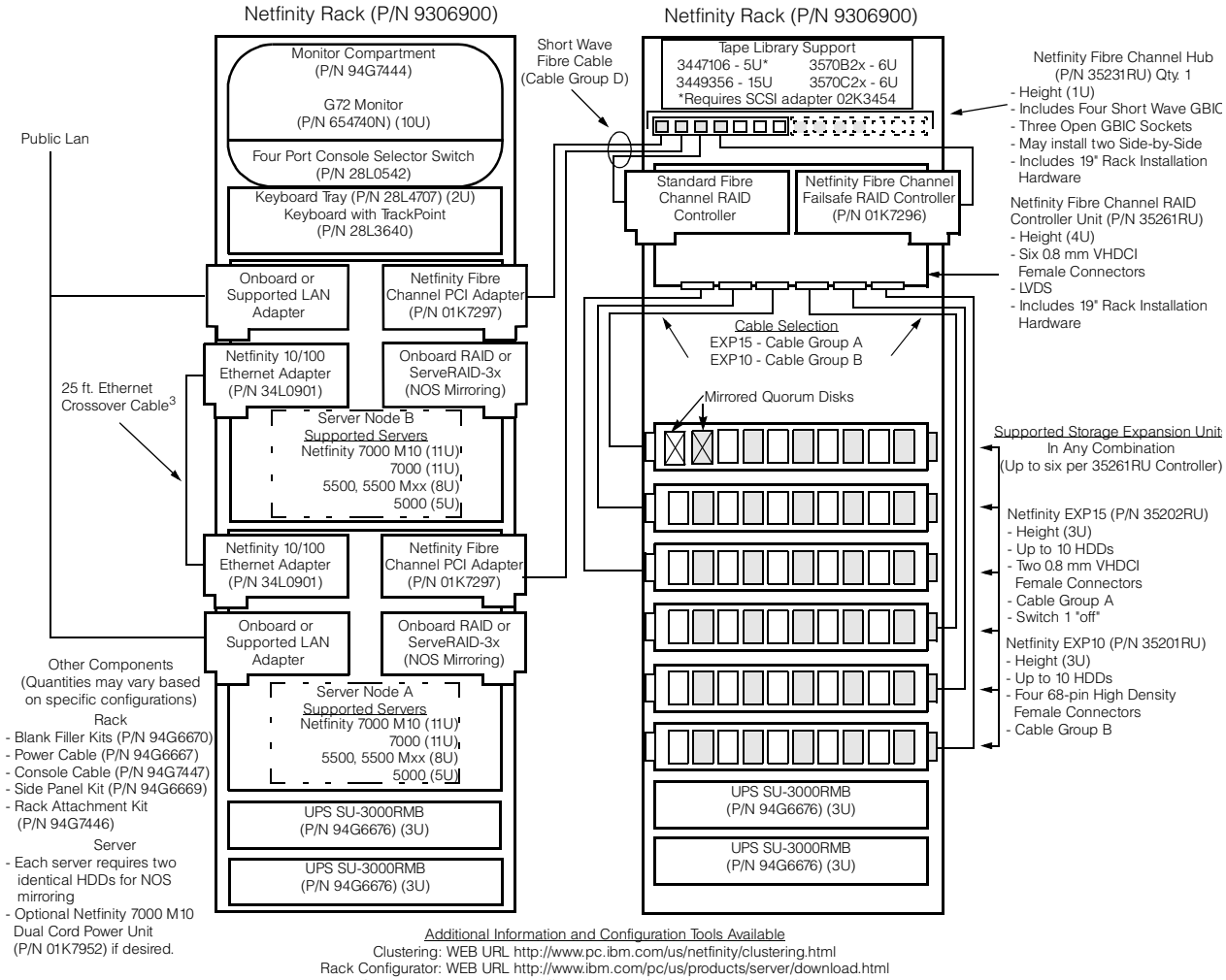
Connector Types 68-pin - High Density Connector 0.8 mm - Very High Density Connection Interface VHDCI	Cable Group D (Short-Wave Fibre) 03K9306 - Netfinity Fibre Channel 5 M Cable 03K9305 - Netfintiy Fibre Channel 25 M Cable Customer supplied short-wave cable of up to 500 meters (0.31 miles)
Cable Group A (0.8 mm to 0.8 mm) 03K9310 - Netfinity 2 M Ultra2 SCSI Cable 03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable 03K9312 - Netfinity 12 M Ultra2 SCSI Cable	Cable Group E (Long-Wave Fibre) Customer supplied long-wave cable of up to 10 kilometers (6.2 miles) GBIC 03K9308 - Netfinity Fibre Channel Short-Wave GBIC[2] 03K9307 - Netfinity Fibre Channel Long-Wave GBIC
Cable Group B (68-pin to 0.8 mm) 76H3589 - 1 M External .8mm SCSI Cable[1] 01K8027 - 2 M External .8mm SCSI Cable 03K9352 - 3 M External Auto-Sensing Cable 01K8029 - 4.3 M External 0.8mm SCSI Cable	1. Rack installation requires a minimum cable length of 2 meters. 2. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)

IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements

Cluster Solution

High speed multiple node Microsoft Cluster Server and Netfinity Fibre Channel Storage configuration offering data protection and RAID redundancy.



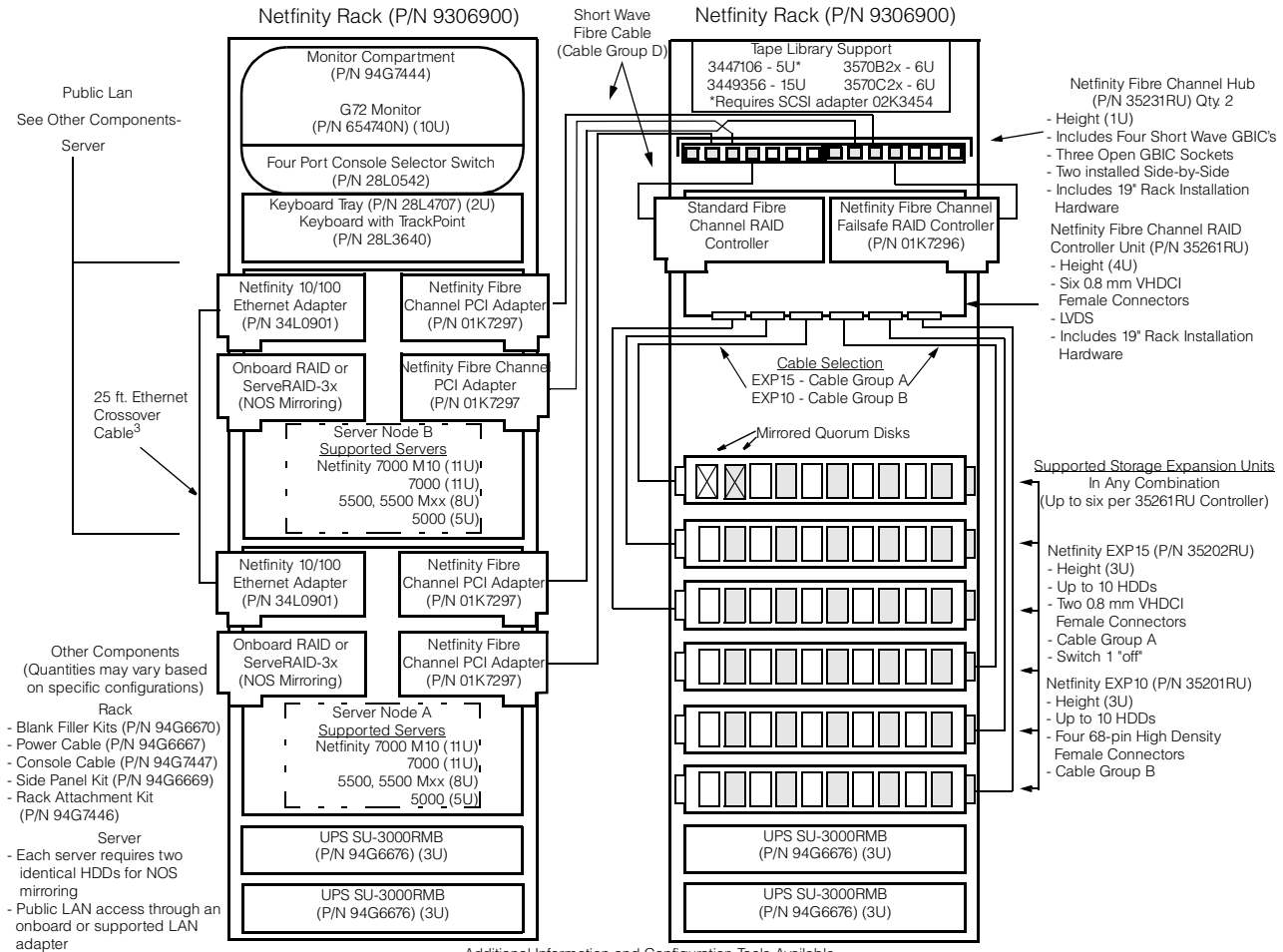
Additional Information and Configuration Tools Available
Clustering: WEB URL http://www.pc.ibm.com/us/netfinity/clustering.html
Rack Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
Paper Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
ConfigXpert: WEB URL http://www.ibm.com/pc/us/configXpert

Connector Types 68-pin - High Density Connector 0.8 mm - Very High Density Connection Interface VHDCI	Cable Group D (Short-Wave Fibre) 03K9306 - Netfinity Fibre Channel 5 M Cable 03K9305 - Netfintiy Fibre Channel 25 M Cable Customer supplied short-wave cable of up to 500 meters (0.31 miles) Cable Group E (Long-Wave Fibre) Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)
Cable Group A (0.8 mm to 0.8 mm) 03K9310 - Netfinity 2 M Ultra2 SCSI Cable 03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable 03K9312 - Netfinity 12 M Ultra2 SCSI Cable	GBIC 03K9308 - Netfinity Fibre Channel Short-Wave GBIC[2] 03K9307 - Netfinity Fibre Channel Long-Wave GBIC
Cable Group B (68-pin to 0.8 mm) 76H3589 - 1 M External .8mm SCSI Cable[1] 01K8027 - 2 M External .8mm SCSI Cable 03K9352 - 3 M External Auto-Sensing Cable 01K8029 - 4.3 M External 0.8mm SCSI Cable	1. Rack installation requires a minimum cable length of 2 meters. 2. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU) 3. Microsoft Cluster Server (MSCS) requires a private interconnect between clustered nodes. A 25 ft. Ethernet crossover cable is shown but not available from IBM as a separate option. Contact your IBM Business Partner for assistance.

IBM Netfinity Fibre Channel Solutions

Note: The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partne or IBM Marketing Representative for assistance with your specific configuration requirements

Advanced high-speed high-availability multiple node Microsoft Cluster Server and fully redundant Netfinity Fibre Channel Storage configuration offering the highest levels of data protection and availability and access to data

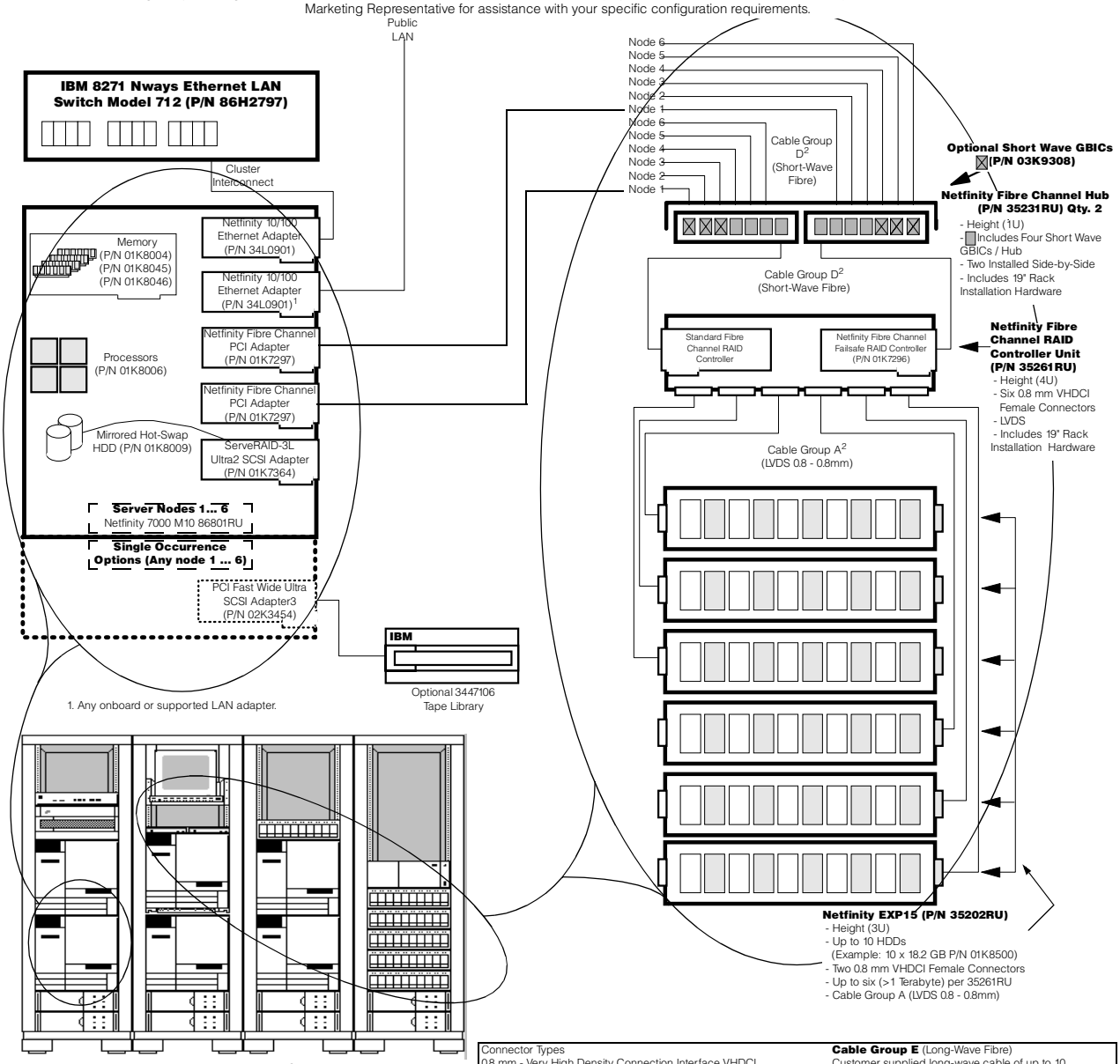


Additional Information and Configuration Tools Available
Clustering: WEB URL http://www.pc.ibm.com/us/netfinity/clustering.html
Rack Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
Paper Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
ConfigXpert: WEB URL http://www.ibm.com/pc/us/configXpert

Connector Types 68-pin - High Density Connector 0.8 mm - Very High Density Connection Interface VHDCI	Cable Group D (Short-Wave Fibre) 03K9306 - Netfinity Fibre Channel 5 M Cable 03K9305 - Netfintiy Fibre Channel 25 M Cable Customer supplied short-wave cable of up to 500 meters (0.31 miles) Cable Group E (Long-Wave Fibre) Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)
Cable Group A (0.8 mm to 0.8 mm) 03K9310 - Netfinity 2 M Ultra2 SCSI Cable 03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable 03K9312 - Netfinity 12 M Ultra2 SCSI Cable	GBIC 03K9308 - Netfinity Fibre Channel Short-Wave GBIC[2] 03K9307 - Netfinity Fibre Channel Long-Wave GBIC
Cable Group B (68-pin to 0.8 mm) 76H3589 - 1 M External .8mm SCSI Cable[1] 01K8027 - 2 M External .8mm SCSI Cable 03K9352 - 3 M External Auto-Sensing Cable 01K8029 - 4.3 M External 0.8mm SCSI Cable	1. Rack installation requires a minimum cable length of 2 meters. 2. Four Netfinity Fibre channel Short-Wave GBIC's (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU) 3. Microsoft Cluster Server (MSCS) requires a private interconnect between clustered nodes. A 25 ft. Ethernet crossover cable is shown but not available from IBM as a separate option. Contact your IBM Business Partner for assistance.

Netfinity Fibre Channel Solution
Six Node Oracle® Parallel Server (OPS)

The following sample configurations are for illustration only and may not be suitable for any specific customer installation. Contact your IBM Business Partner or IBM Marketing Representative for assistance with your specific configuration requirements.



Rack A	Rack B	Rack C	Rack D
8271 Switch	Monitor	EXP15	RAID Controller
3447 Tape Lib.	Console Switch	7000 M10	EXP15
7000 M10	2 x Fibre Hub	7000 M10	EXP15
7000 M10	7000 M10	3000 UPS	EXP15
3000 UPS	Keyboard	3000 UPS	EXP15
3000UPS	7000 M10		EXP15
	3000 UPS		3000 UPS
	3000 UPS		3000 UPS

Connector Types
0.8 mm - Very High Density Connection Interface VHDCI

Cable Group A (0.8 mm to 0.8 mm)
03K9310 - Netfinity 2 M Ultra2 SCSI Cable
03K9311 - Netfinity 4.2 M Ultra2 SCSI Cable
03K9312 - Netfinity 12 M Ultra2 SCSI Cable

Cable Group D (Short-Wave Fibre)
03K9306 - Netfinity Fibre Channel 5 M Cable
03K9305 - Netfinity Fibre Channel 25 M Cable
Customer supplied short-wave cable of up to 500 meters (0.31 miles)

Additional Information and Configuration Tools Available
Clustering: WEB URL http://www.pc.ibm.com/us/netfinity/clustering.html
Rack Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
Paper Configurator: WEB URL http://www.ibm.com/pc/us/products/server/download.html
ConfigXpert: WEB URL http://www.ibm.com/pc/us/configxpert

Cable Group E (Long-Wave Fibre)
Customer supplied long-wave cable of up to 10 kilometers (6.2 miles)

GBIC
03K9308 - Netfinity Fibre Channel Short-Wave GBIC[1]
03K9307 - Netfinity Fibre Channel Long-Wave GBIC

(1) Four Netfinity Fibre Channel Short-Wave GBICs (P/N 03K9308) are included with Netfinity Fibre Channel Hub (P/N 35231RU)
(2) Cable length requirements are dependant on component placement within the rack suite. The parts list for this example reflects requirements for the illustrated configuration only. Cable length requirements for other configurations are best determined by using the Netfinity Rack Configurator which is downloadable from Web site http://www.ibm.com/pc/us/products/server/download.html
(3) A tape library is optional and attaches to any one of the nodes within the cluster.

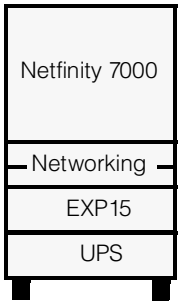
Netfinity Fibre Channel Solution Six Node OPS Parts List[1]

Part Number	Description	Qty.	Usage
	Nodes 1... 6		
86801RU	Netfinity 7000 M10	6	Cluster Nodes
01K8004	Netfinity 7000 M10 Memory Expansion Card	6	1 per node, required for memory installation in Banks 5... 8. Enables 8-way interleaving for supported configurations.
01K8045	Netfinity 7000 M10 512 MB Memory Expansion Kit - 4x128	24	4 per node, total of 4 GB
01K8046	Netfinity 7000 M10 1 GB Memory Expansion Kit - 4x256	12	2 per node, total of 4 GB
01K8006	Netfinity 7000 M10 400 MHzm, 512 KB Upgrade	18	3 per node, total of 4 SMP processors per node
01K8009	IBM Netfinity 4.51 GB 10K Wide Ultra SCSI SCA-2 HDD	12	2 per node, mirrored NOS, attached to ServeRAID-3L
01K7364	IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter	6	1 per node for NOS HDDs
34L0901	Netfinity 10/100 Ethernet Adapter	12	2 per node (1-Cluster Interconnect attachment to 8271 Switch, 1-Public LAN)
01K7297	Netfinity Fibre Channel PCI Adapter	12	2 per node, each attaches to one of the two Fibre Hubs
01K7951	IBM Netfinity 400 W Hot-Swap Redundant Power Supply II	12	2 per node, provides power supply redundancy for each node
01K7952	Netfinity 7000 M10 Dual Cord Power Unit	6	1 per node, provides two power cables per node which are attached to separate UPS's allowing power source redundancy
	Storage Subsystems		
35231RU	Netfinity Fibre Channel Hub	2	Short-wave connection between each hub to each of 6 nodes, and two connections to Netfinity Fibre Channel RAID Controller Unit. Each hub includes 4 standard SW GBICs.
03K9308	Netfinity Fibre Channel Short-wave GBIC	6	3 per hub, total of 7 per hub
35261RU	Netfinity Fibre Channel RAID Controller Unit	1	Attaches to six EXP15's, with Failsafe Controller - two attachments to the hubs
01K7296	Netfinity Fibre Channel Failsafe RAID Controller	1	Installs in Controller Unit, provides redundant path to EXP15's
35202RU	Netfinity EXP15	6	One LVDS attachment to RAID Controller Unit per EXP15, max of 60 HDDs
3447106	3447 Digital Linear Library	1	Tape subsystems are optional. The 3447 includes a 4.5 M cable.
02K3454	PCI Fast/Wide Ultra SCSI Adapter	1	Supports optional 3447 tape drive. May be installed in any of the 6 servers.
94G6676	APC Smart-UPS 3000RMB	8	Power connections are intra-rack only[2]
	Storage Cables		
03K9306	Netfinity Fibre Channel 5 M Cable	14	12 hub to node, 2 hub to RAID controller
03K9310	Netfinity 2 M Ultra2 SCSI Cable	6	RAID controller to EXP15's
	Other Non-rack		
Customer Supplied	Ethernet Cluster Interconnect Cables	6	Not connected to Public LAN, provides interconnection between clustered nodes.
28L3640	Space Saver Keyboard (1U)	1	Includes TrackPoint
65464AN	G54 Color Monitor 15" (13.7" Viewable Image Size)	1	-
86H2797	IBM 8271 Nways Ethernet LAN Switch Model 712	1	Attaches to Cluster Interconnect Ethernet adapter in each node
	Rack / Related		
9306900	IBM Netfinity Rack Cabinet	4	Provides 42U of mounting space per rack
28L4707	Netfinity Rack Keyboard Tray	1	Allows keyboard 28L3640 to be stored in a ready to use position
85H6735	Network Products Mounting Kit	1	Required for mounting 8271 switch in a Netfinity rack
94G7444	Monitor Compartment	1	Required for mounting G54 Monitor
94G7445	Console Server Selector Switch - 8 port	1	Connects 6 nodes to monitor and keyboard
94G6669	Side Panel Kit	1	Provides side panels for both ends of the rack suite.
94G7446	Rack Attachment Kit	3	Provides hardware for attaching four racks together in a suite
94G6670	Blank Filler Panel Kit	4	Provides blank panels to fill the remaining rack space within the suite
94G6667	Power Cable - Type A14	9	Provides 14' power cables for UPS attachment to installed components
94G7447	12ft. Console Cable Set	6	Attaches each node to the console switch.

1. Cable, power, cooling and weight are dependent on component placement within the rack and rack suite. This parts list reflects one possible configuration of the listed components. Prior to ordering, you should configure your specific environment using the Netfinity Rack Configurator. The Netfinity Rack Configurator is downloadable from URL http:/www.ibm.com/pc/us/products/server/download.html
2. Pre-installation site planning information: 94G6676 contains eight L5-30P, 120V 30 amp circuitry.

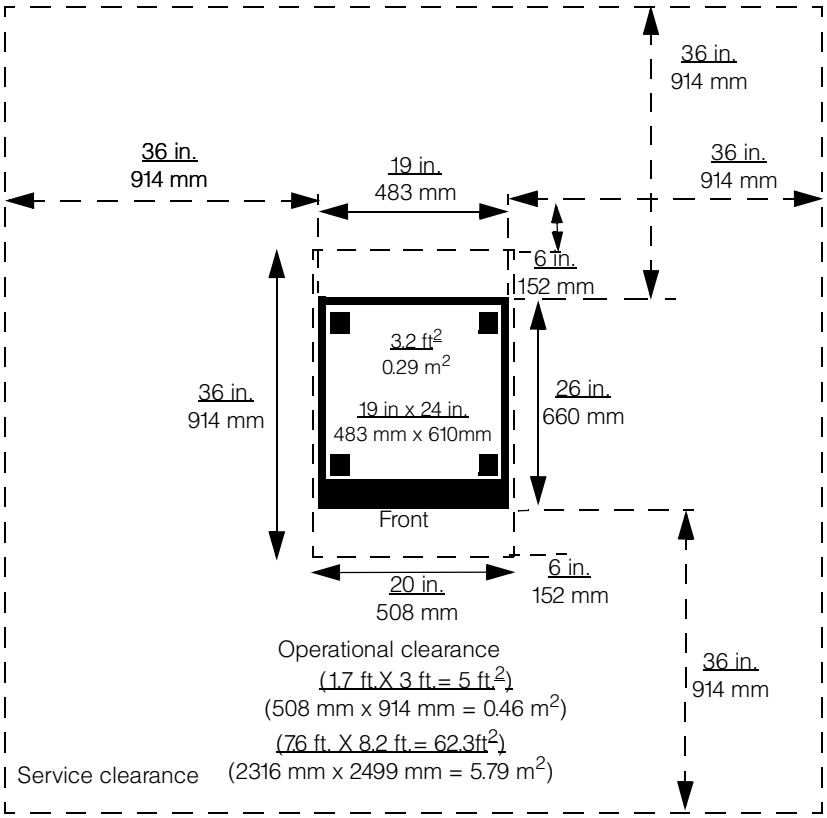
IBM Netfinity NetBAY3 Stackable Enclosure

Sample Configuration



Installation Guidelines:

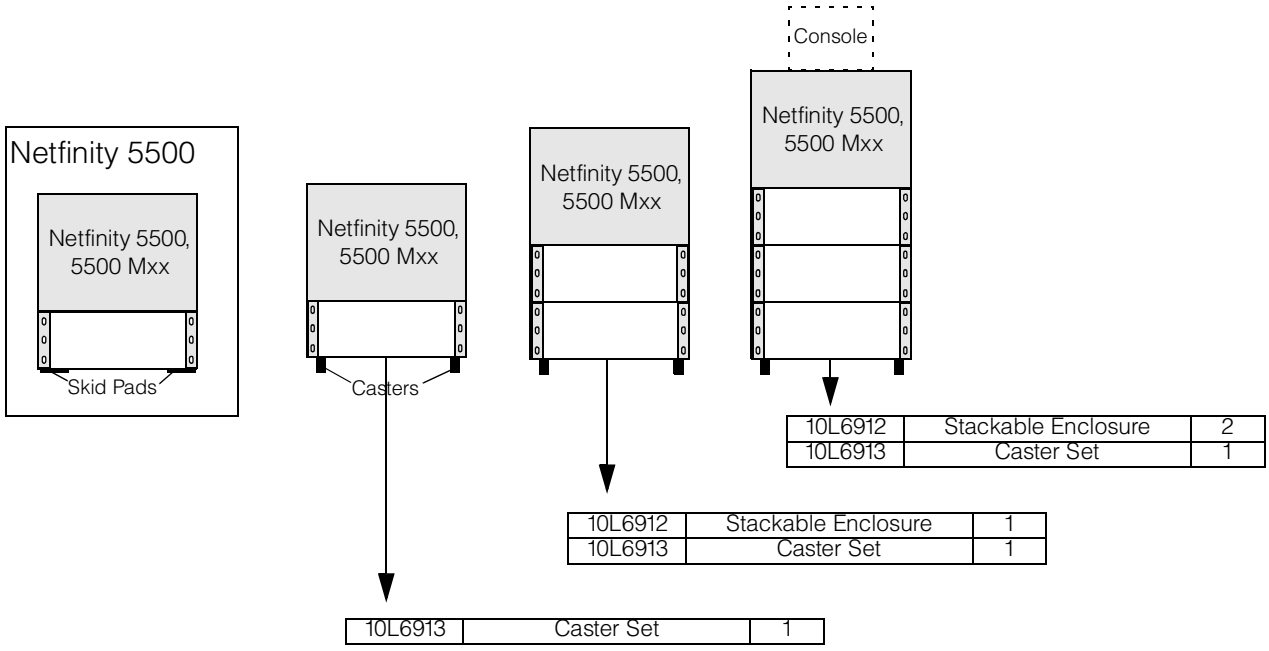
1) Locate power units with line cords in the bottom enclosure.
2) Install components starting from the bottom; start with the heaviest device.
3) If nothing is installed in the enclosure, attach the rear blank panel for stability.

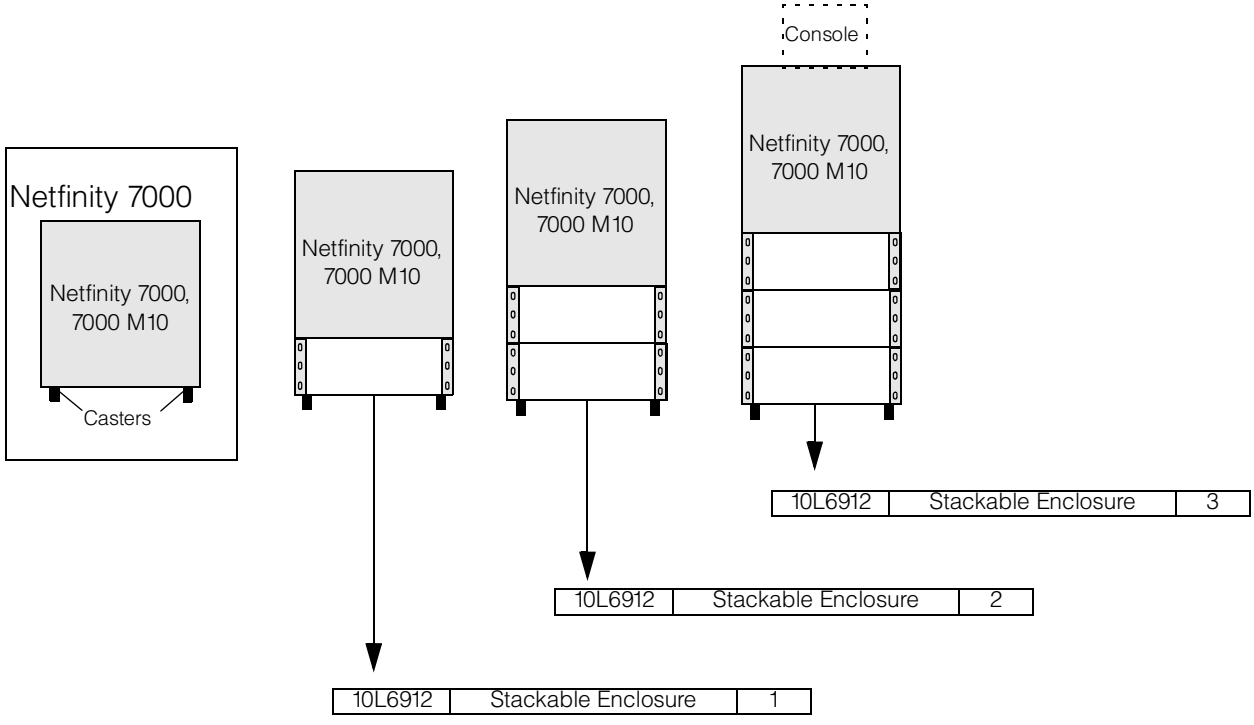


Supported Devices	Size (U)	Weight(lb/kg)	Max/Enclosure	Max/Stack
Servers				
Netfinity 7000	-	160/72.6	n/a	1
Netfinity 7000-M10[1]	-	160/72.6	n/a	1
Netfinity 5500	-	120/54.4	n/a	1
Netfinity 5500-Mxx	-	123.4/56.0	n/a	1
Expansion				
Netfinity EXP15	3	107/48.5	1	3
IBM Tape Units				
NetMEDIA 3551001	3	37/17	1	3
Power				
APC Smart-UPS 1400RMB	3	55/24.9	1	1
APC Smart-UPS 3000RMB	3	112/50.8	1	1
100-120V PDU	1	5/2.3	1	1
200-240V PDU	1	8/3.6	1	1
Networking				
2210 Multiprotocol Router	1, 2	7/3.2, 20/9.1	3, 1	9, 3
8230 T-R Controlled Access Unit	2	15/6.8	1	3
8235 Dial-in Access to LANs	1	8/3.6	3	9
8237 Ethernet Hub	2	10/4.5	1	3
8238 Nways T-R Hub	2	11/5.0	1	3
8271 Ethernet Switch	2	16/7.3	1	3
8272 T-R Switch	2	16/7.3	1	3
8285 ATM Switch	3	70/31.8	1	3
Console	-	46/20.9	n/a	1

1. Netfinity 7000-M10 systems are rack mountable and ship without a keyboard. In order to be utilized with a NetBAY3 or in a tower configuration, optional Rack-to-Tower Kit (P/N 01K8005) must be installed.

IBM Netfinity NetBAY3 Stackable Enclosure

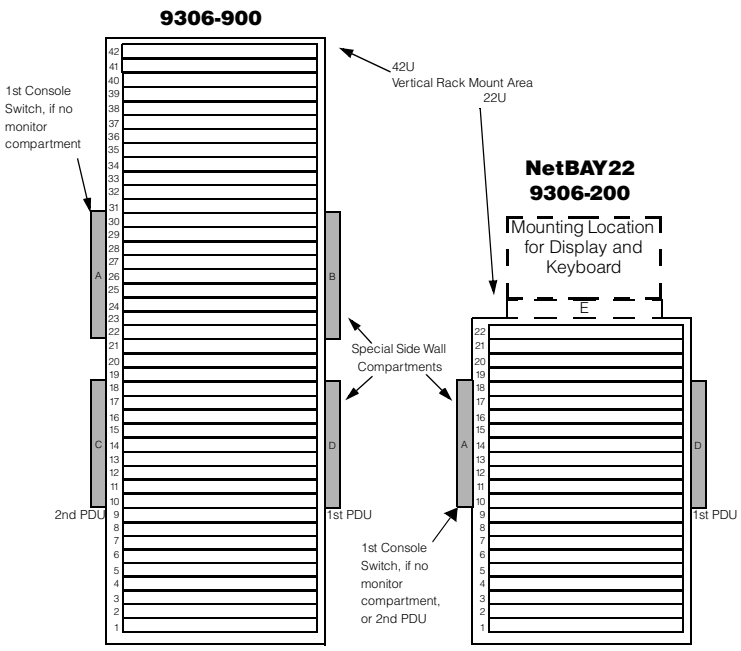




1. Netfinity 7000 M10 systems are rack mountable and ship without a keyboard. In order to be utilized with NetBAY3 or in a tower configuration, optional Rack-to-Tower Kit (P/N 01K8005) must be installed.

IBM Netfinity Rack Cabinet and Options

Note: For a robust rack configurator application access URL http://www.ibm.com/pc/us/products/server/download.html



Direct Rack Mount[1]: Units Supported		
IBM Servers		
Netfinity 5000	Rack Models	5U
Netfinity 5500, 5500 Mxx	Rack Models	8U
Netfinity 7000, 7000 M10	Rack Models	11U
IBM Storage Expansion Units		
Netfinity EXP15	3520-2Rx	3U
IBM 7133 Serial Disk System[2, 3]	7133-020	4U
IBM Tape Units		
NetMEDIA	3551001	3U
Magstar MP 3570	3570B21/B22	6U
Magstar MP 3570	3570C21/C22	6U
DLT Tape Library	3447-106	5U
8mm Tape Library	3449-356	15U
IBM Networking Products		
Dial-in Access to LANS	8235-03x	1U

1. Mounting hardware provided with product
2. Requires Rail Kit (FC 3093). 208V Power cord included, optional 110V power cord (FC 9886/1.8M or FC 9800/2.8M) can be ordered. If the Black Cover Kit (FC 3020) is ordered, no white cover is shipped with system. Other specify codes may be required.
3. The 7133 Serial Disk System is not a IBM Personal Systems Group product. For additional configuration support, product information and ordering of these IBM Storage offerings, visit the IBM storage Website http://www.ibm.com/storage or contact your IBM representative.

Optional Accessories

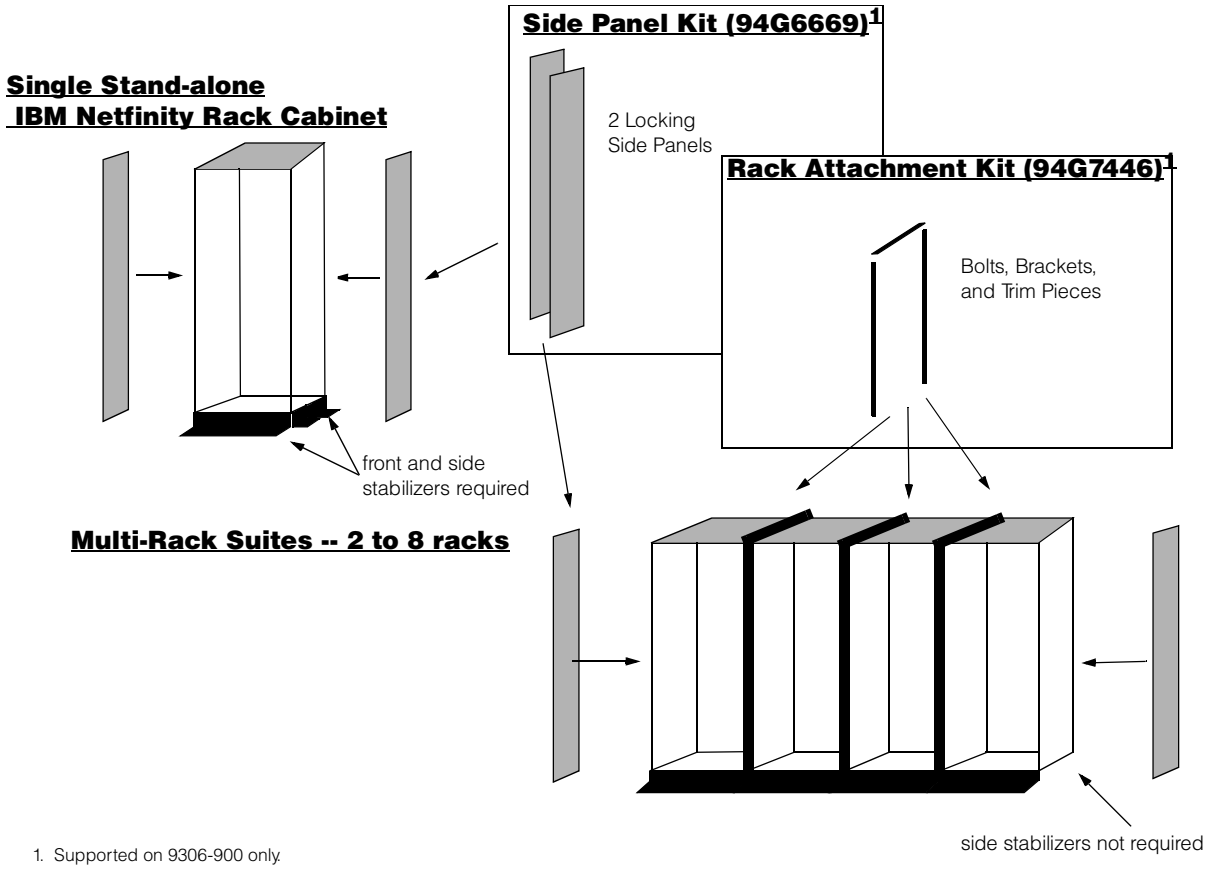
Part Number	Mounting Support	Rack Space	Units Supported
94G7442	Fixed Shelf: width x depth= (439 mm x 663mm) 17.3 in. x 26.1 in max. weight= (45 kg)100lbs.	2 to xx U	IBM Networking Products 8222-008, 016 Nways Enet Wkgp Hub 2U 8225-003 Ethernet Hub 2U
94G5461	Slide Shelf	12 to 15 U	IBM Servers (towers) / Mounting Plate PC Server 300, 320, 330 94G4996 15U PC Server 325 94G4996 12U PC Server 500, 520, 720 94G4997 15U 3518 Enterprise Expansion Encl. 94G4997 15U PS/2 Server 85,95 94G4995 13U
85H6735	Network Products Mounting Kit	1 to 5 U	IBM Networking Products Ethernet Switch 8271-108, 216 2U Ethernet Hub 8237-00x 2U Token-Ring Switch 8272-108 2U Token-Ring Controlled Access Unit 8230-04A, 04P 2U Nways LAN Switch 8270-800 5U Nways Token-Ring Hub 8238-xx1 2U ATM Switch 8285-00B, 00E 3U Multi-Protocol Router 2210-12x 1U Multi-Protocol Router 2210-x4x 2U
Part Number	**Console Support**	**Rack Space**	**Devices Supported**
94G7444	Monitor compartment supports one monitor, and one Console Server Selector Switch	4 to 10 U	IBM Monitors 4707-E01 (6U) G40, G41 (9U) G50, G51, G52, P50 (9U) G70, G72, P70 (10U)
28L4707[2] 94G7443	Keyboard tray supports one keyboard, and one mouse or Trackpoint	1 to 2 U (dependent on keyboard height)	IBM Keyboards/Mouse[1] 104 key black keyboard 76H0109 (1U) 101 key black TrackPoint II 13H6705 (2U) 84 key black Space Saver w/TP 28L3640 (1U) Black Sleek Mouse 12J3615 (1U)
94G7445 28L0542	Console Server Selector Switch (8-port) Netfinity Console Selector Switch (4-port)	-	Mounts 1) behind monitor compartment or 2) in rack side wall A, B
94G7447	Console Cable Set- (3.66 m) 12 ft.	-	Connect servers/switches to primary switch

1. Many tower models of Netfinity and PC Servers include a keyboard. These keyboards are supported by rack tray 94G7443 and console selector switches.
2. Space Saver Keyboard (P/N 28L3640) can be stored in a "ready-to-use" position.

Part Number	Power Support	Rack Space	Comments
94G6666	100-120V 12a Power Distribution Unit	--	8 NEMA 5-15R outlets Mounts in rack side wall D,C
94G7450	200-240V 16a Power Distribution Unit	--	10 IEC 320-C13 outlets Mounts in rack side wall D,C
94G6674 94G6675	1400VA UPS 120V US/C/LA 220-240V EMEA/AP	3U	6 NEMA 5-15R outlets 4 IEC 320-C13 outlets
94G6676 94G6677	3000VA UPS 120V US/C/LA 120-240V EMEA/AP	3U	8 NEMA 5-15R outlets 8 IEC 320-C13 and 1 C19
94G6667 94G6668 94G7448 94G7449	Power Cables Type Connectors A14 IEC 320-C13 to NEMA 5-15P B14 IEC 320-C19 to NEMA 5-15P C12 IEC 320-C13 to IEC 320-C14 D12 IEC 320-C19 to IEC 320-C14	- - - -	Length (4.27 m) 14 ft. (4.27 m) 14 ft. (3.66 m) 12 ft. (3.66 m) 12 ft.
Part Number	**Miscellaneous**	**Rack Space**	**Comments**
94G6670	Blank Filler Panel Kit 1U panel (qty. = 2) 3U panel (qty. =1) 5U panel (qty. = 1)	1U + 1U 3U 5U	Use as required to fill empty space in the vertical rack mount area.

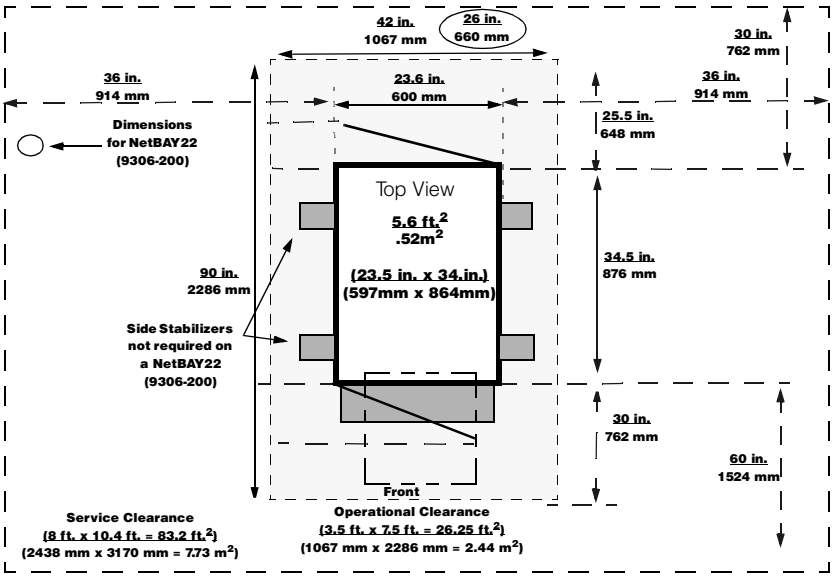
Note: You can select up to two power units per rack. Select the optional Power Cables when the standard cable is not long enough or has incompatible power plug.

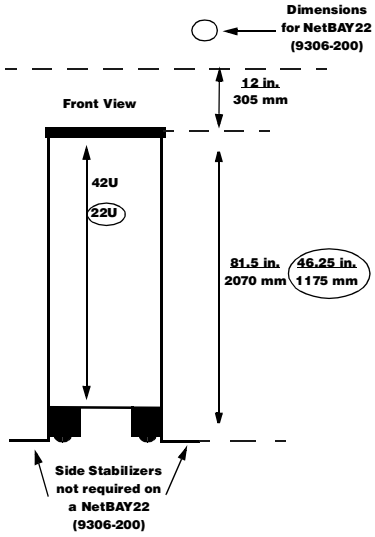
9306-900 Single Cabinet or Multi-Rack Suite Options



1. Supported on 9306-900 only.

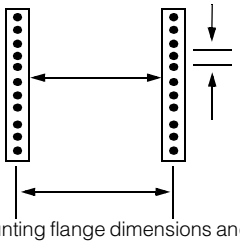
IBM Netfinity Rack - Cabinet and Options Dimensions 9306-900 and NetBAY22 (9306-200)



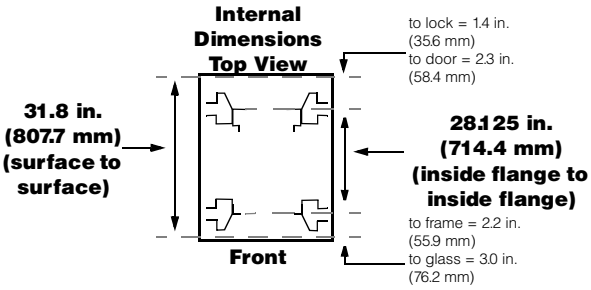


	9306-900		9306-200
Weight (lb/kg)	**Moveable**	**Stationary**	**Moveable or Stationary**
Empty rack	276/125.2	276/125.2	182/82.6
Max load	824/373.8	1424/645.9	746/338.4
Total	1100/499.0	1700/771.1	928/421.0

EIA 310-D standard 19-inch, type A cabinet
1U = (44.45 mm)1.75 inches

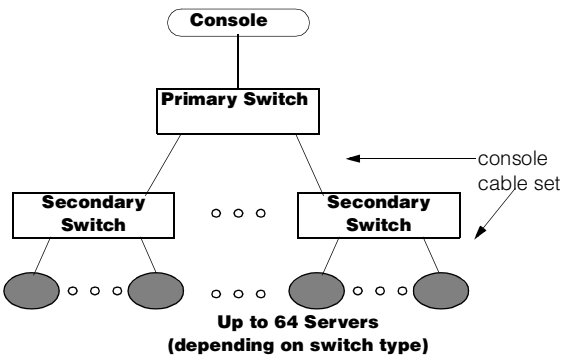


Mounting flange dimensions and universal hole spacing defined by EIA 310 for 19-inch racks

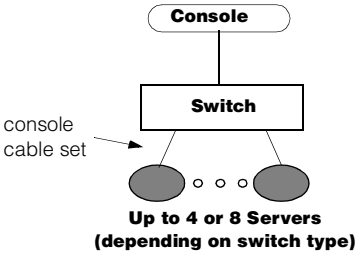


Switch Arrangements

Tiering



Single Switch



Appendix A: Tape Drive Attributes

SCSI Interface

LEGEND
HH: Half High - approx. height of 1.6"
SL: Slim Line - approx. height of 1"

Part Number	Description	Bays Supported	SCSI Interface (bit)	Form Factor	Bezel - (B)lack	Max GB-Native/Compr.	MB/sec - Native/compr.	Termination Incl.	68/50-pin Converter Incl.	Internal Cables	Data/Cleaning Cartridges std/max	Ext. Tape Enclosures[2]
01K1282	IBM 12/24GB DDS/3 4mm Internal Tape Drive	-	8	3.5"HH or 5.25"HH	B/W	12/24	1.1/2.2	Y[9]	Y	-	1/1	3510020
06H9716	IBM 4/8GB TR4 Internal SCSI Tape Drive[3]	-	8	3.5"SL or 5.25"HH	B/W	4/8	0.5/1	Y[9]	N	-	1/0	3510020
01K1319	IBM 10/20GB NS Internal SCSI Tape Drive	-	8	3.5"SL or 5.25"HH	B/W	10/20	1/2	Y[9]	Y	-	1/0	3510020, 3551001
01K1325	IBM 20/40GB 8mm SCSI Tape Drive	-	16	5.25"HH	B	20/40	3/6	N[10]	N	-	1/1	3510020[4], 3551001
01K1320	IBM 20/40GB DLT SCSI Tape Drive	-	8	5.25"FH	B	20/40	1.5/3	Y[8]	Y	16-bit, 4 drop	1/0	3503B0X[4], 3551001
04K0149	IBM 35/70GB DLT SCSI Tape Drive	-	16	5.25"FH	B	35/70	5/10	N[10]	N	16-bit, 4 drop	1/0	3503B0X[4], 3551001
	Associated Options											
32G3918	SCSI-2 16-bit Active Terminator	-	16	Ext.	-	-	-	Y	N	-	-	3510020, 3503B0X
94G7587	PC Server SCSI Terminator Kit	-	8/16	Int.	-	-	-	Y	N	-	-	-
32G3925	SCSI 68-pin to 50-pin Converter	-	8/16	Int.	-	-	-	N	Y	-	-	3551001
36L9636	Netfinity Two-Drop Internal SCSI Cable[11]	-	16	Int.	-	-	-	Y	N	16-bit, 2 drop	-	-
	External Tape Enclosures											
3510020	External Half High SCSI Storage Enclosure[5]	-	8/16	Desktop	B	-	-	N	N	8-bit or 16-bit	-	-
3551001	IBM NetMEDIA Storage Expansion Unit EL[6]	-	16	Rack	B	-	-	Y	N	16-bit, 4 drop	-	-
10L7113	NetMEDIA Systems Management Adapter[1]	-	16	-	-	-	-	N	N	N	-	3551001
3503B0X	IBM DLT External SCSI Enclosure[7]	-	16	Desktop	B	-	-	N	N	16-bit	-	-
	External Tape Libraries[12]											
3447xxx	3447 Digital Tape Library (desktop-105, rack-106)	-	16	Desktop or Rack	B	-	-	Y	-	-	1/1	-
3449xxx	3449 8mm Tape Library (desktop-355, rack-356)	-	Diff.	Deskside or Rack	B	-	-	Y	-	-	1/1	-
3570xxx	Magstar MP 3570 Tape Subsystem (models B2x and C2x	-	Diff.	Rack	B	-	-	Y	-	-	1/1	-

1. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
2. To determine cable requirements, note the tape drive's SCSI interface, the appropriate SCSI controller from the system configurator section and the desired enclosure then refer to Appendix D: Cables-Storage Units-Controllers.
3. SCSI 68-pin to 50-pin Converter (P/N 32G3925) is required unless installed in a 3510020.
4. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
5. Provides a black desktop 5.25" half-high (HH) tape enclosure. Connector is configurable as 50-pin Centronix or 68-pin high density. Requires either tape drive self termination or SCSI-2 16-bit Active Termination (P/N 32G3918).
6. Provides a black 3U, 19" rack or NetBAY3 mountable tape enclosure. Provides two full high (FH) or four half-high (HH) extended length 5.25" bays. External connector is 0.8mm VHDCI.
7. Provides a black desktop DLT tape enclosure. External connector is 68-pin high density. Requires SCSI-2 16-bit Active Termination (P/N 32G3918).
8. A 16-bit terminator is included for attachment to an internal cable.
9. Tape Drive is capable of self termination.
10. If installed as the last or only device on a SCSI cable, termination is required. Check system unit SCSI cabling to assure termination is included. Where internal termination is not included, PC Server SCSI Terminator Kit (P/N 94G7587) should be used.
11. Netfinity Two-Drop Internal SCSI Cable (P/N 36L9636) is a wide two-drop terminated cable and is required for attachment of internal tape drives to the onboard SCSI controller of a Netfinity 5000 when the hot-swap backplane is attached to a RAID Controller.
12. Tape library attributes and prerequisites are located in Appendix B: Tape Library Attributes

Note: SCSI support for tape drives is provided by system unit onboard (standard) controller (no-RAID function) or PCI Fast Wide Ultra SCSI Adapter P/N 02K3454.

Appendix B: Tape Library Attributes

SCSI Interface

LEGEND
F: Female - External
M: Male - External
68: 16-bit, 68 pin High Density Connector
Diff: Differential SCSI

Part Number	Description	SCSI Interface	Form Factor	Bezel - (B)lack	External Terminator Incl.	External Cables Incl. (m)	SCSI Controllers Incl.	Data Cartridges[1] std./max	Cartridge Mags std./max	Qty. of drives - std./max	Max GB-Native/Compressed	MB/sec[2] - Native/compr.
3447105	3447 Digital Linear Library Desktop[12]	F 68	Desktop	B	Y	M68-M68, 4.5 m	N[3]	1/15	1	1/2	525/1050	5/10
3447106	3447 Digital Linear Library Rack Mountable[12]	F 68	5U Rack	B	Y	M68-M68, 4.5 m	N[3]	1/15	1	1/2	525/1050	5/10
59H3569	3447 Second Digital Linear Tape Drive Kit[4]	F 68	-	-	N[12]	0.4 m[4, 12]	N[12]	-	-	-	-	5/10
59H3558	3447 10-Cartridge Media Magazine	-	-	-	-	-	-	-	-	-	-	-
3449355	3449 8mm Tape Library Deskside[6]	Diff	deskside	B	Y	4.5 m	Y	1/20	2	1/2	440/880	3/6
3449356	3449 8mm Tape Library Rack Mountable[6]	Diff	15U Rack	B	Y	4.5 m	Y	1/20	2	1/2	440/880	3/6
59H3391	3449 Second 20 GB Drive[5]	Diff	-	-	-	-	N	-	-	-	-	3/6
59H3900	3449 Adapter Card[6]	Diff	-	-	Y	4.5 m	Y	-	-	-	-	-
87G1728	3449 10-Cartridge Media Magazine	-	-	-	-	-	-	-	-	-	-	-
3570B21	Magstar MP 3570 Tape Subsystem[7]	Diff	6U Rack	B	Y	4.5 m	Y	1/20	2	1/2	100/300	2.2/6.6
.3570B22	Magstar MP 3570 Tape Subsystem[7]	Diff	6U Rack	B	Y	4.5 m	Y	1/20	2	2/2[8]	100/300	2.2/6.6
3570C21	Magstar MP 3570 Tape Subsystem[7]	Diff	6U Rack	B	Y	4.5 m	Y	1/20	2	1/2	100/300	7.0/15.0
3570C22	Magstar MP 3570 Tape Subsystem[7]	Diff	6U Rack	B	Y	4.5 m	Y	1/20	2	2/2[8]	100/300	7.0/15.0
08L6517	3570 Adapter Card Kit[13]	Diff	-	-	Y	4.5 m	Y	-	-	-	-	-
08L6516	Second "B" Drive for B21[9]	Diff	-	-	-	-	N	-	-	1	-	2.2/6.6
08L6480	Second "C" Drive for C21[9]	Diff	-	-	-	-	N	-	-	1	-	7.0/15.0
	Magstar MP Media[10]											
05H2462	Magstar MP Fast Access Linear Tape Cartridge, B-format[11]	-	-	-	-	-	-	-	-	-	-	-
05H2463	Magstar MP Cleaning Cartridge	-	-	-	-	-	-	-	-	-	-	-
08L6187	Magstar MP Fast Access Linear Tape Cartridge, C-format	-	-	-	-	-	-	-	-	-	-	-

1. One cleaning and one data cartridge ship with each tape unit.
2. Transfer rates are for single SCSI Channel configurations. Tape Libraries utilizing split library or dual host configurations may obtain higher rates.
3. Requires Ultra SCSI adapter P/N 02K3454
4. Includes a 0.4 m SCSI cable for daisy-chaining to the initial drive.
5. No additional cables are required if daisy-chaining to the initial drive.
6. Dual Host or Split Library operation requires 3449 Second 20GB Drive (P/N 59H3391) and 3449 Adapter Card (P/N 59H3900) which includes appropriate adapters, cables and terminators.
7. Include rack mounting hardware and two power cords (120 V and 250 V). Models B22 and C22 include an additional 2 power cords.
8. The two tape drives are daisy-chained on the same SCSI bus with an included 0.5 meter SCSI cable. Dual Host and Split Library configurations require 3570 Adapter Card Kit (P/N 08L6517)
9. Required for either dual host or split library operation. Should be installed by qualified service personnel.
10. Magstar MP Media can be ordered by calling 888-IBM-MEDIA or 888-426-6334 in the US, Canada, or Puerto Rico.
11. B-format tape cartridges can be used in either Magstar MP 3570 Model B or C tape drives.
12. Split Mode operation requires 3447 Second Digital Linear Tape Drive Kit (P/N 59H3569), SCSI-2 16-bit Active Terminator (P/N 32G3918), PC Server 3.0M SCSI-2 F/W Cable (P/N 94G5567), or PC Server 4.3M SCSI-2 F/W Rack Cable (P/N 94G5566), and a second Ultra SCSI adapter (P/N 02K3454). Split mode operation is limited to AUTOLOADER MODE ONLY which processes the cartridges sequentially.
13. Required for Dual Host or Split Library configurations with 3570B2x or 3570C2x containing two drives.

Appendix C: UPS Runtime Estimate (minutes)

				Tower				Rack Mount	
			International Part Number	SU-700iNET 94G4073	SU-1000iNet 94G4074	SU-1400iNET 94G4075	SU-2200iNET 94G4076	SU-1400RMiB 94G6675	SU-3000RMiB 94G6677
			United States Part Number	SU-700NET 94G3134	SU-1000NET 94G3135	SU-1400NET 94G3136	Not Available	SU-1400RMB 94G6674	SU-3000RMB 94G6676
Servers	**# Pwr. Cords Std/Max**	**VA Load Max./Typ.[1]**	**Watts Load Max./Typ.[1]**	**minimum/ typical[4]**	**minimum/ typical[4]**	**minimum/ typical[4]**	**minimum/ typical[4]**	**minimum/ typical[4]**	**minimum/ typical[4]**
Netfinity 1000[2, 5]	1/1	225/160	225/160	22/32	36/51	57/80	114/156	-	-
Netfinity 3000[2]	1/1	225/160	225/160	22/32	36/51	57/80	114/156	-	-
Netfinity 3500	1/1	380/265	265/190	15/25	26/42	40/68	98/134	-	-
Netfinity 5000[2]	1/2	475/330	475/330	-	12/19	20/30	47/76	15/23	42/62
Netfinity 5500[2]	1/2	540/375	540/375	-	-	16/26	38/63	12/21	35/55
Netfinity 5500 M10[2]	1/2	540/375	540/375	-	-	16/26	38/63	12/21	35/55
Netfinity 5500 M20[2]	1/2	640/450	640/450	-	-	12/20	31/54	9/15	29/45
Netfinity 7000 M10[2]	1/2	745/525	745/525	-	-	12/17	26/40	8/12	26/35
Other Devices									
3517 SCSI Multi Storage Enclosure	1/1	190/135	135/100	38/55	58/75	90/118	180/225	-	-
3518 Enterprise Expansion Enclosure	1/1	700/500	500/350	-	11/18	18/28	43/71	13/21	41/67
Netfinity EXP15 (3520)[2]	2/2	400/280	400/280	-	-	-	-	18/27	57/84
SSA Entry Storage Subsystem for PC Servers (3527)[2]	1/1	300/210	300/210	12/20	22/36	34/57	85/121	-	-
3447 Digital Linear Tape Library	1/1	200/140	100/70	38/55	58/75	90/118	170/220	66/91	152/183
3449 8mm Tape Library	1/1	320/225	288/200	14/22	24/38	37/60	112/156	25/44	84/116
Netfinity Fibre Channel RAID Controller Unit (3526)[2]	2/2	160/105	160/105	-	-	-	-	60/91	140/183
UPS Attributes									
Communication Links to Servers	-	-	-	1	1	1	1	1	3
Color	-	-	-	black[3]	black[3]	black[3]	white	black	black
EIA Height	-	-	-	-	-	-	-	3U	3U
International Models	-	-	-						
Receptacles (IEC 320-C13, C19	-	-	-	4	4	4	8, 1	4	8, 1
Live Cord Receptacle (IEC 320-)	-	-	-	C14	C14	C20	C20	C14	C20
US Models	-	-	-						
Receptacles (NEMA 5-15R)	-	-	-	4	6	6	-	6	8
Line Cord Length, Plug	-	-	-	6 ft., 5-15P	6 ft., 5-15P	6 ft., 5-15P	-	6 ft., L5-15P	6 ft., L5-30P

1. This table represents general guidelines for selecting the appropriate UPS based on minimum and typical runtime estimates. A 'maximum configuration' load will result in 'minimum' UPS runtime. 'Typical' loads are based on a production system running at approximately 70% of maximum capacity. The 'typical' loads represent a more likely configuration and, therefore, a more likely estimate of runtime. Customer environments are unique and are unlikely to be precisely represented by any of the specific entries in the table.
2. Power-Factor Corrected (PFC) power supply. Runtime estimates have been adjusted accordingly.
3. Early versions were white. US versions currently shipping in cartons clearly marked as "black". International version will be black by end of 1Q99.
4. Data provided by APC.
5. Netfinity 1000 is not available in the Americas.

Note: For runtime estimates of multiple components attached to a single UPS, add the number of Watts for all selected components. Use the total Wattage and Total Configuration Runtime Estimator to determine which UPS provides an acceptable duration of estimated runtime.

For the latest product & technical information, refer to the Information Sources on pages 2 and 3.

Total Configuration Runtime Estimator (Time in minutes)[1]						
	Tower				Rack Mount	
	SU-700iNET 94G4073	SU-1000iNET 94G4074	SU-1400iNET 94G4075	SU-2200iNET 94G4076	SU-1400RMiB 94G6675	SU-3000RMiB 94G6677
Total Configuration Load (Watts)	SU-700NET 94G3134	SU-1000NET 94G3135	SU-1400NET 94G3136	Not Available	SU-1400RMB 94G6674	SU-3000RMB 94G6676
200	22	38	62	130	45	104
250	17	28	43	104	34	84
300	12	22	34	85	25	70
350	9	18	29	71	22	58
400	7	14	23	65	18	52
450	5	12	20	52	15	45
500	-	11	18	43	13	38
550	-	9	16	38	11	35
600	-	8	13	34	10	31
650	-	7	12	31	9	29
700	-	6	11	28	8	26
750	-	-	10	25	8	24
800	-	-	9	23	7	22
850	-	-	8	21	7	20
900	-	-	7	19	6	18
950	-	-	6	18	5	17
1000	-	-	-	17	-	16
1050	-	-	-	16	-	15
1100	-	-	-	15	-	14
1150	-	-	-	14	-	13
1200	-	-	-	13	-	12
1250	-	-	-	12	-	11
1300	-	-	-	11	-	10
1350	-	-	-	10	-	9
1400	-	-	-	10	-	9
1450	-	-	-	9	-	8
1500	-	-	-	9	-	8

1. Data provided by APC.

Step:
1. Identify the devices contained in the configuration.
2. Sum the load of all devices in the configuration. Use either Maximum Load for minimum runtime, or Typical Load for typical runtime.
3. Find the Total Configuration Load in the table above.
4. Select the most appropriate UPS model to achieve the desired runtime.

NOTE: If the Total Configuration Load is greater than the entries above, split the load across two or more UPS units.

Appendix D: Cables - Storage Units - Controllers

Cables - Storage Units - Controllers

F: Female - External
M: Male - External
I: Internal
68: 16-bit, 68-pin High Density connector
50: 8-bit, 50-pin Centronix Connector
0.8: 16-bit, 68-pin Very High Density Connection Interface (VHDCI) 0.8 mm connector
16: 16-bit, 68-pin connector
8: 8-bit, 50-pin connector

Instructions: Identify Desired Controller Row and Storage Unit Column. The intersection of row and column contains the cable group letter which supports the connection. Go to the cable group under the corresponding storage unit for specific support. Read all Notes for row, column, and any cable group footnotes.

Description	Part Number	Max./ Channel (MB/sec)[12]	LVDS	Connector Type/ Max	Note #	3517xxx	3518xxx	Repeater 94G7585	3519xxx	35201RU	35202RU	3527xxx	3510020	3503B0X	3551001	Adapter 10L7113
Storage Unit																
Max.MB/sec.[12]						20	20	20	20	40	40	80	-	-	-	-
LVDS						-	-	-	-	-	X	-	-	-	-	-
Connector Type						F68	F68	F68	F68	F68	F0.8	SSA	F68 or F50	F68	F0.8	F0.8
						5	6	16, 17	15, 17	11, 15	15, 23	-	20, 21	21, 22	15, 21	15, 21, 25
RAID Storage Controllers																
Netfinity Fibre Channel RAID Controller Unit	35261RU	80	X	F0.8/6	19	-	-	-	-	B	A	-	-	-	-	-
IBM Netfinity ServeRAID-3H Ultra2 SCSI Adapter	01K7207	80	X	F0.8/3	-	-	B	B	B	B	A	-	-	-	-	-
IBM Netfinity ServeRAID-3L Ultra2 SCSI Adapter	01K7364	80	X	F0.8/1	-	-	B	B	B	B	A	-	-	-	-	-
IBM ServeRAID II Ultra SCSI Adapter	76H3584	40	-	F0.8/3[4]	4	B	B	B	B, G[14]	B	A[10, 11]	-	-	-	-	-
IBM Netfinity 5500, 5500 M10 - ServeRAID II	Onboard	40	-	F0.8/1[2]	2	B	B	B	B, G[14]	B	A[10, 11]	-	B, G[24]	B[24]	A[24]	A[24]
IBM Netfinity 5500 M20 - ServeRAID II	Onboard	40	-	F 0.8/1	-	B	B	B	B, G[14]	B	A[10, 11]	-	B, G[24]	B[24]	A[24]	A[24]
IBM SSA RAID Adapter for PC Servers	32H3811	-	-	SSA	-	-	-	-	-	-	-	F	-	-	-	-
IBM Advanced SerialRAID/X Adapter	09L2123	-	-	SSA	-	-	-	-	-	-	-	F	-	-	-	-
Ultra SCSI Controllers																
PCI Fast/Wide Ultra SCSI Adapter	02K3454	40	-	F68/1	-	C	C	C	C, G	C	B[11]	-	C, G	C	B	B
PC Server Ultra Wide SCSI PCI Adapter	76H5407	40	-	F68/1	-	C	C	C	C, G	C	-	-	C, G	C	B	B
PC Server Ultra Wide SCSI PCI Adapter	76H3579	40	-	F68/1	-	C	C	C	C, G	C	-	-	C, G	C	B	B
IBM Netfinity 1000[26] - Wide Ultra SCSI	Onboard	40	-	F68/1	-	-	-	-	-	-	-	-	C, G	C	-	-
IBM Netfinity 3000 - Wide Ultra SCSI	Onboard	40	-	F68/1	-	-	-	-	-	-	-	-	C, G	C	-	-
IBM Netfinity 3500 - Wide Ultra SCSI	Onboard	40	-	F68/1	-	C	-	-	-	-	-	-	C, G	C	-	-
IBM Netfinity 5000 - Wide Ultra SCSI	Onboard	40	-	F68/1	-	-	-	-	-	-	-	-	C, G	C	B	B
IBM Netfinity 7000 - Wide Ultra SCSI	Onboard	40	-	F68/1[3]	3	-	-	-	-	-	-	-	C, G	C	B	B
IBM Netfinity 7000 M10 - Wide Ultra SCSI	Onboard	40	-	F0.8/1	-	-	-	-	-	-	-	-	B, G	B	A	A
Related Options																
IBM 0.8mm to 68-pin SCSI Adapter	01K8017	-	-	M0.8-F68	1	-	-	-	G	-	-	-	G	-	-	-
IBM Netfinity SCSI Controller Cable	03K9313	-	-	I16-F0.8	2	B	B	B	B, G	B	A[10, 11]	-	B, G	B	A	A
Netfinity PCI SCSI Controller to Bulkhead Cable	94G7421	-	-	I16-F68	3	-	-	-	-	-	-	-	C, G	C	B	B
IBM Third Channel Cable	76H5400	-	-	I16-F0.8	4	B	B	B	B, G	B	A[10, 11]	-	B, G	B	A	A
IBM SCSI-2 F/W Enhanced Repeater	94G7585	20	-	F68-I16	16, 17	-	X	-	X	-	-	-	-	-	-	-
Cable Group A (M0.8-M0.8)																
Netfinity 2M Ultra2 SCSI Cable	03K9310	-	X	M0.8-M0.8	9	-	-	-	-	-	X	-	-	-	X	X
Netfinity 4.2M Ultra2 SCSI Cable	03K9311	-	X	M0.8-M0.8	9	-	-	-	-	-	X	-	-	-	X	X
Netfinity 12M Ultra2 SCSI Cable	03K9312	-	X	M0.8-M0.8	10	-	-	-	-	-	X[10]	-	-	-	-	X
Cable Group B (M68-M0.8)																
IBM 1M External .8mm SCSI Cable	76H3589	-	-	M68-M0.8	-	X	X	X	-	X	X	-	X	X	X	X
IBM 2M External .8mm SCSI Cable	01K8027	-	-	M68-M0.8	-	-	X	X	X	X	X	-	X	X	X	X
Netfinity EXP10 3M External Auto-Sensing Cable	03K9352	-	-	M68-M0.8	8, 11	-	X	X	X	X[8]	X	-	-	-	-	-
IBM 4.3M External .8mm SCSI Cable	01K8029	-	-	M68-M0.8	11	-	X	X	X	X	X	-	-	-	X	X
Cable Group C (M68-M68)																
PC Server F/W to F/W External SCSI Cable-1m	70G9857	-	-	M68-M68	-	X	X	X	-	X	-	-	X	X	-	-
PC Server 3.0M SCSI-2 F/W Cable	94G5567	-	-	M68-M68	11	-	X	X	X	X	-	-	-	-	-	-
PC Server 4.3M SCSI-2 F/W Rack Cable	94G5566	-	-	M68-M68	7, 11	-	X	X	X	X	-	-	-	-	-	-
Cable Group D (Short Wave Fibre)																

For the latest product & technical information, refer to the Information Sources on pages 2 and 3.

Cables - Storage Units - Controllers

F: Female - External
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50: 8-bit, 50-pin Centronix Connector
0.8: 16-bit, 68-pin Very High Density Connection Interface (VHDCI) 0.8 mm connector
16: 16-bit, 68-pin connector
8: 8-bit, 50-pin connector

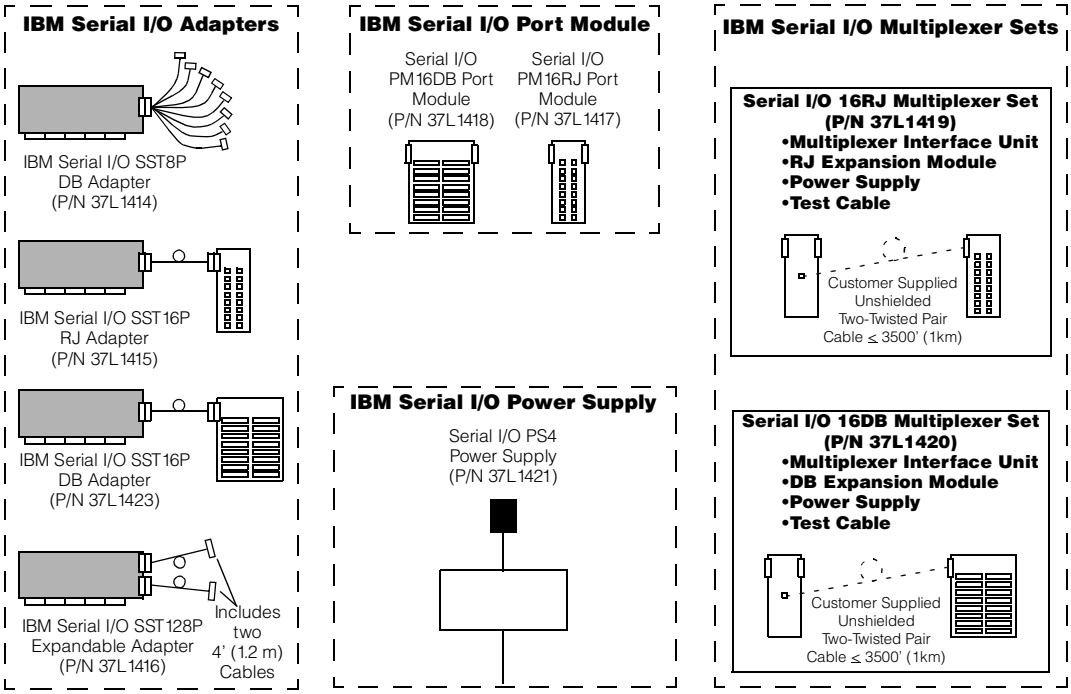
Instructions: Identify Desired Controller Row and Storage Unit Column. The intersection of row and column contains the cable group letter which supports the connection. Go to the cable group under the corresponding storage unit for specific support. Read all Notes for row, column, and any cable group footnotes.

Storage Unit	3517xxx	3518xxx	Repeater 94G7585	3519xxx	35201RU	35202RU	3527xxx	3510020	3503B0X	3551001	Adapter 10L7113
Max.MB/sec.[12]	20	20	20	20	40	40	80	-	-	-	-
LVDS	-	-	-	-	-	X	-	-	-	-	-
Connector Type	F68	F68	F68	F68	F68	F0.8	SSA	F68 or F50	F68	F0.8	F0.8
	5	6	16, 17	15, 17	11, 15	15, 23	-	20, 21	21, 22	15, 21	15, 21, 25

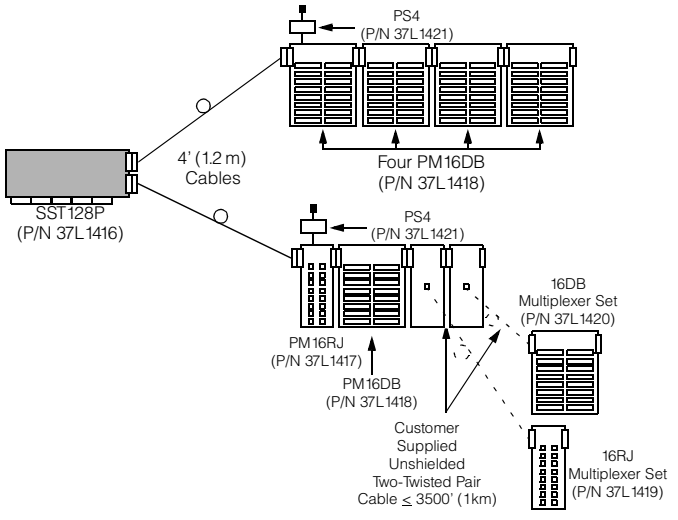
Description	Part Number	Max./ Channel (MB/sec)[12]	LVDS	Connector Type/ Max	Note #											
Netfinity Fibre Channel 5 M Cable	03K9306	-	n/a	S/W Fibre	-	-	-	-	-	-	-	-	-	-	-	-
Netfinity Fibre Channel 25 M Cable	03K9305	-	n/a	S/W Fibre	-	-	-	-	-	-	-	-	-	-	-	-
Customer supplied cables <500M (0.31 miles)	**********	-	n/a	S/W Fibre	-	-	-	-	-	-	-	-	-	-	-	-
Cable Group E (Long Wave Fibre)																
Customer supplied cables < 10 KM (6.2 miles)	**********	-	n/a	L/W Fibre	-	-	-	-	-	-	-	-	-	-	-	-
Cable Group F (SSA)																
External SSA Cable, pair 1.0M	59H7220	-	-	SSA	-	-	-	-	-	-	-	-	X	-	-	-
External SSA Cable, pair, 2.5M	59H7221	-	-	SSA	-	-	-	-	-	-	-	-	X	-	-	-
External SSA Cable, pair, 5.0M	59H7222	-	-	SSA	-	-	-	-	-	-	-	-	X	-	-	-
External SSA Cable, pair, 10.0M	59H7223	-	-	SSA	-	-	-	-	-	-	-	-	X	-	-	-
External SSA Cable, pair, 25.0M	59H7224	-	-	SSA	-	-	-	-	-	-	-	-	X	-	-	-
Cable Group G (Other)																
PC Server F/W to Fast External SCSI Cable-1M	70G9858	-	-	M68-M50	-	-	-	-	-	-	-	-	-	X[20]	-	-	-
SCSI-2 16-bit Active Terminator	32G3918	-	-	M68	-	-	-	-	-	-	-	-	-	X	X	-	-
IBM SCSI Storage Extender Cable-split 6M	94G7594	-	-	3 x M68	14	-	-	X	X	-	-	-	-	-	-	-	-
GBIC																
Netfinity Fibre Channel Short-Wave GBIC	03K9308	-	n/a	S/W Fibre	13	-	-	-	-	-	-	-	-	-	-	-	-
Netfinity Fibre Channel Long-Wave GBIC	03K9307	-	n/a	L/W Fibre	-	-	-	-	-	-	-	-	-	-	-	-	-

1. Converts a F0.8mm into a F68-pin connector for attachment of an external M68 cable .
2. Netfinity 5500 and 5500 M10 require IBM Netfinity SCSI Controller Cable (P/N 03K9313) to route the internal onboard SCSI RAID connector to an external F0.8 mm connector.
3. Requires IBM Netfinity PCI SCSI Controller to Bulkhead Cable (P/N 94G7421) to route the internal onboard Ultra SCSI connector of a Netfinity 7000 to an external F68-pin connector.
4. IBM Third Channel Cable (P/N 76H5400) routes the third (internal) SCSI RAID connector of IBM ServeRAID II Ultra SCSI Adapter (P/N 76H3584) external to the adapter. This is accomplished by replacing the two connector adapter interface plate with a three connector plate (included with the option).
5. Storage unit 3517xxx supports attachment of 1 meter cables only.
6. Storage unit 3518xxx requires IBM SCSI-2 F/W Enhanced Repeater (P/N 94G7585) for each attachment when cable lengths exceed 1 meter or in Twin-Tail configurations.
7. PC Server 4.3M SCSI-2 F/W Rack Cable (P/N 94G5566) is supported in rack installations ONLY.
8. Replaces IBM 3M External .8mm SCSI Cable (P/N 01K8028). Required in Twin-Tail configurations using EXP10 (P/N 35201RU).
9. Supports attachment to Ultra-2 or single-ended SCSI controllers with operational speeds of up to Ultra-2. Controller, storage unit, cable length or storage device limitations may apply (see Max. MB/sec row and column above).
10. Cable lengths exceeding 4.3 meters are NOT supported for attachment to non-Ultra-2 controllers.
11. Installations with cable lengths greater than 2 meters are limited to SCSI Fast/Wide speeds of 20MB/S .
12. Maximum supported speeds may be limited by installation of lower speed devices, controllers or cable lengths greater than 2 meters.
13. Four short wave GBICs are included with Netfinity Fibre Channel Hub (P/N 35231RU).
14. IBM SCSI Storage Extender Cable (P/N 94G7594) is used to daisy-chain two 3519xxx storage units to a single SCSI channel. Requires IBM .8mm to 68-pin SCSI Adapter (P/N 01K8017) for attachment to F0.8 controller connectors.
15. Rack installation cable management requires devices to have a minimum cable length of 2 meters. Cable length requirements will vary based on placement within a single or multiple rack suite.
16. Optional IBM SCSI-2 F/W Enhanced Repeater (P/N 94G7585) provides repeater function (required for cable lengths greater than 1 meter) and auto-sensing termination (required for twin-tail configurations) for external storage unit 3518xxx.
17. IBM SCSI-2 F/W Enhanced Repeater (P/N 94G7585) provides SCSI repeater and auto-sensing termination for external storage unit 3519xxx. One is standard and the second is required for Twin-Tail configurations.
18. Twin-Tail configurations with storage unit 35201RU require Netfinity EXP10 3M External Auto-Sensing Cables (P/N 03K9352).
19. Connection to either Netfinity Fibre Channel Hub (P/N 35231RU) or Netfinity Fibre Channel PCI Adapter (P/N 01K7297) requires short wave fibre cables from Cable Group D.
20. Cable groups B and C are for 16-bit tape drive installation while cable group G's P/N 70G9858 applies to 8-bit drives. External Storage Unit 3510020 comes equipped with both a F68 connector set for 16-bit tape drives and a F50 connector set for 8-bit drives. Attachment of cable P/N 70G9858 (Cable Group G) to a 0.8mm controller connector requires IBM .8mm to 68-pin SCSI Adapter (P/N 01K8017).
21. Daisy chaining tape enclosures is not supported. Speeds are limited by cable lengths and installed devices.
22. Requires SCSI-2 16-bit Active Terminator (P/N 32G3918).
23. Attachment to wide ultra SCSI controllers limits operational speeds to Ultra SCSI (40 MB/s) for cables up to 2 meters in length and Fast/Wide SCSI (20 MB/s) for cable lengths between 2 meters and 4.3 meters. Ultra-2 controllers and cables allow cable lengths of up to 12 meters at up to 40 MB/s.
24. RAID support for tape drives is limited to Non-RAID functions and utilization of a dedicated channel.
25. Installs in a 3551001. Provides repeater function and LVDS interface allowing longer cable lengths and auto-termination when the 3551001 is powered off.
26. Netfinity 1000 is not available in the Americas.

Appendix E: IBM Serial I/O



Sample Configurations



37L1414	Serial I/O SST8P DB Adapter[1, 6]
37L1415	Serial I/O SST16P RJ Adapter[2, 6]
37L1423	Serial I/O SST16P DB Adapter[3, 6]
37L1416	Serial I/O SST128P Expandable Adapter[4, 6]
37L1417	Serial I/O PM16RJ Port Module[5]
37L1418	Serial I/O PM16DB Port Module[5]
37L1419	Serial I/O 16RJ Multiplexer Set[5, 7]
37L1420	Serial I/O 16DB Multiplexer Set[5, 7]
37L1421	Serial I/O PS4 Power Supply[5]

(1) Intelligent serial I/O interface card providing eight DB-25 RS232 serial connections using an octopus cable. Support for all ports at 921.6 Kbps simultaneously.
(2) Intelligent serial I/O interface card providing sixteen RJ-45 RS232 serial connections in a breakout box. Support for all ports at 115.2 Kbps simultaneously.
(3) Intelligent serial I/O interface card providing sixteen DB-25 RS232 serial connections in a breakout box. Support for all ports at 115.2 Kbps simultaneously.
(4) Intelligent interface card providing up to 128 RS232 serial connections (DB25 or RJ45) configured in 16 port increments utilizing any combination of Port Modules and Multiplexer Sets. Includes two 4' (1.2 m) bus cables. Each 4' cable supports attachment of 1 to 4 Port Modules and/or Multiplexer Interface Units for a total of 8 per adapter. The first Port Module or Multiplexer Set attached to a cable requires a Serial I/O PS4 Power Supply (P/N 37L1421). Support for all ports at 115.2 Kbps simultaneously.
(5) Port Modules and Multiplexer Sets attach directly to one the two standard 4' (1.2m) bus cables of the Serial I/O SST128P Expandable Adapter (P/N 37L1416) or directly to 1 or more Port Modules or Multiplexer Sets already attached to one of the cables. A maximum of 4 Port Modules or Multiplexer Sets may be attached to single cable. The first Port Module or Multiplexer Set attached to a cable requires a Serial I/O PS4 Power Supply (P/N 37L1421).
(6) Serial I/O Adapters are 32-bit PCI half length cards. A maximum of four Serial I/O adapters (in any combination) may be installed in a single host system.
(7) Requires a customer supplied Unshielded Two-Twisted Pair (Catagory 3 minimum) cable with a maximum length of 3,500 feet (1 Km).

Important Notes

IBM reserves the right to change product specifications and to discontinue marketing products without notice.
*MHz only measures microprocessor internal clock speed, not application performance. Many factors affect application performance.
**When referring to hard drive capacity, GB stands for one billion bytes.Total user-accessible capacity may vary depending on operating environments.
***The quotation function within ConfigXpert allows reseller specific pricing to be included.
****Tape Drives which utilize data compression technology have storage capacity that will vary depending upon whether the drive is operating in native mode (without compression) or compressed mode. Actual storage capacity will vary based upon many factors and may be less than the maximum possible.
Maximum internal hard disk drive capacities assume the replacement of any hard disk drives and the population of all hard disk drive bays with the largest currently supported drives available from IBM.
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