

HP 9000 Series 800 and Series 600 Business Servers

Configuration Guide

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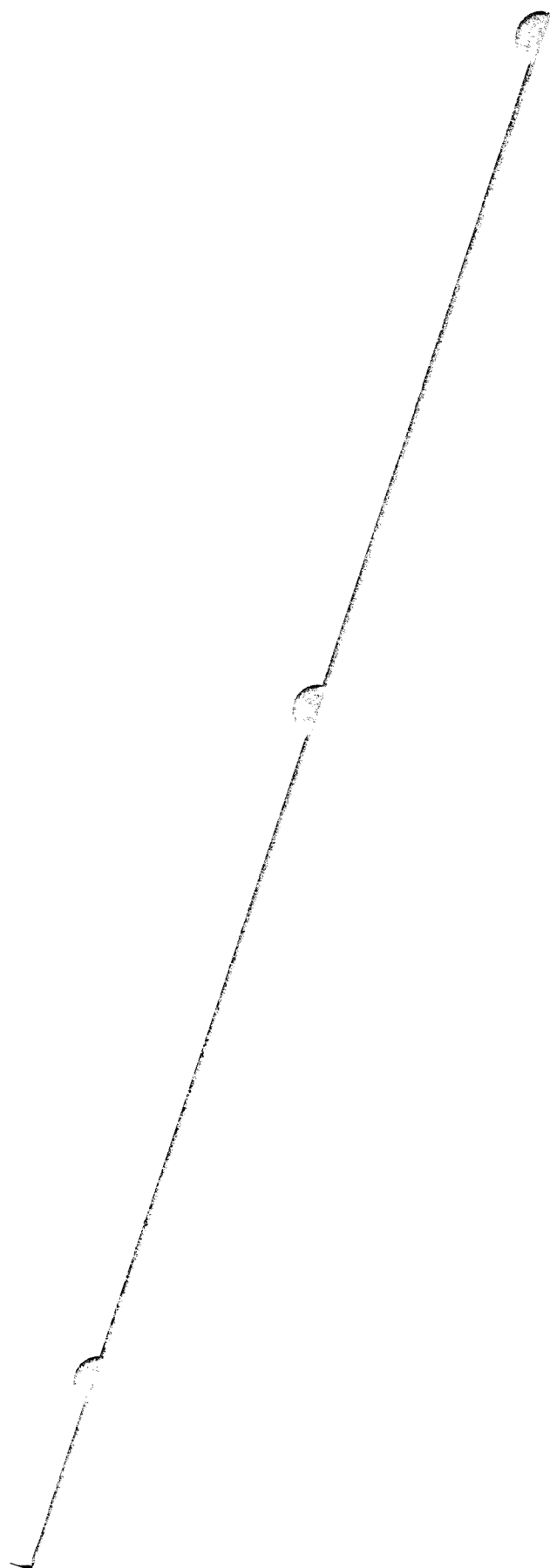


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About this Guide

System Selection

To aid in choosing the right system to meet your customers requirements, this guide begins with the "SPUs at a Glance" table of specifications. A general configuration information section follows, giving the operational requirements for the SPUs and how to order peripheral devices intended for use outside the United States.

Configuring a System

This guide details each of the different computer solutions components in a separate section beginning with the Series 800 Business Servers. The upgrade program, I/O, networking and peripherals are among the other sections. By following the guide through each section, you should be able to configure a system quickly and accurately.

New Products in This Configuration Guide

A1751A Model 807S Business Server

A1703A Model 817S Business Server

A1704A Model 827S Business Server

A1765A Model 837S Business Server

A1766A Model 847S Business Server

A1706A Model 857S Business Server

C2460F Model 420F HP Series 6000 Multi-User SCSI Mass Storage Systems

C2460R Model 420R HP Series 6000 Multi-User SCSI Mass Storage Systems

C2461F Model 670F HP Series 6000 Multi-User SCSI Mass Storage Systems

C2461R Model 670r HP Series 6000 Multi-User SCSI Mass Storage Systems

C2462F Model 1350F HP Series 6000 Multi-User SCSI Mass Storage Systems

C2462R Model 1350R HP Series 6000 Multi-User SCSI Mass Storage Systems

C2463F Model 1300D/F HP Series 6000 Multi-User SCSI Mass Storage Systems

C2463R Model 1300D/RF HP Series 6000 Multi-User SCSI Mass Storage Systems

7980S 1/2" SCSI Tape Drive

33481A Laserjet IIP Printer

33491A Laserjet III Si Printer

HP 28655A SCSI/Parallel Interface

J2092A Asynch 16-Ch RS-232 Direct Connect Multiplexer

J2093A Asynch 16-Ch RS-423 Direct Connect Multiplexer

J2094A Asynch 16-Ch RS-232 Modem Connect Multiplexer

J2146A LAN/9000 Link for 8x7s Systems

27147A CIO SCSI Host Adapter

28655A HP-PB SCSI/Parallel Host Adapter

94181A HP-PB Real-Time Interface

Products Deleted Since the Last Configuration Guide

2684A Laserjet 2000 Printer

7957S 107 MB SCSI Disk Drive

7958S 161 MB SCSI Disk Drive

7959S 323 MB SCSI Disk Drive

Other Information

Other important information on HP 9000 Series 800/600 Business Servers and related products is provided in the following publications:

- Models 808S/815S Technical Data Sheet, 5952-0519
- Models 807S/817S/827S/837S/847S/857S Technical Data Sheet, 5091-1631
- Models 825S/835S/835SE/845S/845SE Technical Data Sheet, 5952-2312
- Models 822S/832S/842S/852S Technical Data Sheet, 5091-0343E
- Models 850S/855S/860S/865S/870S Technical Data Sheet, 5952-2308
- HP-UX 7.0 Operating System Technical Data Sheet, 5091-0344E
- HP-UX 8.0 Technical Data Sheet
- HP System Availability for HP 9000 Series 800 Computers, 5091-0345E
- GSY Hotline
- HP AdvanceNet Specification Guide, 5956-4144, 2/90
- HP AdvanceNet Specification Guide Addendum, 5956-4144A, 8/90
- Connectivity Matrix, 5951-7065, 7/90
- HP Peripheral Configuration Guide, 5959-2479, 4/89

Pricing Information

For information on the U.S. prices for the HP 9000 Series 800/600 Business Servers, interfaces, peripherals, options and accessories in this guide, refer to the HP 9000 Series 800/600 Price Guide. (Part Number 5091-1515E)

The HP 9000 Series 800/600 SPU's at-a-Glance

PERFORMANCE (page ref.)	Model 807S (page 12)	Model 808S (page 42)	Model 815S (page 44)
Relative OLTP Performance to 822S	2.0	.5	.5
Double Precision MFLOPS	Not applicable	.6 (with Opt. FPP)	.6 (with Opt. FPP)
Max. I/O Bandwidth (MB/sec)	32 (HP Precision Bus)	32 (HP Precision Bus)	32 (HP Precision Bus)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	HP-PB	HP-PB	HP-PB
HP-PB Slots Available	2	3	8
Available HP-PB Interfaces, Memory, and Other Cards	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, SCSI/Parallel, and Real-Time Interface	8-ch multiplexer, HP-IB, SCSI/Parallel, LAN, X.25, SNA, GP Parallel, 8 Mbyte ECC Memory, and Battery Backup	8-ch multiplexer, HP-IB, SCSI/Parallel, LAN, X.25, SNA, MAP 3.0, GP Parallel, 8 Mbyte ECC Memory, and Battery Backup
CTB Slots Available	Not applicable	Not applicable	Not applicable
Available CTB Cards	Not applicable	Not applicable	Not applicable
CIO Slots Available	Not applicable	Not applicable	Not applicable
Available CIO I/O Interfaces	Not applicable	Not applicable	Not applicable
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Not applicable	Not applicable
Base Memory	8 Mbyte**	8 Mbyte	8 Mbyte
Maximum Memory	64 Mbyte	32 Mbyte	56 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte	8 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To 64	To 16	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	96	8	24
Minimum disk Memory	234 Mbyte**	150 Mbyte	335 Mbyte
Maximum disk Memory	10.9 Gbyte	8.0 Gbyte	8.0 Gbyte
Maximum SCSI Connected Disk Memory	10.9 Gbyte 9 disks	8.0 Gbyte 12 disks	8.0 Gbyte 12 disks
Maximum HP-FL Connected Disk Memory	Not supported	Not supported	Not supported
Maximum HP-IB Connected Disk Memory	2.7 Gbyte (4 disks, 1 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	4 (1 interface)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	Not applicable	Not applicable	Not applicable
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronics Connected Printers	1	3	3

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

** Minimum requirements for LAN, X.25, SNA: 16 MB memory, 328 MB disk.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPUs at-a-Glance, continued

PERFORMANCE (page ref.)	Model 817S (page 12)	Model 822S (page 46)	Models 825S (page 75)
Relative OLTP Performance to 822S	3.6	1.0	.9
Double Precision MFLOPS	9.0 (with Opt. FPP)	1.0	.5
Max. I/O Bandwidth (MB/sec)	32 (HP Precision Bus)	32 (HP Precision Bus)	10‡ (w/CIO Exp)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	HP-PB	HP-PB	CIO and CTB
HP-PB Slots Available	2	12	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, SCSI/Parallel, and Real-time Interface	8- or 16-ch multiplexer, SCSI/Parallel, HP-IB, LAN, X.25, SNA, MAP 3.0, GP Parallel, 8 Mbyte/16 Mbyte/32 Mbyte ECC Memory, PBA FL Interface	Not applicable
CTB Slots Available	Not applicable	Not applicable	6
Available CTB Cards	Not applicable	Not applicable	8 Mbyte/16 Mbyte/32 Mbyte ECC memory, SNA/X.25 interface, display controller interface, and CIO adapters
CIO Slots Available	Not applicable	Not applicable	5 (12 w/CIO Expander)
Available CIO I/O Interfaces	Not applicable	Not applicable	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Not applicable	Not applicable
Base Memory	16 Mbyte	8 Mbyte	8 Mbyte
Maximum Memory	192 Mbyte	128 Mbyte	192 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	160	48	44
Minimum disk Memory	328 Mbyte	335 Mbyte	335 Mbyte
Maximum disk Memory	28.5 Gbyte	24.1 Gbyte	21.4 Gbyte
Maximum SCSI Connected Disk Memory	28.5 Gbyte 21 disks	10.6 Gbyte 16 disks	10.6 Gbyte 16 disks
Maximum HP-FL Connected Disk Memory	Not supported	21.4 Gbyte (16 disks, 2 interfaces)	21.4 Gbyte (16 disks, 2 interfaces)
Maximum HP-IB Connected Disk Memory	2.7 Gbyte (4 disks, 1 interface)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	4 (1 interface)	4	8 (2 interfaces)
Max. HP-IB Connected Printers	Not applicable	Not applicable	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronics Connected Printers	3	4	Not applicable

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPU's at-a-Glance, continued

PERFORMANCE (page ref.)	Model 827S (page 24)	Model 832S (page 50)	Models 835S/835SE (page 78)
Relative OLTP Performance to 822S	3.6	1.5	1.7
Double Precision MFLOPS	9.0 (with Opt. FPP)	1.6	1.9
Max. I/O Bandwidth (MB/sec)	32 (HP Precision Bus)	32 (HP Precision Bus)	5‡(S)/10‡ (SE)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	HP-PB	HP-PB	CIO and CTB
HP-PB Slots Available	6	12	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, PBA-FL Interface, SCSI/Parallel, MAP 3.0, and Real-Time Interface	8- or 16-ch multiplexer, SCSI, HP-IB, LAN, X.25, SNA, MAP 3.0, GP Parallel, 8 Mbyte/16 Mbyte/32 Mbyte ECC Memory, PBA FL Interface	Not applicable
CTB Slots Available	Not applicable	Not applicable	6(S)/5(SE)
Available CTB Cards	Not applicable	Not applicable	8 Mbyte/16 Mbyte/32 Mbyte ECC memory, SNA/X.25 interface, display controller interface, and CIO adapters
CIO Slots Available	Not applicable	Not applicable	5(S)/13(SE)
Available CIO I/O Interfaces	Not applicable	Not applicable	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Not applicable	Not applicable
Base Memory	16 Mbyte	16 Mbyte	8 Mbyte(S)/24 Mbyte(SE)
Maximum Memory	192 Mbyte	128 Mbyte	192 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	224	96	98
Minimum Disk Memory	328 Mbyte	335 Mbyte	335 Mbyte
Maximum Disk Memory	47.6 Gbyte	24.1 Gbyte	21.4 Gbyte
Maximum SCSI Connected Disk Memory	47.6 Gbyte 35 disks	10.6 Gbyte 16 disks	10.6 Gbyte 16 disks
Maximum HP-FL Connected Disk Memory	21.4 Gbyte (16 disks, 2 interfaces)	21.4 Gbyte (16 disks, 2 interfaces)	21.4 Gbyte (16 disks, 2 interfaces)
Maximum HP-IB Connected Disk Memory	5.4 Gbyte (8 disks, 2 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	8 (2 interfaces)	4	8 (2 interfaces)
Max. HP-IB Connected Printers	Not applicable	Not Applicable	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronic Connected Printers	5	4	Not applicable

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPUs at-a-Glance, continued

PERFORMANCE (page ref.)	Model 837S (page 12)	Models 842S (page 54)	Model 845S/845SE (page 81)
Relative OLTP Performance to 822S	4.8	4.0	2.5
Double Precision MFLOPS	11.4 (with Opt. FPP)	6.9 (with Opt. FPP)	2.5
Max. I/O Bandwidth (MB/sec)	32 (HP Precision Bus)	32 (HP Precision Bus)	5‡(S)/10‡(SE)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	HP-PB	HP-PB	CIO and CTB
HP-PB Slots Available	2	12	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, SCSI/Parallel, and Real-time Interface	8- or 16-ch multiplexer, SCSI/Parallel, HP-IB, LAN, X.25, SNA, MAP 3.0, GP Parallel, 8 Mbyte/16 Mbyte/32 Mbyte ECC Memory, PBA FL Interface	Not applicable
CTB Slots Available	Not applicable	Not applicable	5(S)/5(SE)
Available CTB Cards	Not applicable	Not applicable	8 Mbyte/16 Mbyte/32 Mbyte ECC memory, SNA, X.25, display controller interface, and CIO adapters
CIO Slots Available	Not applicable	Not applicable	4(S)/12(SE)
Available CIO I/O Interfaces	Not applicable	Not applicable	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Not applicable	Not applicable
Base Memory	16 Mbyte	32 Mbyte	16 Mbyte(S)/32 Mbyte(SE)
Maximum Memory	192 Mbyte	256 Mbyte	192 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	240	224	154
Minimum Disk Memory	328 Mbyte	670 Mbyte	335 Mbyte
Maximum Disk Memory	28.5 Gbyte	45.6 Gbyte	21.4 Gbyte
Maximum SCSI Connected Disk Memory	28.5 Gbyte 21 disks	21.2 Gbyte 32 disks	10.6 Gbyte 16 disks
Maximum HP-FL Connected Disk Memory	Not Support	42.8 Gbyte (32 disks, 4 interfaces)	21.4 Gbyte (16 disks, 2 interfaces)
Maximum HP-IB Connected Disk Memory	2.7 Gbyte (4 disks, 1 interface)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	4 (1 interface)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	Not Applicable	Not applicable	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronic Connected Printers	3	6	Not applicable

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPU's at-a-Glance, continued

PERFORMANCE (page ref.)	Models 847S (page 24)	Model 850S (page 84)	Models 852S (page 58)
Relative OLTP Performance to 822S	5.0	2.0	5.2
Double Precision MFLOPS	11.4 (with Opt. FPP)	1.8 (with FP Upgrade)	9.8 (with Opt. FPP)
Max. I/O Bandwidth (MB/sec)	32 (HP Precision Bus)	40‡ (w/CIO Expanders)	32 (HP Precision Bus)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	HP-PB	CIO and CTB	HP-PB
HP-PB Slots Available	6	Not applicable	11
Available HP-PB Interfaces, Memory, and Other Cards	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, SCSI/Parallel, PBA-FL Interface, MAP 3.0, and Real-Time Interface	Not applicable	8- or 16-ch multiplexer, SCSI/Parallel, HP-IB, LAN, X.25, SNA, MAP 3.0, GP Parallel, 8 Mbyte/16 Mbyte/32 Mbyte ECC Memory, PBA FL Interface
CTB Slots Available	Not applicable	10	Not applicable
Available CTB Cards	Not applicable	16 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters	Not applicable
CIO Slots Available	Not applicable	7 (Up to 17 in SPU w/add'l CIO channel adapters)	Not applicable
Available CIO I/O Interfaces	Not applicable	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)	Not applicable
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Up to 48 slots in 3 expansion modules	Not applicable
Base Memory	32 Mbyte	48 Mbyte	64 Mbyte
Maximum Memory	192 Mbyte	256 Mbyte	256 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	16 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	320	106	327
Minimum Disk Memory	677 Mbyte	335 Mbyte	670 Mbyte
Maximum Disk Memory	47.6 Gbyte	42.9 Gbyte	45.6 Gbyte
Maximum SCSI Connected Disk Memory	47.6 Gbyte 35 disks	21.2 Gbyte 32 disks	21.2 Gbyte 32 disks
Maximum HP-FL Connected Disk Memory	21.4 Gbyte (16 disks, 2 interfaces)	42.9 Gbyte (32 disks, 4 interfaces)	42.8 Gbyte 32 disks (4 interfaces)
Maximum HP-IB Connected Disk Memory	5.4 Gbyte (8 disks, 2 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte 12 disks (3 interfaces)
Maximum Magnetic Tape Drives	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	Not applicable	8 (2 interfaces)	Not applicable
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronic Connected Printers	5	Not applicable	6

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPU's at-a-Glance, continued

PERFORMANCE (page ref.)	Model 855S (page 89)	Models 857S (page 33)	Model 860S (page 94)
Relative OLTP Performance to 822S	2.9	5.3	4.1
Double Precision MFLOPS	4	11.4 (with Opt. FPP)	2.3
Max. I/O Bandwidth (MB/sec)	40‡ (w/CIO Expanders)	32 (HP Precision Bus)	40‡ (w/CIO Expanders)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	CIO and CTB	HP-PB	CIO and CTB
HP-PB Slots Available	Not applicable	12	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	Not applicable	8-ch & 16-ch multiplexer, HP-IB, LAN, X.25, SNA, SCSI/Parallel, PBA-FL Interface, MAP 3.0, and Real-Time Interface	Not applicable
CTB Slots Available	10	Not applicable	10
Available CTB Cards	16 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters	Not applicable	16 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters
CIO Slots Available	7 (Up to 17 in SPU w/add'l CIO channel adapters)	Not applicable	7 (Up to 17 in SPU w/add'l CIO channel adapters)
Available CIO I/O Interfaces	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)	Not applicable	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Up to 64 slots in 4 expansion modules	Not applicable	Up to 64 slots in 4 expansion modules
Base Memory	48 Mbyte	32 Mbyte	48 Mbyte
Maximum Memory	256 Mbyte**	192 Mbyte	256 Mbyte ^x
Memory Increments	16 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte	16 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	172	320	206
Minimum Disk Memory	335 Mbyte	677 Mbyte	335 Mbyte
Maximum Disk Memory	42.9 Gbyte	47.6 Gbyte	42.9 Gbyte
Maximum SCSI Connected Disk Memory	21.2 Gbyte 32 disks	47.6 Gbyte 35 disks	21.2 Gbyte 32 disks
Maximum HP-FL Connected Disk Memory	42.9 Gbyte (32 disks, 4 interfaces)	32.1 Gbyte 24 disks (3 interfaces)	42.9 Gbyte (32 disks, 4 interfaces)
Maximum HP-IB Connected Disk Memory	8.0 Gbyte (12 disks, 3 interfaces)	5.4 Gbyte 8 disks (2 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	8 (2 interfaces)	Not applicable	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronics Connected Printers	Not applicable	5	Not applicable

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

** Memory configurations larger than 128 Mbytes require a second memory controller (HP A1103A).

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPU's at-a-Glance, continued

PERFORMANCE (page ref.)	Model 865S (page 99)	Model 870S/100 (page 104)	Model 870S/200 (page 109)
Relative OLTP Performance to 822S	5.4	7.2	Up to 10
Double Precision MFLOPS	9.8	9.8	Not Available
Max. I/O Bandwidth (MB/sec)	40‡ (w/CIO Expanders)	40‡ (w/CIO Expanders)	40‡ (w/CIO Expanders)

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	CIO and CTB	CIO and CTB	CIO and CTB
HP-PB Slots Available	Not applicable	Not applicable	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	Not applicable	Not applicable	Not applicable
CTB Slots Available	10	10	10
Available CTB Cards	16 Mbyte/64 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters	16 Mbyte/64 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters	16 Mbyte/64 Mbyte ECC Memory, SNA and X.25 Interfaces, display controller interface, and CIO adapters
CIO Slots Available	7 (Up to 17 in SPU w/add'l CIO channel adapters)	7 (Up to 17 in SPU w/add'l CIO channel adapters)	7 (Up to 17 in SPU w/add'l CIO channel adapters)
Available CIO I/O Interfaces	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)	6-ch or 16-ch multiplexer, SCSI, HP-IB, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port (std)
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Up to 64 slots in 4 expansion modules	Up to 64 slots in 4 expansion modules	Up to 64 slots in 4 expansion modules
Base Memory	64 Mbyte	96 Mbyte	128 Mbyte
Maximum Memory	512 Mbyte	768 Mbyte	768 Mbyte
Memory Increments	16 Mbyte, 64 Mbyte	16 Mbyte, 64 Mbyte	16 Mbyte, 64 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	8	8	8
Upgrade	To Unlimited	To Unlimited	To Unlimited

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	316	400	608
Minimum Disk Memory	335 Mbyte	335 Mbyte	335 Mbyte
Maximum Disk Memory	85.8 Gbyte	85.8 Gbyte	128 Gbyte
Maximum SCSI Connected Disk Memory	21.2 Gbyte 32 disks	21.2 Gbyte 32 disks	21.2 Gbyte 32 disks
Maximum HP-FL Connected Disk Memory	85.8 Gbyte (64 disks, 8 interfaces)	85.8 Gbyte (64 disks, 8 interfaces)	128 Gbyte (96 disks, 12 interfaces)
Maximum HP-IB Connected Disk Memory	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)	8.0 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)	8 (2 interfaces)
Max. Centronics Connected Printers	Not applicable	Not applicable	Not applicable

‡ Based on 5 Mbyte/sec per CIO bus; 10 Mbyte with two CIO channel adapters to two CIO buses.

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

*** Logged-on users equals two times active users.

The HP 9000 Series 800/600 SPU's at-a-Glance, continued

PERFORMANCE (page ref.)	Models 635SV (page 130)	Models 645SV (page 133)
Relative OLTP Performance to 822S	1.7	2.5
Double Precision MFLOPS	1.9	2.5
Max. I/O Bandwidth (MB/sec)	5	5

CONFIGURATION PARAMETERS

I/O and Memory

Type of I/O Interface	CIO and CTB	CIO and CTB
HP-PB Slots Available	Not applicable	Not applicable
Available HP-PB Interfaces, Memory, and Other Cards	Not applicable	Not applicable
CTB Slots Available	6	5
Available CTB Cards	8 Mbyte/16 Mbyte/32 Mbyte ECC memory, SNA/X.25 interface, display controller interface, and CIO adapters	8 Mbyte/16 Mbyte/32 Mbyte ECC memory, SNA/X.25 interface, display controller interface, and CIO adapters
CIO Slots Available	3	3
Available CIO I/O Interfaces	6-ch or 16-ch multiplexer, HP-IB, SCSI, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port	6-ch or 16-ch multiplexer, HP-IB, SCSI, LAN, HP-FL, Parallel AFI, Real-Time Interface, and Access Port
Card Cage Space Dedicated for Terminal I/O (usable only for 6 or 16-Channel Multiplexers)	Not applicable	Not applicable
Base Memory	24 Mbyte	32 Mbyte
Maximum Memory	192 Mbyte	192 Mbyte
Memory Increments	8 Mbyte, 16 Mbyte, 32 Mbyte	8 Mbyte, 16 Mbyte, 32 Mbyte

HP-UX User Licensing

No. of Users in Base SPU	2**	2**
Upgrade	To Multiuser (16-user)	To Multiuser (16-user)

Peripherals (the maximums specified here are the maximums that have been tested)*

Maximum logged-on users with medium workload (commercial application with relational database)***	Not Applicable	Not applicable
Minimum Disk Memory	335 Mbyte	335 Mbyte
Maximum Disk Memory	21.4 Gbyte	21.4 Gbyte
Maximum SCSI Connected Disk Memory	10.6 Gbyte 16 disks	10.6 Gbyte 16 disks
Maximum HP-FL Connected Disk Memory	21.4 Gbyte (16 disks, 2 interfaces)	21.4 Gbyte (16 disks, 2 interfaces)
Maximum HP-IB Connected Disk Memory	8 Gbyte (12 disks, 3 interfaces)	8 Gbyte (12 disks, 3 interfaces)
Maximum Magnetic Tape Drives	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Printers	8 (2 interfaces)	8 (2 interfaces)
Max. HP-IB Connected Plotters	8 (2 interfaces)	8 (2 interfaces)
Max. Centronics Connected Printers	Not applicable	Not applicable

* The total number of all peripherals that can be supported is limited by card cage space for interface cards. To avoid exceeding interfacing capacity when specifying a system configuration, keep track of your interface usage on the interfacing worksheet for your selected system.

** The Models 635SV and 645SV come with a two-user server license, which means that up to two users may log into the system at any one time. The server license allows:

- Two logins (direct, rlogin, or telnet)
- Unlimited X window sessions
- Unlimited remote command execution (rsh, for example)

*** Logged-on users equals two time active users.

General Configuration Information

Operational Requirements

HP 9000 Series 800/600 Business Servers require the following minimum configuration to support operation:

1. **A system console**, selected from the User Communication Devices section.
2. **A system disk**, selected from those listed in the Disk Drives section.
3. **A tape drive**, for software installation and backup, selected from those listed in the Tape Drives section.

National Versions of Peripheral Devices

For convenient use in various nations throughout the world, peripheral devices used with the HP 9000 Series 800/600 System Processor Units are offered in specific national versions.

National Versions of C100xA/G/W Terminals

National versions of C100xA/G/W Terminals provide appropriate keyboard, user's manuals, and power cable. They are specified as **"must order"** options to the respective product number, as follows:

Option Keyboard	User's Manual	Power Cable
ABA U.S. English	English	U.S.
ABB English	English	European
ABC French Canadian	French	U.S.
ABD German	German	European
ABE European Spanish	Spanish	European
ABF European French	French	European
ABG Australian	English	
ABH Dutch	Dutch	European
ABJ Japan	Japanese	
ABL Canadian English	English	U.S.
ABM Latin American Spanish	Spanish	U.S.
ABN Norwegian	Norwegian	European
ABO Taiwan	Chinese	
ABP Swiss German	German	European
ABQ Swiss French	French	European
ABR U.S. English	English	S. African
ABS Swedish	Swedish	European
ABU U.K. English	English	U.K.
ABV Arabic	English	
ABW Flemish	Dutch	European
ABX Finnish	Finnish	European
ABY Danish	Danish	European
ABZ Italian	Italian	European
AB1 Korean	Korean	
AB4 Singapore	English	
ACC U.S. English	English	U.K.
ACD U.S. English	English	Swiss
ACE U.S. English	English	Danish
ACF U.S. English	English	Japanese
ACG U.S. English	English	Australian

National Versions of 2393A/2397A Terminals

National versions of 2393A/2397A terminals provide appropriate keyboard and user's manuals. They are specified as **"must order"** options to the respective product number, as follows:

Option	Nat'l Version	Option	Nat'l Version
Std	U.S. English	108	Canadian English
015	Int'l Monitor	109	Italian
101	Swedish	110	Dutch
102	Norwegian	111	Finnish
103	French	112	Danish
104	German	113	Swiss German
105	U.K. English	114	Swiss French
106	Spanish	115	Latin American Spanish
107	French Canadian	116	Flemish

National Versions of Printers

National versions of printers are indicated by a second suffix letter at the end of the respective product numbers, as listed below:

2225D									ThinkJet
2227A									QuietJet Plus
2227B									QuietJet Plus
2228A									QuietJet
2276A									DeskJet
2277A									DeskJet Plus
3630A									PaintJet
2235x*									RuggedWriter
33491A									LaserJet III Si Printer
33449A									LaserJet Series III
									National Version
-	-	-	-	-	-	-	-	-	U.S.
B	B	B	B	B	B	B	B	B	European
D			D		D	D			German
E			E		E	E	E		Spanish
F	F		F		F	F			French
				G	G	G			Australian
		J					J		Japanese (Katakana)
	K	K		K					Intercon
P		P			P	P			Swiss French
Q	Q		Q	Q	Q	Q	Q		Swiss
U	U	U	U	U	U	U	U		United Kingdom
Y	Y	Y	Y	Y	Y	Y	Y		Danish
Z			Z		Z	Z			Italian

* 2235x denotes 2235A, 2235B, 2235C, or 2235D.

National Versions of Electrostatic Plotters

National versions of C1600A/C1601A Electrostatic Plotters provide English user's manuals and appropriate power cable. They are specified as **"must order"** options to the respective product number, as follows:

Option Power Cable	Option	Power Cable
ABA U.S.	AB4	Singapore
ABB European	AB5	Hong Kong
ABG Australian	ACD	Swiss
ABK Intercon	ACE	Danish
ABL Canadian	ACF	Japanese
ABU U.K.	ACQ	South African

National Versions of Pen Plotters

National versions of pen plotters are indicated by a second suffix letter at the end of the respective product numbers, as listed below:

7440A*	ColorPro Plotter
7475A*	Graphics Plotter
7550B	Graphics Plotter
7570B	DraftPro Plotter
7595B	DraftMaster Plotter
7596B	DraftMaster II Plotter
National Version	
- - - - -	U.S.
B B B B B B	European
D D D D D D	German
E E E E E E	Spanish
F F F F F F	French
Q Q Q Q Q Q	Swiss
U U U U U U	United Kingdom
Y Y Y Y Y Y	Danish
Z Z Z Z Z Z	Italian

* 7440AA through AZ and 7475AA through AZ specify the plotter with RS-232C interface; 7440BA through BZ and 7475BA through BZ specify the plotter with HP-IB interface.

Models 807S/817S/837S Business Servers

Description

The HP 9000 Models 807S, 817S and 837S are the low end systems which are available in an integrated package. All of these compact systems include a single processor, an embedded disk drive and an embedded Digital Data Storage (DDS) cartridge tape drive. The package for these systems (43 cm. high, 22.2 cm. wide and 53.3 cm. deep) has been designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 807S/817S/837S packages support up to two internal disk drives. These products support up to two 234, 328 or 422 Mbyte disk mechanisms or a single 677 Mbyte or 1.36 GB disk. Maximum internal disk storage is 1.36 GB. The Model 807S comes standard with a single integrated 234 Mbyte disk mechanism, while the 817S and 837S come standard with a single 328 Mbyte disk mechanism.

Additional disk storage is available using external standalone disk mechanisms. The Model 807S can support 10.9 Gbytes of standalone external SCSI disk storage, or 2.7 Gbytes of standalone external HP-IB disk storage. Models 817S and 837S can support 28.5 Gbytes of SCSI disk storage or 2.7 Gbytes of standalone external HP-IB disk storage. Note that Models 807S/817S/837S do not support HP-FL interface adapters or HP-FL external disk drives.

Cost-effective backup for the 807S/817S/837S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the desktide package, stores up to 1.3 Gbytes of data in a single DAT cassette, mea-

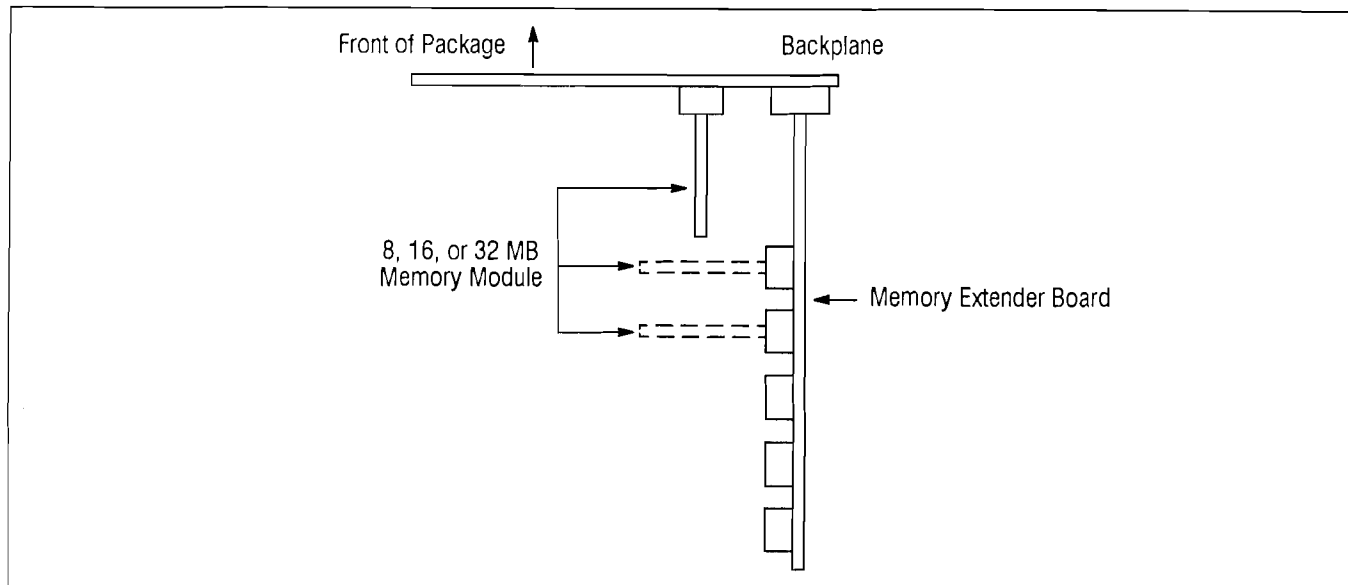
suring only 7.3x5.4x1.05 cm. The transfer rate is 183 kbytes per second, which translates into a two hour period required for backing up 1.3 Gbytes of data.

These Models also feature the HP Precision Bus (HP-PB) as the system bus that interfaces the CPU printed circuit assembly (PCA) with I/O. The HP-PB synchronously transfers I/O data over a 32-bit data path at a burst peak rate of 32 Mbytes/sec or a sustained rate of 21 Mbytes/sec. The HP 9000 Models 807S/817S/837S have two HP Precision Bus slots available for I/O cards. In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O cards. In the 817S/837S one HP-PB slot is occupied by the LAN 9000/Link included with the system, leaving one available HP-PB slot. The two HP-PB slots can support one double-high card or two single-high cards. These slots are only accessible from the rear of the package.

The card cage for the Models 807S/817S/837S is shown in Figure 1. The 807S comes standard with 8 Mbytes of memory, the 817S and 837S come standard with 16 Mbytes of memory. Different CPU cards are used for the Models 807S, 817S and 837S. In addition, the Models 817 and 837 use a different personality card (combination SCSI and 8 port mux card) from the Model 807.

Single-high Precision Bus cards include the 8- and 16-channel mux cards, HP-IB, LAN 9000/LINK, X.25/9000 Link, the SCSI adapter, and the SNA Link. Double-high Precision Bus cards include MAP 3.0 and PBA-FL; neither card is supported on the 807S/817S/837S at this time.

Memory Array



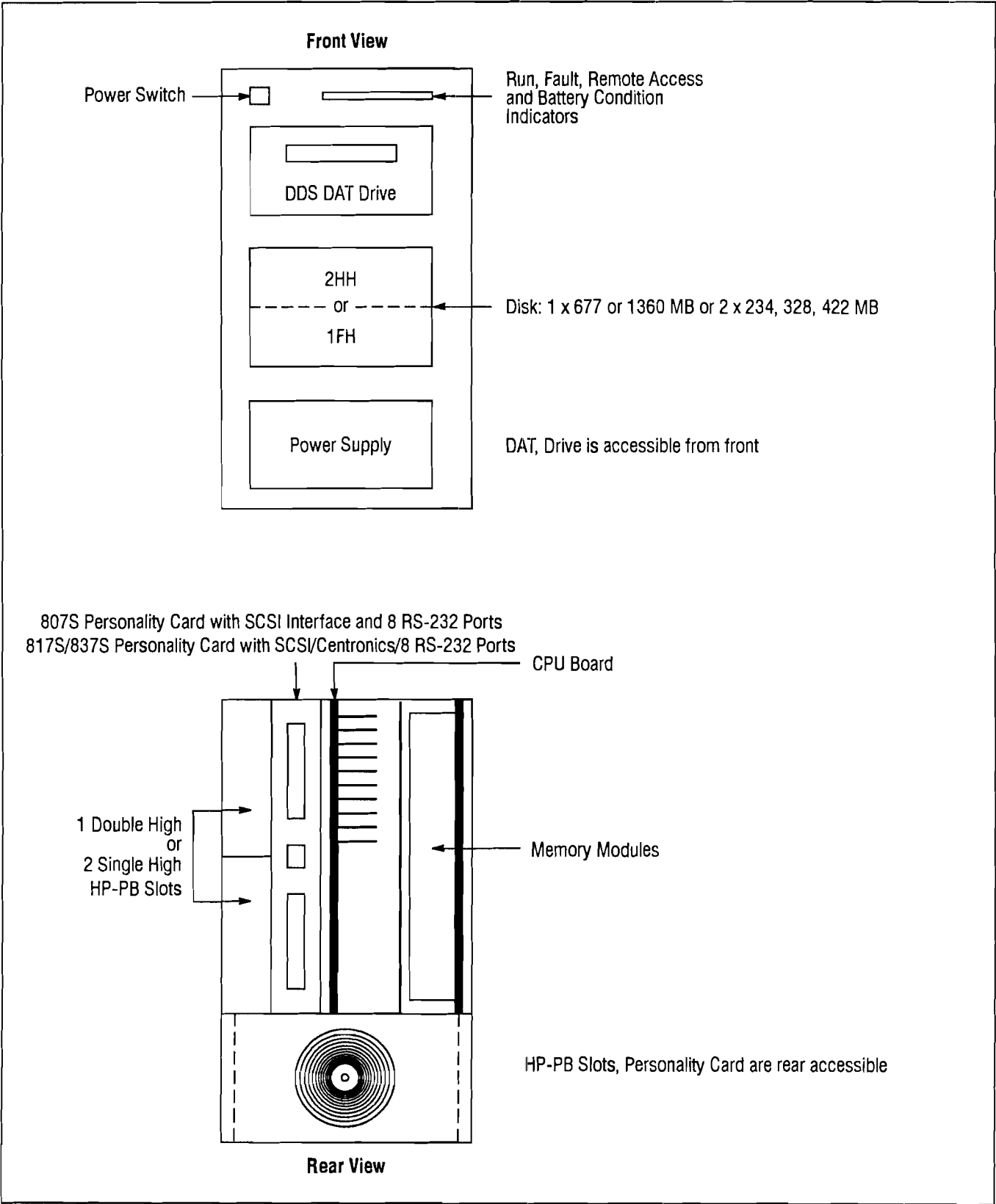


Figure 1. Model 807S/817S/837S Business Server Layout

Model 807S/817S/837S Business Servers, continued

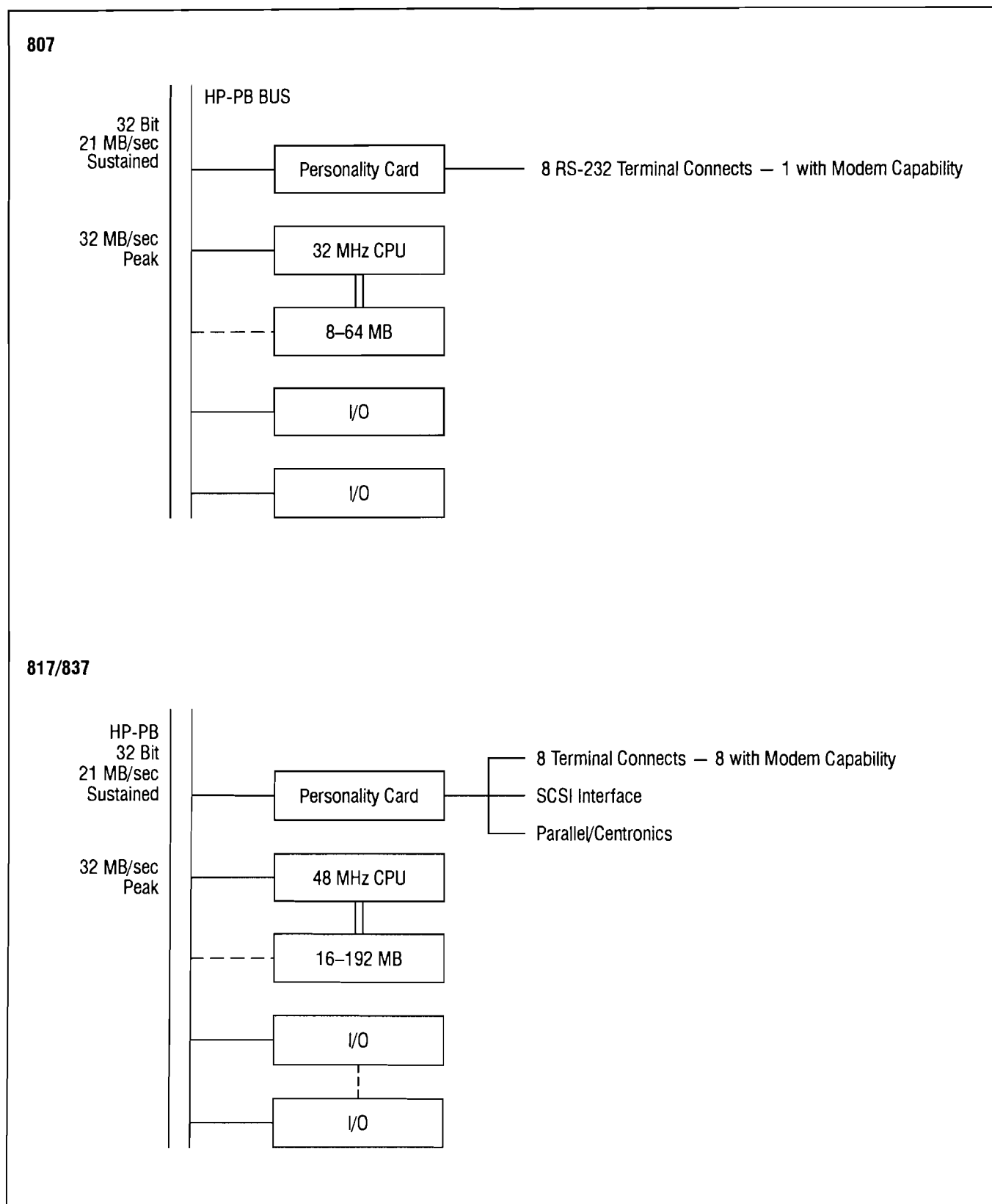


Figure 2. Model 807S/817S/837S Systems BUS Relationships

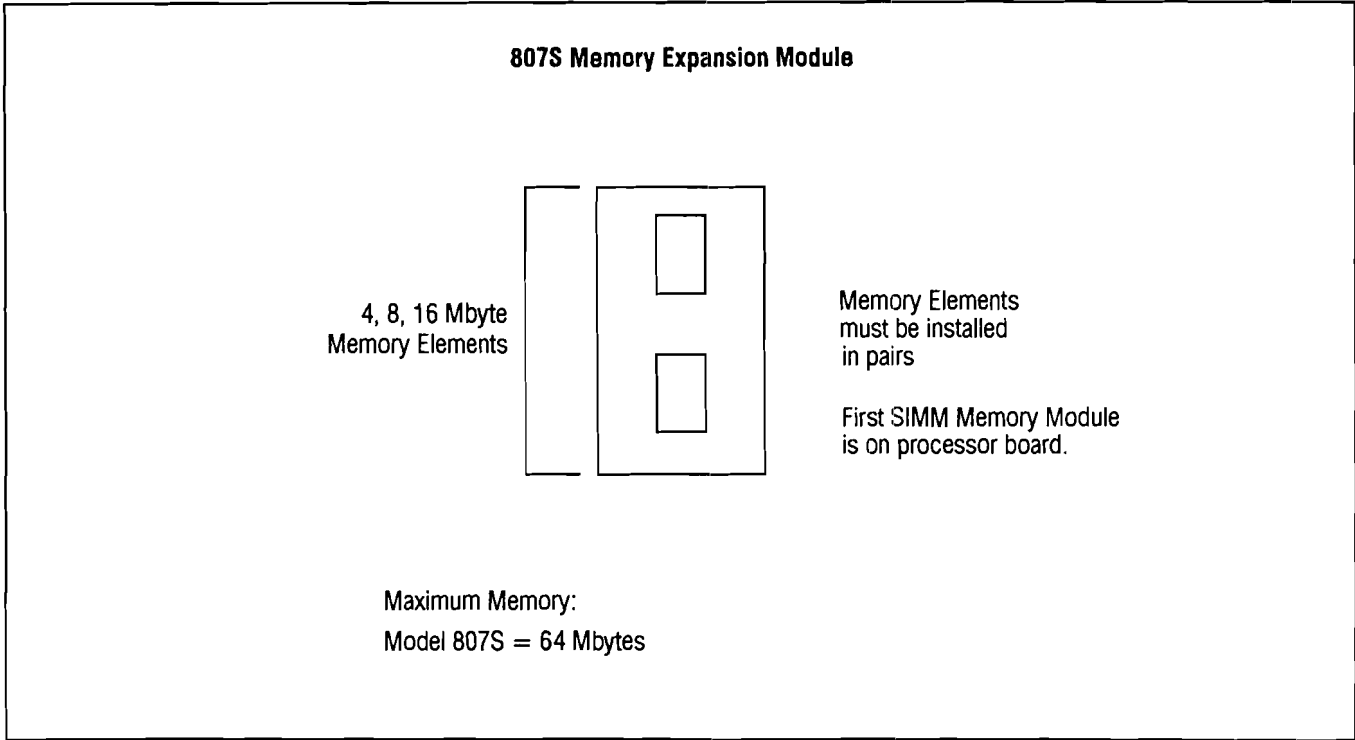


Figure 3. Model 807S System

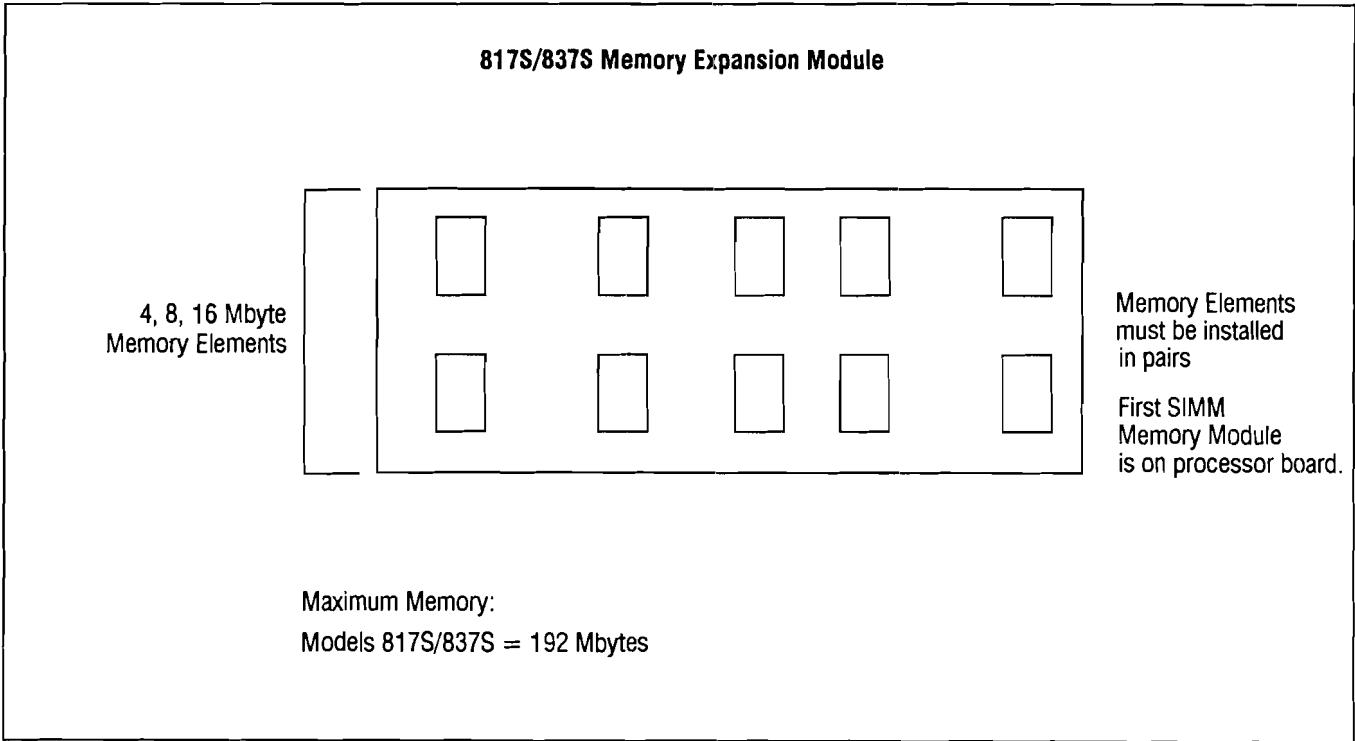


Figure 4. Model 817S/837S System

Model 807S/817S/837S Worksheet

The HP 9000 Models 807S/817S/837S are integrated computer systems which provide processor, disk, tape, and I/O functionality in a single compact package. The product structure includes options for including additional memory, disk storage, and I/O functionality to each base configuration. Everything included in the base product structure and those items added as an option to the base product structure is pre-installed in the package prior to customer shipment.

If the required configuration of the Model 807S/817S/837S can not be met by the base product or its options, standalone accessory cards may need to be ordered.

The following is a step-by-step approach to configuring and ordering a HP 9000 Model 807S/817S/837S computer system. Refer to Table 1 and Figure 1 to track which backplane slots are utilized as the system is configured. **There is a template in the back of this configuration guide that can be used for your system configuration.**

1. Select a System

A1751A Model 807S Business Server consisting of:

- HP PA-RISC 32 Mhz system processor
- HP Precision Bus with two single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 8 Mbytes SIMM memory
- 8 RS-232 ports including Console Access port and Remote Access Port and 1 with full modem control
- SCSI Interface for Internal Mechanisms
- 234 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive
- 8 user HP-UX installed on embedded disk
- Owners Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

A1703A Model 817S Business Server consisting of:

- HP PA-RISC 48 Mhz system processor
- HP Precision Bus with two single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 16 Mbytes SIMM memory
- 8 RS-232 ports with full modem control including Console Access and Remote Access Port
- SCSI Interface
- Parallel Centronics interface
- 328 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive

- LAN/9000 Thin Coax Network Interface and Pre-Loaded TCP/IP, ARPA, NFS Services
- 8 user HP-UX installed on embedded disk
- Owner's Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

A1704A Model 837S Business Server consisting of:

- HP PA-RISC 48 Mhz system processor
- HP Precision Bus with two single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 16 Mbytes SIMM memory
- 8 RS-232 ports with full modem control including Console Access and Remote Access Port
- SCSI Interface
- Parallel Centronics Interface
- 328 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive
- LAN/9000 Thin Coax Network Interface and Pre-Loaded TCP/IP, ARPA, NFS Services
- 8 user HP-UX installed on embedded disk
- Owner's Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

2. Additional Memory

- Configuration rules
 - a. The Model 807S supports a maximum of 64 Mbytes of memory.
 - b. The Models 817S and 837S support a maximum of 192 Mbytes of memory.
- Model 807S Business Server (A1751A)

Select options 501 through 503 to increase memory from 8 Mbytes base up to the maximum 32 Mbytes. To increase memory beyond 32 Mb, standalone accessory memory products need to be ordered.
- Model 817S Business Server (A1703A)

Select options 502 through 506 to increase memory from 16 Mbyte base up to 64 Mbytes. To increase memory beyond 64 Mbytes, standalone accessory memory products need to be ordered. Standalone accessory memory can only be ordered in increments of 8, 16 or 32 Mbytes.
- Model 837S Business Server (A1704A)

Select options 502 through 506 to increase memory from 16 Mbyte base up to 64 Mbytes. To increase memory beyond 64 Mbytes, standalone accessory memory products need to be ordered. Standalone accessory memory can only be ordered in increments of 8, 16 or 32 MBytes.

Model 807S/817S/837S Worksheet, continued

- Standalone accessory memory products are:

A2230A	8 Mbyte	ECC Memory Module
A2231A	16Mbyte	ECC Memory Module
A2232A	32Mbyte	ECC Memory Module

A memory extender card (P/N A1793A) must be ordered when ordering standalone accessory memory for systems configured with 16 Mbytes or less of SIMM memory.

3. Additional Serial Ports for Terminals and Printers

- Configuration Rules

Maximum Ports	807S	817S	837S
MUX	40	40	40
MUX and DTC	208	368	432
Typical Users	2-16	16-32	N/A*

*Optimized for server configuration.

- Model 807S Business Server (A1751A)
Select option 602 to add 16 RS-232-C direct connect ports (data only) to the eight in the base system. For additional ports or other types of interface, a standalone 8- or 16-channel card or DTC will need to be ordered.
- Model 817S Business Server (A1703A)
Select options 602 through 604 to add 16 RS-232-C direct ports (data only) to the eight in the base system. For additional ports or other types of interface, a standalone 8- or 16-channel card or DTC will need to be ordered.
- Model 837S (A1704A)
Select options 602 through 604 to add 16 RS-232-C direct ports (data only) to the eight in the base system. For additional ports or other types of interface, a standalone 8- or 16-channel card or DTC will need to be ordered.
- Additional standalone ports
 - 40299B – HP-PB 8-channel RS-232-C modem connect asynchronous multiplexer
 - J2092A – 16 RS-232-C peripherals in direct connect mode using data signals only (up to 15 meters)
 - J2093A – 16 RS-423 peripherals in direct connect mode for only distance purpose (up to 1200 meters)
 - J2094A – 16 RS-232-C peripherals connected locally but using data AND modem signals (up to 15 meters) or through the use of asynchronous modemsEach J209XA product comprises one single wide HP-PB card and 2 distribution panels with standard DB-25 connectors for peripherals attachment. The distribution panels are linked to the MUX card through the use of a 4 meter cable.
- 2340A – DTC 16 for the HP 9000 (16 port LAN terminal server)
- 2345A – DTC 48 for the HP 9000 (48 port LAN terminal server)

4. Terminals and System Console

A system console (700/92 terminal, P/N C1001A/G/W) and cable is included with the base systems for the Models 807S/817S/837S. For additional information on HP terminal products, please refer to the "User Communication Devices" section of this configuration guide.

5. Additional Disk Storage

- Configuration Rules

a. Disk Storage	807S	817S	837S
Internal			
Standard (Mbyte)	234	328	328
Maximum (Gbyte)	1.36	1.36	1.36
External (Gbytes)			
HP-IB	2.7	2.7	2.7
SCSI	10.9	28.5	28.5

- b. Models 807S/817S/837S support one HP-IB card.
- c. Maximum of 4 disk devices supported per HP-IB card.
- d. Maximum of one SCSI adapter supported on the 807S, two on the 817S/837S.
- e. The Model 807S cannot accommodate any external SCSI devices without adding a SCSI interface card. The Models 817S/837S can accommodate up to 6 external SCSI devices with 7 additional devices for each SCSI card added.
- f. When adding external SCSI devices to the integrated SCSI interfaces order cable K2296(1 M) or K2297(1.5 M) and terminator K2291.
- g. Additional SCSI adaptors include cable and terminator.
- Model 807S (A1751A)
Select options 001 through 003 to increased integrated disk storage to 677 Mbytes. For additional internal disk storage, standalone disk drives will need to be ordered. For external disk storage, an additional SCSI card with standalone disk will be needed.
- Models 817S (A1703A) and 837S (A1704A)
Select options 003 through 007 to increase integrated disk storage to 1.36 Gbytes. For external disk storage, standalone disk drives will need to be ordered.
- Disk storage products and interface cards
The following is an abbreviated list of disk subsystems supported on the Models 807S/817S/837S. For additional information, refer to the "Disk Drives" section of this configuration guide.

C2470S	234-Mbyte integrated disk mechanism for Model 807S
C2471S	328-Mbyte integrated disk mechanism for Models 807S/817S/837S
C2472S	422-Mbyte integrated disk mechanism for Models 807S/817S/837S
C2473S	677-Mbyte integrated disk mechanism for Models 807S/817S/837S
C2475S	1.36-Gbyte integrated mechanism for Models 817S/837S
28650B	Precision Bus HP-IB interface card
28655A	Precision Bus SCSI interface card

6. Additional Tape Backup Devices

- Configuration Rules
 - a. Models 807S/817S/837S support one external SCSI DDS tape drive.
 - b. Models 807S/817S/837S support up to 4 external HP-IB tape devices.
 - c. Maximum of four external tape devices supported per HP-IB interface card.

Each Model 807S/817S/837S comes with an integrated DDS DAT drive which can be optionally deleted.

- Listed below are the external DDS format tape drives that are supported on the Models 807S/817S/837S. For additional information, refer to the "Tape Drives" section of this configuration guide.

C1511A	HP Series 6400 Model 1300H, DDS format tape drive.
C1512A	HP Series 6400 Model 1300S, DDS format tape drive.

7. Networking Products

- Configuration Rules
 - a. The Model 807S supports one 802.3 LAN card and one PSI card (used for X.25 and SNA links), while the Models 817S/837S can support a maximum of two 802.3 LAN and two PSI cards. The Models 817S/837S include ARPA and NFS services installed on the embedded disk.
 - b. The Models 807S/817S/837S do not support the MAP 802.4 card.
 - c. The Models 807S/817S/837S do not support the PBA-FL card.
- LAN/9000 option on the Model 807S
Select option 1F7 for LAN networking functionality, which includes a LAN link card with on-board ThinMAU and "T" connector, TCP/IP, ARPA, and NFS services. Minimum of 16 MB memory and 328 MB disk is required.
- LAN/9000 on the Models 817S/837S
A LAN link card with on-board ThinMAU and "T" connector, TCP/IP on tape media and software documentation is included with the base system configuration. These items can be deleted by selecting option 1F8.
- Accessory Networking Products
For information on how to order a second LAN link card for the Models 817S/837S or how to order other networking products such as X.25, SNA and MAP products refer to the networking and communications section of the configuration guide.

8. Printer Support

- Configuration Rules
 - a. The Model 807S supports up to 10 serial (RS-232) printer interfaces, and one Centronics printer interface. No HP-IB printers are supported. A maximum of eleven printers are supported.
 - b. The Models 817S/837S support three Centronics printer interfaces, up to 20 serial printer interfaces. No HP-IB printer interfaces are supported. A maximum of 23 printers are supported.

For additional information on HP printer products please refer to the printer section of this configuration guide

9. Software

The HP-UX 1-8 user license is part of the base system of the Models 807S, 817S and 837S. This software, which is installed on the embedded system disk, includes NCS, NetLS, NFS, ARPA, X-Windows, VUE and LAN Link (TCP/IP) software in the base system configuration.

Tape media can also be ordered by specifying option AAH, or by ordering B2459A HP-UX 8.02 operating system product. If the delete disk option 1AN is specified, a media option must be ordered.

Upgrade licenses are required to support users above the 8-user license included in the base system. These products must be ordered separately:

B2436B HP-UX 8.0 User Licenses for Series 800

- Opt. UA3 8 user license
- Opt. UA5 16 user license
- Opt. UA7 32 user license
- Opt. UA9 64 user license
- Opt. UAB 128 user license
- Opt. UAD 256 user license
- Opt. UAT Unlimited user license
- Opt. UB3 Credit for 8 users
- Opt. UB5 Credit for 16 users
- Opt. UB7 Credit for 32 users
- Opt. UB9 Credit for 64 users
- Opt. UBA Credit for 128 users
- Opt. UBC Credit for 256 users
- Opt. AGM 16 user software
- Opt. AGN 32 user software
- Opt. AGP 64 user software
- Opt. AGQ 128 user software
- Opt. AGR 256 user software
- Opt. AGS Unlimited
- Opt. AA0 1/4" cartridge tape
- Opt. AA1 1/2" magnetic tape
- Opt. AAH Digital Audio Tape (DAT)

10. Documentation

Each Model 807S/817S/837S base system comes with hardware documentation and HP-UX software documentation.

Hardware documentation that is shipped with the base system includes the Operator's Handbook, Installation and Configuration Manual and the System Support Log.

The software documentation shipped with the base system includes the HP-UX General Usage Documentation set (B2437A Opt. 0BD).

The HP-UX System Administration Documentation Set (B2437A Opt. 0BE) is included with the media option for HP-UX (options AA0, AA1, and AAH).

HP-UX documentation products can be ordered separately:

B2437A HP-UX 8.0 User Documentation for Series 800

- Opt. 0BD General Usage Documentation
- Opt. 0BG User Guides Documentation
- Opt. 0BE System Admin. Documentation
- Opt. 0BF Programming Documentation

11. Installation

For the models 807S and 817S, installation has been unbundled from the product. These models have been designed so that customers (with PC hardware experience and Unix knowledge) can install the systems. Those customers who have no previous system installation experience may contract HP to perform installation services. Installation services are not orderable through HEART. Services must be ordered through the System Support Organization (SSO) administration systems. The +17A support suffix on the base product is used for the installation service. The 837S includes HP installation.

NOTE: Refer to the HP 9000 Series 800 and 600 Price Guide (P/N 5091-1515E) for more detail on HP-UX documentation.

Model 807S/817S/837S Worksheet, continued

Table 1. Location of Factory Installed Memory and I/O Cards

Model 800	Component	Qty	Location
A1751A Model 807S	Model 807S Processor	1	As Shown
	8 Mbytes ECC Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	234 Mbyte Embedded Disk	1	As Shown
	1.3 Gbyte Embedded DAT	1	As Shown
	Opt. 001-003	1-2	As Shown
	Opt. 1F7*	1	Any HP-PB Slot
	Opt. 501-503	1	Memory Expansion Module
	Opt. 602	1	Any HP-PB Slot
	Opt. 030/031*	1	Any HP-PB Slot
A1703A Model 817S	Model 817S Processor	1	As Shown
	16 Mbytes ECC Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	SCSI Interface	1	Personality Card
	Parallel Centronics Interface	1	Personality Card
	328 Mbyte Embedded Disk	1	As Shown
	LAN 802.3 Card	1	Any HP-PB Slot
	1.3 Gbyte Embedded DAT	1	As Shown
	Opt. 003-007	1-2	As Shown
	Opt. 401	1	Any HP-PB Slot
	Opt. 405	1	Any HP-PB Slot
	Opt. 502-506	1	Memory Expansion Module
	Opt. 602	1	Any HP-PB Slot
	Opt. 604	1	Any HP-PB Slot
	Opt. 8Z7	1	Processor Board
	Opt. 030/031	1	Any HP-PB Slot
A1704A Model 837S	Model 837S Processor	1	As Shown
	16 Mbytes ECC Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	SCSI Interface	1	Personality Card
	Parallel Centronics Interface	1	Personality Card
	328 Mbyte Embedded Disk	1	As Shown
	LAN 802.3 Card	1	Any HP-PB Slot
	1.3 Gbyte Embedded DAT	1	As Shown
	Opt. 003-007	1-2	As Shown
	Opt. 401	1	Any HP-PB Slot
	Opt. 405	1	Any HP-PB Slot
	Opt. 502-506	1	Memory Expansion Module
	Opt. 602	1	Any HP-PB Slot
	Opt. 604	1	Any HP-PB Slot
	Opt. 8Z7	1	Processor Board
	Opt. 030/031	1	Any HP-PB Slot

*Requires 16 MB memory and 328 MB disk.

Model 807S/817S/837S Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1751A	Model 807S 8-user Business Server ● HP PA-RISC 32 Mhz system processor ● HP Precision Bus with two single-high HP-PB slots ● Integrated cabinet and power supply ● Hardware documentation ● 8 Mbytes ECC memory ● 8 RS-232 ports including Console Access and Remote Access Port (1 single modem port) ● SCSI Interface for internal mechanisms ● 234 Mbyte embedded disk drive ● 1.3 Gbyte DDS embedded cartridge tape drive ● 8-user HP-UX installed on embedded disk ● Owners Guide and General Usage Documentation Set ● 700/92 console with cable ● Pre-installation of I/O cards & memory ● Single package shipment
	
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 001	Increase integrated disk capacity to 328 Mbytes (1x328MB)
Opt. 002	Increase integrated disk capacity to 422 Mbytes (1x422MB)
Opt. 003	Increase integrated disk capacity to 677 Mbytes (1x673MB)
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 501	Increase main memory to 16 Mbytes
Opt. 502	Increase main memory to 24 Mbytes
Opt. 503	Increase main memory to 32 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct connect ports)
Opt. 0E1	Add powerfail battery backup
Opt. 1AN	Delete 234 MB disk (must order other boot disk, cannot order Opt. 1CD, must order Opt. AAH or other media)
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1CM	Add rack mount kit
Opt. 1B6	Delete console
Opt. 1F7	Add LAN/9000 Thin Coax Network Interface and pre-loaded TCP/IP, ARPA, NFS Services (disk and memory capacity must be increased).

Model 807S/817S/837S Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1703A	Model 817S 8-user Business Server • HP PA-RISC 48 Mhz System Processor • HP Precision Bus with two single-high HP-PB slots • Integrated cabinet and power supply • Hardware documentation • 16 Mbytes ECC memory • 8 RS-232 ports including Console Access and Remote Access Port (8 modem ports) • SCSI Interface • Parallel Centronics interface • 328 Mbyte embedded disk drive • 1.3 Gbyte DDS embedded cartridge tape drive • LAN/9000 Thin Coax Network Interface and preloaded TCP/IP, ARPA, NFS Services • 8-user HP-UX installed on embedded disk with: • Owners Guide and General Usage Documentation Set • 700/92 console with cable • Pre-installed I/O cards & memory • Single package shipment
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 003	Increase integrated disk capacity to 677 Mbytes (1x673MB)
Opt. 005	Increase integrated disk capacity to 844 Mbytes (2x422MB)
Opt. 007	Increase integrated disk capacity to 1.36 Gbytes (1x1355MB)
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 401	Add one additional SCSI/Parallel Centronics interface
Opt. 405	Add one HP-IB interface
Opt. 502	Increase main memory to 24 Mbytes
Opt. 503	Increase main memory to 32 Mbytes
Opt. 505	Increase main memory to 48 Mbytes
Opt. 506	Increase main memory to 64 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct connect ports)
Opt. 604	Add two 16 port MUX cards (RS-232 direct connect ports)
Opt. 827	Add floating point coprocessor
Opt. 0E1	Add powerfail battery backup
Opt. 1B6	Delete console
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1CM	Add rack mounted kit
Opt. 1F8	Delete LAN/9000 network interface and preloaded TCP/IP, ARPA, NFS Services

Model 807S/817S/837S Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1704A	Model 837S 8-user Business Server ● HP PA-RISC 48 Mhz System Processor ● HP Precision Bus with two single-high HP-PB slots ● Integrated cabinet and power supply ● Hardware documentation ● 16 Mbytes ECC memory ● 8 RS-232 ports including Console Access and Remote Access Port (8 modem ports) ● SCSI Interface ● Parallel Centronics interface ● 328 Mbyte embedded disk drive ● 1.3 Gbyte DDS embedded cartridge tape drive ● LAN/9000 Thin Coax Network Interface and preloaded TCP/IP, ARPA, NFS Services ● 8-user HP-UX installed on embedded disk ● Owners Guide and General Usage Documentation Set ● 700/92 console with cable ● Pre-installed I/O cards & memory ● Single package shipment
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 003	Increase integrated disk capacity to 677 Mbytes (1x673MB)
Opt. 005	Increase integrated disk capacity to 844 Mbytes (2x422MB)
Opt. 007	Increase integrated disk capacity to 1.36 Gbytes (1x1355MB)
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 401	Add one additional SCSI/Parallel Centronics interface
Opt. 405	Add one HP-IB interface
Opt. 502	Increase main memory to 24 Mbytes
Opt. 503	Increase main memory to 32 Mbytes
Opt. 505	Increase main memory to 48 Mbytes
Opt. 506	Increase main memory to 64 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct connect ports)
Opt. 604	Add two 16 port MUX cards (RS-232 direct connect ports)
Opt. 8Z7	Add floating point coprocessor
Opt. 0E1	Add powerfail battery backup
Opt. 1B6	Delete console
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1F8	Delete LAN/9000 network interface and preloaded TCP/IP, ARPA, NFS Services

Models 827S/847S Business Servers

Description

The HP 9000 Models 827S, 847S are the mid-range systems which are available in an integrated package. All of these compact systems include a single processor, an embedded disk drive and an embedded Digital Data Storage (DDS) cartridge tape drive. The package for these systems (43 cm. high, 44.4 cm. wide and 53.3 cm. deep) has been designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 827S/847S packages support up to four internal disk drives. These products support up to two 234, 328 or 422 Mbyte disk mechanisms or three 677 Mbyte or 1.36 GB disk. Maximum internal disk storage is 4.08 GByte. The Model 827S comes standard with a single integrated 328 Mbyte disk mechanism, while the 847S comes standard with a single 677 Mbyte disk mechanism.

Additional disk storage is available using external standalone disk mechanisms. The Models 827S and 847S can support 47.60 Gbytes of standalone external SCSI disk storage, 21.44 Gbytes of external HP-FL disk storage or 5.36 Gbytes of standalone external HP-IB disk storage.

Cost-effective backup for the 827S/847S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the desktide package, stores up to 1.3 Gbytes of data in a single DAT cassette, measuring only 7.3 x 5.4 x 1.05 cm. The transfer rate is

183 Kbytes per second, which translates into a two hour period required for backing up 1.3 Gbytes of data.

These Models also feature the HP Precision Bus (HP-PB) as the system bus that interfaces the CPU printed circuit assembly (PCA) with I/O. The HP-PB synchronously transfers I/O data over a 32-bit data path at a burst peak rate of 32 Mbytes/sec or a sustained rate of 21 Mbytes/sec. The HP 9000 Models 827S/847S have six HP Precision Bus slots for I/O cards. In the 827S/847S one HP-PB slot is occupied by the LAN 9000/LINK included with the system, leaving 5 available HP-PB slots. In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O cards. Consequently, the six HP-PB slots can support three double-high card or six single-high cards. These slots are only accessible from the rear of the package.

The card cage for the Models 827S/847S is shown in Figure 5. The 827S comes standard with 16 Mbytes of memory, the 847S comes standard with 32 Mbytes of memory. Different processor cards are used for the Models 827S and 847S.

Single-high Precision Bus cards include the 8- and 16-channel MUX cards, HP-IB, LAN 9000/LINK, X.25/9000 Link, the SCSI adapter, and the SNA Link. These single high cards can be installed in either half of the double-high slot. The double-high cards that require a double-high slot are the PBA-FL interface, and the MAP 3.0 Link. Map 3.0 is a 2 double-high card set.

Model 827S/847S Business Server, continued

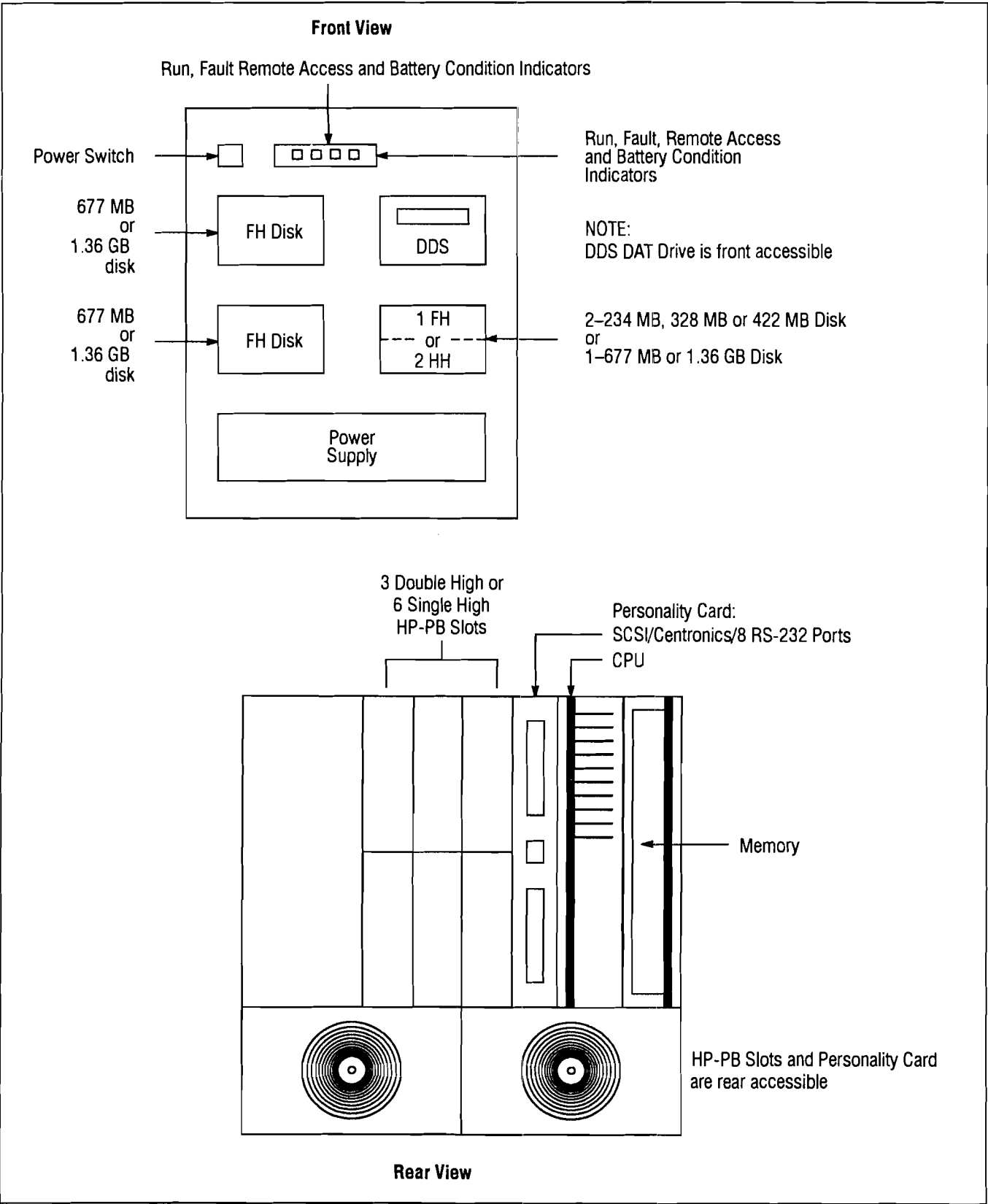


Figure 5. Model 827S/847S Business Server Layout

Model 827S/847S Business Servers, continued

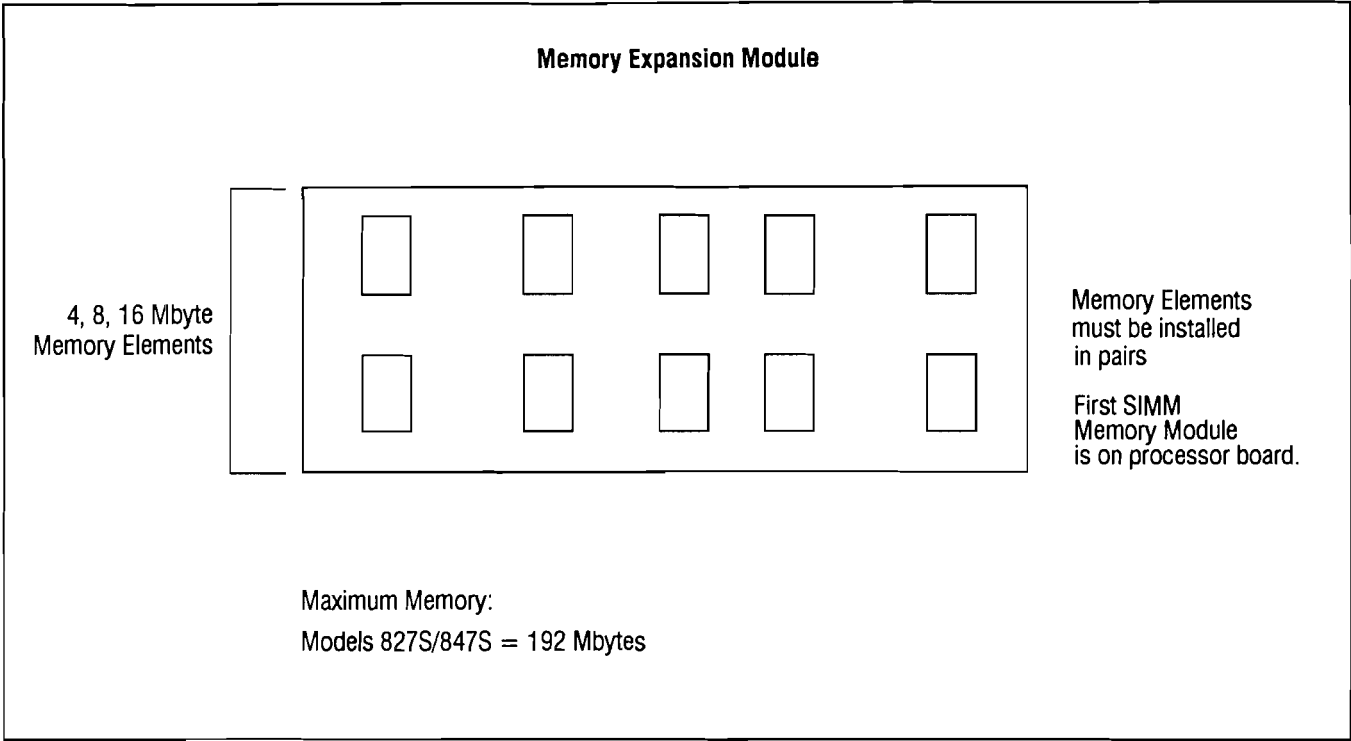


Figure 6. Model 827S/847S System

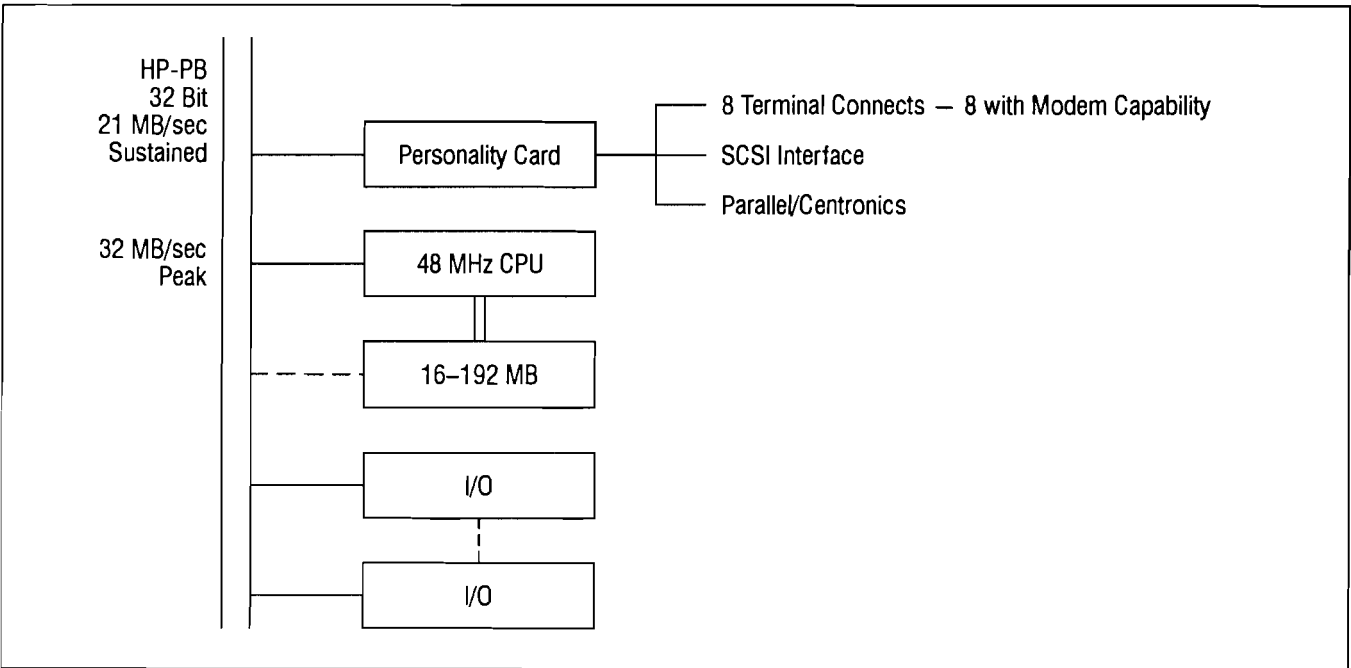


Figure 7. Model 827S/847S Systems BUS Relationships

Model 827S/847S Worksheet

The HP 9000 Models 827S/847S are integrated computer systems which provide processor, disk, tape, and I/O functionality in a single compact package. The product structure includes options for including additional memory, disk storage, and I/O functionality to each base configuration. Everything included in the base product structure and those items added as an option to the base product structure is pre-installed in the package prior to customer shipment.

If the required configuration of the Model 827S/847S cannot be met by the base product or its options, standalone accessory cards may need to be ordered.

The following is a step-by-step approach to configuring and ordering a HP 9000 Model 827S/847S computer system. Refer to Figure 5 to track which backplane slots are utilized as the system is configured. **There is a template in the back of this configuration guide that can be used for your system configuration.**

1. Select a System

A1765A Model 827S Business Server consisting of:

- HP PA-RISC 48 Mhz system processor
- HP Precision Bus with six single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 16 Mbytes ECC memory
- 8 RS-232 ports with full modem control including Console Access and Remote Access Port (8 modem ports)
- SCSI Interface
- Parallel Centronics interface
- 328 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive
- LAN/9000 Thin Coax Network Interface and pre-loaded TCP/IP, ARPA, NFS services
- 8 user HP-UX installed on embedded disk
- Owners Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

A1766A Model 847S Business Server consisting of:

- HP PA-RISC 48 Mhz system processor
- HP Precision Bus with six single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 32 Mbytes ECC memory
- 8 RS-232 ports with full modem control including Console Access and Remote Access Port (8 modem ports)
- SCSI Interface
- Parallel Centronics interface

- 677 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive
- LAN/9000 Thin Coax Network Interface and pre-loaded TCP/IP, ARPA, NFS services
- 8 user HP-UX installed on embedded disk
- Owner's Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

2. Additional Memory

- Configuration rules
 - a. The Models 827S and 847S support a maximum of 192 Mbytes of memory.
- Model 827S Business Server (A1765A)

Select options 502 through 510 to increase memory from 16 Mbyte base up to 128 Mbytes. To increase memory beyond 128 Mbytes, standalone accessory memory products need to be ordered. Standalone accessory memory can only be ordered in increments of 8, 16 or 32 Mbytes.
- Model 847S Business Server (A1766A)

Select options 505 through 510 to increase memory from 32 Mbyte base up to 128 Mbytes. To increase memory beyond 128 Mbytes, standalone accessory memory products need to be ordered. Standalone accessory memory can only be ordered in increments of 8, 16 or 32 Mbytes.
- Standalone accessory memory products are:

A2230A	8 Mbyte	ECC Memory Module
A2231A	16Mbyte	ECC Memory Module
A2232A	32Mbyte	ECC Memory Module

A memory extender card (P/N A1793A) must be ordered when ordering standalone accessory memory for systems configured with 16 Mbytes or less of ECC memory.

3. Additional Serial Ports for Terminals and Printers

- Configuration Rules

Maximum Ports	827S	847S
MUX	104	104
MUX and DTC	368	432
Typical Users	32-64	64-96
- Model 827S Business Server (A1765A)

Select options 602 through 606 to increase the number of ports from 8 in the base system up to a total of 72. For additional ports, Datacommunications and Terminal Controllers (DTCs) will need to be ordered.
- Model 847S Business Server (A1766A)

Select options 602 through 606 to increase the number of ports from 8 in the base system up to a total of 72. For additional ports, Datacommunications and Terminal Controllers (DTCs) will need to be ordered.

- Additional standalone ports
 - 40299B – HP-PB 8-channel RS-232-C modem connect asynchronous multiplexer
 - J2092A – 16 RS-232-C peripherals in direct connect mode using data signals only (up to 15 meters)
 - J2093A – 16 RS-423 peripherals in direct connect mode for only distance purpose (up to 1200 meters)
 - J2094A – 16 RS-232-C peripherals connected locally but using data AND modem signals (up to 15 meters) or through the use of asynchronous modems

Each J209XA product comprises one single wide HP-PB card and 2 distribution panels with standard DB-25 connectors for peripherals attachment. The distribution panels are linked to the MUX card through the use of a 4 meter cable.

- 2340A – DTC 16 for the HP 9000 (16 port LAN terminal server)
- 2345A – DTC 48 for the HP 9000 (48 port LAN terminal server)

4. Terminals and System Console

A system console (700/92 terminal, P/N C1001A/G/W) and cable is included with the base systems for the Models 827S/847S. For additional information on HP terminal products, please refer to the "User Communication Devices" section of this configuration guide.

5. Additional Disk Storage

- Configuration Rules

a. Disk Storage	827S	847S
Internal		
Standard (Mbyte)	328	677
Maximum (Gbyte)	4.08	4.08
External (Gbytes)		
HP-IB	5.36	5.36
SCSI	47.60	47.60
HP-FL	21.44	21.44
- b. Models 827S/847S support two HP-IB cards.
- c. Maximum of 4 disk devices supported per HP-IB card.
- d. Maximum of 4 SCSI adapter cards supported on the 827S/847S.
- e. Maximum of 2 PBA-FL adapter cards supported on the 827S/847S.
- Model 827S (A1765A)

Select options 003 through 010 to increased integrated disk storage to 4.08 Gbytes. For external disk storage, standalone disk drives will need to be ordered.

- Models 847S (A1766A)

Select options 007 through 010 to increase integrated disk storage to 4.08 Gbytes. For external disk storage, standalone disk drives will need to be ordered.
- Disk storage products and interface cards

The following is an abbreviated list of disk subsystems supported on the Models 827S/847S. For additional information, refer to the "Disk Drives" section of this configuration guide.

C2471S	328-Mbyte integrated disk mechanism for Model 827S
C2472S	422-Mbyte integrated disk mechanism for Models 827S/847S
C2473S	677-Mbyte integrated disk mechanism for Models 827S/847S
C2474S	1.36-Gbyte integrated disk mechanism for Models 827S/847S
28650B	Precision Bus HP-IB interface card
28655A	Precision Bus SCSI interface card
A1749A	Precision Bus Adapter and fiber link interface card

6. Additional Tape Backup Devices

- Configuration Rules
 - Models 827S/847S support three external SCSI DDS tape drives.
 - Models 827S/847S support up to 8 external HP-IB tape devices.
 - Maximum of four external tape devices supported per HP-IB interface card.

Each Model 827S/847S comes with an integrated DDS cartridge tape device which can be optionally deleted.
- Listed below are the external DDS format tape drives that are supported on the Models 827S/847S. For additional information, refer to the "Tape Drives" section of this configuration guide.

C1511A	HP Series 6400 Model 1300H, DDS format tape drive.
C1512A	HP Series 6400 Model 1300S, DDS format tape drive.

7. Networking Products

- Configuration Rules
 - The Model 827S/847S supports 4 802.3 LAN card and up to 6 PSI cards (used for X.25 and SNA links). The Models 827S/847S include ARPA and NFS services installed on the embedded disk.
 - The Models 827S/847S each support a maximum of one MAP 802.4 card.
- Accessory Networking Products

For information on how to order a second LAN link card for the Models 827S/847S or how to order other networking products such as X.25, SNA and MAP products refer to the networking and communications section of the configuration guide.

8. Printer Support

- Configuration Rules
 - a. The Models 827S/847S support five Centronics printer interface and up to 20 serial printer interfaces. No HP-IB printer interfaces are supported. A maximum of 23 printers are supported.

For additional information on HP printer products please refer to the printer section of this configuration guide

9. Software

The HP-UX 1-8 user license is part of the base system of the Models 827S and 847S. This software, which is installed on the embedded system disk, includes NCS, NetLS, NFS, ARPA, X-Windows, VUE and LAN Link (TCP/IP) software in the base system configuration.

Tape media can also be ordered by specifying options AAH, or by ordering B2459A HP-UX 8.02 operating system product. If the delete disk (Option 1AN) is specified, a media option must be ordered.

Upgrade licenses are required to support users above the 8-user license included in the base system. These products must be ordered separately:

B2436B HP-UX 8.0 User Licenses for Series 800

- Opt. UA3 8 user license
- Opt. UA5 16 user license
- Opt. UA7 32 user license
- Opt. UA9 64 user license
- Opt. UAB 128 user license
- Opt. UAD 256 user license
- Opt. UAT Unlimited user license
- Opt. UB3 Credit for 8 users
- Opt. UB5 Credit for 16 users
- Opt. UB7 Credit for 32 users
- Opt. UB9 Credit for 64 users
- Opt. UBA Credit for 128 users
- Opt. UBC Credit for 256 users
- Opt. AGM 16 user software
- Opt. AGN 32 user software
- Opt. AGP 64 user software
- Opt. AGQ 128 user software
- Opt. AGR 256 user software
- Opt. AGS Unlimited
- Opt. AA0 1/4" cartridge tape
- Opt. AA1 1/2" magnetic tape
- Opt. AAH Digital Audio Tape (DAT)

10. Documentation

Each Model 827S/847S base system comes with hardware documentation and HP-UX software documentation.

Hardware documentation that is shipped with the base system includes the Operator's Handbook, Installation and Configuration Manual and the System Support Log.

The software documentation shipped with the base system includes the HP-UX General Usage Documentation set (92536A).

The HP-UX System Administration Documentation Set (92538A) is included with the media option for HP-UX (options AA0, AA1, and AAH).

HP-UX documentation products can be ordered separately:

B2437A HP-UX 8.0 User Documentation for Series 800

- Opt. 0BD General Usage Documentation
- Opt. 0BG User Guide Documentation
- Opt. 0BE System Admin. Documentation
- Opt. 0BF Programming Documentation

11. Installation

For the model 827S installation has been unbundled from the product. This model has been designed so that customers (with PC hardware experience and Unix knowledge) can install the systems. Those customers who have no previous system installation experience may contract HP to perform installation services. Installation services are not orderable through HEART. Services must be ordered through the System Support Organization (SSO) administration systems. The +17A support suffix on the base product is used for the installation service.

The model 847S systems includes both HP and HP site planning installation.

NOTE: Refer to the HP 9000 Series 800 and 600 Price Guide (P/N 5091-1515E) for more detail on HP-UX documentation.



Model 827S/847S Worksheet, continued

Table 2. Location of Factory Installed Memory and I/O Cards

Model 800	Component	Qty	Location
A1765A Model 827S	Model 827S Processor	1	As Shown
	16 Mbytes SIMM Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	SCSI Interface	1	Personality Card
	Parallel Centronics Interface	1	Personality Card
	328 Mbyte Embedded Disk	1	As Shown
	LAN 802.3 Card	1	Any HP-PB Slot
	1.3 Gbyte Embedded DAT	1	As Shown
	Opt. 003-010 Embedded Disk	1-4	As Shown
	Opt. 401 SCSI/Centronics Interface	1	Any HP-PB Slot
	Opt. 405 HP-IB Interface	1	Any HP-PB Slot
	Opt. 502-510 Memory up to 192 Mbytes	1	Memory Expansion Module
	Opt. 602 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 604 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 605 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 606 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 8Z7 Floating Point Coprocessor	1	Processor Board
	Opt. 030/031 X.25 Link	1	Any HP-PB Slot
A1766A Model 847S	Model 847S Processor	1	As Shown
	32 Mbytes SIMM Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	SCSI Interface	1	Personality Card
	Parallel Centronics Interface	1	Personality Card
	677 Mbyte Embedded Disk	1	As Shown
	LAN 802.3 Card	1	Slot 0
	1.3 Gbyte Embedded DAT	1	As Shown
	Opt. 007-010 Embedded Disk	1-3	As Shown
	Opt. 401 SCSI/Centronics Interface	1	Any HP-PB Slot
	Opt. 405 HP-IB Interface	1	Any HP-PB Slot
	Opt. 505-510 Memory up to 192 Mbytes	1	Memory Expansion Module
	Opt. 602 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 604 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 605 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 606 16 Port MUX Card	1	Any HP-PB Slot
	Opt. 8Z7 Floating Point Coprocessor	1	Processor Board
	Opt. 030/031 X.25 Link	1	Any HP-PB Slot

Model 827S/847S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1765A	Model 827S 8-user Business Server • HP PA-RISC 48 Mhz system processor • HP Precision Bus with six single-high HP-PB slots • Integrated cabinet and power supply • Hardware documentation • 16 Mbytes ECC memory • 8 RS-232 ports including Console Access and Remote Access Port (8 modem ports) • SCSI Interface • Parallel Centronics interface • 328 Mbyte embedded disk drive • 1.3 Gbyte DDS embedded cartridge tape drive • LAN/9000 Thin Coax Network Interface and preloaded TCP/IP, ARPA, NFS Services • 8-user HP-UX installed on embedded disk • Owners Guide and General Usage Documentation Set • 700/92 console with cable • Pre-installation of I/O cards & memory • Single package shipment
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 003	Increase integrated disk capacity to 677 Mbytes (1x673MB)
Opt. 005	Increase integrated disk capacity to 844 Mbytes (2x422MB)
Opt. 007	Increase integrated disk capacity to 1.36 Gbytes (1x1355MB)
Opt. 008	Increase integrated disk capacity to 2 Gbytes (2x328MB, 1x1355MB)
Opt. 009	Increase integrated disk capacity to 3 Gbytes (1x328MB, 2x1355MB)
Opt. 010	Increase integrated disk capacity to 4 Gbytes (3x1355MB)
Opt. 401	Add one additional SCSI/Parallel Centronics interface
Opt. 405	Add one HP-IB interface
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 502	Increase main memory to 24 Mbytes
Opt. 503	Increase main memory to 32 Mbytes
Opt. 505	Increase main memory to 48 Mbytes
Opt. 506	Increase main memory to 64 Mbytes
Opt. 507	Increase Main memory to 80 Mbytes
Opt. 508	Increase main memory to 96 Mbytes
Opt. 509	Increase main memory to 112 Mbytes
Opt. 510	Increase main memory to 128 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct connect ports)
Opt. 604	Add two 16 port MUX cards (RS-232 direct connect ports)
Opt. 605	Add three 16 port MUX cards (RS-232 direct connect ports)
Opt. 606	Add four 16 port MUX cards (RS-232 direct connect ports)
Opt. 8Z7	Add floating point coprocessor
Opt. 0E1	Add powerfail battery backup
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1CM	Add rack mount kit
Opt. 1AN	Delete 328 Mbyte embedded disk drive (cannot order 1CD, order other boot disk)
Opt. 1F8	Delete LAN/89000 network interface and preloaded TCP/IP, ARPA, NFS Services
Opt. 1B6	Delete console

Model 827S/847S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1766A	Model 847S 8-user Business Server • HP PA-RISC 48 Mhz system processor • HP Precision Bus with six single-high HP-PB slots • Integrated cabinet and power supply • Hardware documentation • 32 Mbytes ECC memory • 8 RS-232 ports including Console Access and Remote Access Port (8 modem ports) • SCSI Interface • Parallel Centronics interface • 677 Mbyte embedded disk drive • 1.3 Gbyte DDS embedded cartridge tape drive • LAN/9000 Thin Coax Network Interface and preloaded TCP/IP, ARPA, NFS Services • 8-user HP-UX installed on embedded disk • Owners Guide and General Usage Documentation Set • 700/92 console with cable • Pre-installation of I/O cards & memory • Single package shipment
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 007	Increase integrated disk capacity to 1.36 Gbytes (1x1355MB)
Opt. 008	Increase integrated disk capacity to 2 Gbytes (2x328MB, 1x1355MB)
Opt. 009	Increase integrated disk capacity to 3 Gbytes (1x328MB, 2x1355MB)
Opt. 010	Increase integrated disk capacity to 4 Gbytes (3x1355MB)
Opt. 401	Add one additional SCSI/Parallel Centronics interface
Opt. 405	Add one HP-IB interface
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 505	Increase main memory to 48 Mbytes
Opt. 506	Increase main memory to 64 Mbytes
Opt. 507	Increase main memory to 80 Mbytes
Opt. 508	Increase main memory to 96 Mbytes
Opt. 509	Increase main memory to 112 Mbytes
Opt. 510	Increase main memory to 128 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct connect ports)
Opt. 604	Add two 16 port MUX cards (RS-232 direct connect ports)
Opt. 605	Add three 16 port MUX cards (RS-232 direct connect ports)
Opt. 606	Add four 16 port MUX cards (RS-232 direct connect ports)
Opt. 827	Add floating point coprocessor
Opt. 0E1	Add powerfail battery backup
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1CM	Add rack mount kit
Opt. 1AN	Delete 673 Mbyte embedded disk drive (cannot order 1CD, order other boot disk)
Opt. 1F8	Delete LAN/9000 network interface and preloaded TCP/IP, ARPA, NFS Services
Opt. 1B6	Delete console

Model 857S Business Servers

Description

The HP 9000 Models 857S is the highest performing and most configurable mid-range system which is available in an integrated package. This compact system includes a single processor, an embedded disk drive and an embedded Digital Data Storage (DDS) cartridge tape drive. The package for this system (43 cm. high, 44.4 cm. wide and 53.3 cm. deep) has been designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 857S package supports up to four internal disk drives. This product supports up to two 422 Mbyte and two 1.36 Gbyte disk mechanisms or three 1.36 Gbyte disk mechanisms. Maximum internal disk storage is 4.08 Gbyte. The Model 857S comes standard with a single integrated 677 Mbyte disk mechanism.

Additional disk storage is available using external standalone disk mechanisms. The Model 857S can support 47.60 Gbytes of standalone external SCSI disk storage, 32.1 Gbytes of external HP-FL disk storage or 5.36 Gbytes of standalone external HP-IB disk storage.

Cost effective backup for the 857S is provided with HP-s Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the desktide package, stores up to 1.3 Gbytes of data in a single DAT cassette, measuring

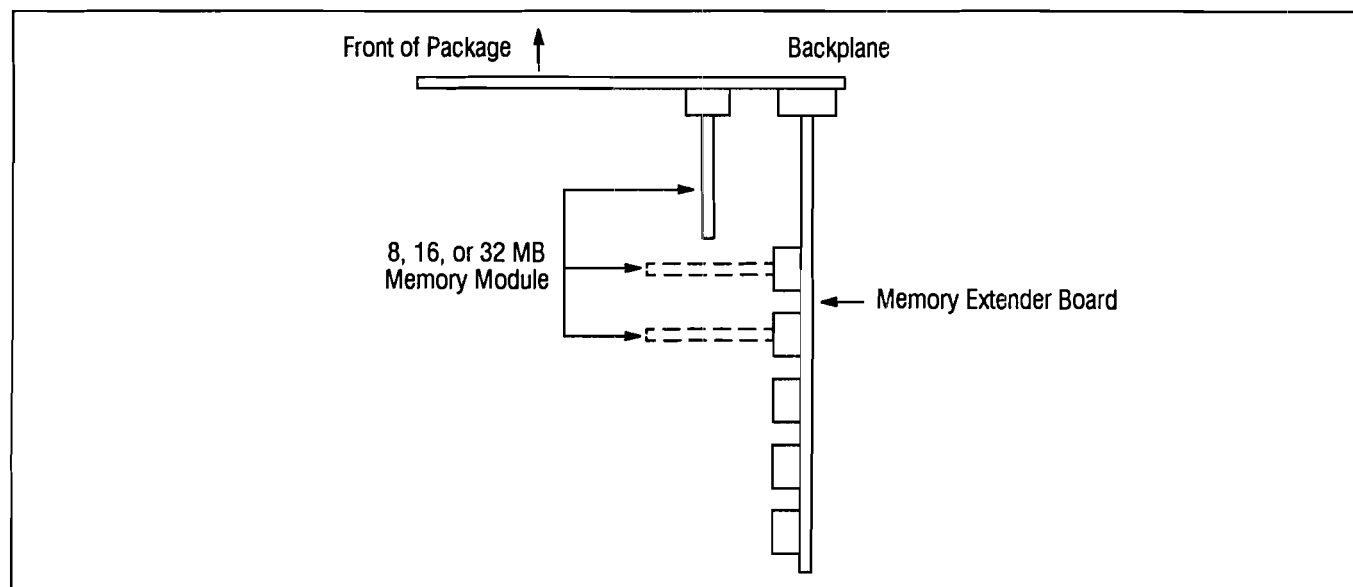
only 7.3x5.4x1.05 cm. The transfer rate is 183 Kbytes per second, which translates into a two hour period required for backing up 1.3 Gbytes of data.

This Model also features the HP Precision Bus (HP-PB) as the system bus that interfaces the CPU printed circuit assembly (PCA) with I/O. The HP-PB synchronously transfers I/O data over a 32-bit data path at a peak rate of 32 MB/sec or a sustained rate of 21 Mbytes/sec. The HP 9000 Model 857S has twelve HP Precision Bus slots available for I/O cards. In the 857S one HP-PB slot is occupied by the LAN 9000/Link included with the system, leaving 11 available HP-PB slots. In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O cards. Consequently, the twelve HP-PB slots can support six double-high cards or twelve single-high cards. These slots are only accessible from the rear of the package.

The card cage for the Model 857S is shown in Figure 8. The 857S comes standard with 64 Mbytes of memory.

Single-high Precision Bus cards include the 8- and 16-channel MUX cards, HP-IB, LAN/9000, X.25/9000 Link, the SCSI adapter, and the SNA Link. These single high cards can be installed in either half of the double-high slots. The double-high are cards that require a double-high slot are the LAN/9000 link, PBA-FL interface, and the MAP 3.0 Link. MAP 3.0 is a two double-high card set.

Memory Array



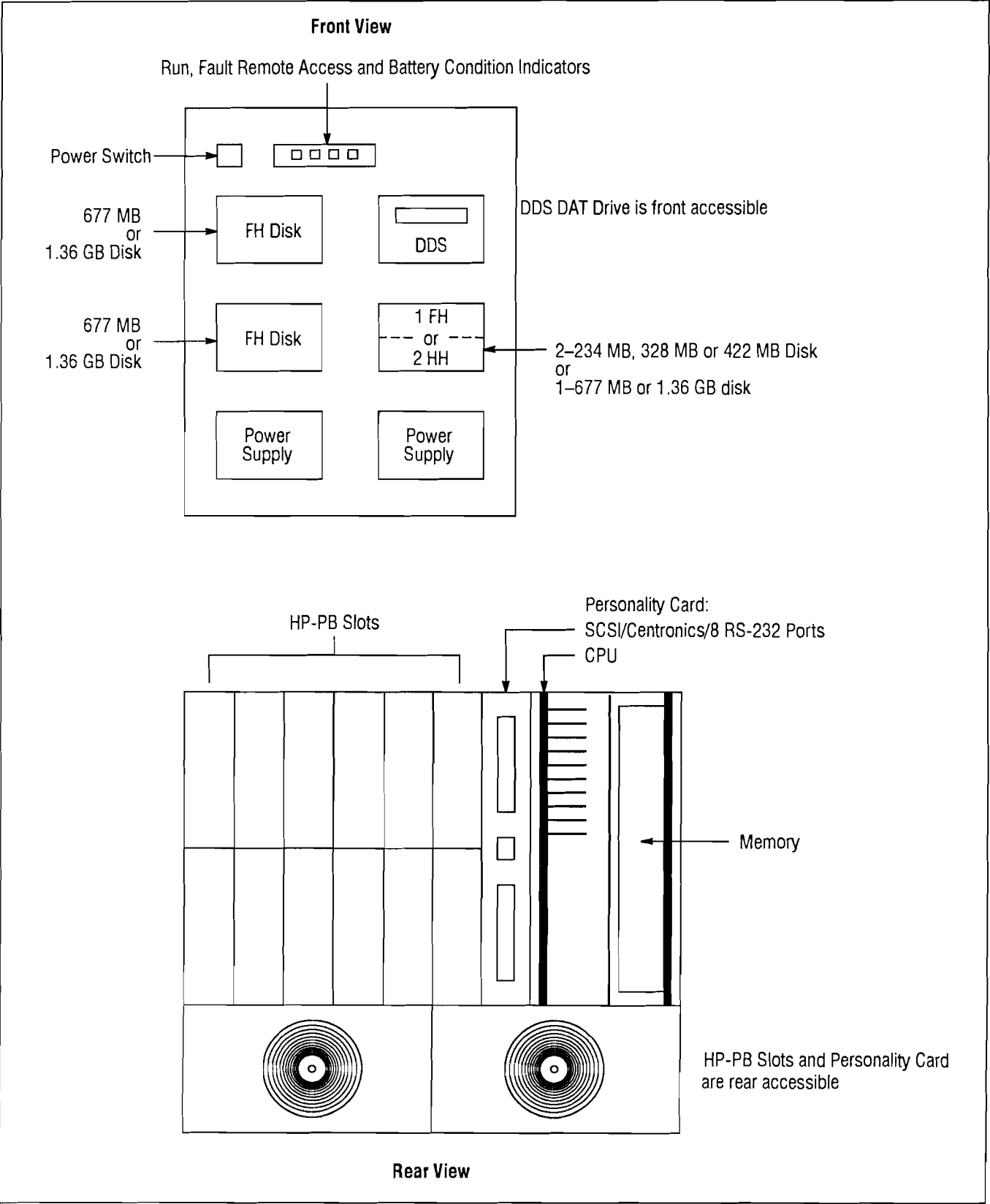


Figure 8. Model 857S Business Server Layout

Model 857S Worksheet

The HP 9000 Models 857S is an integrated computer system which provides processor, disk, tape, and I/O functionality in a single compact package. The product structure includes options for including additional memory, disk storage, and I/O functionality to each base configuration. Everything included in the base product structure and those items added as an option to the base product structure is pre-installed in the package prior to customer shipment.

If the required configuration of the Model 857S cannot be met by the base product or its options, standalone accessory cards may need to be ordered.

The following is a step-by-step approach to configuring and ordering an HP 9000 Model 857S computer system. Refer to Figure 8 to track which backplane slots are utilized as the system is configured. **There is a template in the back of this configuration guide that can be used for your system configuration.**

1. Select a System

A1706A Model 857S Business Server consisting of:

- HP PA-RISC 48 Mhz system processor
- HP Precision Bus with twelve single-high HP-PB slots
- Integrated cabinet and power supply
- Hardware documentation
- 64 Mbytes ECC memory
- 8 RS-232 ports with full modem control including Console Access and Remote Access Port (8 modem ports)
- SCSI Interface
- Parallel Centronics interface
- 677 Mbyte embedded disk drive
- 1.3 Gbyte DDS embedded cartridge tape drive
- LAN/9000 Thin Coax Network Interface
- 8 user HP-UX installed on embedded disk
- Owners Guide and General Usage Documentation Set
- C1001G (700/92 console with cable)
- Pre-installed I/O cards & memory
- Single package shipment

2. Additional Memory

- Configuration rules
 - a. The Model 857S supports a maximum of 192 Mbytes of memory.
- Model 857S Business Server (A1706A)

Select options 507 through 510 to increase memory from 64 Mbyte base up to 128 Mbytes. To increase memory beyond 128 Mbytes, standalone accessory memory products need to be ordered. Standalone accessory memory can only be ordered in increments of 8, 16 or 32 Mbytes.

- Standalone accessory memory products are:

A2230A	8 Mbyte	ECC Memory Module
A2231A	16Mbyte	ECC Memory Module
A2232A	32Mbyte	ECC Memory Module

3. Additional Serial Ports for Terminals and Printers

- Configuration Rules

Maximum Ports	857S
MUX	136
MUX and DTC	528

Typical Users 96-160

- Model 857S Business Server (A1706A)

Select options 602 through 608 to increase the number of ports from 8 in the base system up to a total of 104. For additional ports, Datacommunications and Terminal Controllers (DTCs) will need to be ordered.

- Additional standalone ports

40299B – HP-PB 8-channel RS-232-C modem connect asynchronous multiplexer

J2092A – 16 RS-232-C peripherals in direct connect mode using data signals only (up to 15 meters)

J2093A – 16 RS-423 peripherals in direct connect mode for only distance purpose (up to 1200 meters)

J2094A – 16 RS-232-C peripherals connected locally but using data AND modem signals (up to 15 meters) or through the use of asynchronous modems

Each J209XA product comprises one single wide HP-PB card and 2 distribution panels with standard DB-25 connectors for peripherals attachment. The distribution panels are linked to the MUX card through the use of a 4 meter cable.

2340A – DTC 16 for the HP 9000 (16 port LAN terminal server)

2345A – DTC 48 for the HP 9000 (48 port LAN terminal server)

4. Terminals and System Console

A system console (700/92 terminal, P/N C1001A/G/W) and cable is included with the base systems for the Model 857S. For additional information on HP terminal products, please refer to the "User Communication Devices" section of this configuration guide.

5. Additional Disk Storage

- Configuration Rules
 - a. Disk Storage 857S

Internal	
Standard (Mbyte)	677
Maximum (Gbyte)	4.08
External (Gbytes)	
HP-IB	5.36
SCSI	47.60
HP-FL	32.16
 - b. Model 857S supports two HP-IB cards.
 - c. Maximum of 4 disk devices supported per HP-IB card.
 - d. Maximum of 4 SCSI adapter cards supported on the 857S.
 - e. Maximum of 3 PBA-FL adapter cards supported on the 857S.
- Model 857S (A1706A)

Select options 007 through 010 to increase integrated disk storage to 4.08 Gbytes. For external disk storage, standalone disk drives will need to be ordered.
- Disk storage products and interface cards

The following is an abbreviated list of disk subsystems supported on the Model 857S. For additional information, refer to the "Disk Drives" section of this configuration guide.

C2472A	422-Mbyte integrated disk mechanism for Model 857S
C2473A	677-Mbyte integrated disk mechanism for Model 857S
C2474A	1.36-Gbyte integrated disk mechanism for Model 857S
28650B	Precision Bus HP-IB interface card
28655A	Precision Bus SCSI interface card
A1749A	Precision Bus Adapter and Fiber Link interface card

6. Additional Tape Backup Devices

- Configuration Rules
 - a. Model 857S supports three external SCSI DDS tape drives.
 - b. Model 857S supports up to 8 external HP-IB tape devices.
 - c. Maximum of four external tape devices supported per HP-IB interface card.
- Each Model 857S comes with an integrated DDS cartridge tape device which can be optionally deleted.
- Listed below are the external DDS format tape drives that are supported on the Model 857S. For additional information, refer to the "Tape Drives" section of this configuration guide.

C1511A	HP Series 6400 Model 1300H, DDS format tape drive.
C1512A	HP Series 6400 Model 1300S, DDS format tape drive.

7. Networking Products

- Configuration Rules
 - a. The Model 857S supports 4 802.3 LAN card and up to 12 PSI cards (used for X.25 and SNA links). The Model 857S include ARPA and NFS services installed on the embedded disk.
 - b. The Model 857S supports a maximum of one MAP 802.4 card.
- Accessory Networking Products

For information on how to order a second LAN link card for the Model 857S or how to order other networking products such as X.25, SNA and MAP products refer to the networking and communications section of the configuration guide.

8. Printer Support

- Configuration Rules
 - a. The Model 857S supports five Centronics printer interface and up to 20 serial printer interfaces. No HP-IB printer interfaces are supported. A maximum of 25 printers are supported.
- For additional information on HP printer products please refer to the printer section of this configuration guide

9. Software

The HP-UX 1-8 user license is part of the base system of the Model 857S. This software, which is installed on the embedded system disk, includes the C compiler, HP-UX symbolic debugger, assembler, device I/O and real-time package. In addition, NCS, NetLS, NFS, ARPA, X-Windows, VUE and LAN Link (TCP/IP) software are included in the base system configuration.

Tape media can also be ordered by specifying option AAH, or by ordering B2459A HP-UX 8.02 operating system product. If the delete disk (Option 1AN) is specified, a media option must be ordered. Upgrade licenses are required to support users above the 8-user license included in the base system. These products must be ordered separately:

B2436B HP-UX 8.0 User Licenses for Series 800

- Opt. UA3 8 user license
- Opt. UA5 16 user license
- Opt. UA7 32 user license
- Opt. UA9 64 user license
- Opt. UAB 128 user license
- Opt. UAD 256 user license
- Opt. UAT Unlimited user license
- Opt. UB3 Credit for 8 users
- Opt. UB5 Credit for 16 users
- Opt. UB7 Credit for 32 users
- Opt. UB9 Credit for 64 users
- Opt. UBA Credit for 128 users
- Opt. UBC Credit for 256 users
- Opt. AGM 16 user software
- Opt. AGN 32 user software

Model 857S Worksheet, continued

- Opt. AGQ 128 user software
- Opt. AGR 256 user software
- Opt. AGS Unlimited
- Opt. AA0 1/4" cartridge tape
- Opt. AA1 1/2" magnetic tape
- Opt. AAH Digital Audio Tape (DAT)

10. Documentation

Each Model 857S base system comes with hardware documentation and HP-UX software documentation.

Hardware documentation that is shipped with the base system includes the Operator's Handbook, Installation and Configuration Manual and the System Support Log.

The software documentation shipped with the base system includes the HP-UX General Usage Documentation set (92536A).

The HP-UX System Administration Documentation Set (92538A) is included with the media option for HP-UX (options AA0, AA1, and AAH).

HP-UX documentation products can be ordered separately:

B2437A HP-UX 8.0 User Documentation for Series 800

- Opt. 0BD General Usage Documentation
- Opt. 0BG User Guide Documentation
- Opt. 0BE System Admin. Documentation
- Opt. 0BF Programming Documentation

11. Installation

The model 857S includes both site planning and HP installation.

NOTE: Refer to the HP 9000 Series 800 and 600 Price Guide (P/N 5091-1515E) for more detail on HP-UX documentation.

12. Configuration Verification

The Model 857S is a very powerful system providing industry leading performance at an industry leading price. Due to the large number of slots in the package, which allow considerable configuration flexibility, the 857S cannot support every combination of I/O cards that can be placed in the system. Thus, **YOUR CONFIGURATION NEEDS TO BE VERIFIED** to ensure that it falls within the model 857S' supportable limits. This section provides easy verification of your configuration. Contact your System Engineer for I/O cards that are introduced in the future.

The worksheet, Table 3 below, along with the related diagrams will allow the easy comparison of the power limits of the Model 857S systems with the actual power consumption of a proposed configuration of boards and connections. In making this

comparison, you may determine the supportability of your proposed configuration. The following guidelines will help you through the verification process:

- A. Which slot you put cards in DOES make a difference. The key constraint is "+5V" power consumption; when a configuration is limited, +5V will be the limiting factor 95% of the time.
- B. Put high +5V requirement cards in "R" bank slots. The power requirements for each card are listed in Table 1. Since the 857S has two power supplies, we term power as coming from the "L" bank and the "R" bank. The slots are marked on Diagram 1. The CPU, memory, peripherals, and two HP-PB I/O slots draw power from the "L" bank. The other ten HP-PB I/O slots draw power from the "R" bank.
- C. If your configuration passes the verification test below, your configuration is supported. If it does not pass the test, it DOES NOT mean it is not supported. The test below assumes the system has maximum memory and maximum integrated peripherals. It is a worst case scenario. If you fall outside the limits by 33% or more, you need to cut back on cards. If you are outside the limits by less than 33%, and you have not configured the maximum amount of memory or integrated disks, you can call the sales center to obtain verification of support to sell the system. These will be considered on merit on a case-by-case basis.

Use the worksheet as follows:

1. Refer to Diagram 1 and 2 and insert the proposed cards into available slots. Diagram 1 is a picture of the 857S backplane I/O slots. Diagram 2 contains the card placement guidelines (slot restrictions). Draw the cards into Diagram 1 based in the card configuration guidelines in Diagram 2. The completed diagram is necessary to check the proposed configuration.
2. From the completed Diagram 1, for each card, note whether the power comes from the left bank of the right bank. Slots marked "L" draw their power from the left bank. Slots marked "R" draw their power from the right bank. Now enter the number of cards from Diagram 1 in the appropriate quantity columns of the Table 3. Note that there are separate quantity columns for left bank cards and right bank cards. A double-high card counts as QTY = 1 even though it occupies two half height slots.
3. Multiply the quantity entered in each row by the power given in each of the three "Power Req./Card" columns. Put the result in the appropriate "Total Power Required" column.

Model 857S Worksheet, continued

When configuring MAP 3.0, remember that MAP 3.0 is a two double-high card set available with a broadband link or a carrierband link. Thus, the MAP 3.0 rows in Table 3 requires entries for both cards.

4. Sum each column and compare the results with the power limits at the bottom. The computed totals must be less than the limits given. If you exceed the power requirements by less than 33%, review guideline "C" above.

The following two examples show typical supported configurations.

Configuration Example 1:

- 3 PBA-FL cards
- 3 addon SCSI cards
- 2 addon 16 port MUX cards

NIO Slot Location

	1/2	3/4	5/6	7/8	9/10	11/12
PBA-FL	1-DH	1-DH	1-DH			
SCSI					2-SH	1-SH
16 Port MUX				1-SH		1-SH

This configuration uses all available power. Even though there is still one single-high I/O slot available, it is not usable. There is not enough power left to drive additional cards.

Configuration Example 2:

- 8 X.25 cards
- 2 addon 16 port MUX cards
- 2 addon SCSI cards

NIO Slot Location

	1/2	3/4	5/6	7/8	9/10	11/12
WAN X.25	2-SH	2-SH	2-SH	2-SH		
SCSI						2-SH
16 Port MUX					2-SH	

This configuration uses all available slots. There is still power available, but no slots to put additional cards in. Also note that if X.25 cards had been placed in slots 11 and 12, rather than slots 1 through 8, it would have exceeded the left bank's +5 V power requirements of the system. In general, put high power requirement cards in slots #1-10.

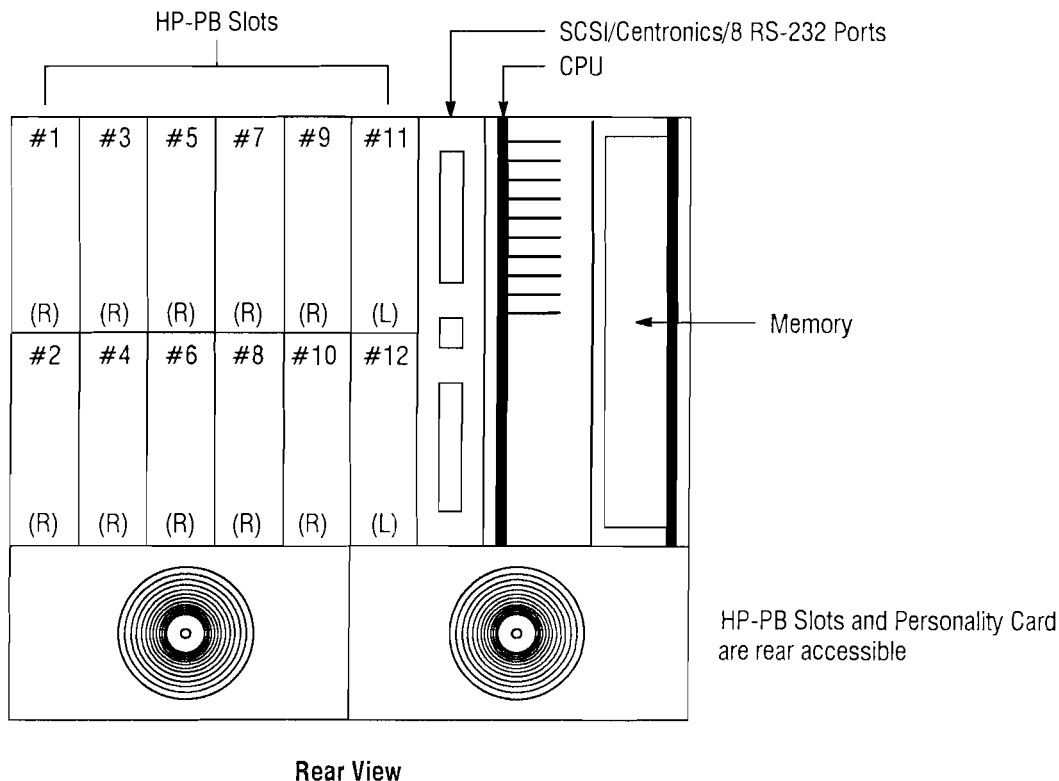


Diagram 1. Model 857S Business Server Layout

Model 857S Worksheet, continued

Product #	Description	Form Factor	Can Be Placed In These Slots
40299B	8 Port MUX	Single-high	#1 thru #12
J2092A	16 RS-232 MUX	Single-high	#1 thru #12
J2093A	16 RS-423 MUX	Single-high	#1 thru #12
J2094A	16 Modem MUX	Single-high	#1 thru #12
J2146A	802.3 LAN	Single-high	#1 thru #4
28655A	SCSI Interface	Single-high	#1 thru #12
28650B	HP-IB Interface	Single-high	#1 thru #12
A1749A	PBA-FL	Double-high	#1 thru #6
36960A	X.25 WAN	Single-high	#1 thru #12
98173A	SNA Link	Single-high	#1 thru #12
36970A	MAP 3.0 Broadband	2 Double-high	#3 thru #6
36969A	MAP 3.0 Carrierband	2 Double-high	#3 thru #6

Diagram 2. Model 857S I/O Card Configuration Guidelines

Table 3. Model 857S Power Budgeting Table

I/O Card	Qty.	Power Req./Card Right Bank			Total Power Required Right Bank			Qty.	Power Req./Card Left Bank			Total Power Required Left Bank		
		+12 V	+5 V	-12 V	+12 V	+5 V	-12 V		+12 V	+5 V	-12 V	+12 V	+5 V	-12 V
8 Port MUX 40299B		.16	1.40	.13					.16	1.40	.13			
16 Port MUX J2092A, J2093A, J2094A		.30	1.60	.14					.30	1.60	.14			
802.3 LAN J2146A		.50	2.13	.00					.50	2.13	.00			
SCSI I/F 28655A		.00	.90	.00					.00	.90	.00			
HP-IB I/F 28650A		.00	2.10	.00					.00	2.10	.00			
PBA-FL I/F A1749A		.08	6.77	.07					.08	6.77	.07			
X.25 36960A		.08	1.91	.08					.08	1.91	.08			
SNA Link 98173A		.08	1.91	.08					.08	1.91	.08			
802.4 MAP BB Card 1 of 2 Card 2 of 2 36970A		.60	1.25	.30					.60	1.25	.30			
		.00	1.03	.00					.00	1.03	.00			
802.4 MAP CB Card 1 of 2 Card 2 of 2 36969A		.00	1.00	.00					.00	1.00	.00			
		.00	1.03	.00					.00	1.03	.00			
Total Power Required (Must not exceed total power available listed below)														
Total Power Available for HP-PB cards in the Model 857S					3.20	24.00	2.00					1.10	3.00	1.50

Model 857S Worksheet, continued

Table 4. Location of Factory Installed Memory and I/O Cards

Model 800	Component	Qty	Location
A1706A Model 857S	Model 857S Processor	1	As Shown
	64 Mbytes SIMM Memory	1	Memory Motherboard
	8 Channel Multiplexer	1	Personality Card
	SCSI Interface	1	Personality Card
	Parallel Centronics Interface	1	Personality Card
	677 Mbyte Embedded Disk	1	As Shown
	LAN 802.3 Card	1	Any HP-PB Slot
	1.3 Gbyte Embedded DAT	1	As Shown
Opt. 007-010	Embedded Disk	1-4	As Shown
Opt. 401	SCSI/Centronics Interface	1	Any HP-PB Slot
Opt. 405	HP-IB Interface	1	Any HP-PB Slot
Opt. 507-510	Memory up to 192 Mbytes	1	Memory Expansion Module
Opt. 602	16 Port MUX Card	1	Any HP-PB Slot
Opt. 604	16 Port MUX Card	1	Any HP-PB Slot
Opt. 605	16 Port MUX Card	1	Any HP-PB Slot
Opt. 606	16 Port MUX Card	1	Any HP-PB Slot
Opt. 607	16 Port MUX Card	1	Any HP-PB Slot
Opt. 608	16 Port MUX Card	1	Any HP-PB Slot
Opt. 8Z7	Floating Point Coprocessor	1	Processor Board
Opt. 030/031	X.25 Link	1	Any HP-PB Slot

Model 857S Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1706A	Model 857S 8-user Business Server • HP PA-RISC 48 Mhz system processor • HP Precision Bus with twelve single-high HP-PB slots • Integrated cabinet and power supply • Hardware documentation • 64 Mbytes ECC memory • 8 RS-232 ports including Console Access and Remote Access Port (8 modem ports) • SCSI Interface • Parallel Centronics interface • 677 Mbyte embedded disk drive • 1.3 Gbyte DDS embedded cartridge tape drive • LAN/9000 Thin Coax Network Interface and preloaded TCP/IP, ARPA, NFS Services • 8-user HP-UX installed on embedded disk • Owners Guide and General Usage Documentation Set • 700/92 console with cable • Pre-installation of I/O cards & memory • Single package shipment
Options	
Opt. AAH	HP-UX on DDS Tape with System Administration Documentation
Opt. 007	Increase integrated disk capacity to 1.36 Gbytes (1x1355MB)
Opt. 008	Increase integrated disk capacity to 2 Gbytes (2x328MB, 1x1355MB)
Opt. 009	Increase integrated disk capacity to 3 Gbytes (1x328MB, 2x1355MB)
Opt. 010	Increase integrated disk capacity to 4 Gbytes (3x1355MB)
Opt. 401	Add one additional SCSI/Parallel Centronics interface
Opt. 405	Add one HP-IB interface
Opt. 030	Add one X.25 Link with backup software on DDS tape and RS-232-C cable connection
Opt. 031	Add one X.25 Link with backup software on DDS tape and V.35 cable connection
Opt. 507	Increase Main memory to 80 Mbytes
Opt. 508	Increase main memory to 96 Mbytes
Opt. 509	Increase main memory to 112 Mbytes
Opt. 510	Increase main memory to 128 Mbytes
Opt. 602	Add one 16 port MUX card (RS-232 direct modem ports)
Opt. 604	Add two 16 port MUX cards (RS-232 direct modem ports)
Opt. 605	Add three 16 port MUX cards (RS-232 direct modem ports)
Opt. 606	Add four 16 port MUX cards (RS-232 direct modem ports)
Opt. 607	Add five 16 port MUX cards (RS-232 direct modem ports)
Opt. 608	Add six 16 port MUX cards (RS-232 direct modem ports)
Opt. 827	Add floating point coprocessor
Opt. 0E1	Add powerfail battery backup
Opt. 1CD	Delete DDS tape drive (must order external backup device)
Opt. 1CM	Add rack mount kit
Opt. 1AN	Delete 673 Mbyte embedded disk drive (must have one disk boot device, must order option AAH or other media)
Opt. 1F8	Delete LAN/9000 network interface and preloaded TCP/IP, ARPA, NFS Services
Opt. 1B6	Delete console

Model 808S Business Server

Description

HP 9000 Model 808S is the lowest priced HP 9000 Series 800/600 Integrated Business Server. It uses interfaces and memory cards that connect to the same HP Precision Bus (HP-PB) (See Figure 1).

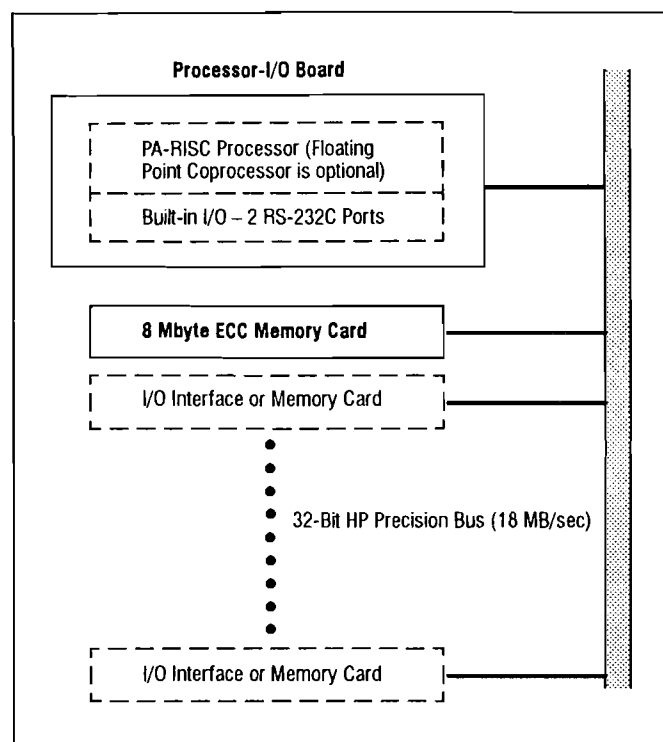


Figure 9. Models 808S/815S Bus Relationships

The entire processor and two unbuffered RS-232C serial ports are located on a single processor-I/O board, which connects to a 6-slot backplane. Three of these slots contain the 8 Mbyte ECC memory card, 8-channel MUX card and HP-IB card. Three slots remain available for additional cards.

In compliance with the Eurocard standard, the HP Precision Bus is designed to accommodate single-high (3U) and double-high (6U) I/O cards. The Model 808S has 6 single-high card slots capable of supporting 6 single-high cards, or 3 double-high cards, or a combination thereof, as permitted by removable center guides. See Figure 10, below. The Model 808S includes the HP-UX reduced configuration operating system with an 8-user license.

The HP-UX reduced configuration operating system is suitable for run-time applications. The HP-UX reduced configuration operating system differs from the HP-UX operating system by not including program development tools, on-line man pages, text processing (nroff), and Personal Applications Manager (PAM). Both HP-UX and the HP-UX reduced configuration operating systems are completely compatible.

The Model 808S is available as the HP A1625A integrated Business Server, including disk-tape interface, 152 Mbyte fixed disk, and cartridge tape drive for software installation and backup. The Model 808S is not available as a System Processing Unit (SPU).

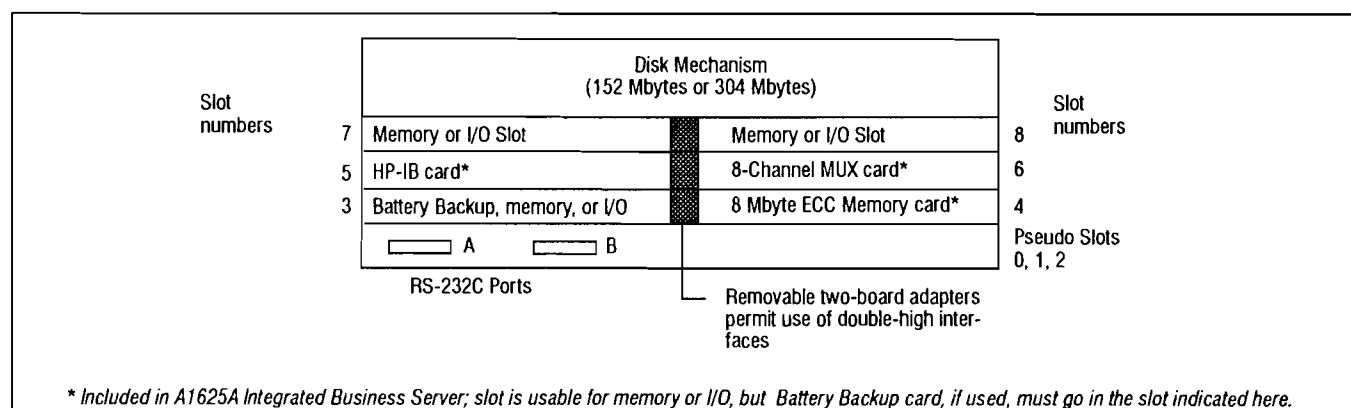


Figure 10. Model 808S SPU Backplane Layout

Model 808S 8-User Integrated Business Server Product Summary

Product/ Opt. No.	Description
A1625A	Model 808S Integrated Business Server, consisting of: • A1410A Model 815S System Processor Unit, as described in the section titled "Model 815S Business Servers", pg. 44.** • HP 28650AL HP-IB Disk/Tape Interface, including 1 meter HP-IB cable (uses one single-high HP-PB backplane slot). • HP 40299B 8-Channel Multiplexer Interface, including breakout panel (uses one single-high HP-PB backplane slot). • HP 7958A 152-Mbyte Disk Drive with 1 meter HP-IB cable. • HP 9144A 67-Mbyte 16-Channel 1/4-inch Cartridge Tape Subsystem. • 8-user HP-UX License and General Usage Documentation. • HP 40242M Cable to system console terminal (terminal purchased separately). • Customer Convenience Kit, including: • Installation of memory and I/O cards in the SPU at the factory. • Installation of HP-UX on the disk at factory. • Installation of option 012 LAN 9000 Series 800 Link interface and networking software, if ordered. • HP 92211R DesignPlus Cabinet. • Racking of configured system components in cabinet at the factory and single shipment. <i>Note: On-site installation Assistance, is available for the integrated bundle as the A1625A + 17A product.</i>
Options	
Opt. OE1	Adds Battery Backup System (uses one HB-PB single-high backplane slot).
Opt. 002	Adds one HP A1404A 8-Mbyte ECC memory card (max. of four – each uses one HP-PB single-high backplane slot).
Opt 005	Deletes HP 9144A 67-Mbyte 16-channel Cartridge Tape Subsystem and HP 92211R Design Plus Cabinet. (i)
Opt 007	Substitutes 304-Mbyte internal disk drive for 152 Mbyte internal disk drive.
Opt 004	Substitutes HP 9145A 134-Mbyte 32-channel Cartridge Tape Subsystem for HP 9144A 67 Mbyte 16-channel Cartridge Tape Subsystem.
Opt 012	Adds HP 36967A LAN/9000 Series 800 Link interface (uses one double-high HP-PB backplane slot), ARPA and NFS Services.
Opt 021	Provides HP-UX reduced configuration software on 1/4-inch Cartridge Tape and System Administration Documentation.
Add-on Accessories	
A1404A	8 Mbyte ECC memory card (uses one single-high HP-PB backplane slot).
A1406A	Floating-Point Coprocessor.
A1407A	Battery Backup System (uses one HP-PB single-high backplane slot).
B2438A	HP-UX 8.0 Server Operating System
B2459A	HP-UX 8.0 User Licenses
B2437A	HP-UX 8.0 Documentation

(i) Caution: System Users should make provisions for some other disk drive back-up device.

HP-PB Interfaces

See page 163.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W, C1002A/G/W, or discontinued HP 2392A Option S12 terminal, connected to RS-232C Port A via HP 40242M cable. <i>NOTE: The HP A1625A Integrated Model 808S system includes the system console connect cable.</i>
Tape Drives	<i>The HP A1625A Integrated Model 808S system satisfies this requirement with its included Cartridge Tape Subsystem. However, if option 005 is implemented, a software installation/backup device is required. Select from those listed in the Tape Drives section on page 195, or comparable support from a LAN-connected network server. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired software installation/backup device.</i>
Operating System	Reduced configuration, included with base system.
System Disk	152 MB or 304 MB built in disk, included with base system.

Model 815S Business Server

Description

HP 9000 Model 815S is an entry-level HP 9000 Series 800/600 System Processor Unit. It uses interfaces and memory cards that connect to the same HP Precision Bus (HP-PB) (See Figure 11).

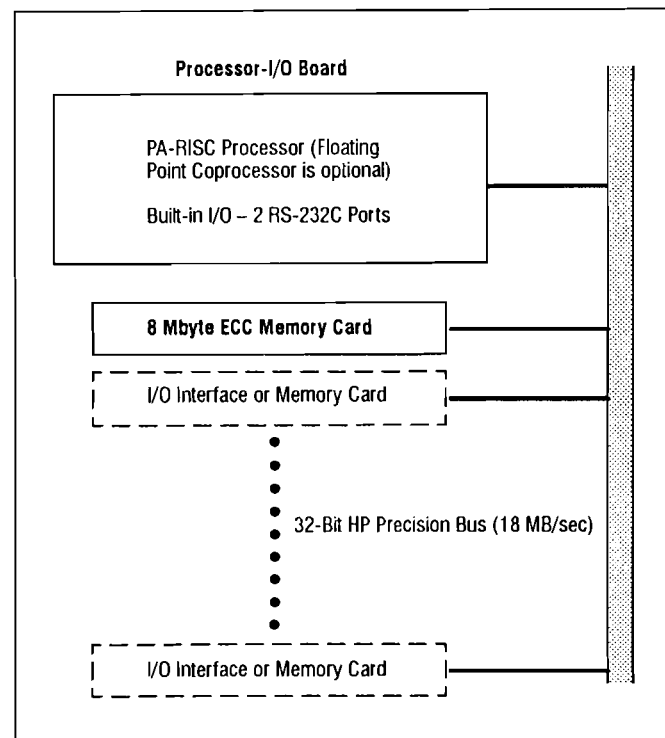


Figure 11. Model 815S Bus Relationships

The entire processor and two unbuffered RS-232C serial ports are located on a single processor-I/O board, which connects to a 12-slot backplane. One of these slots contains an 8 Mbyte ECC memory card, as shown in Figure 12.

In compliance with the Eurocard standard, the HP Precision Bus (HP-PB) is designed to accommodate single-high (3U) and double-high (6U) I/O cards. The Model 815S has 12 single-high card slots capable of supporting 12 single-high cards, or 6 double-high cards, or a combination thereof, as permitted by removable center guides. The Model 815S includes the HP-UX operating system with a 8-user license.

The Model 815S is available as the HP A1410A System Processor Unit (SPU) or as an HP A1071A integrated Business Server, including disk-tape interface, 335 Mbyte fixed disk, and cartridge tape drive for software installation and backup.

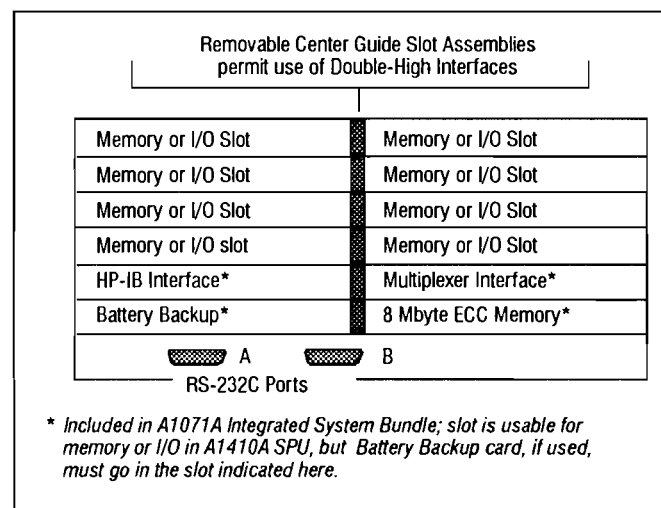


Figure 12. Model 815S SPU Backplane Layout

Model 815S SPU Product Summary

Product/ Opt. No.	Description
A1410A	Model 815S System Processor Unit, consisting of: - Processor-I/O Board, with: - PA-RISC CPU. - Two unbuffered RS-232C ports. - HP A1404A 8 Mbyte ECC memory card. - Enclosure 310 mm (12.2 in.) high by 327 mm (12.88 in.) wide by 413 mm (16.25 in.) deep package with 12 single-high slots (11 available) for additional HP-PB memory or I/O cards or Battery Backup, and power supply. - Hardware documentation. - HP 92675B 8-User HP-UX License and General Usage Documentation Set. Software on tape media is orderable separately. - On-site installation assistance. 90-day on-site warranty.
Options	
Opt. 828	Adds Floating-Point Coprocessor.

Model 815S Business Server, continued

Model 815S Integrated Business Server Bundle

Product/ Opt. No.	Description
A1071A	Model 815S Integrated Business Server Bundle, consisting of: ● HP A1410A Model 815S System Processor Unit, as described above. ● HP 28650A HP-IB Disk/Tape Interface, including one meter HP-IB cable (uses one single-high HP-PB backplane slot). ● One HP 40299B 8-Channel Multiplexer Interfaces, including breakout panels (uses two single-high HP-PB backplane slots). ● HP A1407A Battery Backup Subsystem (uses one single-high HP-PB backplane slot). ● HP C2200A 335-Mbyte Disk Drive with one meter HP-IB cable. ● HP 9144A 67-Mbyte 16-channel 1/4-inch Cartridge Tape Subsystem. ● 8-user HP-UX License and General Usage Documentation. ● HP 40242M Cable to system console terminal (terminal purchased separately). ● Customer Convenience Kit, including: ● Installation of memory and I/O cards in the SPU at the factory. ● Installation of HP-UX on the disk at factory. ● Installation of option 012 LAN/9000 Series 800 Link interface and networking software, if ordered. ● HP 92211R DesignPlus Cabinet. ● Racking of configured system components in cabinet at the factory and single shipment. <i>Note: On-site installation Assistance is available for the integrated bundle as the A1071A + 17A product.</i>
Options	
Opt. 002	Adds one HP A1404A 8 Mbyte ECC Memory Card (max. of six – each uses one HP-PB single-high backplane slot).
Opt. 828	Adds Floating-Point Coprocessor.
Opt. 009	Substitutes HP C2203A 670-Mbyte Disk Drive for C2200A Disk Drive.
Opt. 004	Substitutes HP 9145A 134-Mbyte 32-channel Cartridge Tape Subsystem for HP 9144A 67 Mbyte 16-channel Cartridge Tape Subsystem.
Opt. 602	Adds one 40299A 8-channel multiplexer.
Opt. 012	Adds HP 36967A LAN/9000 Series 800 Link interface (uses one double-high HP-PB backplane slot), ARPA, and NFS Services.
Opt. 020	Provides HP-UX software on 1/4-inch Cartridge Tape and System Administration Documentation.
Add-on Accessories	
A1404A	8 Mbyte ECC memory card (uses one single-height HP-PB backplane slot).
A1406A	Floating-Point Coprocessor.
A1407A	Battery Backup System (uses one HP-PB single-height backplane slot).
B2438A	HP-UX 8.0 Server Operating System
B2459A	HP-UX 8.0 User Licenses
B2437A	HP-UX 8.0 Documentation

HP-PB Interfaces

See page 163.

System Rack Mounting

For information on rack mounting of systems based on the Model 815S, see page 245.

Operational Requirements

Description	Requirements
Operating System	HP 92675B Option AA0 HP-UX software on 1/4-inch cartridge tape with System Administration Documentation must be available for installation on all licensed systems at a site (Not required for the A1071A Integrated System Bundle, HP-UX installed on system disk at factory, media available as Opt. 020).
System Console	An HP C1001A/G/W, C1002A/G/W, or discontinued HP 2392A Option S12 terminal, connected to RS-232C Port A via HP 40242ML cable. <i>NOTE: The HP A1071A Integrated Model 815S system includes the system console connect cable.</i>
System Disk	A system disk, selected from those listed in the Mass Storage Devices section on page NO TAG, or comparable support from a LAN-connected network server. The required cable to the required HP 28650A HP-IB interface will be listed with the disk choices if it is not included with the disk. <i>NOTE: The HP A1071A Integrated Model 815S system satisfies this requirement with its included 304 Mbyte disk.</i>
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195, or comparable support from a LAN-connected network server. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired software installation/backup device. <i>NOTE: The HP A1071A Integrated Model 815S system satisfies this requirement with its included Cartridge Tape Subsystem.</i>

Model 822S Business Server

Description

The HP 9000 Series 800 Model 822S is the low-end system that is available in an integrated package. This compact system includes a processor with one to four embedded disk drives and one embedded Digital Data Storage (DDS) cartridge tape drive. This package, which measures 75 cm high, 37.5 cm wide, and 71 cm deep, has been uniquely designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 822S package supports up to four disk drives internally which can either be the 335-Mbyte and 670-Mbyte 5.25-inch disk drive mechanisms. Additional disk storage is available using external standalone disk mechanisms. With HP-IB external standalone disks, the Model 822S supports a maximum of 8.0 Gbytes. Using HP-FL external standalone disks combined with the HP-IB internal disks, the Model 822S supports a maximum of 24.1 Gbytes.

Cost-effective backup for the Model 822S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the deskside package, stores up to 1.3 Gbytes of data on a single DAT cassette, measuring only 7.3x5.4x1.05 cm. The transfer rate is 183 Kbytes per second which translates into a 2 hour period required for backing up 1.3 Gbytes of data.

The system also features HP Precision Bus (HP-PB) as the system bus that interfaces the PA-RISC processor with memory and I/O (see Figure 5). The HP-PB synchronously transfers processor, memory, and I/O data over a 32-bit data path. Data is transferred at a maximum sustained throughput speed of 21 Mbytes/sec. The HP-PB backplane interconnects processor, memory, and I/O cards.

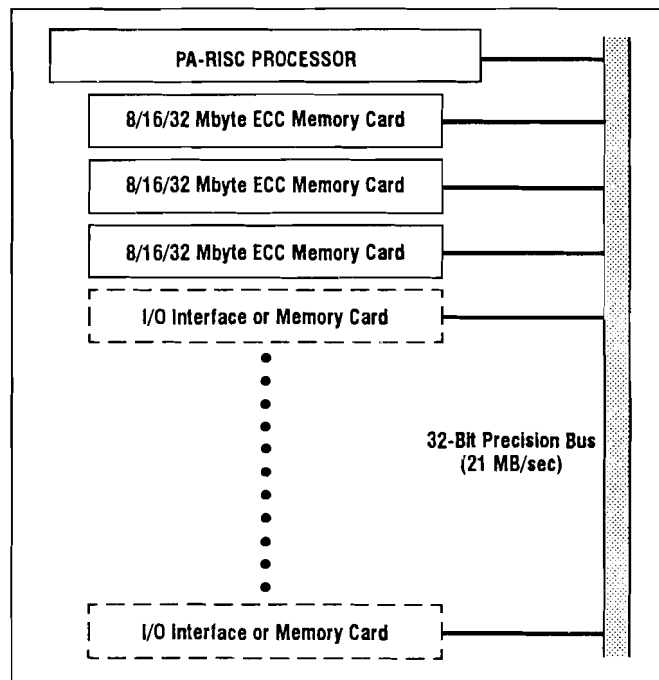


Figure 13. Model 822S Bus Relationships

The HP 9000 Model 822S backplane has 16 HP Precision Bus slots available for the processor, memory, and I/O cards. One slot is utilized by the processor card, leaving 15 slots for memory and I/O cards.

In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O and memory cards. As shown in Figure 6, this integrated package has 4 single-high and 11 double-high slots. Each double-high slot has just one logical connection to the bus and therefore can only support one double-high card or one single-high card. The three slots accessible from the front of the package can support memory cards only.

The card cage for the Model 822S is shown in Figure 6. The 822S base system comes standard with one 8-channel MUX card, one HP-IB card, and one 8-Mbyte card leaving 12 available slots.

The single-high Precision Bus cards include the 8 or 16-channel MUX, SCSI/Parallel, HP-IB, GP-IO, 8-Mbyte, 16-Mbyte, and 32-Mbyte memory cards, the X.25/9000 Link, and the SNA Link. These single-high cards can also be installed in the double-high slot.

The double-high cards that require a double-high slot are the LAN/9000 Link, PBA-FL interface, and the MAP 3.0 Link.

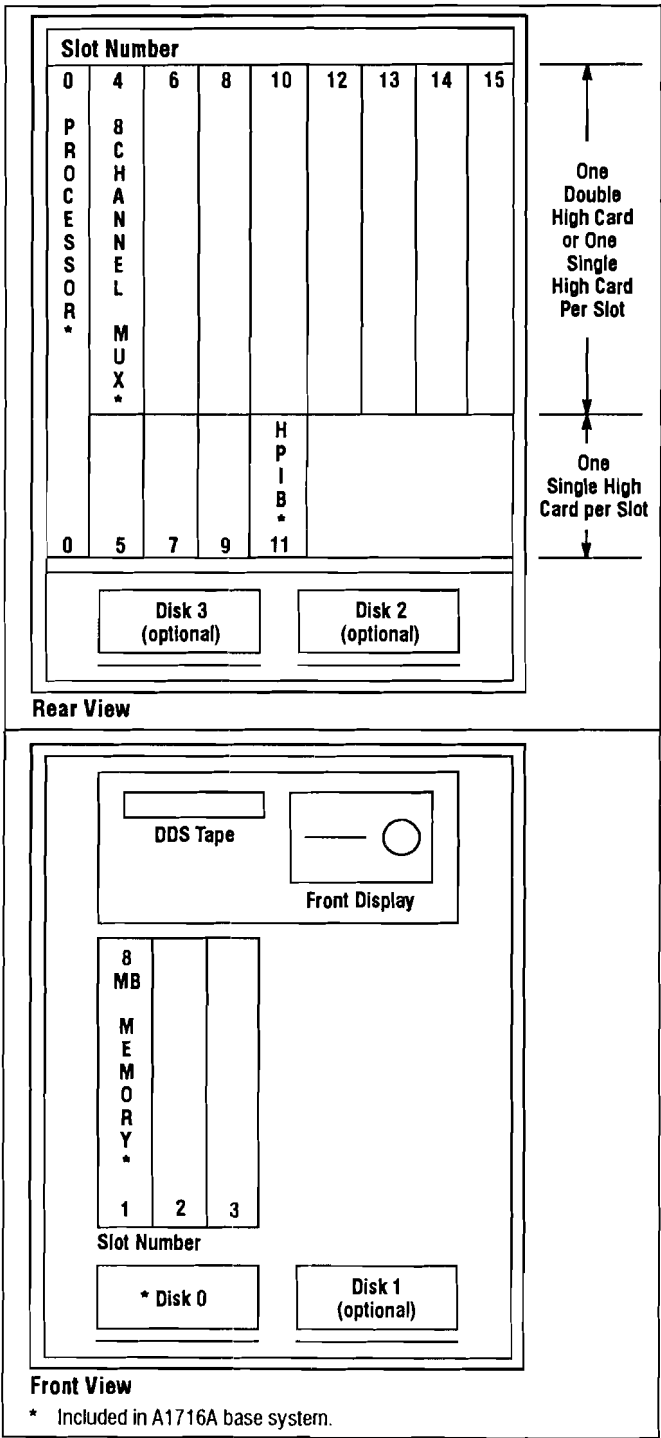


Figure 14. Model 822S System Layout

Note: Slots 1, 2 and 3 are usable for memory only.
Slots 4 through 15 are usable for memory or I/O.

Model 822S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1716A	Model 822S Integrated Business Server consisting of: • PA-RISC System Processor • Hardware Documentation • Floating point coprocessor • Integrated cabinet, power supply, and Precision Bus • 8-Mbyte Error-Checking and Correcting (ECC) RAM memory (A1404A) • One 8-Channel Serial Multiplexers (40299B) • 335-Mbyte embedded disk drive (C2281A) • 1.3-Gbyte DDS embedded cartridge tape drive • HP-IB (IEEE 488) Interface (28650A) • C1001G (700/92 console with cable) • Powerfail battery backup • 8-user HP-UX license and General Usage Documentation • Customer Convenience Kit including: • Pre-installed I/O & memory cards • HP-UX preconfigured and pre-installed on disk • Power-up documentation • HP site preparation and installation is included
Options	
Opt. AA0	HP-UX on 1/4" Cartridge Tape with System Admin Docts
Opt. AA1	HP-UX on 1/2" Mag. Tape with System Admin Docts
Opt. AAH	HP-UX on DDS Tape with System Admin Docts
Opt. 002	Increase disk capacity to .6 Gbytes (1–670MB) (C2282A)
Opt. 003	Increase disk capacity to .9 Gbytes (1–670MB/1–335MB) (C2282A/C2281A)
Opt. 004	Increase disk capacity to 1.3 Gbytes (2–670MB) (C2282A)
Opt. 005	Increase disk capacity to 1.6 Gbytes (2–670/1–335) (C2282A/C2281A)
Opt. 006	Increase disk capacity to 2.0 Gbytes (3–670MB) (C2282A)
Opt. 007	Increase disk capacity to 2.3 Gbytes (3–670/1–335) (C2282A/C2281A) and add a second HP-IB card (28650A)
Opt. 008	Increase disk capacity to 2.6 Gbytes (4–670MB) (C2282A) and add a second HP-IB card (28650A)
Opt. 014	Add LANLink(1 DH slots), ARPA, & NFS Services (ThinMAU and ThickMAU included)
Opt. 402	Add one HP-IB (for external devices only)
Opt. 502	Increase main memory to 16 MB (Add 8 Mbytes for a total of 1-16 Mbyte card (A1436A)
Opt. 503	Increase main memory to 24 MB (Add 16 Mbytes for a total of 1-16 Mbyte card (A1436A) and 1-8 Mbyte card (A1404A)
Opt. 504	Increase main memory to 32 MB (Add 24 Mbytes for a total of 1-32 Mbyte card (A1437A)
Opt. 505	Increase main memory to 40 MB (Add 32 Mbytes for a total of 1-32 Mbyte card (A1437A) and 1-8 Mbyte card (A1404A)
Opt. 506	Increase main memory to 48 MB (Add 40 Mbytes for a total of 1-32 Mbyte card (A1437A) and 1-16 Mbyte card (A1436A)
Opt. 602	Add one MUX card (total of 2 cards or 16 ports) (40299B)
Opt. 603	Add one MUX cards (total of 3 cards or 24 ports) (40299B)
Opt. 604	Add two MUX cards (total of 4 cards or 32 ports) (40299B)
Opt. 1B6	DELETE CONSOLE
Opt. 1C4	DELETE DDS TAPE DEVICE. Must order external device

Model 822S Business Server, continued

HP-PB Interfaces

See page 163.

Operational Requirements for Model 822S

Description	Requirements
Operating System	HP-UX software is required for Model 822S system operation and is included as part of A1716A base system.
System Console	A C1001A/G/W terminal is required for Model 822S system console and is included as part of A1716A base system.
System Disk	A system disk is required for Model 822S system operation and is included as part of A1716A base system.
Tape Drive	A tape drive is required for Model 822S system operation and is included as part of the A1716A base system with the integrated Digital Data Storage cartridge tape drive (Digital Audio Tape). Optionally, a customer can delete the DDS tape drive from the A1716A base system with option 1C4. In this case, an external install/backup device must be selected from those listed in the Tape Drives section on page 195. The required HP-IB cable will be listed with the cartridge of magnetic tape choices if it is not included with the desired software installation/backup device.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone. HP-UX environments.

Model 832S Business Server

Description

The HP 9000 Series 800 Model 832S is a midrange system that is available in an integrated package. This compact system includes a processor with one to four embedded disk drives and one embedded Digital Data Storage (DDS) cartridge tape drive. This package, which measures 75 cm high, 37.5 cm wide, and 71 cm deep, has been uniquely designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 832S package supports up to four disk drives internally which can either be the 335-Mbyte and 670-Mbyte 5.25-inch disk drive mechanisms. Additional disk storage is available using external standalone disk mechanisms. With HP-IB external standalone disks, the Model 832S supports a maximum of 8.0-Gbytes. Using HP-FL external standalone disks combined with the HP-IB internal disks, the Model 832S support a maximum of 24.1-Gbytes.

Cost-effective backup for the Model 832S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the deskside package, stores up to 1.3 Gbytes of data on a single DAT cassette, measuring only 7.3x5.4x1.05 cm. The transfer rate is 183 Kbytes per second which translates into a 2 hour period required for backing up 1.3 Gbytes of data.

The system also feature HP Precision Bus (HP-PB) as the system bus that interfaces the PA-RISC processor with memory and I/O (see Figure 7). The HP-PB synchronously transfers processor, memory, and I/O data over a 32-bit data path. Data is transferred at a maximum sustained throughput speed of 21 Mbytes/sec. The HP-PB backplane interconnects processor, memory, and I/O cards.

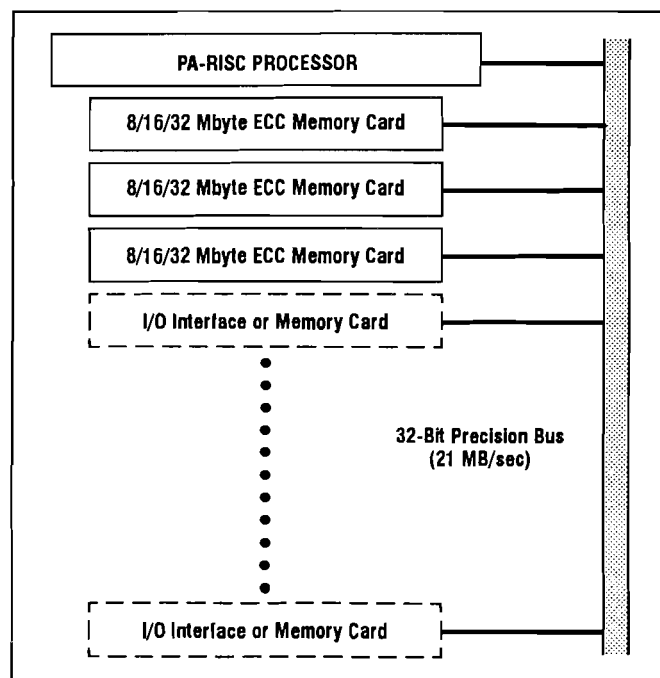


Figure 15. Model 832S Bus Relationships

The HP 9000 Model 832S backplane has 16 HP Precision Bus slots available for the processor, memory, and I/O cards. One slot is utilized by the processor card, leaving 15 slots for memory and I/O cards.

In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O and memory cards. As shown in Figure 8, this integrated package has 4 single-high and 11 double-high slots. Each double-high slot has just one logical connection to the bus and therefore can only support one double-high card or one single-high card. The three slots accessible from the front of the package can support memory cards only.

The card cage for the Model 832S is shown in Figure 8. The 832S base system comes standard with one 8-channel MUX card, one HP-IB card, and one 16-Mbyte card leaving 12 available slots.

The single-high Precision Bus cards include the 8 or 16-channel MUX, SCSI Parallel, HP-IB, GP-IO, 8-Mbyte, 16-Mbyte, and 32-Mbyte memory cards, the X.25/9000 Link, and the SNA Link. These single-high cards can also be installed in the double-high slot.

The double-high cards that require a double-high slot are the LAN/9000 Link, PBA-FL, and the MAP 3.0 Link.

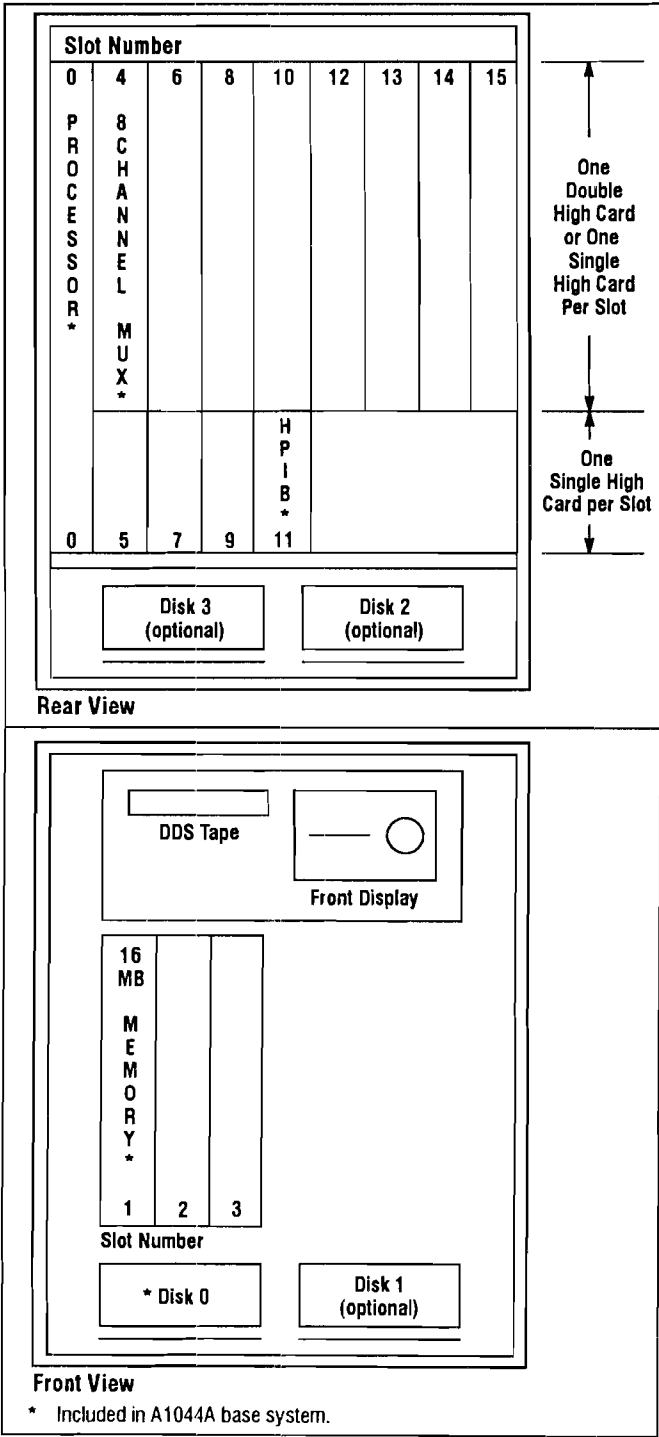


Figure 16. Model 832S System Layout

Note: Slots 1, 2 and 3 are usable for memory only.
Slots 4 through 15 are usable for memory or I/O.

Model 832S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1044A	Model 832S Integrated Business Server consisting of: ● PA-RISC System Processor ● Hardware Documentation ● Floating point coprocessor ● Integrated cabinet, power supply, and Precision Bus ● 16-Mbyte Error-Checking and Correcting (ECC) RAM memory (A1436A) ● One 8-Channel Serial Multiplexers (40299B) ● 335-Mbyte embedded disk drive (C2281A) ● 1.3-Gbyte DDS embedded cartridge tape drive ● HP-IB (IEEE 488) Interface (28650A) ● C1001G (700/92 console with cable) ● Powerfail battery backup ● 8-user HP-UX license and General Usage Documentation ● Customer Convenience Kit including: ● Pre-installed I/O & memory cards ● HP-UX preconfigured and pre-installed on disc ● Power-up documentation ● HP site preparation and installation is included
Options	
Opt. AA0	HP-UX on 1/4" Cartridge Tape with System Admin Docts
Opt. AA1	HP-UX on 1/2" Mag. Tape with System Admin Docts
Opt. AAH	HP-UX on DDS Tape with System Admin Docts
Opt. 002	Increase disk capacity to .6 Gbytes (1-670MB) (C2282A)
Opt. 003	Increase disk capacity to 1.0 Gbytes (1-670MB/1-335MB) (C2281A/C2282A)
Opt. 004	Increase disk capacity to 1.3 Gbytes (2-670MB) (C2282A)
Opt. 005	Increase disk capacity to 1.6 Gbytes (2-670/1-335) (C2281A/C2282A)
Opt. 006	Increase disk capacity to 2.0 Gbytes (3-670MB) (C2282A)
Opt. 007	Increase disk capacity to 2.3 Gbytes (3-670/1-335) (C2281A/C2282A) and add a second HP-IB card (28650A)
Opt. 008	Increase disk capacity to 2.6 Gbytes (4-670MB) (C2282A) and add a second HP-IB card (28650A)
Opt. 014	Add LANLink(1 DH slots), ARPA, & NFS Services (ThinMAU and ThickMAU included)
Opt. 402	Add one HP-IB (total of two) (28650A)
Opt. 503	Increase main memory to 24 MB. Add 8-Mbytes for a total of 1-16 Mbyte card (A1436A) and 1-8 Mbyte card (A1404A)
Opt. 504	Increase main memory to 32 MB. Add 16 Mbytes for a total of 1-32 Mbyte card (A1437A)
Opt. 505	Increase main memory to 40 MB. Add 24 Mbytes for a total of 1-32 Mbyte card (A1437A) and 1-8 Mbyte card (A1404A)
Opt. 506	Increase main memory to 48 MB. Add 32 Mbytes for a total of 1-32 Mbyte card (A1437A) and 1-16 Mbyte card (A1436A)
Opt. 507	Increase main memory to 56 MB. Add 40 Mbytes for a total of 1-32 Mbyte card (A1437A), 1-16 Mbyte (A1436A), 1-8 Mbyte (A1404A)
Opt. 508	Increase main memory to 64 MB. Add 48 Mbytes for a total of 2-32 Mbyte cards (A1437A)
Opt. 602	Add one MUX cards (total of 2 cards or 16 ports) (40299B)
Opt. 603	Add two MUX cards (total of 3 cards or 24 ports) (40299B)
Opt. 604	Add three MUX cards (total of 4 cards or 32 ports) (40299B)
Opt. 605	Add four MUX cards (total of 5 cards or 40 ports) (40299B)
Opt. 606	Add five MUX cards (total of 6 cards or 48 ports) (40299B)
Opt. 607	Add six MUX cards (total of 7 cards or 56 ports) (40299B)
Opt. 608	Add seven MUX cards (total of 8 cards or 64 ports) (40299B)
Opt. 1B6	DELETE CONSOLE
Opt. 1C4	DELETE DDS TAPE DEVICE. Must order external device

HP-PB Interfaces

See page 163.

Operational Requirements for Model 832S

Description	Requirements
Operating System	HP-UX software is required for Model 832S system operation and is included as part of A1044A base system.
System Console	A C1001A/G/W terminal is required for Model 832S system console and is included as part of A1044A base system.
System Disk	A system disk is required for Model 832S system operation and is included as part of A1044A base system.
Tape Drive	A tape drive is required for Model 832S system operation and is included as part of A1044A base system with the integrated Digital Data Storage cartridge tape drive (Digital Audio Tape). Optionally, a customer can delete the DDS tape drive from A1044A base system with option 1C4. In this case, an external install/backup device must be selected from those listed in the Tape Drives section on page 1955. The required HP-IB cable will be listed with the cartridge of magnetic tape choices if it is not included with the desired software installation/backup device.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone, HP-UX environments.

Model 842S Business Server

Description

The HP 9000 Series 800 Model 842S is a midrange system that is available in an integrated package. This compact system includes a processor with one to four embedded disk drives and one embedded Digital Data Storage (DDS) cartridge tape drive. This package, which measures 75 cm high, 37.5 cm wide, and 71 cm deep, has been uniquely designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 842S package supports up to four internal 670-Mbyte 5.25-inch disk drive mechanisms. Additional disk storage is available using external standalone disk mechanisms. With HP-IB external standalone disks, the Model 842S supports a maximum of 8.0 Gbytes. Using HP-FL external standalone disks combined with the HP-IB internal disks, the Model 842S supports a maximum of 45.5 Gbytes.

Cost-effective backup for the Model 842S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the deskside package, stores up to 1.3 Gbytes of data on a single DAT cassette, measuring only 7.3x5.4x1.05 cm. The transfer rate is 183 Kbytes per second which translates into a 2 hour period required for backing up 1.3 Gbytes of data.

The system also features HP Precision Bus (HP-PB) as the system bus that interfaces the PA-RISC processor with memory and I/O (see Figure 9). The HP-PB synchronously transfers processor, memory, and I/O data over a 32-bit data path. Data is transferred at a maximum sustained throughput speed of 21 Mbytes/sec. The HP-PB backplane interconnects processor, memory, and I/O cards.

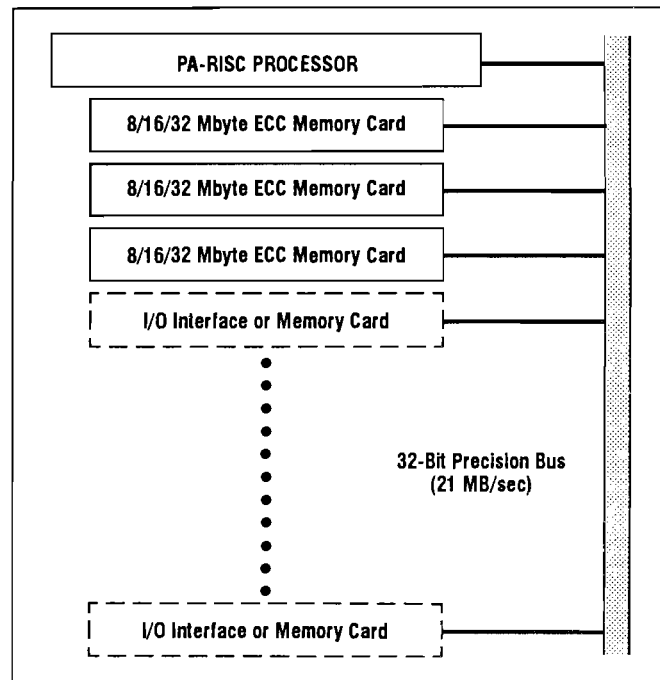


Figure 17. Model 842S Bus Relationships

The HP 9000 Model 842S backplane has 16 HP Precision Bus slots available for the processor, memory, and I/O cards. One slot is utilized by the processor card, leaving 15 slots for memory and I/O cards.

In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O and memory cards. As shown in Figure 10, this integrated package has 4 single-high and 11 double-high slots. Each double-high slot has just one logical connection to the bus and therefore can only support one double-high card or one single-high card. The three slots accessible from the front of the package can support memory cards only.

The card cage for the Models 842S is shown in Figure 10. The 842S base system comes standard with one 8 or 16-channel MUX card, one HP-IB card, and one 32-Mbyte card leaving 12 available slots.

The single-high Precision Bus cards include the 8-channel MUX, SCSI Parallel, HP-IB, GP-IO, 8-Mbyte, 16-Mbyte, and 32-Mbyte memory cards, the X.25/9000 Link, and the SNA Link. These single-high cards can also be installed in the double-high slot.

The double-high cards that require a double-high slot are the LAN/9000 Link, PBA-FL interface, and the MAP 3.0 Link.

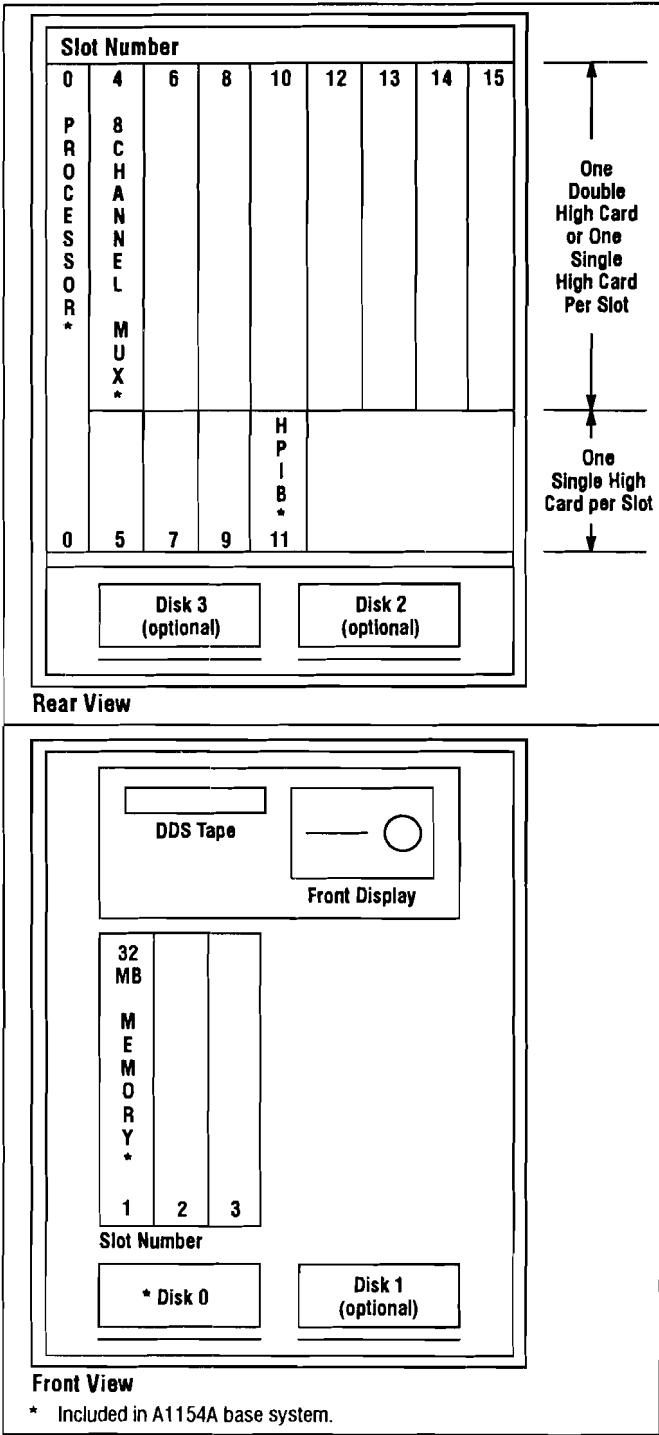


Figure 18. Model 842S System Layout

Note: Slots 1, 2 and 3 are usable for memory only.
Slots 4 through 15 are usable for memory or I/O.

Model 842S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1154A	Model 842S Integrated Business Server consisting of: • PA-RISC System Processor • Hardware Documentation • Integrated cabinet, power supply, and Precision Bus • 32-Mbyte Error-Checking and Correcting (ECC) RAM memory (A1437A) • One 8-Channel Serial Multiplexers (40299B) • 670-Mbyte embedded HP-IB disk drive (C2282A) • 1.3-Gbyte DDS embedded HP-IB cartridge tape drive • HP-IB Interface (28650A) • C1001G (700/92 console with cable) • Powerfail battery backup • 8-User HP-UX License and General Usage Documentation • Customer Convenience Kit including: • Pre-installed I/O & memory cards • Factory installation of HP-UX on the disk • Power-up documentation • HP site preparation and installation is included
Options	
Opt. 8Z7	Add Floating Point Coprocessor
Opt. AA0	HP-UX on 1/4" Cartridge Tape with System Admin Docts
Opt. AA1	HP-UX on 1/2" Mag. Tape with System Admin Docts
Opt. AAH	HP-UX on DDS Tape with System Admin Docts
Opt. 004	Increase disk capacity to 1.3 Gbytes (2-670 MB) (C2282A)
Opt. 006	Increase disk capacity to 2.0 Gbytes (3-670MB) (C2282A)
Opt. 008	Increase disk capacity to 2.6 Gbytes (4-670MB) and add second HP-IB interface card (C2282A) (28650A)
Opt. 014	Add LANlink (1 DH slot), TCP/IP, ARPA, and NFS Services. ThinMAU and ThickMAU included.
Opt. 402	Add one HP-IB interface (28650A)
Opt. 503	Increase main memory to 48 Mbytes (add 16 Mbytes for a total of 1 16MB card and 1 32MB card) (A1436A/A1437A)
Opt. 504	Increase main memory to 64 Mbytes (add 32 Mbytes for a total of 2 32MB cards) (A1437A)
Opt. 505	Increase main memory to 80 Mbytes (add 48 Mbytes for a total of 1 16MB card and 2 32MB cards) (A1436A/A1437A)
Opt. 506	Increase main memory to 96 Mbytes (add 64 Mbytes for a total of 3 32MB cards) (A1437A)
Opt. 602	Add one MUX card (total of 2 cards or 16 ports) (40299B)
Opt. 604	Add three MUX card (total of 4 cards or 32 ports) (40299B)
Opt. 606	Add five MUX cards (total of 6 cards or 48 ports) (40299B)
Opt. 608	Add seven MUX cards (total of 8 cards or 64 ports) (40299B)
Opt. 1B6	DELETE Console
Opt. 1C4	DELETE DDS Tape Device. Must order external device

Model 842S Business Server, continued

HP-PB Interfaces

See page 163.

Operational Requirements for Model 842S

Description	Requirements
Operating System	HP-UX software is required for Model 842S system operation and is included as part of A1154A base system.
System Console	A C1001A/G/W terminal is required for Model 842S system console and is included as part of A1154A base system.
System Disk	A system disk is required for Model 842S system operation and is included as part of A1154A base system.
Tape Drive	A tape drive is required for Model 842S system operation and is included as part of A1154A base system with the integrated Digital Data Storage cartridge tape drive (Digital Audio Tape). Optionally, a customer can delete the DDS tape drive from the A1154A base system with option 1C4. In this case, an external install/backup device must be selected from those listed in the Tape Drives section on page 195. The required HP-IB cable will be listed with the cartridge of magnetic tape choices if it is not included with the desired software installation/backup device.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone. HP-UX environments.

Model 852S Business Server

Description

The HP 9000 Series 800 Model 852S is a midrange system that is available in an integrated package. This compact system includes a processor with one to four embedded disk drives and one embedded Digital Data Storage (DDS) cartridge tape drive. This package, which measures 75 cm high, 37.5 cm wide, and 71 cm deep, has been uniquely designed to hold an entire system in a small amount of space, maximizing the utility of office or computer room space.

The Model 852S package supports up to four internal 670-Mbyte 5.25-inch disk drive mechanisms. Additional disk storage is available using external standalone disk mechanisms. With HP-IB external standalone disks, the Model 832S supports a maximum of 8.0 Gbytes. Using HP-FL external standalone disks combined with the HP-IB internal disks, the Model 852S supports a maximum of 45.5 Gbytes.

Cost-effective backup for the Model 852S is provided with HP's Digital Audio Tape (DAT) unit which uses the Digital Data Storage (DDS) format. The DDS backup unit, integrated in the desktide package, stores up to 1.3 Gbytes of data on a single DAT cassette, measuring only 7.3x5.4x1.05 cm. The transfer rate is 183 Kbytes per second which translates into a 2 hour period required for backing up 1.3 Gbytes of data.

The systems also feature HP Precision Bus (HP-PB) as the system bus that interfaces the PA-RISC processor with memory and I/O (see Figure 19). The HP-PB synchronously transfers processor, memory, and I/O data over a 32-bit data path. Data is transferred at a maximum sustained throughput speed of 21 Mbytes/sec. The HP-PB backplane interconnects processor, memory, and I/O cards.

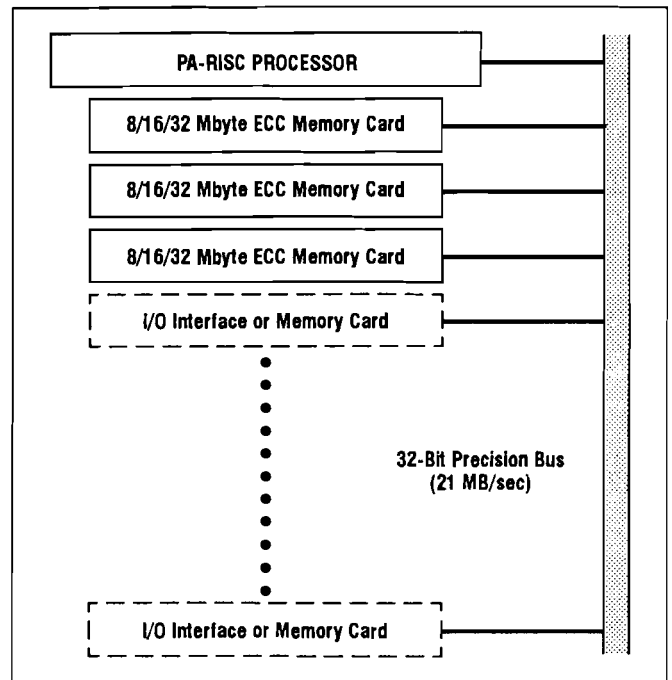


Figure 19. Model 852S Bus Relationships

The HP 9000 Model 852S backplane has 16 HP Precision Bus slots available for the processor, memory, and I/O cards. One slot is utilized by the processor card, leaving 15 slots for memory and I/O cards.

In compliance with the Eurocard standard, the HP-PB is designed to accommodate single-high and double-high I/O and memory cards. As shown in Figure 20, this integrated package has 4 single-high and 11 double-high slots. Each double-high slot has just one logical connection to the bus and therefore can only support one double-high card or one single-high card. The three slots accessible from the front of the package can support memory cards only.

The card cage for the Model 852S is shown in Figure 20. The 852S base system comes standard with one 8-channel MUX card, one HP-IB card, and two 32-Mbyte cards leaving 11 available slots.

The single-high Precision Bus cards include the 8 or 16-channel MUX, SCSI Parallel, HP-IB, GP-IO, 8-Mbyte, 16-Mbyte, and 32-Mbyte memory cards, the X.25/9000 Link, and the SNA Link. These single-high cards can also be installed in the double-high slot.

The double-high cards that require a double-high slot are the LAN/9000 Link, PBA-FL interface, and the MAP 3.0 Link.

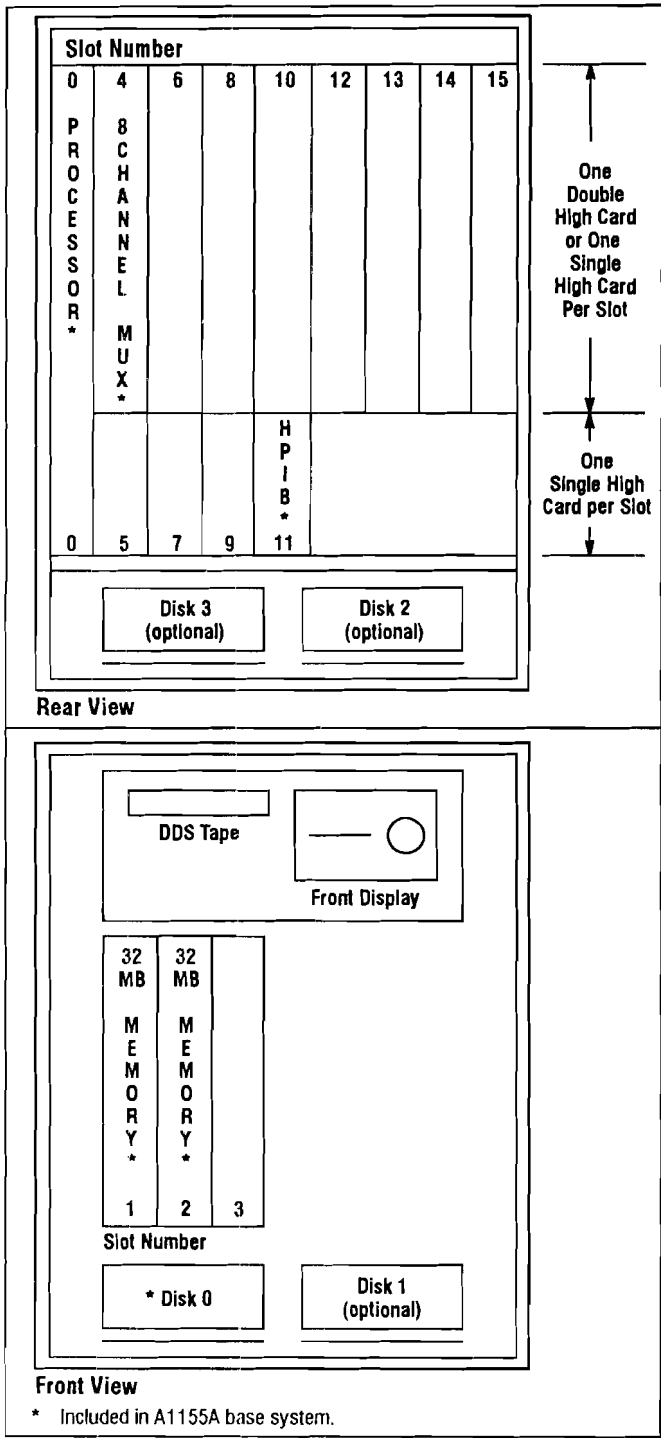


Figure 20. Model 852S System Layout

Note: Slots 1, 2 and 3 are usable for memory only.
Slots 4 through 15 are usable for memory or I/O.

Model 852S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1155A	Model 852S Integrated Business Server consisting of: • PA-RISC System Processor • Hardware Documentation • Integrated cabinet, power supply, and Native I/O Bus • 64-Mbyte Error-Checking and Correcting (ECC) RAM memory (A1437A) • One 8-Channel Serial Multiplexers (40299B) • 670-Mbyte embedded HP-IB disk drive (C2282A) • 1.3-Gbyte DDS embedded HP-IB cartridge tape drive • HP-IB Interface (28650A) • C1001G (700/92 console with cable) • Powerfail battery backup • 8-User HP-UX License and General Usage Documentation • Customer Convenience Kit, including: • Pre-installed I/O & memory cards • Factory installation of HP-UX on the disk • Power-up documentation • HP site preparation and installation is included
Options	
Opt. 8Z7	Add Floating Point Coprocessor
Opt. AA0	HP-UX on 1/4" Cartridge Tape with System Admin Docts
Opt. AA1	HP-UX on 1/2" Mag. Tape with System Admin Docts
Opt. AAH	HP-UX on DDS Tape with System Admin Docts
Opt. 004	Increase disk capacity to 1.3 Gbytes (2–670MB) (C2282A)
Opt. 006	Increase disk capacity to 2.0 Gbytes (3–670MB) (C2282A)
Opt. 008	Increase disk capacity to 2.6 Gbytes (4–670MB) and add second HP-IB interface card (C2282A/28650A)
Opt. 014	Add LANlink (1 DH slot), TCP/IP, ARPA, and NFS Services. ThinMAU and ThickMAU included.
Opt. 402	Add one HPIB interface
Opt. 505	Increase main memory to 80 Mbytes (add 16 Mbytes for a total of 1 16MB card and 2 32MB card) (A1436A/A1437A)
Opt. 506	Increase main memory to 96 Mbytes (add 32 Mbytes for a total of 3 32MB cards) (A1437A)
Opt. 507	Increase main memory to 112 Mbytes (add 48 Mbytes for a total of 1 16MB card and 3 32MB cards) (A1436A/A1437A)
Opt. 508	Increase main memory to 128 Mbytes (add 64 Mbytes for a total of 4 32MB cards) (A1437A)
Opt. 602	Add one MUX card (total of 2 cards or 16 ports) (40299B)
Opt. 604	Add three MUX cards (total of 4 cards or 32 ports) (40299B)
Opt. 606	Add five MUX cards (total of 6 cards or 48 ports) (40299B)
Opt. 608	Add seven MUX cards (total of 8 cards or 64 ports) (40299B)
Opt. 1B6	DELETE Console
Opt. 1C4	DELETE DDS Tape Device. Must order external device.
Opt. 0GH	Return Credit for Model 845S with 16 Mbyte memory
Opt. 0GJ	Return Credit for Model 845SE with 32 Mbytes memory

HP-PB Interfaces

See page 163.

Operational Requirements for Model 852S

Description	Requirements
Operating System	HP-UX software is required for Model 852S system operation and is included as part of A1155A base system.
System Console	A C1001A/G/W terminal is required for Model 852S system console and is included as part of A1155A base system.
System Disk	A system disk is required for Model 852S system operation and is included as part of A1155A base system.
Tape Drive	A tape drive is required for Model 852S system operation and is included as part of A1155A base system with the integrated Digital Data Storage cartridge tape drive (Digital Audio Tape). Optionally, a customer can delete the DDS tape drive from the A1155A base system with option 1C4. In this case, an external install/backup device must be selected from those listed in the Tape Drives section on page 195. The required HP-IB cable will be listed with the cartridge of magnetic tape choices if it is not included with the desired software installation/backup device.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone. HP-UX environments.

Model 808S Interfacing Worksheet

Recording Card Cage and Interface Use

This page and the next are designed to be duplicated on a copier and the records utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage Record

The Model 808S Card Cage Record, Figure 21 below, contains a diagram of the Model 808S card cage. The division between sets of I/O slots is shaded to indicate that the center guide slots can be removed to install double-high interfaces, such as the HP 36967A LAN Link Interface. Single-high interfaces in affected I/O slots have to move up to make room for double-high

interfaces. As you determine the need and add memory or interfaces, enter the respective product numbers into the card cage record.

Use of Model 808S Built-in Interfaces

RS-232C Interface A (System Console)*

Device P/N	Cable P/N

RS-232C Interface B

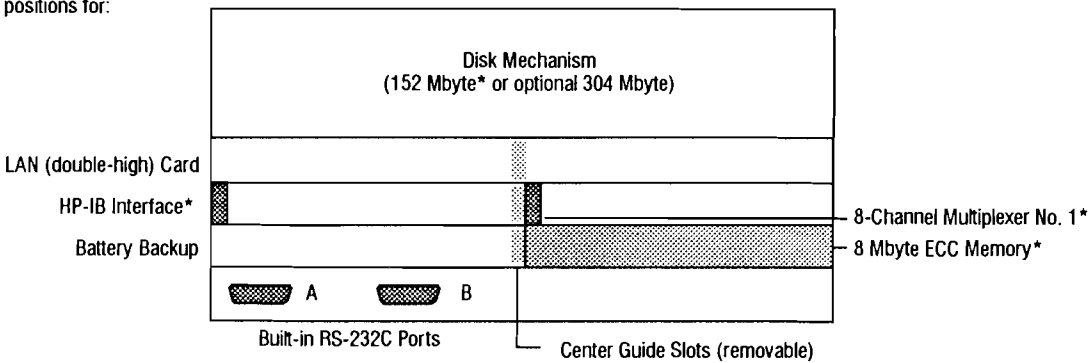
Device P/N	Cable P/N

NOTE: Ports A and B are unbuffered. They system console (usually connected to Port A) is the only device supported in these ports. They should not be used for modems, printers or black boxes.

MODEL 808S SYSTEM PROCESSOR UNIT CARD CAGE RECORD

Enter memory and I/O Cards by product number in the appropriate card cage for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 40299B-1, -2, etc. and HP-IB interfaces as 28650A-D1, -M1, -PL1, etc., for keying with the use records in the section on the next page.

Recommended positions for:



* Item included in A1625A System

Figure 21. Model 808S System Processor Unit Card Cage Record

The Multiplexer and Interface Use Records

On the next page are the Multiplexer and Interface Use records. Into a copy of these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 40299B 8-channel Multiplexer Interfaces. Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 28650A HP-IB interfaces or SCSI peripheral

devices via the HP 28655A (SCSI) parallel interface. An HP 28650A HP-IB interface dedicated to disk connections, and also usable for magnetic tape or cartridge tape connections, is designated D1 and one dedicated to plotter connections is designated PL1. In the HP A1625A Model 808S Business Server, one HP 40299B Multiplexer interface and one HP 28650A HP-IB interface are standard, and indicated as such in the record. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

Multiplexer & Interface Use Records for Model 808S

MULTIPLEXER AND HP-IB INTERFACE USE RECORDS FOR MODEL 808S

As each multiplexer and/or interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers interface you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

40299B Multiplexer No. 1 (Std*)

SCSI/Parallel No. 1

Device P/N	Cable P/N

Device P/N	Cable P/N

28650A HP-IB Interface No. D1 for Disks and/or Cartridge Tapes (Std*)

28650A HP-IB Interface No. D2 for Disks and/or Cartridge Tapes

28650A HP-IB Interface No. D3 for Disks and/or Cartridge Tapes

Device P/N	Cable P/N
	Included with I/F

Device P/N	Cable P/N
	Included with I/F

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. G1 for General HP-IB Devices

28650A HP-IB Interface No. G2 for General HP-IB Devices

28650A HP-IB Interface No. PL1 for Plotters

Device P/N	Cable P/N
	Included with I/F

Device P/N	Cable P/N
	Included with I/F

Device P/N	Cable P/N
	Included with I/F

* First HP 40299A Multiplexer and HP 28650A HP-IB D1 interface are standard with HP A1625A Model 808S configured system.

Model 815S Interfacing Worksheet

Recording Card Cage and Interface Use

This page and the next are designed to be duplicated on a copier and the records utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage Record

The Model 815S Card Cage Record, Figure 22 below, contains a diagram of the Model 815S card cage. The division between sets of I/O slots is shaded to indicate that the center guide slots can be removed to install double-high interfaces, such as the HP 36967A LAN Link Interface or the HP 36969A or 36970A OSI Express MAP 3.0 Link Interface (Map 3.0 Link requires 2 double-high slots). Single-high interfaces in affected I/O slots have to move up to make room for double-

high interfaces. As you determine the need and add memory or interfaces, enter the respective product numbers into the card cage record.

Use of Model 815S Built-in Interfaces

RS-232C Interface A (System Console)

Device P/N	Cable P/N

RS-232C Interface B

Device P/N	Cable P/N

NOTE: The 815 built in Ports A and B are unbuffered. The system console (usually connected to Port A) is the only device supported on these ports. They should not be used for modems, printers, or black boxes.

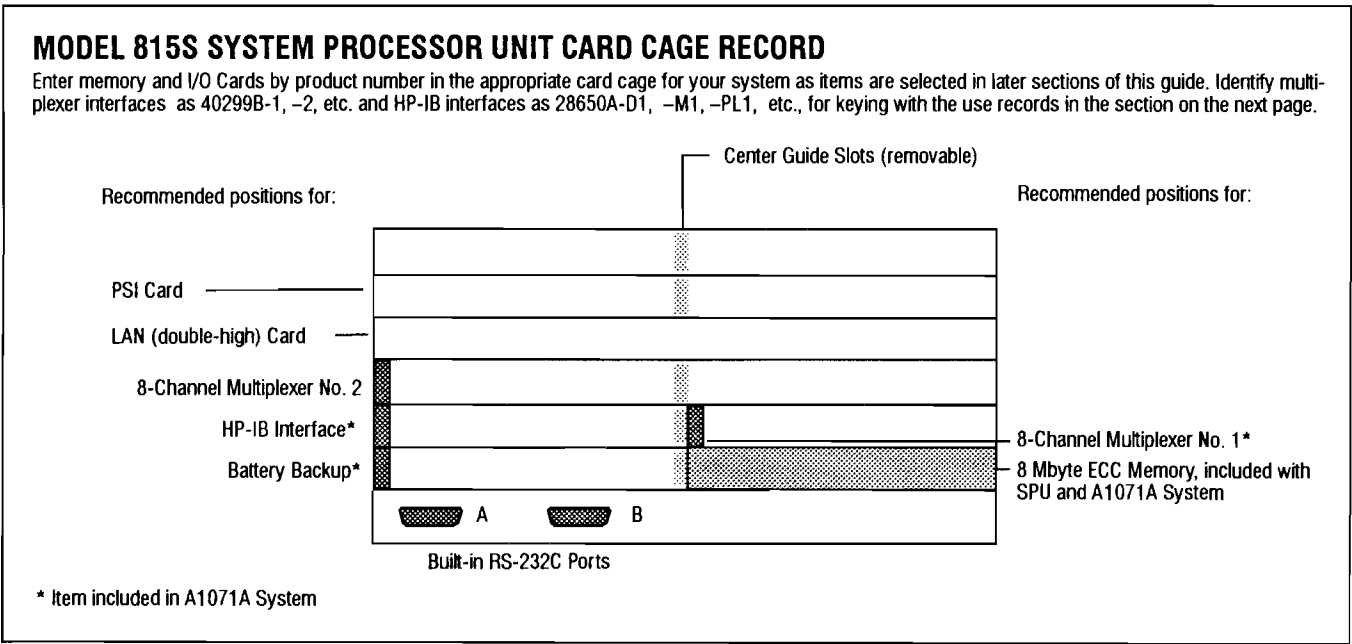


Figure 22. Model 815S System Processor Unit Card Cage Record

The Multiplexer and HP-IB Interface Use Records

On the next page are Multiplexer and HP-IB Interface Use records. Into a copy of these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 40299B 8-channel Multiplexer Interfaces. Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 28650A HP-IB interfaces, and SCSI pe-

ripheral devices via the HP28655A SCSI/parallel interface. An HP 28650A HP-IB interface dedicated to disk connections, and also usable for magnetic tape or cartridge tape connections, is designated D1 and one dedicated to plotter connections is designated PL1. In the HP A1071A Model 815S Business Server, one HP 40299B Multiplexer interfaces and one HP 28650A HP-IB interface are standard, and indicated as such in the record. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

Multiplexer & Interface Use Records for Model 815S

MULTIPLEXER AND INTERFACE USE RECORDS FOR MODEL 815S

As each multiplexer interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers, SCSI Parallel, and interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

40299B Multiplexer No. 1 (Std*)

Device P/N	Cable P/N

40299B Multiplexer No. 2

Device P/N	Cable P/N



SCSI/Parallel No. 1

Device P/N	Cable P/N

SCSI/Parallel No. 2

Device P/N	Cable P/N

SCSI/Parallel No. 3

Device P/N	Cable P/N

28650A HP-IB Interface No. D1 for Disks and/or Cartridge Tapes (Std*)

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. D2 for Disks and/or Cartridge Tapes

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. D3 for Disks and/or Cartridge Tapes

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. G1 for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. G2 for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

28650A HP-IB Interface No. PL1 for Plotters

Device P/N	Cable P/N
	Included with I/F

* First and second HP 40299A Multiplexers and HP 28650A HP-IB D1 interface are standard with HP A1071A Model 815S configured system.

Model 822S/832S/842S/852S Interfacing Worksheet

Recording Card Cage and Interface Use

This page and pages 71 and 73 are designed to be duplicated on a copier and the records utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The System Layout Record

The System Layout Record, Figure 24, contains a package diagram of the Models 822S, 832S, 842S, and 852S. As you configure your system with additional memory, I/O cards, disk storage, enter the respective option numbers and product numbers into the system layout record.

These HP 9000 Models 822S/832S/842S/852S are integrated Business Servers which provide processor, disk, tape, and I/O functionality in a single compact package. The product structures include options for including additional memory, disk storage, and I/O functionality to each base configuration. Everything that is included in the base product structure or added as an option to the base product structure is pre-installed in the package prior to customer shipment. For the slot location of the factory installed memory, I/O cards, and disk drives please refer to Table 2 and 3.

If the required configuration of the Model 822S/832S/842S/852S can not be met by the base product or its options, standalone accessory products will need to be ordered and installed at the customer site.

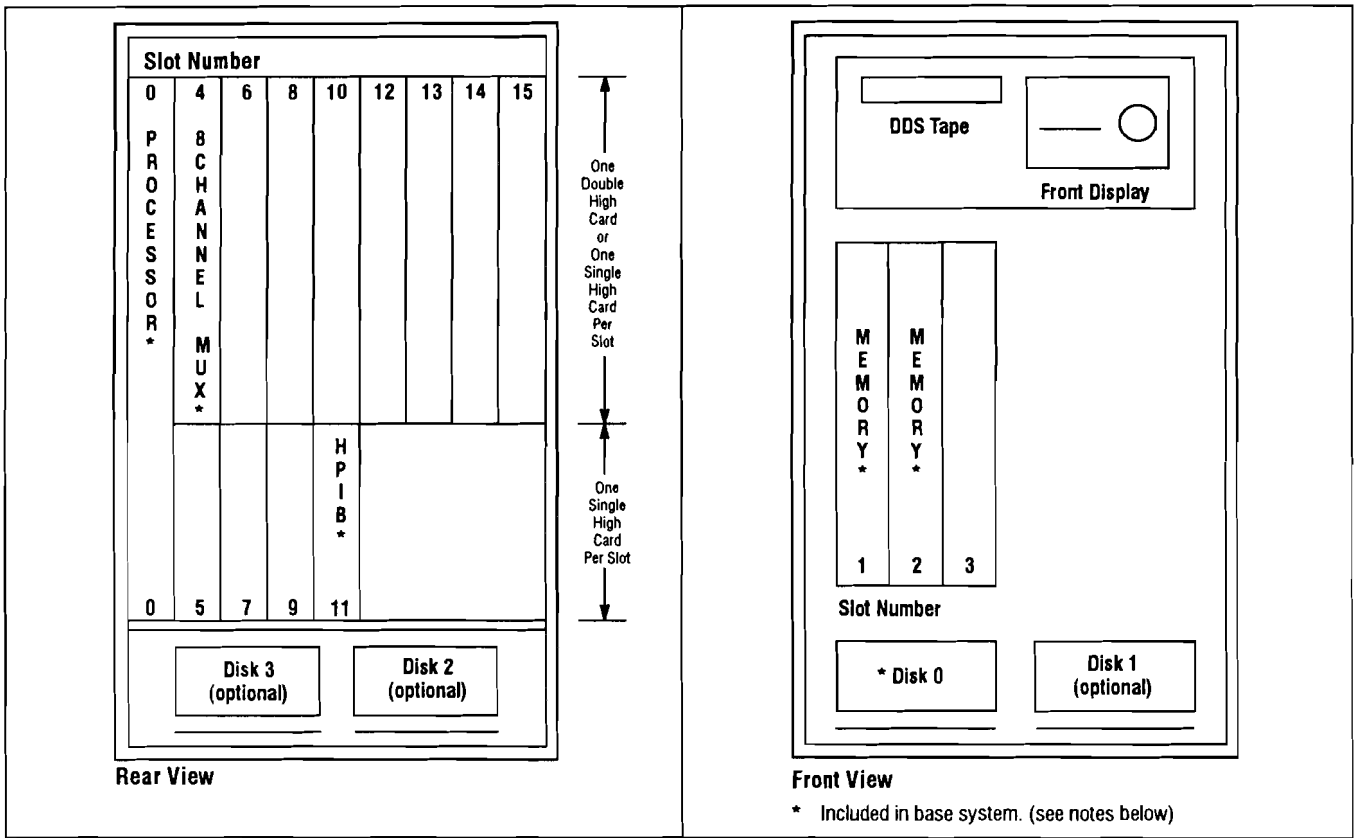


Figure 24. Model 822S/832S/842S/852S System Layout Record

Note 1: The Model 822S comes with one 8 Mbyte card installed in slot 1.

Note 2: The Model 832S comes with one 16 Mbyte card installed in slot 1.

Note 3: The Model 842S comes with one 32 Mbyte card installed in slot 1.

Note 4: The Model 852S comes with two 32 Mbyte cards installed in slots 1 and 2.

Model 822S/832S/842S/852S Interfacing Worksheet, continued

General Card Slot Requirements are Summarized Below:

- Single-high: 8- or 16-channel MUX, HP-IB, SCSI/Parallel, all memory cards, X.25 Link, SNA Link, and GP-IO card.
- Double-high: 802.3 LAN Link, OSI Express Map Link, Precision Bus Adapter Fiber Link card.

Additional memory

- Configuration rules
 - a. The Models 822S and 832S support a maximum of 128 Mbytes of memory.
 - b. The Models 842S and 852S support a maximum of 256 Mbytes of memory.
 - c. For systems with more than 64 Mbytes memory, then the maximum number of memory + PSI cards (x.25 link, SNA link) is limited to 8.
 - d. The maximum number of memory cards + map with modem set is limited to 9. Map with modem (2 cards) equals one set.
- Model 822S computer system (A1716A)

Select Options 502 through 506 to increase memory from the 8Mbyte base up to 48 Mbytes. To increase beyond 48 Mbytes of memory the standalone accessory memory products need to be ordered.
- Model 832S computer system (A1044A)

Select Options 503 through 508 to increase memory from the 16 Mbyte base up to 64 Mbytes. To increase beyond 64 Mbytes of memory the standalone accessory memory products need to be ordered.
- Model 842S computer system (A1154A)

Select Options 503 through 506 to increase memory from the 32 Mbyte base up to 96 Mbytes. To increase beyond 96 Mbytes of memory the standalone accessory memory products need to be ordered.
- Model 852S computer system (A1155A)

Select Options 505 through 508 to increase memory from the 64 Mbyte base up to 128 Mbytes. To increase beyond 128 Mbytes of memory the standalone accessory memory products will need to be ordered.
- Standalone accessory HP-PB memory products
 - A1404A Precision Bus 8 Mbyte memory card
 - A1436A Precision Bus 16 Mbyte memory card
 - A1437A Precision Bus 32 Mbyte memory card

Disk Storage

- Configuration rules

a. Disk storage	822S	832S	842S	852S
Internal				
(Std. Mbyte)	335	335	670	670
(Max. Gbyte)	2.68	2.68	2.68	2.68
Maximum (Gbytes)				
HP-IB	8.0	8.0	8.0	8.0
HP-FL*	24.1	24.1	45.6	45.6
SCSI	10.6	10.6	21.2	21.2

Note: *Includes 4 internal HP-IB disks.

Supported HP-UX 8.0. System power fail is not supported with SCSI on HP-UX 8.0.

- b. Maximum of three HP-IB cards supported per system.
 - c. Maximum of four disk/tape devices supported per HP-IB card.
 - d. Maximum of two Precision Bus Adapter/Fiber Link(PBA-FL) supported on Models 822S and 832S.
 - e. Maximum of four Precision Bus Adapter/Fiber Link supported on Models 842S and 852S.
 - f. Maximum of eight disk devices supported per PBA-FL card.
 - g. Maximum of six PBA-FL cards + 802.3 LAN cards supported on models 842S and 852S.
 - h. SCSI peripheral devices are supported for external use only on the 822S/832S/842S/852S systems.
 - i. Maximum four SCSI/Parallel cards supported in the 822S and 832S.
 - j. Maximum six SCSI /Parallel cards supported in the 842S and 852S.
 - k. Maximum seven SCSI peripherals supported per SCSI/Parallel card.
- Model 822S and 832S computer systems (A1716A, A1044A)

Select options 002 through 008 to increase embedded disk storage from 335 Mbytes to 2.68 Gbytes. For external disk storage, standalone disk drives will need to be ordered.
 - Model 842S and 852S computer systems (A1154A,A1155A)

Select options 002,004,006,008 to increase embedded disk storage from 670 Mbytes to 2.68 Gbytes. For external disk storage, standalone disk drives will need to be ordered.

Model 822S/832S/842S/852S Interfacing Worksheet, continued

- Accessory product numbers for embedded disk and interface cards
 - 28650A Precision Bus HP-IB interface card
 - A1749A Precision Bus Adapter and fiber link interface card for Series 800
 - 28655A HP-PB SCSI/Parallel Host Adapter
 - C2281A 335-Mbyte embedded disk mechanism for Model 822S/832S/842S/852S
 - C2282A 670-Mbyte embedded disk mechanism for Model 822S/832S/842S/852S

Additional Serial Ports for Terminals and Printers

- Configuration rules:

Maximum Ports	822S	832S	842S	852S
MUX	48	160	160	160
DTC	48	96	400	400
MUX and DTC	96	160	400	400

- Model 822S computer system (A1716A)

Select options 602 through 604 to increase the number of ports from eight ports (one 8-channel MUX) in the base system up to 32 (four 8-channel MUX) ports available with option 604. For additional ports, standalone 8- or 16-channel mux cards or Datacommunications and Terminal Controller (DTC) will need to be ordered.

- Model 832S computer system (A1044A)

Select options 602 through 608 to increase the number of ports from eight ports (one 8-channel MUX) in the base system up to 64 ports (eight 8-channel MUX) available with option 608. For additional ports, standalone 8- or 16-channel mux cards or Datacommunications and Terminal Controller (DTC) will need to be ordered.

- Model 842S and 852S computer system (A1154A, A1155A)

Select options 602, 604, 606, or 608 to increase the number of ports from eight ports (one 8-channel MUX) in the base system up to 64 (eight 8-channel MUX) ports available with option 608. For additional ports, standalone 8- or 16-channel mux cards or Datacommunications and Terminal Controller (DTC) will need to be ordered.

- Additional standalone ports

40299B – HP-PB 8-channel AP-MUX card

J2092A HP-PB 16-channel RS-232 Direct Connect MUX card

J2093A HP-PB 16-channel RS-423 Direct Connect MUX card

J2094A HP-PB 16-channel RS-232 Modem Connect MUX card

2340A – DTC 16 for the HP 9000 (16 port LAN terminal server)

2345A – DTC 48 for the HP 9000 (48 port LAN terminal server)

Please note that a LAN/9000 interface with ARPA/9000 software (available with option 014, 013, 014) is required on the Model 822S/832S/842S/852S for use with DTCs. For additional information please refer to the networking section of this configuration guide.

Note: Access Port capability is provided by the HP40299B 8-channel MUX on 8x2S systems with HP-UX revision 8.0.

Networking Products

- Configuration Rules

- The Models 822S and 832S support a maximum of two 802.3 LAN cards, a maximum of two PSI cards (used for X.25 link and SNA links), and a maximum of one MAP 802.4 card.
- The Models 842S and 852S support a maximum of four 802.3 LAN cards, a maximum of five PSI cards (used for X.25 link and SNA link), and a maximum of two MAP 802.4 cards.
- Maximum of six PBA-FL cards + 802.3 LAN cards supported on models 842S and 852S.

- LAN/9000 options on Models 822S, 832S, 842S, and 852S

Select option 014 for LAN networking functionality. This networking option includes the LAN link card, TCP/IP, NFS, and ARPA, software documentation, on-board ThinMAU, "T" connector, ThickMAU, and 6M AUJ cable.

- Accessory Networking Products

For information on how to order a second LAN link or how to order other networking products such as X.25, SNA, and MAP products please refer to the networking section of this configuration guide.

Printer Support

- Configuration rules

- a. Serial (RS232) and Parallel/Centronics printer interfaces are supported on the Models 822S, 832S, 842S, and 852S. HP-IB interface to printers are not supported.
- b. The maximum of twenty serial printers are supported on the Models 822S, 832S, 842S, and 852S. For information on how to order printer products, please refer to the Printers section of this guide.

- c. A maximum of four Parallel/Centronics printers are supported on the 822S and 832S. A maximum of six Parallel/Centronics printers are supported with 842S and 852S.

The following tables indicate the location of the disk, DDS tape, memory, and I/O cards that are installed into the systems at the factory when ordered as options to HP 9000 Model 822S/832S/842S/852S integrated computer system (A1716A, A1044A, A1154A, A1155A).

Model 822S/832S/842S/852S Interfacing Worksheet, continued

Table 5. Location of Factory Installed Memory and I/O Cards

	Component	Quantity	Installation Location
A1716A	Model 822S Processor 8-Mbyte ECC Memory HP-IB Interface 8 Channel Multiplexer Embedded Disk Embedded Tape	1 1 1 1 1 1	Slot 0 Slot 1 Slot 11 Slot 4 Disk Location 0 As Shown
Opt 002-006 Opt 007-008 Opt 012-014 Opt 402 Opt 502-506 Opt 602-604	Embedded Disk Embedded Disk and HPIB Lan 802.3 card HP-IB Memory 8 Channel Multiplexer	1-3 1 1 1 1-2 1-3	Disk Location 1, 2, 3 Disk Location 1, 2, 3 and Slot 12 Slot 13 Slot -12 Slot -1, 2 Slot 5, 6, 7
A1044A	Model 832S Processor 16-Mbyte ECC Memory HP-IB Interface 8 Channel Multiplexer Embedded Disk Embedded DDS Tape	1 1 1 1 1 1	Slot 0 Slot 1 Slot 11 Slot 4 Disk Location 0 As Shown
Opt 002 -> 006 Opt 007 - 008 Opt 012 -> 014 Opt 402 Opt 503 -> 508 Opt 602 -> 607	Embedded Disks Embedded Disk & HPIB Lan 802.3 Card HP-IB Memory 8 Channel Multiplexer	1-3 1 1 1 1-2 1-5	Disk Location 1, 2, 3 Disk Location 1, 2, 3 and Slot 12 Slot 13 Slot 12 Slot 1, 2 Slot 5, 6, 7, 8, 9, 10, 14
A1154A	Model 842S Processor 32-Mbyte ECC Memory HP-IB interface 8 Channel Multiplexer Embedded Disk Embedded Tape	1 1 1 1 1 1	Slot 0 Slot 1 Slot 11 Slot 4 Disk Location 0 As Shown
Opt. 004, 006 Opt 008 Opt 012-014 Opt 402 Opt 503-506 Opt 602-608	Embedded Disk Embedded Disk and HPIB Lan 802.3 card HP-IB Memory 8 Channel Multiplexer	1-2 1 1 1 1-2 1-7	Disk Location 1, 2, 3 Disk Location 1, 2, 3 and Slot 12 Slot 13 Slot 12 Slot 1, 2, 3 Slot 5, 6, 7, 8, 9, 10, 14
A1155A	Model 852S Processor 32-Mbyte ECC Memory HP-IB Interface 8 Channel Multiplexer Embedded Disk Embedded Tape	1 2 1 1 1 1	Slot 0 Slot 1, 2 Slot 11 Slot 4 Disk Location 0 As Shown
Opt 004, 006 Opt 008 Opt 012-014 Opt 402 Opt 505-508 Opt 602-608	Embedded Disk Embedded Disk and HPIB Lan 802.3 card HP-IB Memory 8 Channel Multiplexer	1-2 1 1 1 1-2 1-7	Disk Location 1, 2, 3 Disk Location 1, 2, 3, and Slot 12 Slot 13 Slot 12 Slot 1, 2, 3 Slot 5, 6, 7, 8, 9, 10, 14

The Multiplexer and Interface Use Record, continued

MULTIPLEXER INTERFACE USE RECORDS FOR MODEL 822S/832S/842S/852S, continued

As each multiplexer interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

Multiplexer No. 9

Device P/N	Cable P/N

Multiplexer No. 10

Device P/N	Cable P/N

Note: The Model 822S supports a maximum of 6 multiplexer cards.

The Multiplexer and Interface Use Record, continued

The Interface Use Records

On this page are the HP-IB, Precision Bus Adapter Fiber Link and SCSI/Parallel Interface Use records. Into these records, identify the disks, magnetic tape units, plotters, etc. that will be interfaced to each HP-IB channel or the disks into the records for the HP

A1749A PBA-FL interface. An HP-IB interface dedicated to disk connections and also usable for tape devices connections is designated D1 and one dedicated to plotter connections is designated PL1. These records provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

INTERFACE USE RECORDS FOR MODEL 822S/832S/842S/852S

As each HP-IB and/or PBA-FL and/or SCSI/Parallel interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the HP-IB interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

**28650A HP-IB Interface No. D1
for Disks and/or Cartridge Tapes (Std*)**

Device P/N	Cable P/N
	Included with I/F

**28650A HP-IB Interface No. D2
for Disks and/or Cartridge Tapes**

Device P/N	Cable P/N
	Included with I/F

**28650A HP-IB Interface No. D3
for Disks and/or Cartridge Tapes**

Device P/N	Cable P/N
	Included with I/F

**28650A HP-IB Interface No. G1
for General HP-IB Devices**

Device P/N	Cable P/N
	Included with I/F

**28650A HP-IB Interface No. G2
for General HP-IB Devices**

Device P/N	Cable P/N
	Included with I/F

**28650A HP-IB Interface No. PL1
for Plotters**

Device P/N	Cable P/N
	Included with I/F

A1749A PBA-FL Interface No. D1

Device P/N	Cable P/N

A1749A PBA-FL Interface No. D2

Device P/N	Cable P/N

NOTE: The Models 822S and 832S support a maximum of four SCSI/Parallel cards.
The Models 842S and 952S support a maximum of six SCSI/Parallel cards.

The Multiplexer and Interface Use Record, continued

INTERFACE USE RECORDS FOR MODEL 822S/832S/842S/852S

As each HP-IB and/or PBA-FL and/or SCSI/Parallel interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the HP-IB interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

28655A SCSI/Parallel Interface No. 1

Device P/N	Cable P/N

SCSI/Parallel Interface No. 2

Device P/N	Cable P/N

SCSI/Parallel Interface No. 3

Device P/N	Cable P/N

SCSI/Parallel Interface No. 4

Device P/N	Cable P/N

SCSI/Parallel Interface No. 5

Device P/N	Cable P/N

SCSI/Parallel Interface No. 6

Device P/N	Cable P/N

NOTE: The Models 822S and 832S support a maximum of four SCSI/Parallel cards.
The Models 842S and 952S support a maximum of six SCSI/Parallel cards.

Model 825S Business Server

HP 9000 Model 825S Card Cage

Incl. HP-IB Interface*	8 Mbyte ECC Memory
Incl. 6-Ch Mpxer	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
System Board	
Main Processor Board	
Power Supply	

HP 9000 Model 825S Card Cage with Connection to CIO Expander

Incl. HP-IB Interface*	8 Mbyte ECC Memory
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Incl. 6-Ch Mpxer	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
CIO Channel Adapter	
System Board	
Main Processor Board	
Power Supply	

CIO Expander (8 slots)**

Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Buffer Card
Power Supply

* If used, the Access Port resides in this slot; HP-IB/HP-FL card moves to next slot below access port and MUX moves to fourth slot from the top. Root disk connects to this slot in absence of Access Port.
Shaded center guide slots are removable to permit installation of full-width CTB interfaces, such as the graphics interface or the SNA interface.

** Refer to CIO Power Budget Table for I/O card configuration limitations.

SPU Description

The HP 9000 Model 825S SPU includes 8 Mbytes of ECC memory and seven CIO slots, of which two are used by included 6-channel multiplexer and HP-IB disk interface cards, leaving five for other I/O interfaces, such as FL disk interfaces, LAN interfaces, SCSI interface or the optional Access Port for remotely running diagnostics. Six Central Bus slots remain available for addition of more memory cards, a channel adapter card to an eight-slot CIO Expander, or CTB interfaces. Maximum memory can thus be expanded to 192 Mbytes. The maximum number of available CIO channels can be expanded to 12, as shown in Figure 25 and Figure 26. The Model 825S includes the HP-UX operating system with an 8-user license, which can be upgraded up to an unlimited license.

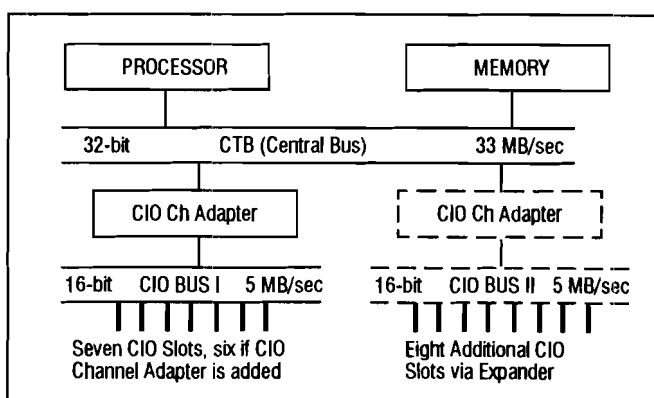


Figure 26. Model 825S Bus Relationships

Figure 25. Model 825S Card Cage Layouts

Model 825S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1004A	Model 825S Business Server, consisting of: • 32-bit PA-RISC Model 825 CPU with floating-point co-processor. • HP A1010A 8-Mbyte ECC Memory Array Card. • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • 234 mm (9.2 in.) high by 325 mm (12.8 in.) wide by 500 mm (19.7 in.) deep package with 5 available CIO slots for additional I/O cards and 6 available CTB slots for additional memory or other CTB cards, and power supply. • 8-user HP-UX License and General Usage Documentation. • Manuals, installation.
Options	
Opt. 002	Add 8-Mbyte ECC Memory Card.
Opt. 003	Add CIO Expander with CIO Channel Adapter (adds 8 available CIO slots).
Opt. 515	Replace 8-Mbyte ECC Memory card with 16-Mbyte ECC memory card.
Opt. 516	Add 16-Mbyte ECC Memory card.
Opt. 531	Replace 8-Mbyte ECC Memory card with two 16-Mbyte ECC memory cards.
Opt. 0E1	Add Battery Backup System.
Opt. 1A4	Add racking hardware for A1001A 1.6 meter cabinet (hardware for SPU and BBU).
Add-on Accessories	
A1010A	8 Mbyte ECC Memory Card.
A1037A	16 Mbyte ECC Memory Card.
A1623A	32-Mbyte ECC Memory Card.
A1013A	CIO Expander with CIO Channel Adapter (adds 7 CIO slots).
A1014A	Battery Backup System.
A1015A	Access Port.
97099A	19-inch Rack Mount Kit for Model 825S SPU.
19500B	19-inch Rack Mount Kit for Model 825S Battery Backup System.
92211L	20.6-inch Taboret Cabinet.
92211R	Mini-rack system cabinet for 825S SPU, CIO Expander, and Battery Backup System.
92211S	Mounting Rail Kit for 92211R.
92211T	Filler Panel Kit for 92211R.
B2438A	HP-UX 8.0 Server Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

System Rack Mounting

For information on rack mounting of systems based on the Model 825S, 835S, and 835SE, see page 245.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console. Graphics board with monitor can also act as system console. System console support is available on the 6-channel MUX only (HP 98196A).
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the tape drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 835S and 835SE Business Servers

HP 9000 Model 835S Card Cage

HP-IB Interface*	8 Mbyte ECC Memory
MUX	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
PDH Card	
CPU Card	
Power Supply	

HP 9000 Model 835SE Card Cage with Its Included CIO Expander

HP-IB Interface*	8 Mbyte ECC Memory
MUX	16 Mbyte ECC Memory
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
Available I/O Slot	Available CTB Slot
PDH Card	
CPU Card	
Power Supply	

CIO Expander (8 slots)**

Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Available I/O Slot
Buffer Card
Power Supply

* If used, the Access Port resides in this slot; HP-IB/HP-FL interface moves to next slot below access port card and MUX moves to the fourth slot from the top. Root Disk connects to this slot in absence of Access Port.
Shaded center guide slots are removable to permit installation of full-width CTB interfaces, such as the graphics interface or the SNA interface.

** Refer to CIO Power Budget Table for I/O card configuration limitations.

SPU Description

HP 9000 Model 835S utilizes the same system package as the Model 825S. Like the 825S, the 835S uses the hierarchical CIO bus I/O architecture. The base Model 835S SPU includes 8 Mbyte of ECC memory and seven CIO slots, of which two are used by included 6-channel multiplexer and HP-IB disk interface cards, leaving five for other I/O interfaces, such as FL disk interfaces, LAN interfaces, SCSI interface or the optional Access Port for remotely running diagnostics. Six CTB slots remain available for addition of more memory cards or CTB interfaces. Maximum memory can thus be expanded to 192 Mbytes. The Model 835S includes HP-UX with a 8-user license, which can be upgraded up to an unlimited user license.

To the 835S, the Model 835SE SPU adds 16 Mbytes of memory, for a total of 24 Mbytes (expandable to 128 Mbytes), and a CIO expander that increases available CIO channels to 13. See Figure 27 and Figure 28. The Model 835SE includes HP-UX with a 8-user license, which can be upgraded to unlimited, and a battery backup unit. The total number of users can be expanded to 342, using a combination of multiplexer and LAN-interfaced DTC connections.

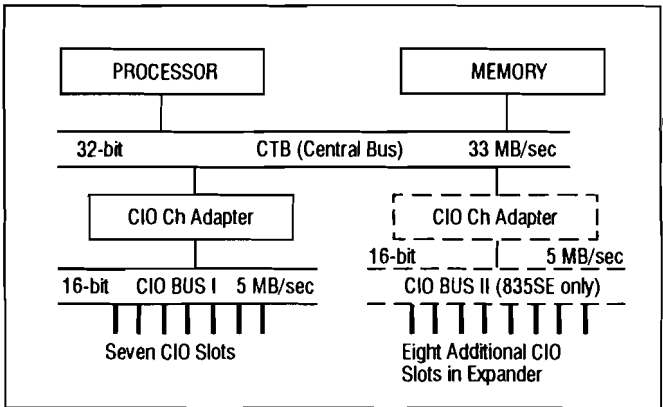


Figure 28. Model 835S/SE Bus Relationships

Figure 27. Model 835S/835SE Card Cage Layouts

Model 835S and 835SE Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1035A	HP A1035A Model 835S Business Server, consisting of: • 32-bit PA-RISC Model 835 CPU with floating-point co-processor and PDH card with one CIO Channel Adapter. • HP A1010A 8-Mbyte ECC Memory Array Card. • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • 234 mm (9.2 in.) high by 325 mm (12.8 in.) wide by 500 mm (19.7 in.) deep package with 5 available CIO slots for additional I/O cards and 6 available CTB slots for additional memory or other CTB cards. Includes its own power supply. • 8-user HP-UX License and General Usage Documentation. • Manuals, installation, and 90-day on-site warranty.
A1040A	HP A1040A Model 835SE Business Server, consisting of: • 32-bit PA-RISC Model 835 CPU with floating-point co-processor and PDH card with two CIO Channel Adapters. • HP A1010A 8-Mbyte ECC Memory Array Card. • HP A1037A 16-Mbyte ECC Memory Array Card. • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • 234 mm (9.2 in.) high by 325 mm (12.8 in.) wide by 500 mm (19.7 in.) deep package with 5 available CIO slots for additional I/O cards and 5 available CTB slots for additional memory or other CTB cards. Includes its own power supply. • A1014A Battery Backup System to sustain memory through power outages up to 15 minutes long. • CIO Expander with power supply in a package with same dimensions as SPU. It adds 8 CIO slots for additional I/O cards to the 5 that are available in the base SPU package. • 8-user HP-UX License and General Usage Documentation. • Manuals, installation.
Options	
Opt. 002	Adds 8 Mbyte ECC Memory Card (for S and SE models)
Opt. 1A4	Add racking hardware for A1001A 1.6 meter cabinet. (Hardware for SPU and BBU) (for S and SE models)
Opt. 515	Replace 8-Mbyte ECC Memory card with 16-Mbyte ECC memory card (for S and SE models)
Opt. 516	Add 16-Mbyte ECC Memory card (for S and SE models)
Opt. 531	Replace 8-Mbyte ECC Memory card with two 16-Mbyte ECC memory cards (32 Mbyte) (for 835S only)
Opt. 0E1	Add Battery Backup System to 835S; Battery Backup is included in 835SE (for 835S only)
Opt. 004	Add racking hardware for A1001A 1.6 meter cabinet (Hardware for CIO Expander) (for 835SE only)
Add-on Accessories	
A1010A	8 Mbyte ECC Memory Card
A1037A	16 Mbyte ECC Memory Card
A1623A	32 Mbyte ECC Memory Card
A1014A	Battery Backup System (835S only; Battery Backup is included in 835SE).
A1015A	Access Port.
97099A	19-inch Rack Mount Kit for Model 835S SPU and CIO Expander. CIO Expander is available (and standard) only in the 835SE SPU.
19500B	19-inch Rack Mount Kit for Model 835S or 835SE Battery Backup System.
92211L	20.6-inch Taboret Cabinet.
92211R	Mini-rack system for 835S or 835SE SPU (with CIO Expander) and Battery Backup System.
92211S	Mounting Rail Kit for 92211R.
92211T	Filler Panel Kit for 92211R.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

Model 835S and 835SE Business Servers, continued

CIO and CTB Interfaces

See page 168.

System Rack Mounting

For information on rack mounting of systems based on the Model 825S, 835S, 835SE, 845S, and 845SE see page 245.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console. Graphics board with monitor can also act as system console. System console support is available via the 6-channel MUX only (HP 98196A).
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the tape drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 845S and 845SE Business Servers

SPU Description

HP Model 845S utilizes the same system package as the Model 825S and 835S. Like the 825S and the 835S, the 845S uses the hierarchical, two-tier CIO/CTB bus I/O architecture. The base Model 845S includes 16 Mbyte ECC RAM and 6 CIO slots, of which two are used by included HP-IB and 6-channel multiplexer interface cards, leaving four CIO slots for other I/O interfaces such as FL disk interfaces, or a LAN interface, SCSI interface additional MUX or HP-IB cards, or the optional Access Port for running remote diagnostics. Five CTB slots remain available for adding additional memory cards or CTB interfaces. Maximum memory can be expanded to a total 192 Mbyte, in 8 Mbyte, 16 Mbyte, or 32 Mbyte increments. The Model 845S also includes HP-UX with a 8-user license, which can be upgraded to an unlimited license.

To the Model 845S, the Model 845SE adds 16 Mbyte of memory for a total of 32 Mbyte ECC RAM (one 32-Mbyte ECC RAM board is used), expandable to 128 Mbyte, and a CIO expander that adds additional 8 CIO channels for a total of 12 available (two slots are used in the SPU for the HP-IB and 6-channel MUX which come standard with the system). See Figure 29 and Figure 30. The Model 845SE includes HP-UX and a 8-user license, which can be upgraded to an unlimited license, and a battery backup unit.

CIO Slots	HP 9000 Model 845S Card Cage		Mid-bus Slots
0	HP-IB*	16 Mbyte Memory Board	8
1	MUX	Available CTB Slot	7
2	Available I/O Slot	Available CTB Slot	6
3	Available I/O Slot	Available CTB Slot	5
4	Available I/O Slot	Available CTB Slot	4
5	Available I/O Slot	Available CTB Slot	3
PDH with internal channel adapter			2/10
Open for Cooling			1
Processor Board			0
Power Supply			

CIO Slots	HP 9000 Model 845SE Card Cage with its Included CIO Expander		Mid-bus Slots
0	HP-IB*	32 Mbyte Memory Board	8
1	MUX	Available CTB Slot	7
2	Available I/O Slot	Available CTB Slot	6
3	Available I/O Slot	Available CTB Slot	5
4	Available I/O Slot	Available CTB Slot	4
5	Available I/O Slot	Available CTB Slot	3
PDH with internal and external channel adapter			2/10
Open for Cooling			1
Processor Board			0
Power Supply			

CIO Expander (8 slots)**

0	Available I/O Slot
1	Available I/O Slot
2	Available I/O Slot
3	Available I/O Slot
4	Available I/O Slot
5	Available I/O Slot
6	Available I/O Slot
7	Available I/O Slot
Buffer Card	
Power Supply	

* If used, the Access Port resides in this slot; HP-IB/HP-FL Interface moves to next lower slot and MUX moves to fourth slot from the top. Root Disk connects to this slot in absence of Access Port.

** Refer to CIO Power Budget Table for I/O card configuration limits.

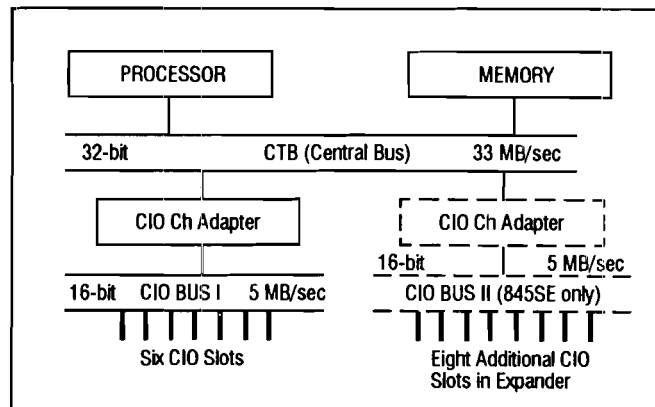


Figure 30. Model 845S/SE Bus Relationships

Figure 29. Model 845S/845SE Card Cage Layouts

Model 845S and 845SE Business Servers, continued

Product Summary

Product/ Opt. No.	Description
A1608A	HP A1608A Model 845S Business Server, consisting of: • 32-bit PA-RISC Model 845 CPU with floating-point co-processor and PDH card with one CIO Channel Adapter. • HP A1037A 16-Mbyte ECC Memory Array Card. • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • 234 mm (9.2 in.) high by 325 mm (12.8 in.) wide by 500 mm (19.7 in.) deep package with 5 available CIO slots for additional I/O cards and 6 available CTB slots for additional memory or other CTB cards. Includes its own power supply. • 8-user HP-UX License and General Usage Documentation. • System Admin Notes, P/N 92538A, General usage documentation and 90-day on-site warranty.
A1609A	HP A1609A Model 845SE Business Server, consisting of: • 32-bit PA-RISC Model 845 CPU with floating-point co-processor and PDH card with two CIO Channel Adapters. • HP A1623A 32-Mbyte ECC Memory Array Card. • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • 234 mm (9.2 in.) high by 325 mm (12.8 in.) wide by 500 mm (19.7 in.) deep package with 5 available CIO slots for additional I/O cards and 5 available CTB slots for additional memory or other CTB cards. Includes its own power supply. • A1014A Battery Backup System to sustain memory through power outages up to 15 minutes long. • CIO Expander with power supply in a package with same dimensions as SPU. It adds 8 CIO slots for additional I/O cards to the 4 that are available in the base SPU package. • 8-user HP-UX License and General Usage Documentation. • System Admin Notes, P/N 92538A, General usage documentation, installation.
Options	
Opt. 004 (845SE only)	Adds racking H/W for I/O expander for A1001A (1-6 meter) cabinet.
Opt. 501 (Both S & SE)	Adds 8-Mbyte ECC Memory card.
Opt. 516 (Both S & SE)	Adds 16-Mbyte ECC Memory card.
Opt. 532 (Both S & SE)	Adds 32-Mbyte ECC Memory card.
Opt. 0E1 (845S only)	Adds Battery Backup System to 845S; Battery Backup is included in 845SE.
Opt. 533 (845S only)	Replaces 16-Mbyte ECC RAM with 32-Mbyte ECC RAM.
Opt. 1A4 (Both S & SE)	Adds racking H/W for A1001A 1.6 m cabinet. (H/W for SPU and BBU)
Add-on Accessories	
A1010A	8 Mbyte ECC memory card.
A1037A	16 Mbyte ECC memory card.
A1623A	32 Mbyte ECC memory card.
A1014A	Battery Backup System (845S only; Battery Backup is included in 845SE).
A1015A	Access Port.
97099A	19-inch Rack Mount Kit for Model 845S SPU and CIO Expander. CIO Expander is available (and standard) only in the 845SE SPU.
19500B	19-inch Rack Mount Kit for Model 845S or 845SE Battery Backup System.
92211L	20.6-inch Taboret Cabinet.
92211R	Mini-rack system for 845S or 845SE SPU (with CIO Expander) and Battery Backup System.
92211S	Mounting Rail Kit for 92211R.
92211T	Filler Panel Kit for 92211R.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

System Rack Mounting

For information on rack mounting of systems based on the Model 825S, 835S, 835SE, 845S, and 845SE, see page 242.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console. Graphics board with monitor can also act as system console. System console support is available on the 6-channel MUX only (HP 98196A).
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately-purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 850S Business Server

Description

HP 9000 Model 850S is a large-capacity system with high speed processing. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 31, below), the Model 850S can be equipped to support up to 300 terminals. If greater capacity and speed are required, select the Models 855S, 860S, 865S, or 870S.

The base Model 850S SPU includes 48 Mbytes of ECC memory and 10 CIO slots (CIO sections 0_1 and 1_1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces, SCSI interface or a LAN interface. See Figure 32 and Figure 33, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links,

OSI Express MAP 3.0 Links, or CIO Channel Adapters. Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to three CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel or 16-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 31, below.

Thirteen slots remain available for addition of more memory cards so memory can be expanded from 48 Mbytes to 256 Mbytes. The Model 850S includes HP-UX with an 8-user license, which can be upgraded to an unlimited license.

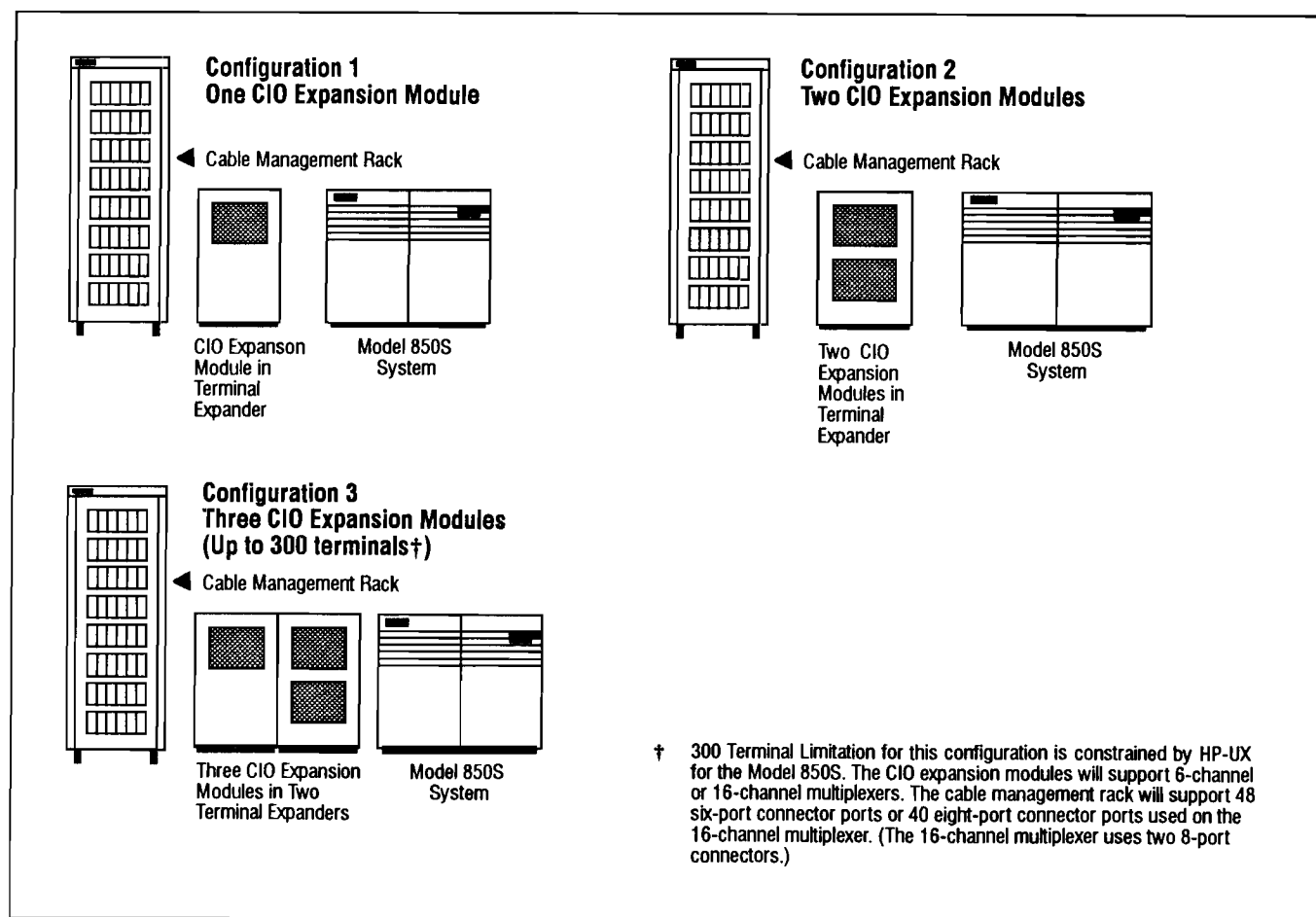


Figure 31. Model 850S with CIO Expansion Modules and Cable Management Racks

Model 850S Business Server, continued

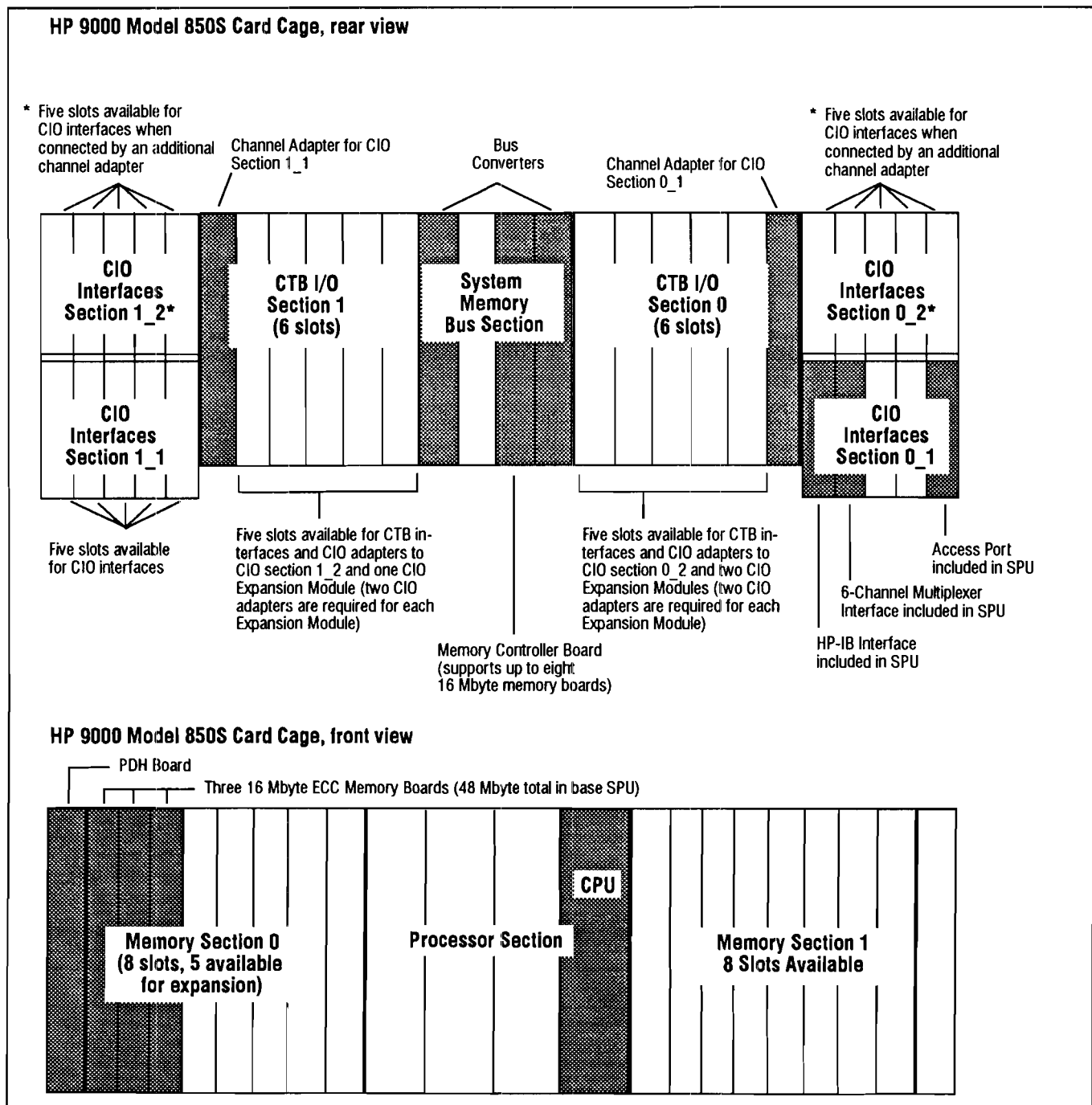
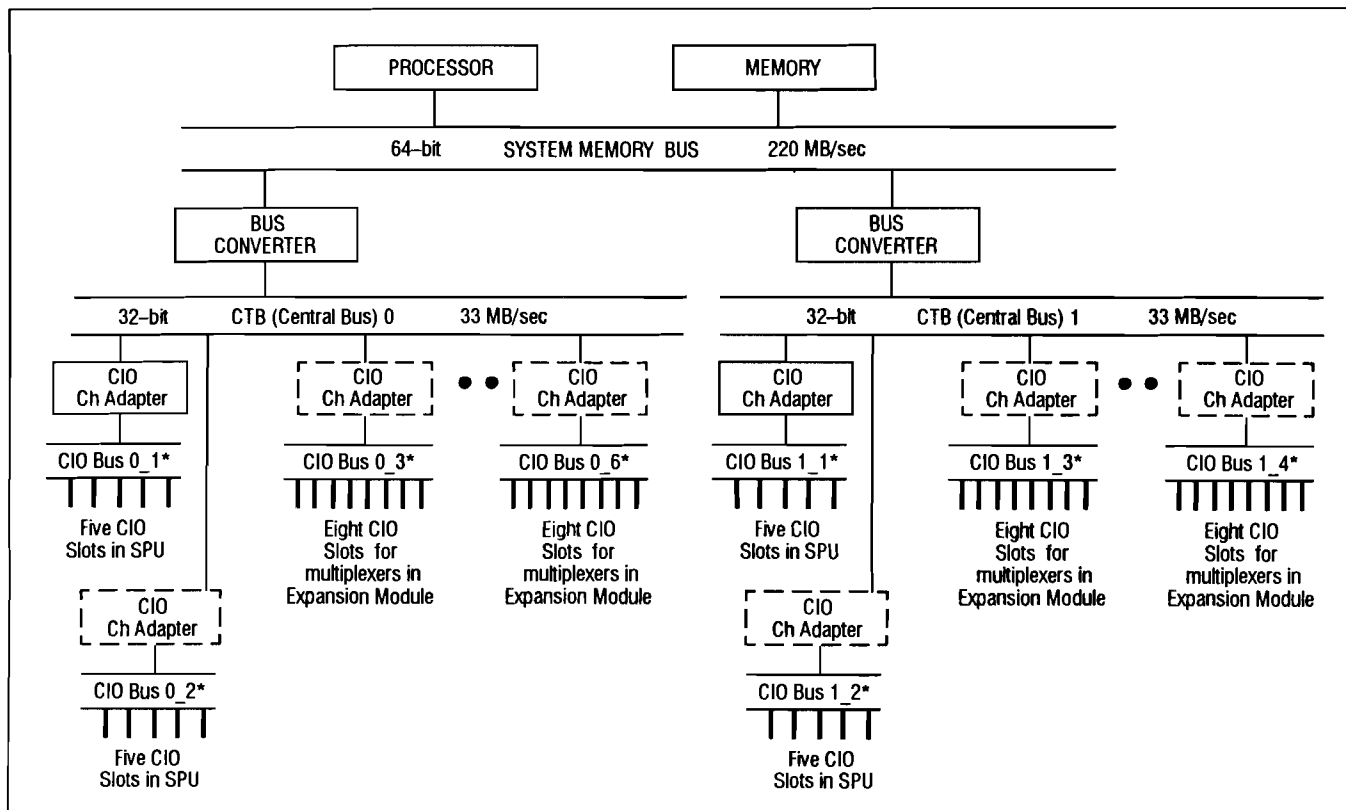


Figure 32. Model 850S Card Cage Layouts



* CIO bus has a 5 MB/sec bandwidth and is a 16-bit bus.

Figure 33. Model 850S Bus Relationships

Model 850S Business Server, continued

Model 850S Product Summary

Product/ Opt. No.	Description
HP 9742A	Model 850S Business Server, consisting of: • 32-bit PA-RISC Model 850 CPU with floating-point co-processor. • Memory controller. • Two bus converters (connect central buses 0 and 1 to system memory bus). • Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots in the SPU mainframe. • Three HP A1104A 16-Mbyte ECC memory cards (48 Mbytes total base memory). • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • HP 30192A Access Port. • Battery Backup System to sustain memory through power outages up to 15 minutes long. • Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1 m (39.4 in.) high by 1.3 m (51.2 in.) wide by 711 mm (28 in.) deep. • 8-user HP-UX License and General Usage Documentation.
Options	
Opt. 014	Add LANLink, TCP/IP ARPA, and NFS Services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Add A1104A 16-Mbyte ECC Memory card.
Opt. 518	Delete 16-Mbyte ECC Memory card.
Opt. 601	Add A1122A CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	Add 16-slot A1123A Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add A1124 CIO Terminal Expander Bay with 16-slot Expansion Module, and two CIO Channel Adapters (purchase of 9742A Option 601 is prerequisite to 9742A Option 603).
Opt. 700	Add 27111A Fiber Optic Peripheral card.
Opt. 828	Floating-Point Upgrade (provides 2.5 times standard floating-point processing speed).
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1108A	Floating-Point Upgrade Kit, including processor board.
A1118A	Upgrade 850S to 855S (Replaces processor board).
A1122A	CIO Terminal Expander, with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters • Power supply
A1123A	CIO Terminal Expansion Module Kit (requires previous purchase of 9742A Option 601 or A1122A or A1124A) with: • 16-slot Expansion Module • Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of 9742A Option 601 or A1122A) with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6 or 16-channel multiplexers).
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices). For use with 6-channel multiplexers only.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

Model 850S Business Server, continued

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately-purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 855S Business Server

Description

HP 9000 Model 855S is a large-capacity system with high speed processing. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 34, below), the Model 855S can support up to 400 terminals. If greater capacity and speed are required, select the Model 860S, 865S, or 870S.

The base Model 855S SPU includes 48 Mbytes of ECC memory and 10 CIO slots (CIO sections 0_1 and 1_1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards SCSI interface and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces or a LAN interface. See Figure 35 and Figure 36, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links, OSI Express MAP 3.0 Links, or CIO Channel Adapters.

Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to four CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 34, below.

Thirteen slots remain available for addition of more memory cards so memory can be expanded from 48 Mbytes to 256 Mbytes. The Model 855S includes HP-UX with an 8-user license, which can be upgraded to an unlimited license.

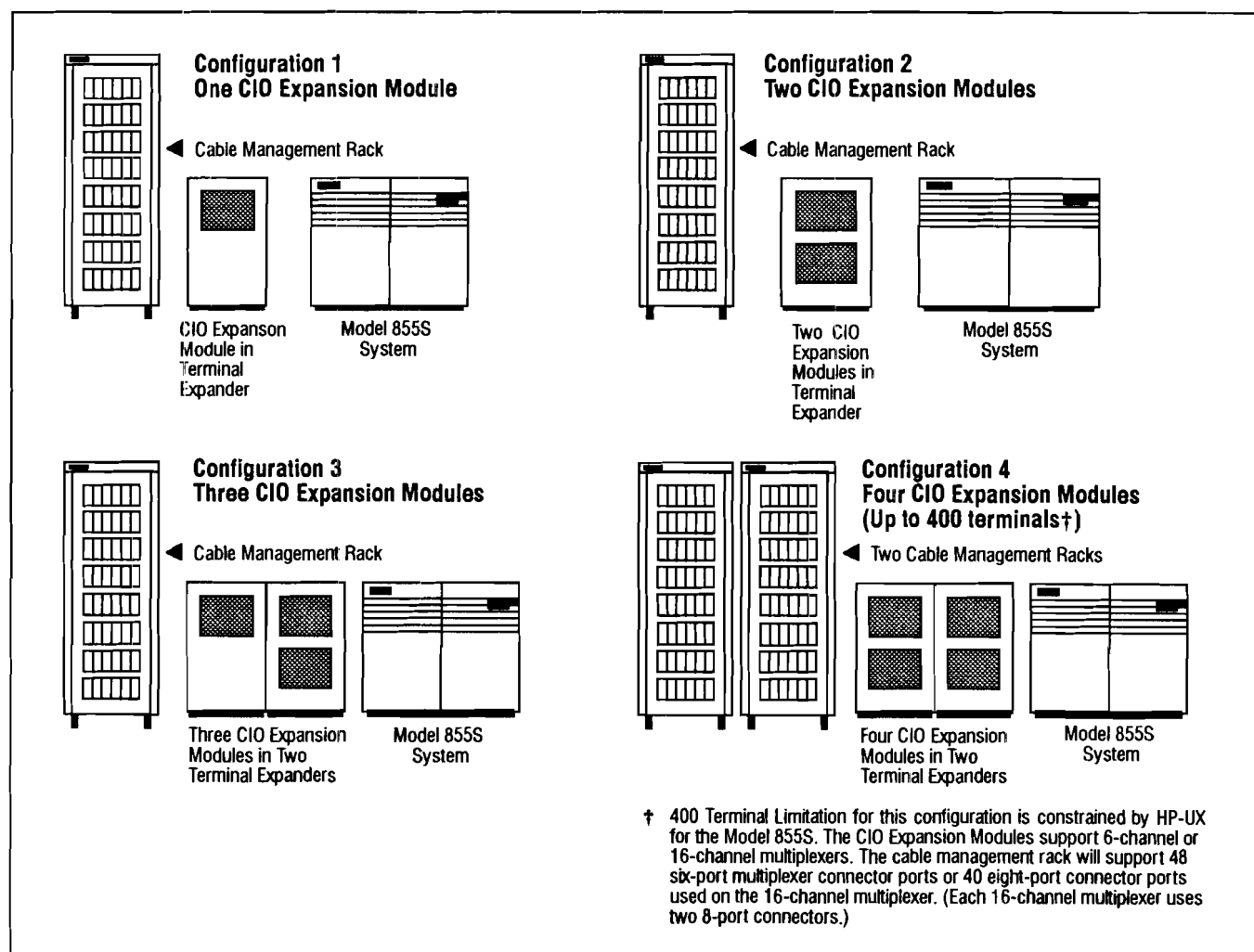


Figure 34. Model 855S with CIO Expansion Modules and Cable Management Racks

Model 855S Business Server, continued

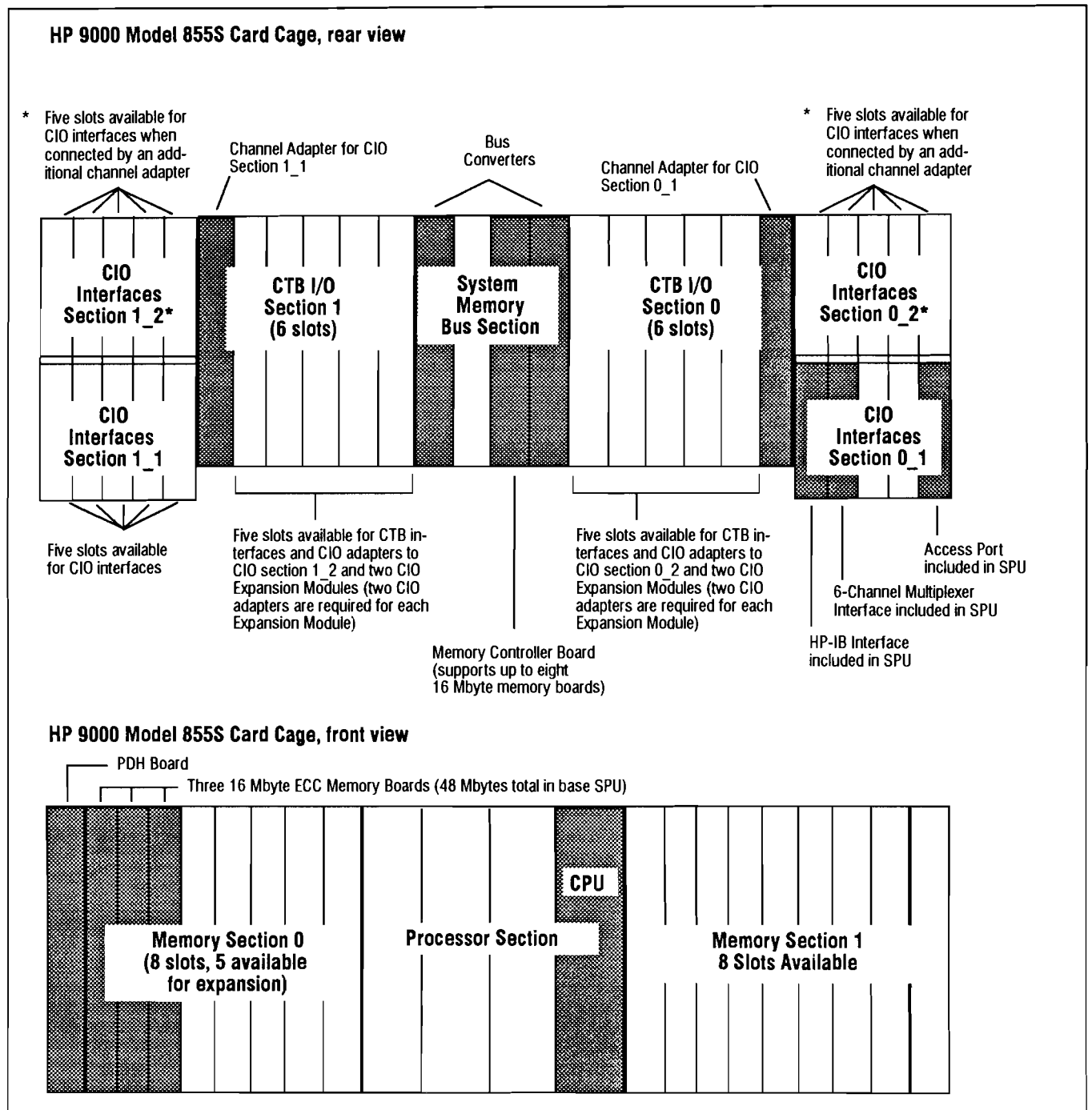
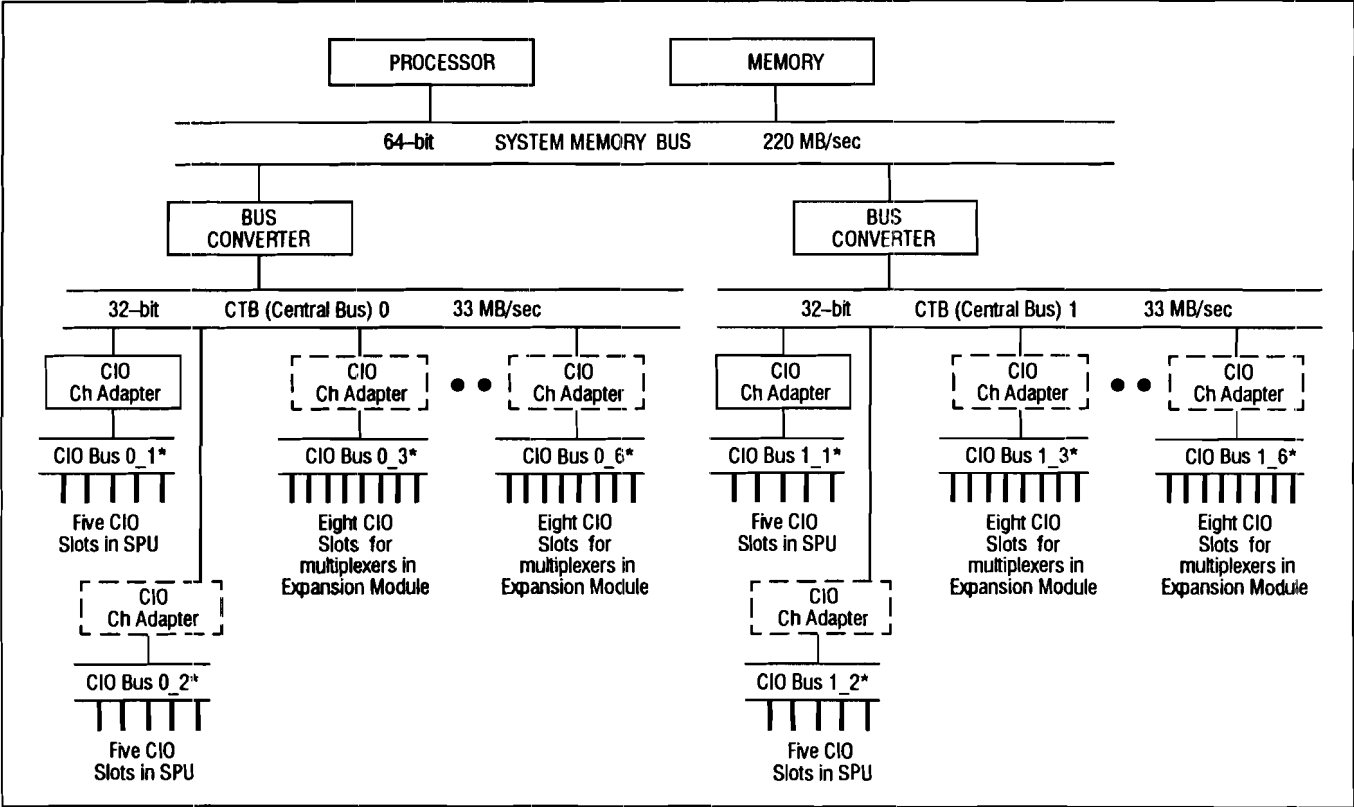


Figure 35. Model 855S Card Cage Layouts



* CIO bus has a 5 MB/sec bandwidth and is a 16-bit bus.

Figure 36. Model 855S Bus Relationships

Model 855S Business Server, continued

Product Summary

Product/ Opt. No.	Description
HP A1114A	Model 855S Business Server, consisting of: ● 32-bit PA-RISC Model 855 CPU with floating-point co-processor. ● Memory controller. ● Two bus converters (connect central buses 0 and 1 to system memory bus). ● Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots. ● Three HP A1104A 16-Mbyte ECC memory cards (48 Mbytes total base memory). ● HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. ● HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. ● HP 30192A Access Port. ● Battery Backup System to sustain memory through power outages up to 15 minutes long. ● Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1m (39.4 in.) high by 1.3m (51.2 in.) wide by 711 mm (28 in.) deep. ● 8-user HP-UX License and General Usage Documentation.
Options	
Opt. 014	Add LANLink, TCP/IP, ARPA, and NFS services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Add A1104A 16-Mbyte ECC Memory card.
Opt. 518	Delete 16-Mbyte ECC Memory card.
Opt. 601	Add A1122A CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	Add A1123A 16-slot Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add A1124A CIO Terminal Expander Bay with 16- slot Expansion Module, and two CIO Channel Adapters (purchase of A1114A Option 601 is prerequisite to A1114A Option 603).
Opt. 700	Add 27111A Fiber Optic Peripheral Card.
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1122A	CIO Terminal Expander, with: ● Cabinet ● 16-slot Expansion Module ● Two CIO Channel Adapters ● Power supply
A1123A	CIO Terminal Expansion Module Kit (requires previous purchase of A1114A Option 601 or A1122A or A1124A) with: ● 16-slot Expansion Module ● Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of A1114A Option 601 or A1122A) with: ● Cabinet ● 16-slot Expansion Module ● Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6-channel or 16-channel multiplexers).
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices). For use with 6-channel multiplexer only.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console , connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk , selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately-purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive , selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.



Model 860S Business Server

Description

HP 9000 Model 860S is a large-capacity system with high speed processing. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 37, below), the Model 860S can support up to 400 terminals. If greater capacity and speed are required, select the Models 865S or 870S.

The base Model 860S SPU includes 48 Mbytes of ECC memory and 10 CIO slots (CIO sections 0_1 and 1_1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces, SCSI interface or a LAN interface. See Figure 38 and Figure 39, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links, OSI Express MAP 3.0 Links, or CIO Channel Adapters.

Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to four CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel or 16-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 37, below.

Thirteen slots remain available for addition of more memory cards so memory can be expanded from 48 Mbytes to 256 Mbytes. The Model 860S includes HP-UX with an 8-user license, which can be upgraded to an unlimited license.

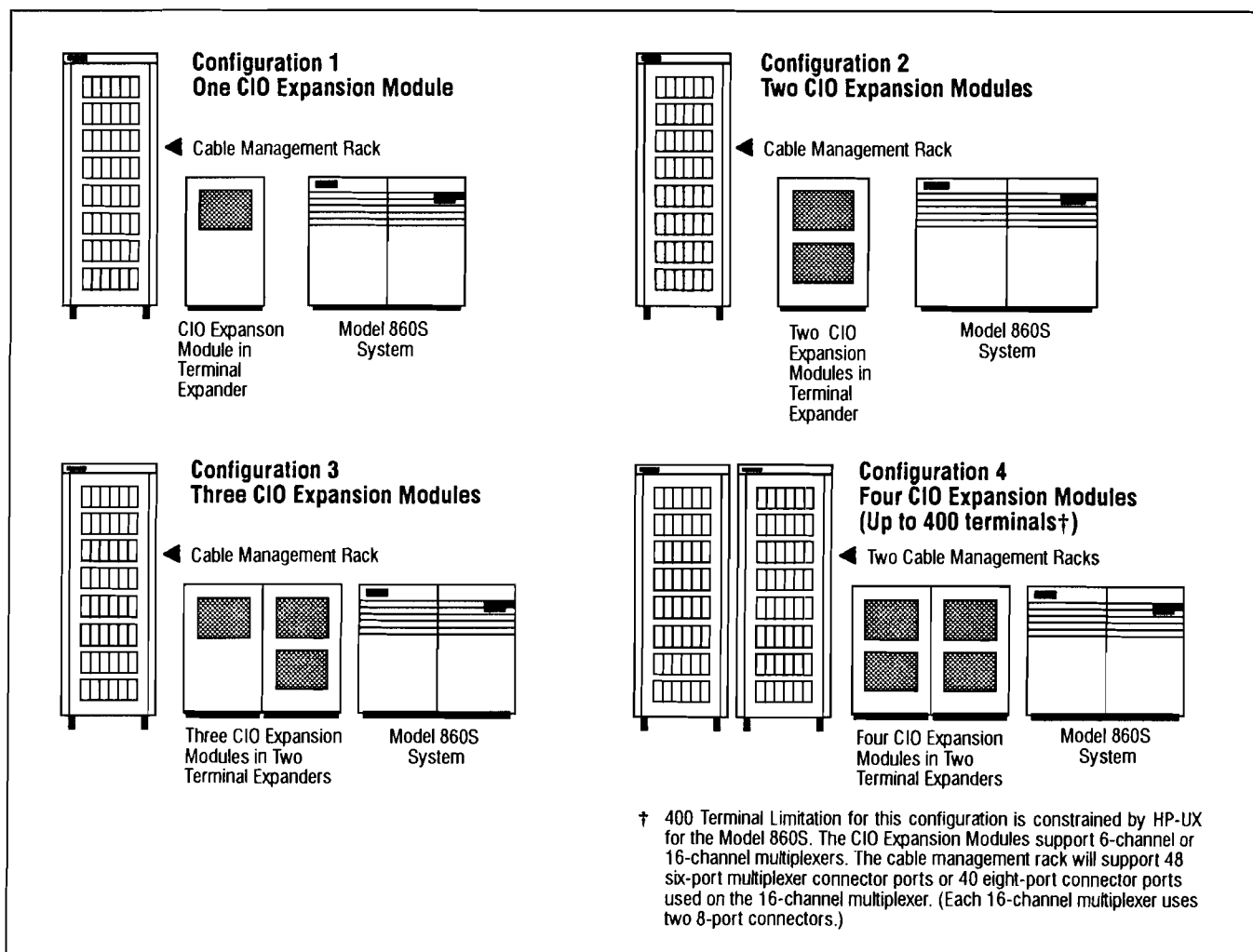
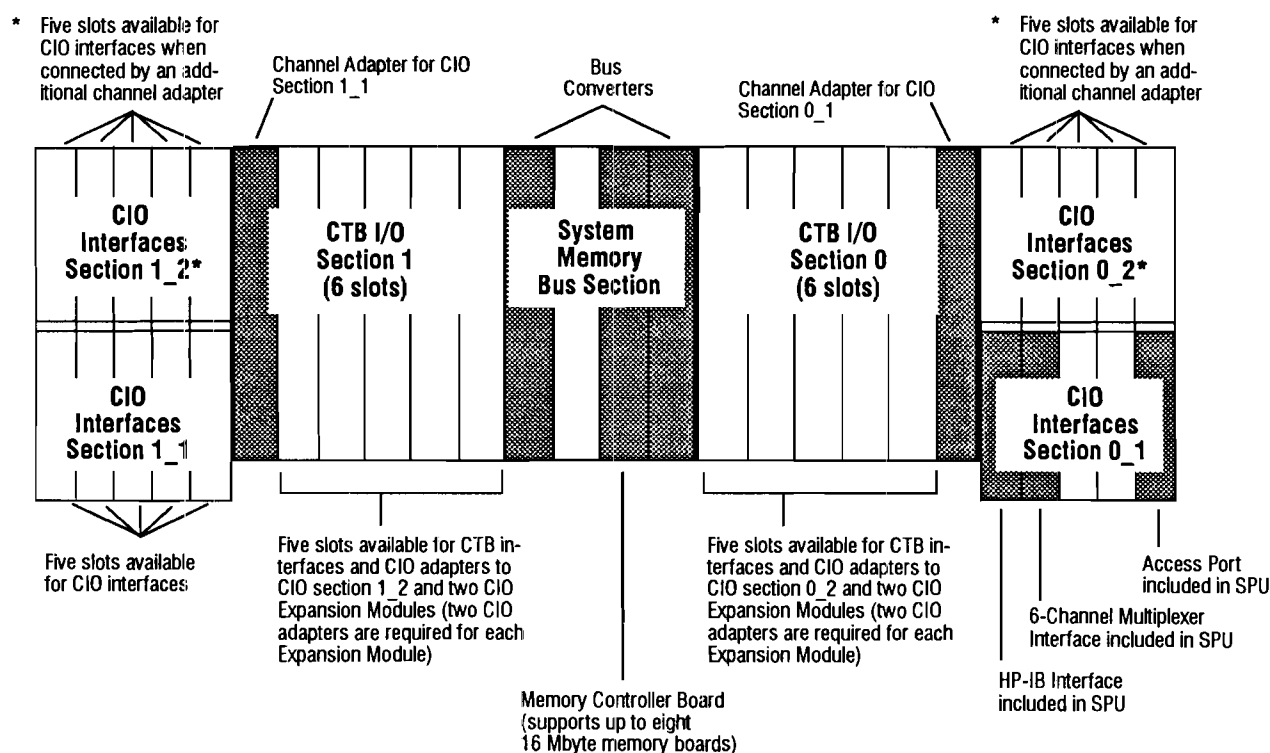


Figure 37. Model 860S with CIO Expansion Modules and Cable Management Racks

HP 9000 Model 860S Card Cage, rear view



HP 9000 Model 860S Card Cage, front view

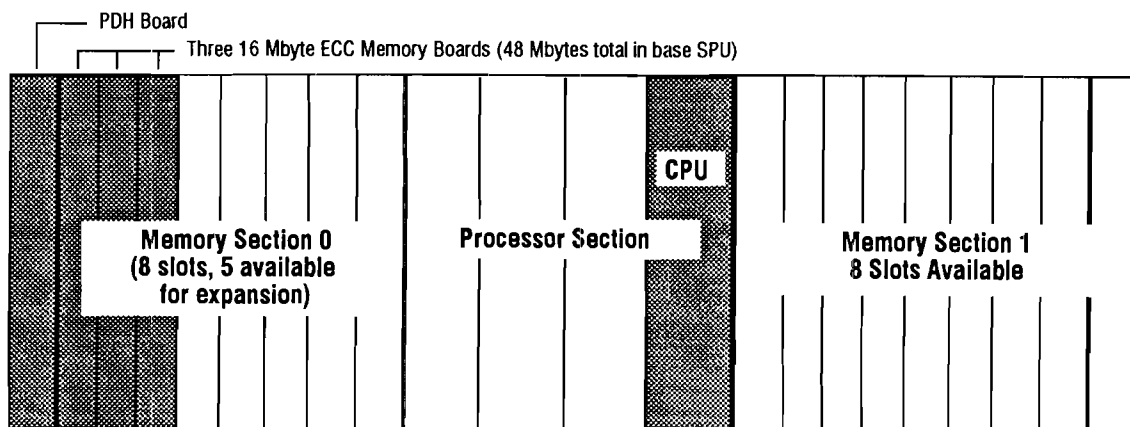
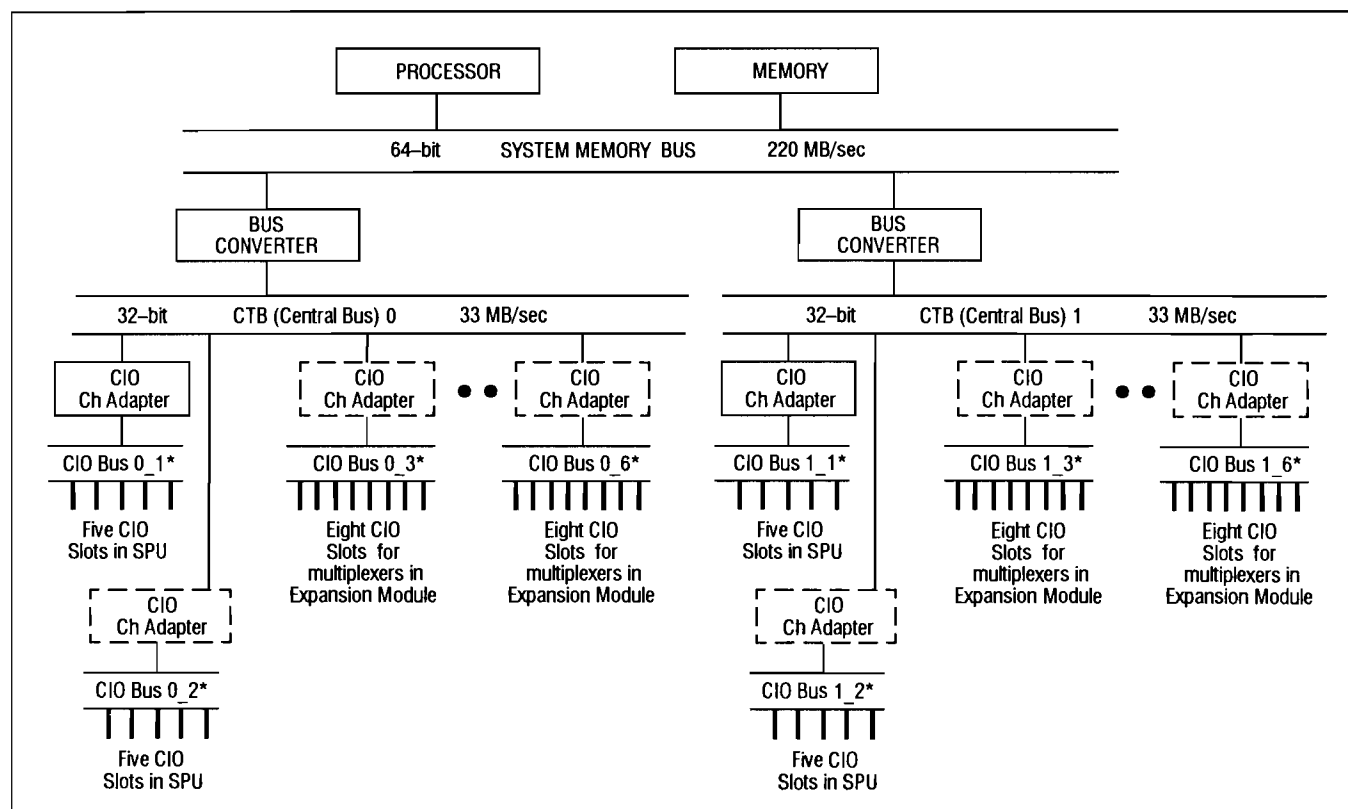


Figure 38. Model 860S Card Cage Layouts



* CIO bus has a 5 MB/sec bandwidth and is a 16-bit bus.

Figure 39. Model 860S Bus Relationships

Model 860S Business Server, continued

Product Summary

Product/ Opt. No.	Description
HP A1843A	Model 860S Business Server, consisting of: • 32-bit PA-RISC Model 860 CPU with floating-point co-processor. • Memory controller. • Two bus converters (connect central buses 0 and 1 to system memory bus). • Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots. • Three HP A1104A 16-Mbyte ECC memory cards (48 Mbytes total base memory). • HP 271108 HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • HP 30192A Access Port. • Battery Backup System to sustain memory through power outages up to 15 minutes long. • Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1m (39.4 in.) high by 1.3m (51.2 in.) wide by 711 mm (28 in.) deep. • 8-user HP-UX License and General Usage Documentation.
Options	
Opt. 014	Add LANLink, TCP/IP, ARPA, and NFS services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Add A1104A 16-Mbyte ECC Memory card.
Opt. 518	Delete 16-Mbyte ECC Memory card.
Opt. 601	Add A1122A CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	Add A1123A 16-slot Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add A1124A CIO Terminal Expander Bay with 16- slot Expansion Module, and two CIO Channel Adapters (purchase of A1114A Option 601 is prerequisite to A1114A Option 603).
Opt. 700	Add 27111A Fiber Optic Peripheral Card.
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1122A	CIO Terminal Expander, with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters • Power supply
A1123A	CIO Terminal Expansion Module Kit (requires previous purchase of A1114A Option 601 or A1122A or A1124A) with: • 16-slot Expansion Module • Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of A1114A Option 601 or A1122A) with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6-channel or 16-channel multiplexers).
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices). For use with 6-channel multiplexer only.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately-purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 865S Business Server

Description

HP 9000 Model 865S is a large-capacity system with fast processing. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 40, below), the Model 865S can be equipped to support up to 600 terminals. If greater capacity and speed are required, select the Model 870S/100 or 870S/200.

The base Model 865S SPU includes 64 Mbytes of ECC memory and 10 CIO slots (CIO sections 0, 1 and 1, 1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces, SCSI interface or a LAN interface. See Figure 41 and Figure 42, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links, OSI Express MAP 3.0 Links, or CIO Channel Adapt-

ers. Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to three CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel or 16-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 40, below.

Thirteen slots remain available for addition of more memory cards so memory can be expanded from 64 Mbytes to 512 Mbytes in either 16 Mbyte or 64 Mbyte increments. The Model 865S includes HP-UX with an 8-user license, which can be upgraded to an unlimited license.

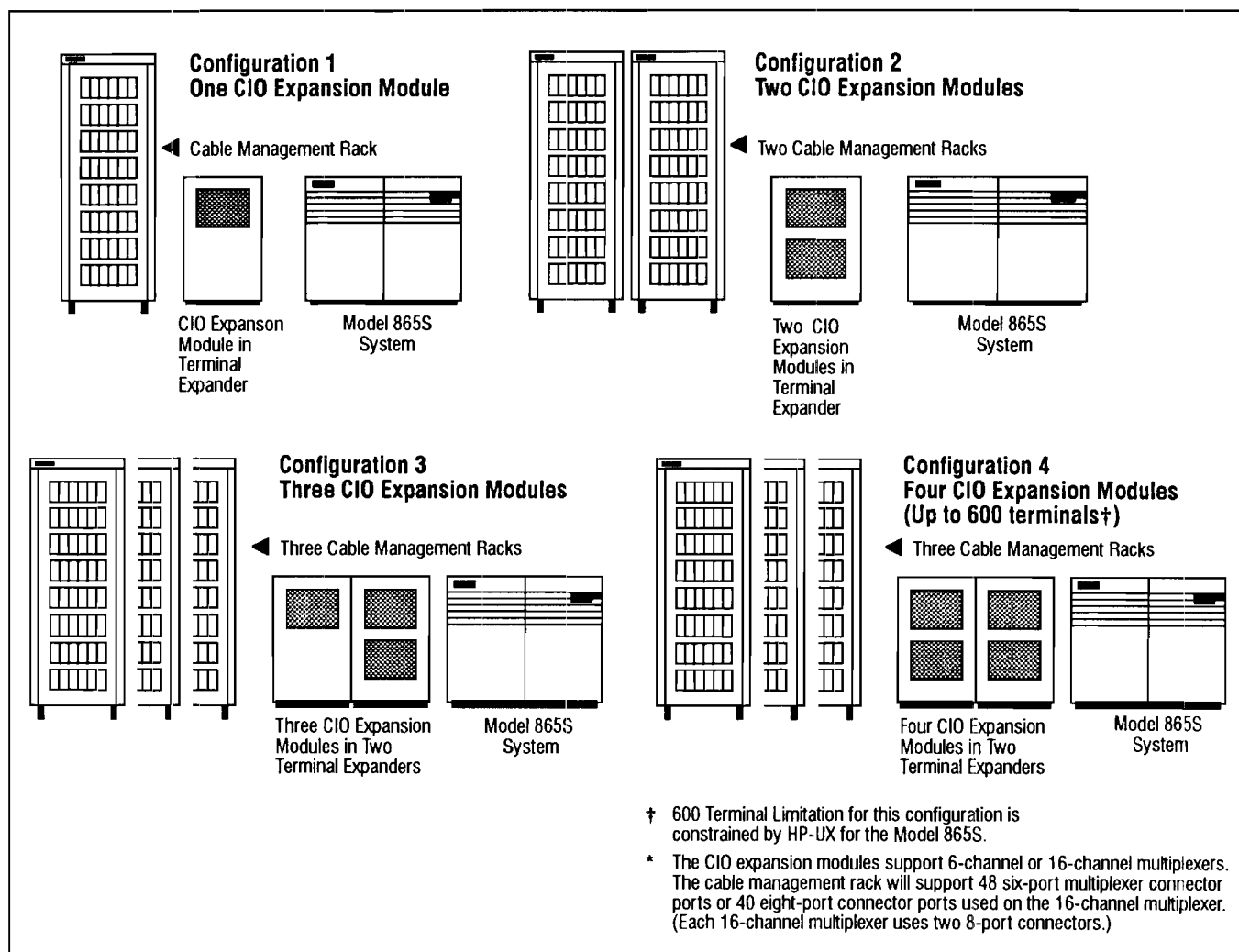


Figure 40. Model 865S with CIO Expansion Modules and Cable Management Racks

Model 865S Business Server, continued

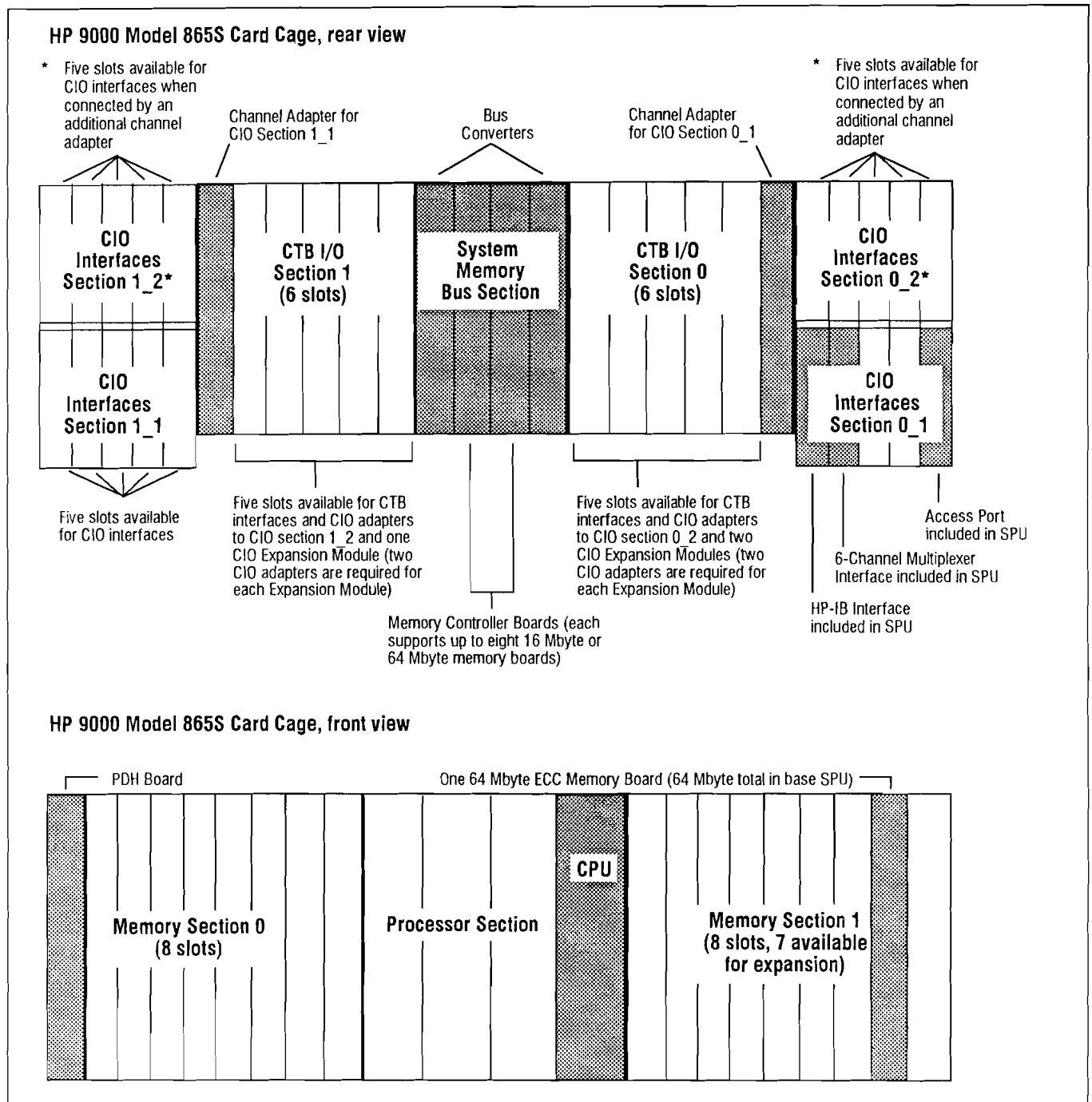
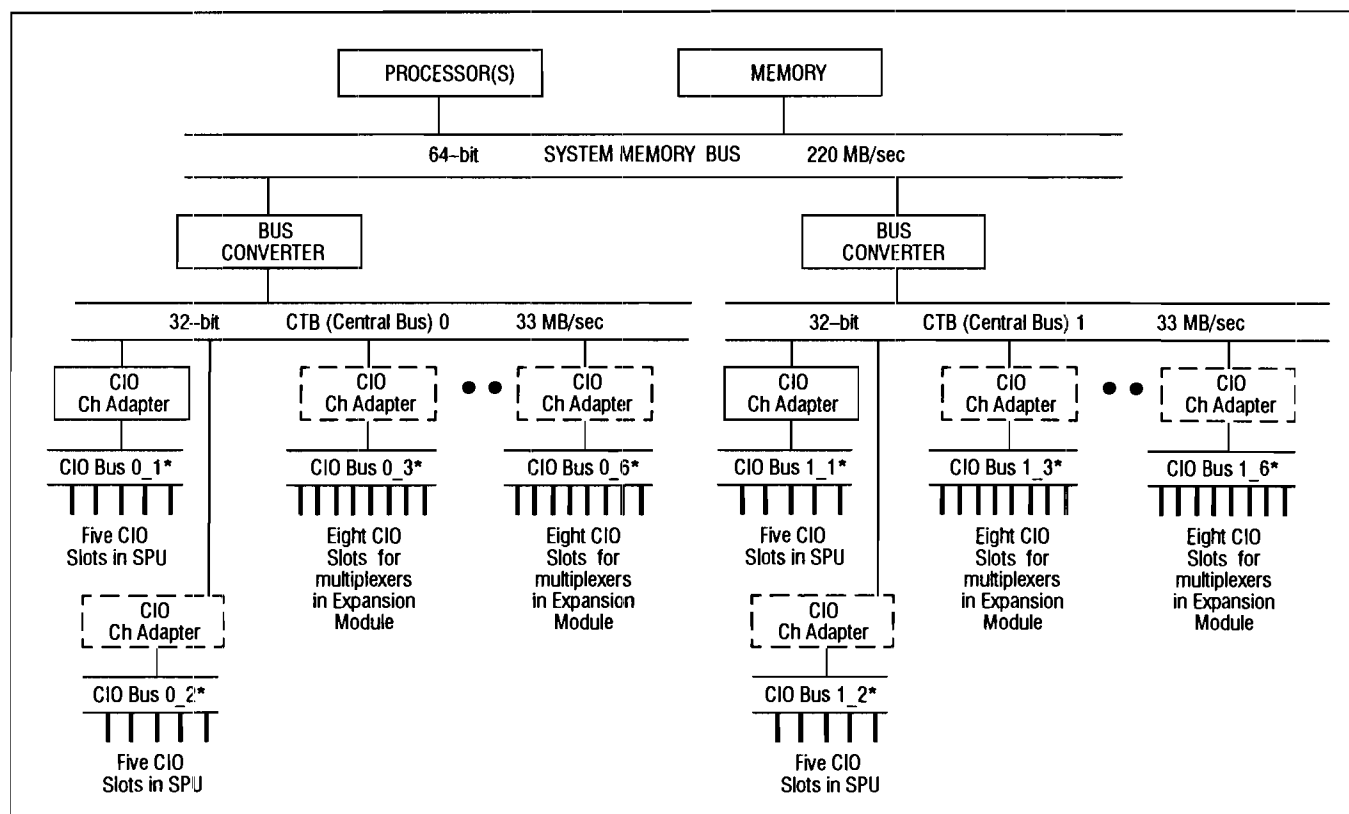


Figure 41. Model 865S Card Cage Layouts



* CIO bus has a 5 MB/sec bandwidth and is a 16-bit bus.

Figure 42. Model 865S Bus Relationships

Model 865S Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1845A	HP A1845A Model 865S Business Server, consisting of: - One 32-bit PA-RISC Model 865S CPU with floating-point co-processor. - Two Memory controllers. - Two bus converters (connect central buses 0 and 1 to system memory bus). - Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots in the SPU mainframe. - One HP A1152A 64 Mbyte ECC Memory card (64 Mbytes total base memory). - HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. - HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. - HP 30192A Access Port. - Battery Backup System to sustain memory through power outages up to 15 minutes long. - Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1 m (39.4 in.) high by 1.3 m (51.2 in.) wide by 711 mm (28 in.) deep. 8-user HP-UX License and General Usage Documentation. - Manuals, installation.
Options	
Opt. 014	Add LANLink, TCP/IP, ARPA, and NFS services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Adds 16-Mbyte ECC Memory card.
Opt. 564	Adds 64 Mbyte ECC Memory card.
Opt. 601	Adds CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	16-slot Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add-on CIO Terminal Expander Bay with 16- slot Expansion Module, and two CIO Channel Adapters (purchase of 9742A Option 601 is prerequisite to 9742A Option 603).
Opt. 700	Adds HP 27111A Fiber optic peripheral interface card.
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1152A	64 Mbyte ECC Memory card.
A1122A	CIO Terminal Expander, with: - Cabinet 16-slot Expansion Module - Two CIO Channel Adapters - Power supply
A1123A	CIO Terminal Expansion Module Kit (requires previous purchase of 9742A Option 601 or A1122A or A1124A) with: 16-slot Expansion Module - Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of 9742A Option 601 or A1122A) with: - Cabinet 6-slot Expansion Module - Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6-channel or 16-channel multiplexers).
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices). For use with 6-channel multiplexer only.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk, selected from those listed in the disk drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately-purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 870S/100 Business Server

Description

HP 9000 Model 870S/100 is a large-capacity system with high speed processing. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 43, below), the Model 870S/100 can be equipped to support up to 800 terminals. If greater capacity and speed are required, select the Model 870S/200 (page 109).

The base Model 870S/100 SPU includes 96 Mbytes of ECC memory and 10 CIO slots (CIO sections 0_1 and 1_1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces, SCSI interfaces, or a LAN interface. See Figure 44 and Figure 45, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links, OSI Express MAP 3.0 Links, or CIO Channel

Adapters. Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to three CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel or 16-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 43, below.

Thirteen slots remain available for addition of more memory cards so memory can be expanded from 96 Mbytes to 768 Mbytes in either 16 Mbyte or 64 Mbyte increments. The Model 870S/100 includes HP-UX with an 8-user license, which can be upgraded to an unlimited license.

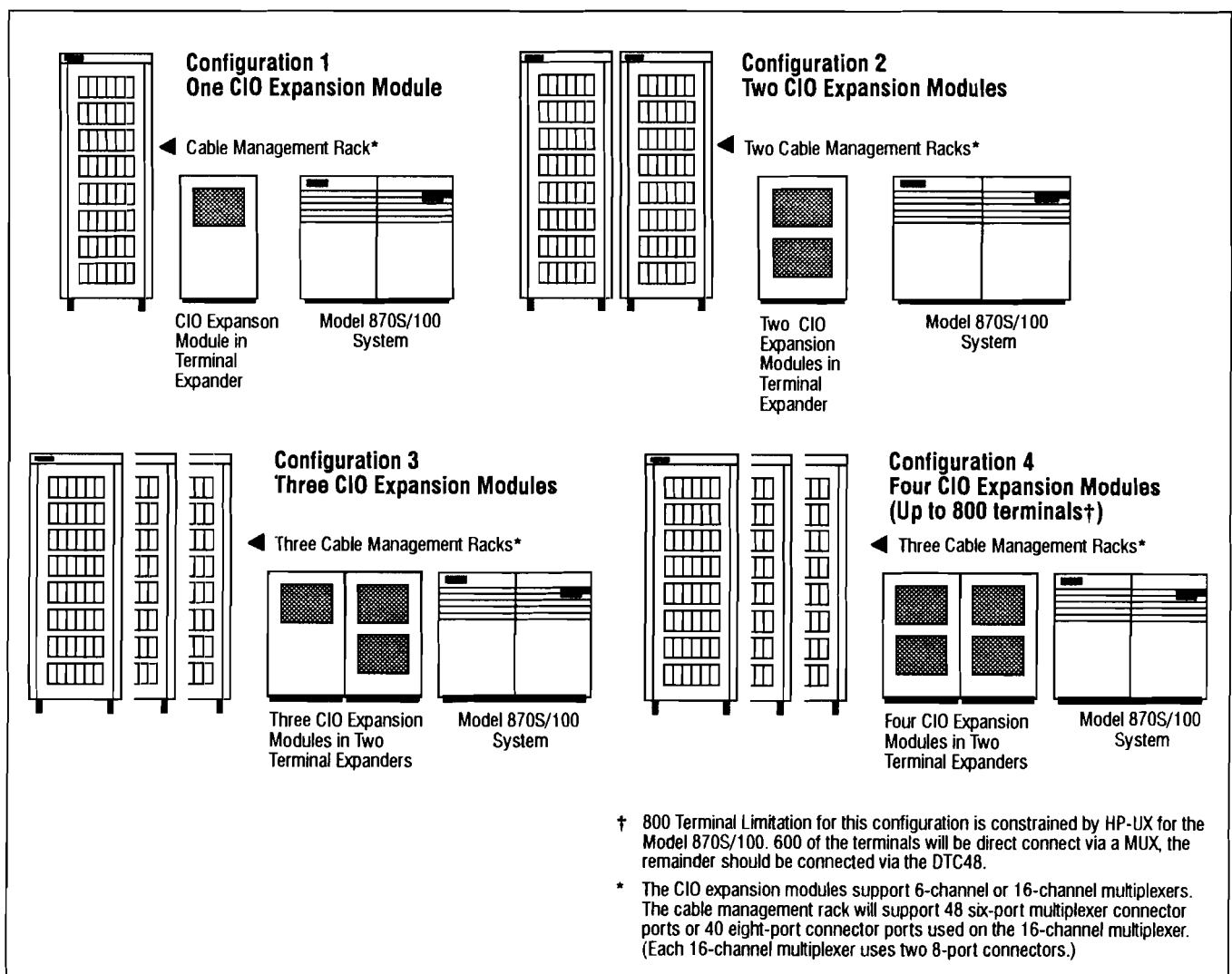


Figure 43. Model 870S/100 with CIO Expansion Modules and Cable Management Racks

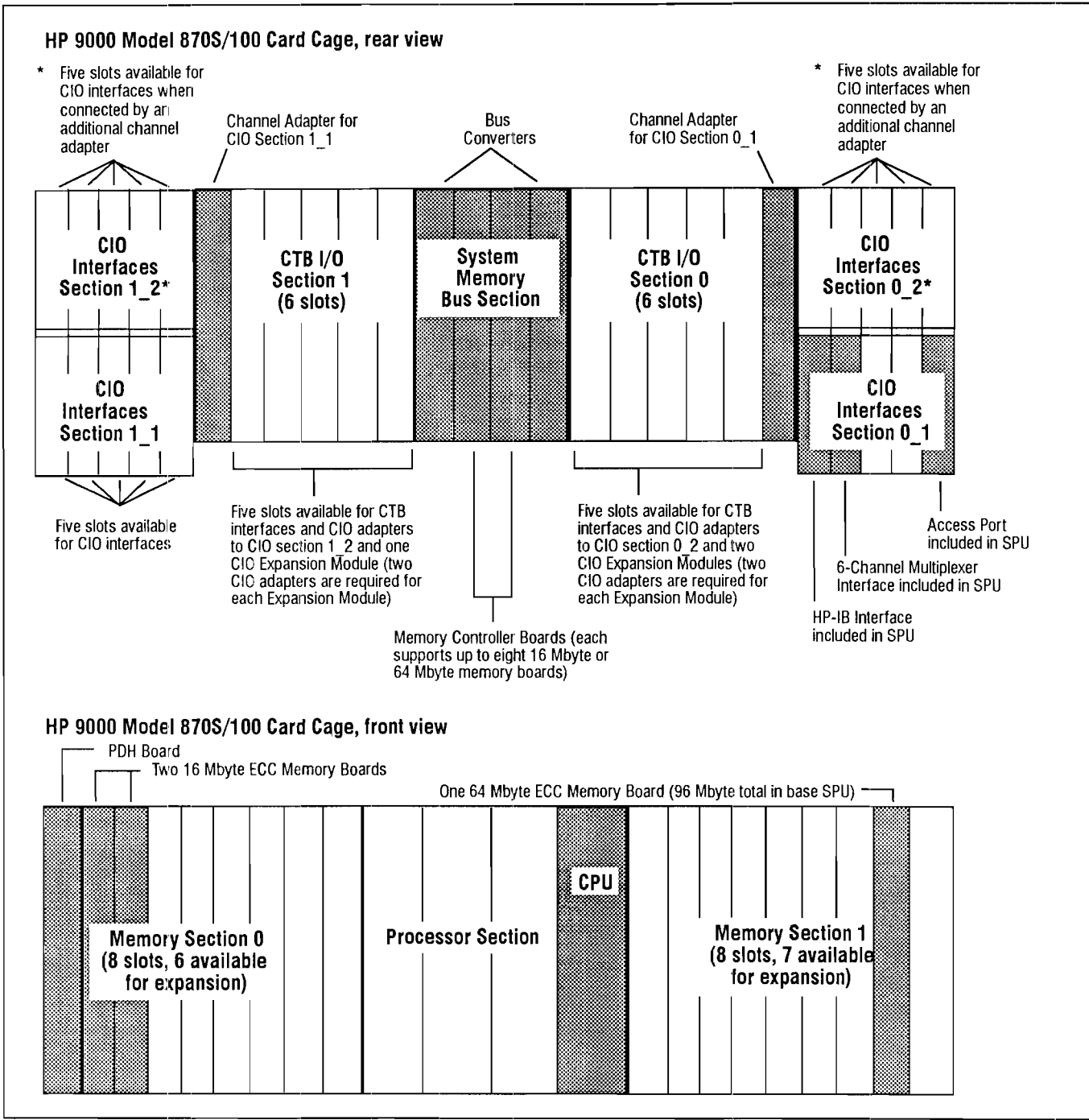
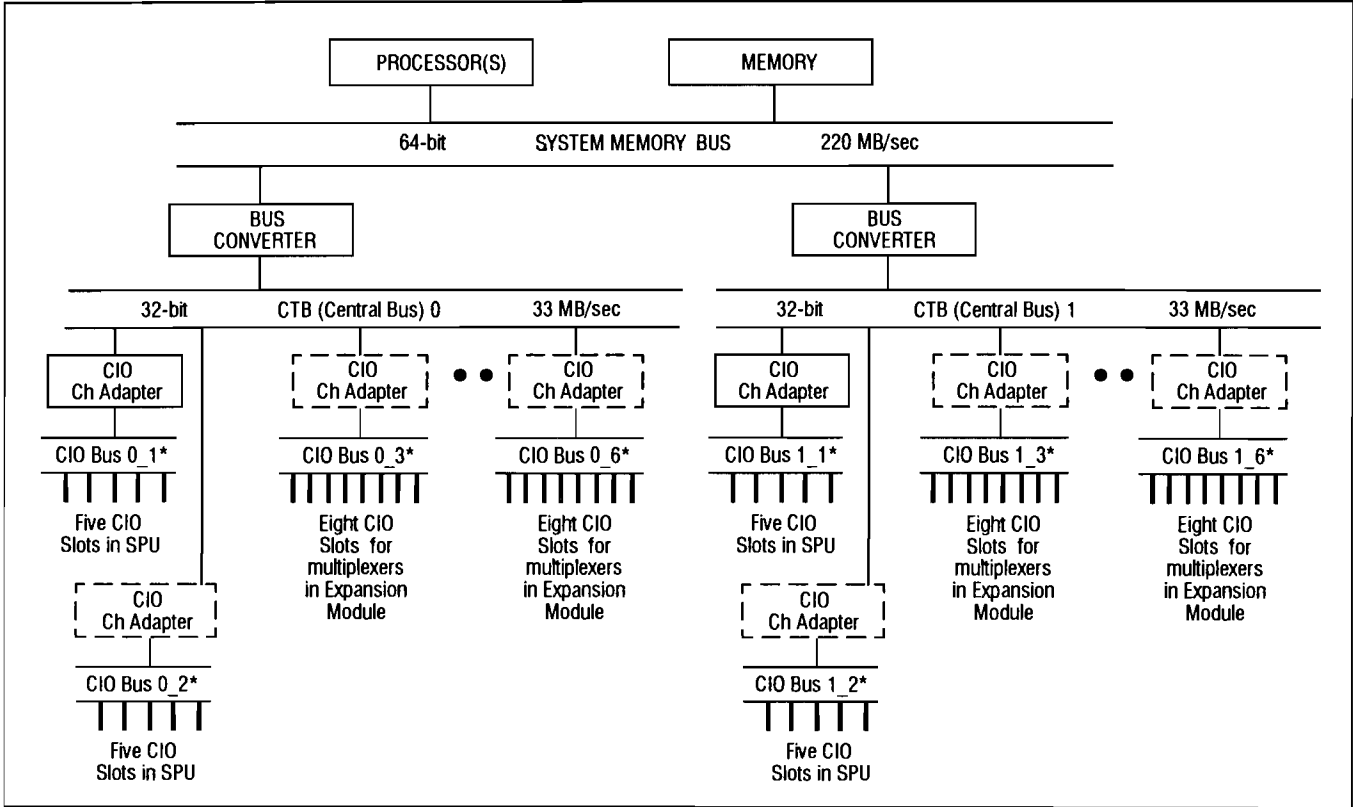


Figure 44. Model 870S/100 Card Cage Layouts



* CIO bus has a 5 MB/sec bandwidth and is a 16-bit bus.

Figure 45. Model 870S/100 Bus Relationships

Model 870S/100 Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1135A	HP A1135A Model 870S/100 Business Server, consisting of: - One 32-bit PA-RISC Model 870S CPU with floating-point co-processor. - Two Memory controllers. - Two bus converters (connect central buses 0 and 1 to system memory bus). - Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots in the SPU mainframe. - Two HP A1104A 16-Mbyte ECC memory cards and one HP A1152A 64 Mbyte ECC memory card (96 Mbytes total base memory). - HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. - HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. - HP 30192A Access Port. - Battery Backup System to sustain memory through power outages up to 15 minutes long. - Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1 m (39.4 in.) high by 1.3 m (51.2 in.) wide by 711 mm (28 in.) deep. 8-user HP-UX License and General Usage Documentation. - Manuals, installation.
Options	
Opt. 014	Add LANlink, TCP/IP, ARPA, and NFS services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Add 16-Mbyte ECC Memory card.
Opt. 532	Delete 32-Mbyte of ECC Memory.
Opt. 564	Add 64-Mbyte ECC Memory card.
Opt. 601	Add CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	16-slot Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add-on CIO Terminal Expander Bay with 16-slot Expansion Module, and two CIO Channel Adapters (purchase of 9742A Option 601 is prerequisite to 9742A Option 603).
Opt. 700	Add HP 27111A Fiber optic peripheral interface card.
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1152A	64-Mbyte ECC memory card.
A1142A	Upgrade to 870S/200 (Adds a second 870 processor board and adds 32 Mbyte ECC Memory).
A1122A	CIO Terminal Expander, with: - Cabinet 16-slot Expansion Module - Two CIO Channel Adapters - Power supply
A1123A	CIO Terminal Expansion Module Kit (requires previous purchase of 9742A Option 601 or A1122A or A1124A) with: 16-slot Expansion Module - Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of 9742A Option 601 or A1122A) with: - Cabinet 6-slot Expansion Module - Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6-channel or 16-channel multiplexers).
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices). For use with 6-channel multiplexer only.
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk, selected from those listed in the Disk Drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

Model 870S/200 Business Server

Description

HP 9000 Model 870S/200 is the largest, most powerful HP 9000 Series 800 Business Server. With the addition of CIO Expansion Modules and Cable Management Racks (Figure 46, below), the Model 870S/200 can support up to 1000 terminals.

The base Model 870S/200 SPU includes 128 Mbytes of ECC memory and 10 CIO slots (CIO sections 0_1 and 1_1), of which three are used by included 6-channel multiplexer and HP-IB disk interface cards and an included Access Port card, leaving seven for other I/O interfaces, such as HP-FL disk interfaces, SCSI interfaces, or a LAN interface. See Figure 47 and Figure 48, next pages. Ten Central Bus (CTB) slots remain available for addition of a CTB SNA interface(s), X.25 Links, OSI Express MAP 3.0 Links, or CIO Channel

Adapters. Additional CIO Channel Adapters provide 10 more CIO slots in the SPU mainframe and up to four CIO Expansion Modules. Each CIO Expansion Module adds 16 CIO slots. The 16 CIO slots in the Expansion Modules are usable only for 6-channel or 16-channel multiplexers. The Expansion Modules are subdivided into two 8-slot CIO sections to match I/O bandwidth needs so two CIO Channel Adapters are required for each 16-slot CIO Expansion Module. The two CIO Channel Adapters are included in the Expansion Module Kit. The Expansion Modules are housed in Terminal Expander cabinets, one or two Expansion Modules to a cabinet, as shown in Figure 46, below.

Fourteen slots remain available for addition of more memory cards so memory can be expanded from 128 Mbytes to 768 Mbytes. The Model 870S/200 includes HP-UX with a 8-user license, which can be upgraded to an unlimited license.

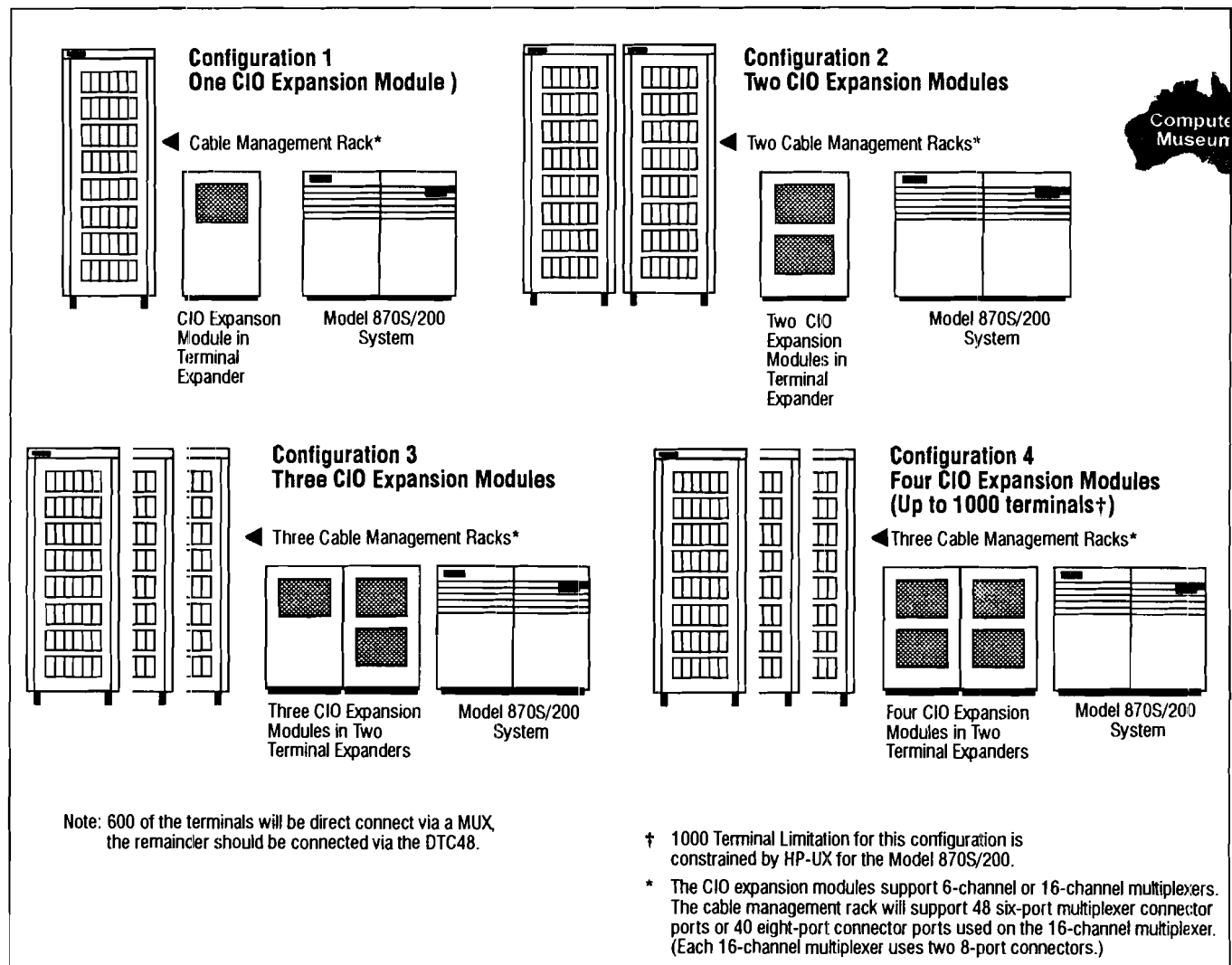


Figure 46. Model 870S/200 with CIO Expansion Modules and Cable Management Racks

Model 870S/200 Business Server, continued

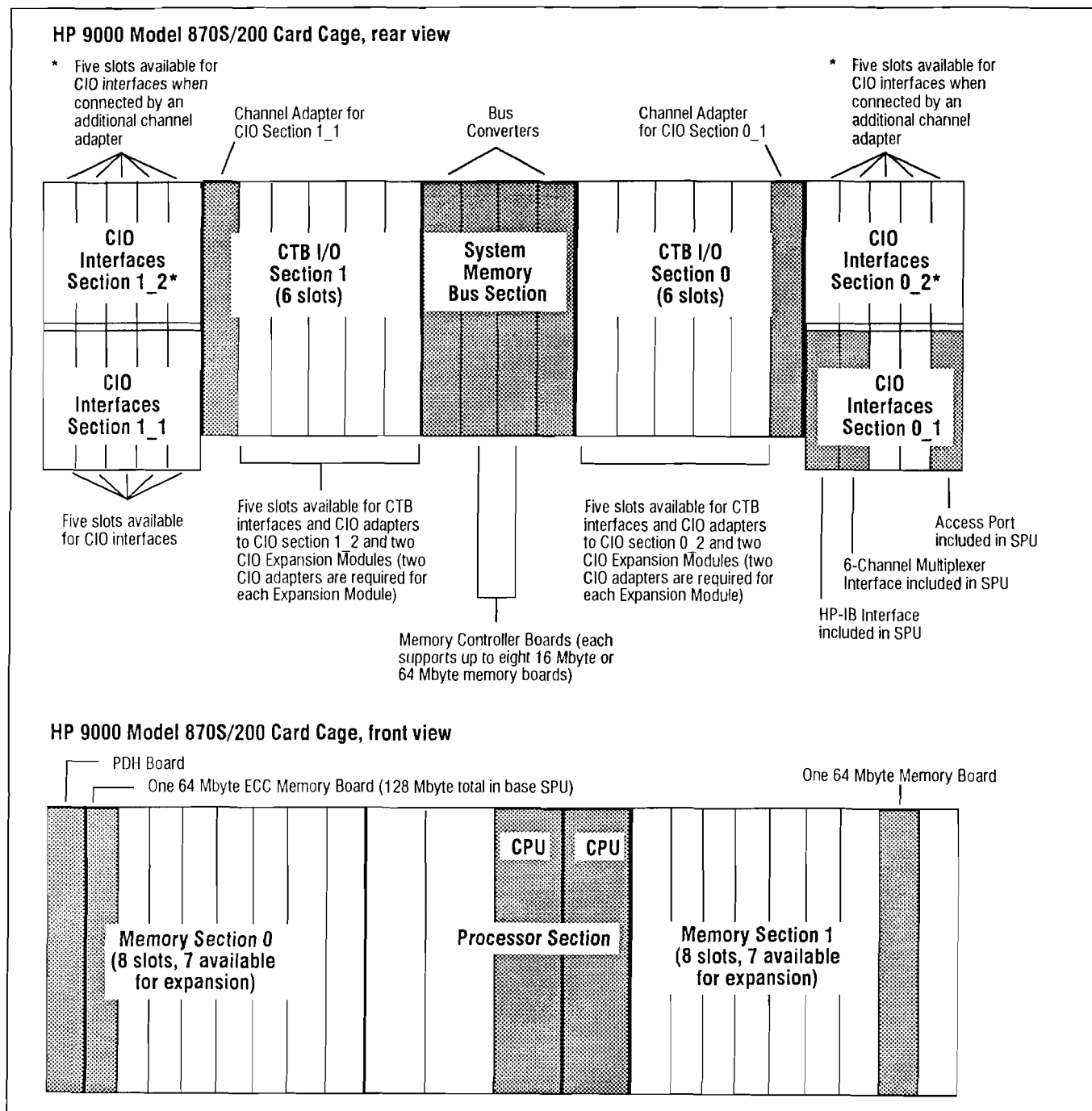
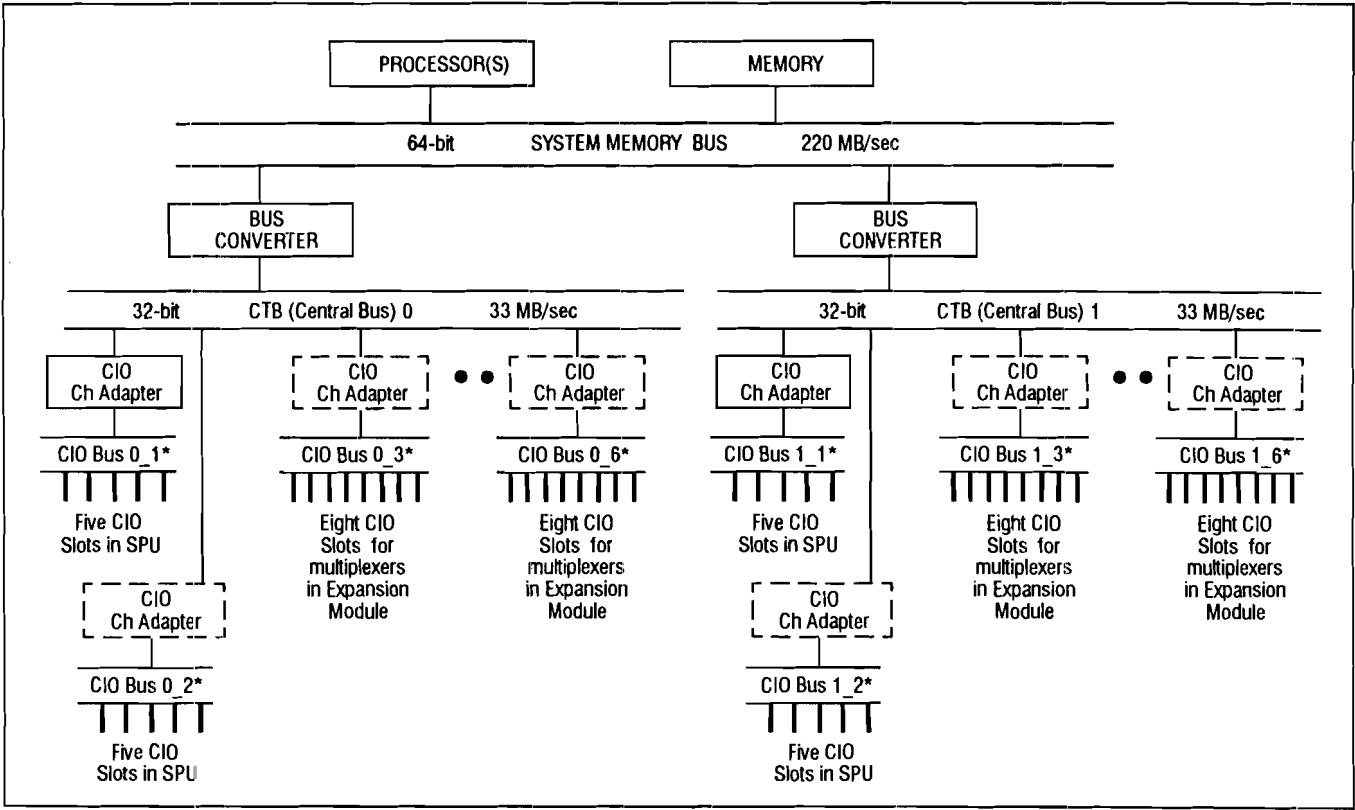


Figure 47. Model 870S/200 Card Cage Layouts



* CIO bus has a 5MB/sec bandwidth and is a 16-bit bus.

Figure 48. Model 870S/200 Bus Relationships

Model 870S/200 Business Server, continued

Product Summary

Product/ Opt. No.	Description
A1146A	HP A1146A Model 870S/200 Business Server, consisting of: • Two 32-bit PA-RISC Model 870 CPUs with floating-point co-processors. • Two Memory controllers. • Two bus converters (connect central buses 0 and 1 to system memory bus). • Two CIO Channel Adapters installed in two central system buses connect to 10 CIO slots. • Two HP A1152A 64-Mbyte ECC memory cards (128 Mbytes total base memory). • HP 27110B HP-IB interface to system disk(s) and cartridge tape unit. • HP 98196A 6-channel multiplexer interface with 6-connector breakout panel. • HP 30192A Access Port. • Battery Backup System to sustain memory through power outages up to 15 minutes long. • Standalone two-bay cabinet with 7 available CIO slots, ten available CTB slots for CIO channel adapters plus six available slots for memory expansion. Includes its own power supply and is 1m (39.4 in.) high by 1.3m (51.2 in.) wide by 711 mm (28 in.) deep. • 8-user HP-UX License and General Usage Documentation. • Manuals, installation.
Options	
Opt. 014	Add LANLink, TCP/IP, ARPA, and NFS services. ThinMAU and ThickMAU included.
Opt. 015	Operation from 380 VAC, 50 Hz power.
Opt. 016	Operation from 415 VAC, 50 Hz power.
Opt. 516	Add 16-Mbyte ECC Memory card.
Opt. 532	Delete 32-Mbyte of ECC Memory.
Opt. 564	Add 64-Mbyte ECC Memory card.
Opt. 601	Add CIO Terminal Expander cabinet with 16-slot Expansion Module, power supply, and two CIO Channel Adapters.
Opt. 602	16-slot Expansion Module Kit with two CIO Channel Adapters (installs in CIO Terminal Expander or Add-on CIO Terminal Expander Bay).
Opt. 603	Add-on CIO Terminal Expander Bay with 16- slot Expansion Module, and two CIO Channel Adapters (purchase of A1114A Option 601 is prerequisite to A1114A Option 603).
Opt. 700	Add HP 27111A Fiber optic peripheral interface card.
Add-on Accessories	
A1101A	CIO Channel Adapter.
A1104A	16-Mbyte ECC memory card.
A1152A	64-Mbyte ECC memory card.
A1122A	CIO Terminal Expander, with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters • Power supply
A1123A	• CIO Terminal Expansion Module Kit (requires previous purchase of A1114A Option 601 or A1122A or A1124A) with: • 16-slot Expansion Module • Two CIO Channel Adapters
A1124A	Add-on CIO Terminal Expander Bay (requires previous purchase of A1114A Option 601 or A1122A) with: • Cabinet • 16-slot Expansion Module • Two CIO Channel Adapters
A1125A	Cable Management Rack (capacity for 288 or 320 connections using 6-channel or 16-channel multiplexers.)
19749A	Cable Management System with Console Table (provides mounting for 11 multiplexer connection panels and management of the related cables to as many as 66 terminals or other RS-232C devices).

CIO and CTB Interfaces

See page 168.

Operational Requirements

Description	Requirements
System Console	An HP C1001A/G/W Terminal as system console, connected via an HP 40242M cable to Multiplexer port 0. HP C1002A/G/W or discontinued HP 2392A Option S12 terminal, connected via HP 40242M cable, is also usable as system console.
System Disk	A system disk, selected from those listed in the Disk Drives section. The required cable to the HP 27110B HP-IB interface will be listed with the disk choices if it is not included with the disk. Alternatively, the system disk can be connected via a separately purchased HP 27111A HP-FL interface card, in which case, the included HP-IB interface can be used to connect the software tape drive.
Tape Drive	A tape drive, selected from those listed in the Tape Drives section on page 195. The magnetic tape drive cannot connect to the same HP-IB bus as the system disk. The required HP-IB cable will be listed with the cartridge or magnetic tape unit choices if it is not included with the desired tape drive.

Suggested Additional Software

Product Number	Description
B1920A	HP OmniBack. Global network backup management system that provides central backup and recovery.
B1921A	HP OmniBack/Turbo. OmniBack plus high-performance local backup (up to 5 Gbytes per hour).
B1900A	HP OpenSpool/UX. Spooling in networked or stand-alone HP-UX environments.

HP 9000 Series 800/600 Configuration Guide

Multiplexer and CIO Interface Use Record

98190A 16-CHANNEL MULTIPLEXER INTERFACE USE RECORD

As each multiplexer interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers you've selected, and thereby determine if and when you have to select the next multiplexer. If necessary to accommodate all multiplexers, make additional copies of this record page.

Multiplexer No. 1

Device P/N	Cable P/N

Multiplexer No. 2

Device P/N	Cable P/N

Multiplexer No. 3

Device P/N	Cable P/N

Multiplexer No. 4

Device P/N	Cable P/N

Multiplexer No. 5

Device P/N	Cable P/N

Multiplexer No. 6

Device P/N	Cable P/N



Multiplexer and CIO Interface Use Record, continued

CIO INTERFACE USE RECORD

As each multiplexer interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers you've selected, and thereby determine if and when you have to select the next multiplexer. If necessary to accommodate all multiplexers, make additional copies of this record page.

27110B HP-IB Interface No. D1
for Disks and/or Tapes (Std)

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D2
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D3
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D4
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D5
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PL1
for Plotters

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PR1
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PR2
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PL2
for Plotters

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G1
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G2
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G3
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27111A HP-FL Interface No. D1

Device P/N	Cable P/N
	Included with I/F

27111A HP-FL Interface No. D1

Device P/N	Cable P/N
	Included with I/F

NOTE: HP 27111A HP-FL interfaces can connect up to eight C2204A disks when they are selected as the 46299A 10.72 Gbyte package, which contains all eight drives in a single cabinet. In any FL disk configuration on a HP 27111A interface card, the maximum PBUS (add-on drive interconnect) cable cannot exceed 6.4 meters.

Model 850S/855S/860S Interfacing Worksheet

Recording Card Cage and Interface Use

This page through page 128 are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage and Expansion Module Records

Referring to the first page of the Interfacing Worksheet, below, note that it contains card cage diagrams of the HP 9000 Model 850S/855S/860S. The next page contains diagrams of the A1122A, A1123A, and A1124A Terminal Expanders. As you determine the need and add memory and CIO or CTB interfaces, enter the respective product numbers into the card cage records. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

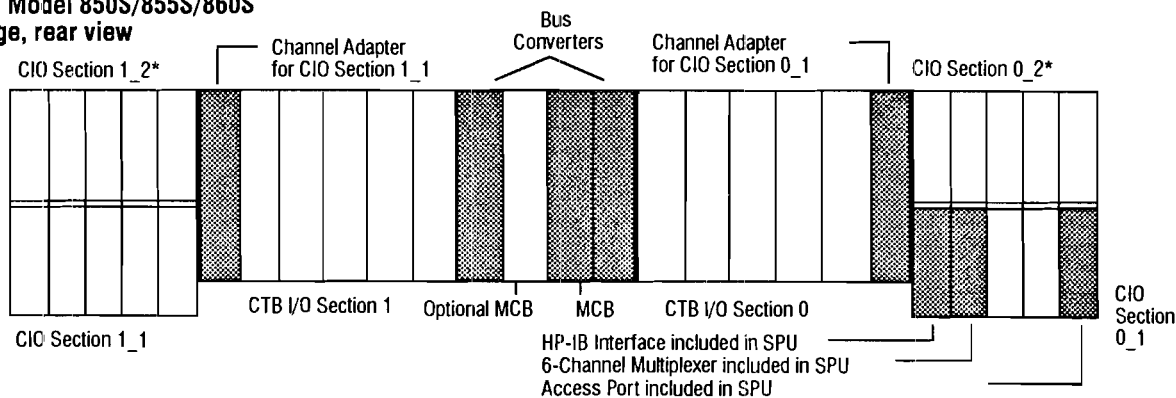
The Multiplexer and CIO Interface Use Records

Interface Use Records are provided for Multiplexers and CIO interfaces. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces (on pages 117 and 138). Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces or the disks into the records for the HP 27111A HP-FL interfaces or into the records for the 27147A SCSI interface on page 128. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and one HP 27110B HP-IB interface are standard, and indicated as such in the records on pages 118 and 128. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

MODEL 850S/855S BASE SYSTEM PROCESSOR UNIT CARD CAGE RECORD

Enter memory and I/O Cards by product number in the appropriate card cage for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc., or 98190A-1, -2, etc., HP-IB interfaces as 27110B-D1, -M1, -PR1, etc., and HP-FL interfaces as 27111A-D1, -D2 for keying with the use records on pages 117, 128, and 138.

HP 9000 Model 850S/855S/860S Card Cage, rear view



HP 9000 Model 850S/855S/860S Card Cage, front view

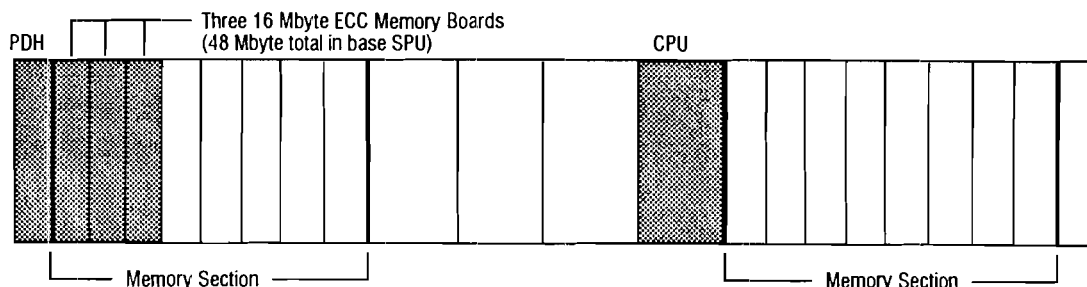


Figure 52. Model 850S/855S/860S Base System Processor Unit Card Cage Record

MODEL 850S/855S/860S CIO EXPANSION MODULE CARD CAGE RECORDS

Enter multiplexer interface cards by product number in the terminal expander card cages for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc. for keying with the use records in the section on pages 117 and 138. Each terminal expander and each terminal expansion module kit includes the CIO Channel Adapters required to connect it to the SPU CTB CIO Adapter slots; however, as each Terminal Expander is added, you may wish to enter the corresponding channel adapters in the SPU card cage record (two adapters for each 16-slot Terminal Expander).

HP A1122A CIO Terminal Expander Cabinet

First CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1123A CIO Terminal Expansion Module Kit

Second CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1124A Add-on CIO Terminal Expander Bay

Third CIO Expansion Module

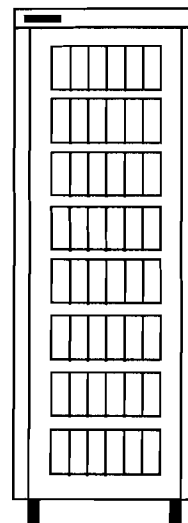
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1123A CIO Terminal Expansion Module Kit

Fourth CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A1125A Cable Management Rack (supports 288 or 320 Terminals)



A1125A Cable Management Rack (supports 288 or 320 Terminals)

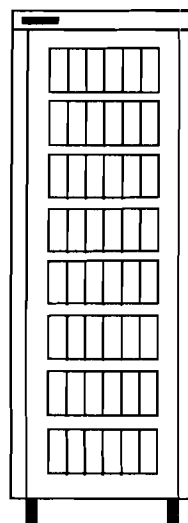


Figure 53. Model 850S/855S/860S CIO Expansion Module Card Cage Records

Model 865S Interfacing Worksheet

Recording Card Cage and Interface Use

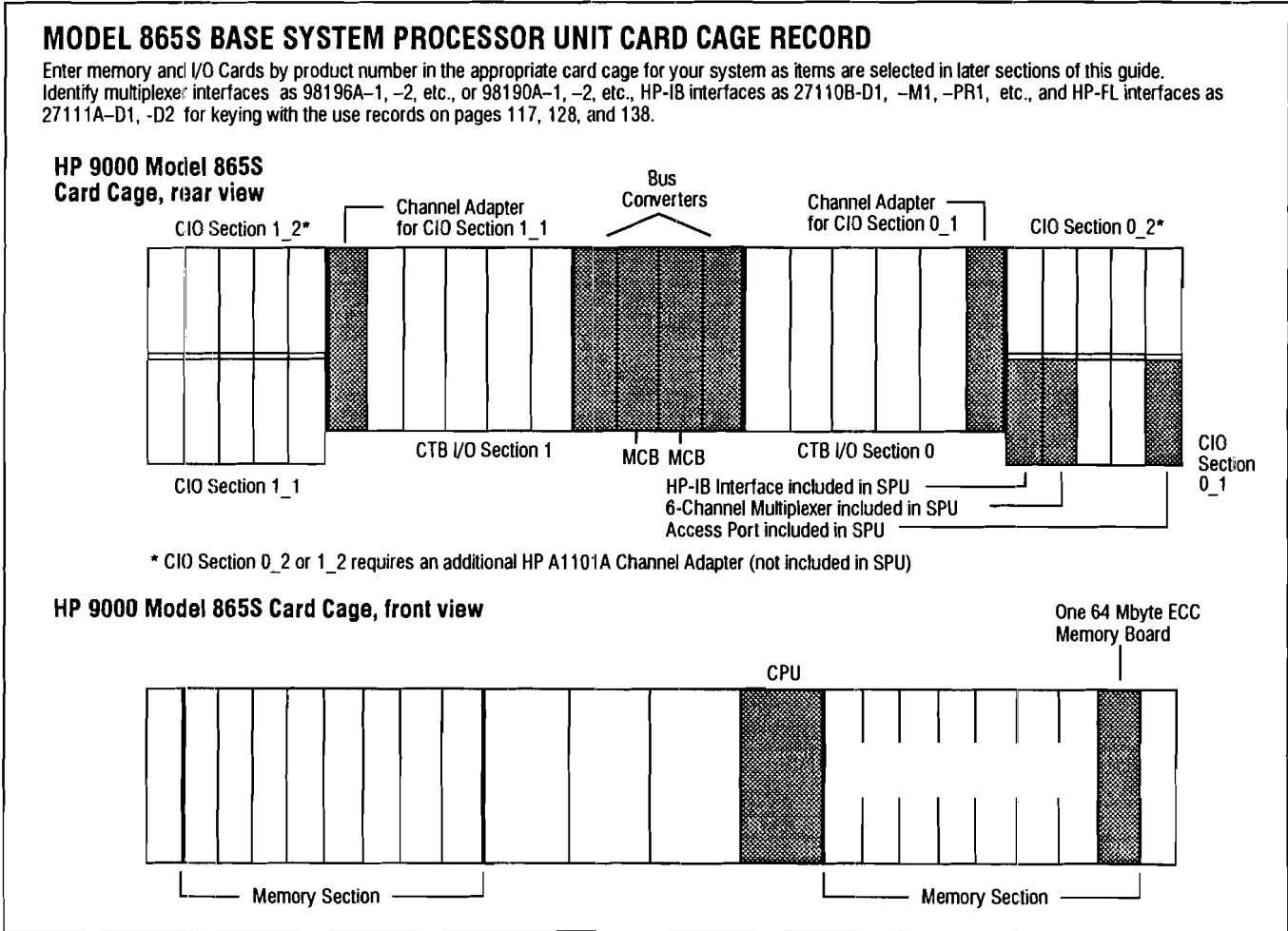
This page through page 128 are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage and Expansion Module Records

Referring to the first page of the Interfacing Worksheet, below, note that it contains card cage diagrams of the HP 9000 Model 865S. The next page contains diagrams of the A1122A, A1123A, and A1124A Terminal Expanders. As you determine the need and add memory and CIO or CTB interfaces, enter the respective product numbers into the card cage records. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

The Multiplexer and CIO Interface Use Records

Interface Use Records are provided for Multiplexers and for CIO interfaces. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces (on pages 117 and 138). Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces or the disks into the records for the HP 27111A HP-FL interfaces or into the records for the 27147A SCSI interface, on page 128. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and one HP 27110B HP-IB interface are standard, and indicated as such in the records on pages 118 and 128. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.



MODEL 865S CIO EXPANSION MODULE CARD CAGE RECORDS

Enter multiplexer interface cards by product number in the terminal expander card cages for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc. for keying with the use records in the section on pages 117 and 138. Each terminal expander and each terminal expansion module kit includes the CIO Channel Adapters required to connect it to the SPU CTB CIO Adapter slots; however, as each Terminal Expander is added, you may wish to enter the corresponding channel adapters in the SPU card cage record (two adapters for each 16-slot Terminal Expander).

HP A1122A CIO Terminal Expander Cabinet

First CIO Expansion Module

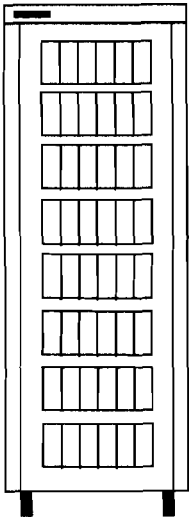
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HP A1123A CIO Terminal Expansion Module Kit

Second CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A1125A Cable Management Rack
(supports 288 or 320 Terminals)



HP A1124A Add-on CIO Terminal Expander Bay

Third CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1123A CIO Terminal Expansion Module Kit

Fourth CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A1125A Cable Management Rack
(supports 288 or 320 Terminals)

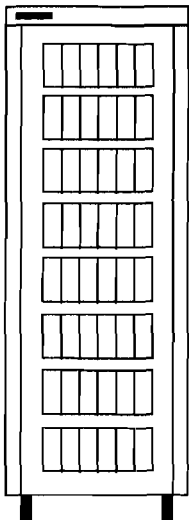


Figure 55. Model 865S CIO Expansion Module Card Cage Records

Model 870S/100 Interfacing Worksheet

Recording Card Cage and Interface Use

This page through page 128 are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage and Expansion Module Records

Referring to the first page of the Interfacing Worksheet, below, note that it contains card cage diagrams of the HP 9000 Model 870S/100. The next page contains diagrams of the A1122A, A1123A, and A1124A Terminal Expanders. As you determine the need and add memory and CIO or CTB interfaces, enter the respective product numbers into the card cage records. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

The Multiplexer and CIO Interface Use Records

Interface Use Records are provided for Multiplexers and for CIO interfaces. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces (on pages 117 and 138). Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces or the disks into the records for the HP 27111A HP-FL interfaces or into the records for the 27147A SCSI interface on page 128. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and one HP 27110B HP-IB interface are standard, and indicated as such in the records on pages 118 and 128. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

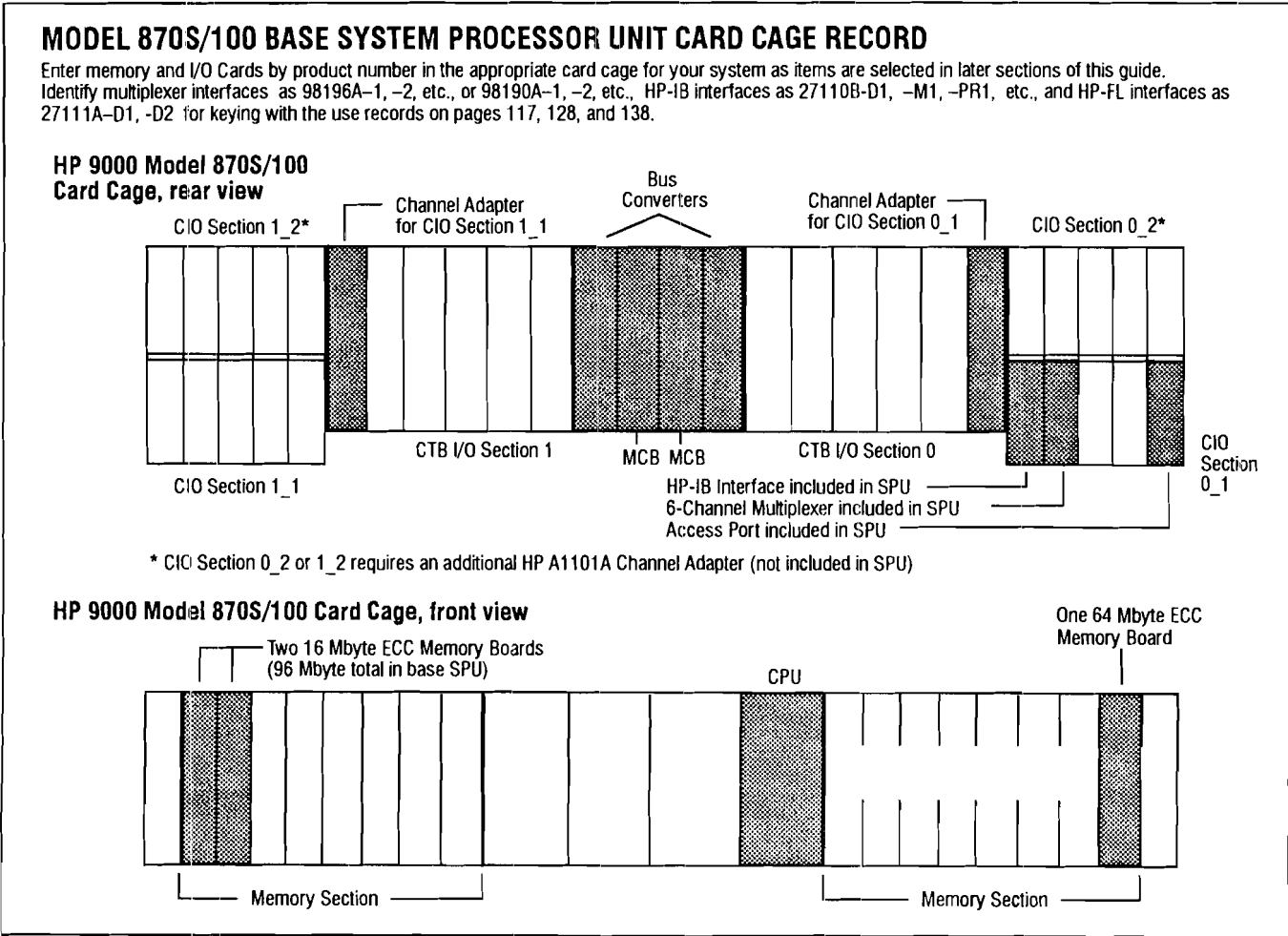


Figure 56. Model 870S/100 Base System Processor Unit Card Cage Record

MODEL 870S/100 CIO EXPANSION MODULE CARD CAGE RECORDS

Enter multiplexer interface cards by product number in the terminal expander card cages for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc. for keying with the use records in the section on pages 117 and 138. Each terminal expander and each terminal expansion module kit includes the CIO Channel Adapters required to connect it to the SPU CTB CIO Adapter slots; however, as each Terminal Expander is added, you may wish to enter the corresponding channel adapters in the SPU card cage record (two adapters for each 16-slot Terminal Expander).

HP A1122A CIO Terminal Expander Cabinet

First CIO Expansion Module

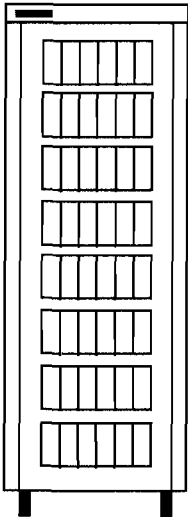
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1123A CIO Terminal Expansion Module Kit

Second CIO Expansion Module

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A1125A Cable Management Rack
(supports 288 or 320 Terminals)



HP A1124A Add-on CIO Terminal Expander Bay

Third CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

HP A1123A CIO Terminal Expansion Module Kit

Fourth CIO Expansion Module

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

A1125A Cable Management Rack
(supports 288 or 320 Terminals)

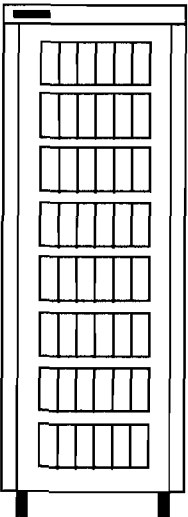


Figure 57. Model 870S/100 CIO Expansion Module Card Cage Records

Model 870S/200 Interfacing Worksheet

Recording Card Cage and Interface Use

This page through page 128 are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage and Expansion Module Records

Referring to the first page of the Interfacing Worksheet, below, note that it contains card cage diagrams of the HP 9000 Model 870S/200. The next page contains diagrams of the A1122A, A1123A, and A1124A Terminal Expanders. As you determine the need and add memory and CIO or CTB interfaces, enter the respective product numbers into the card cage records. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

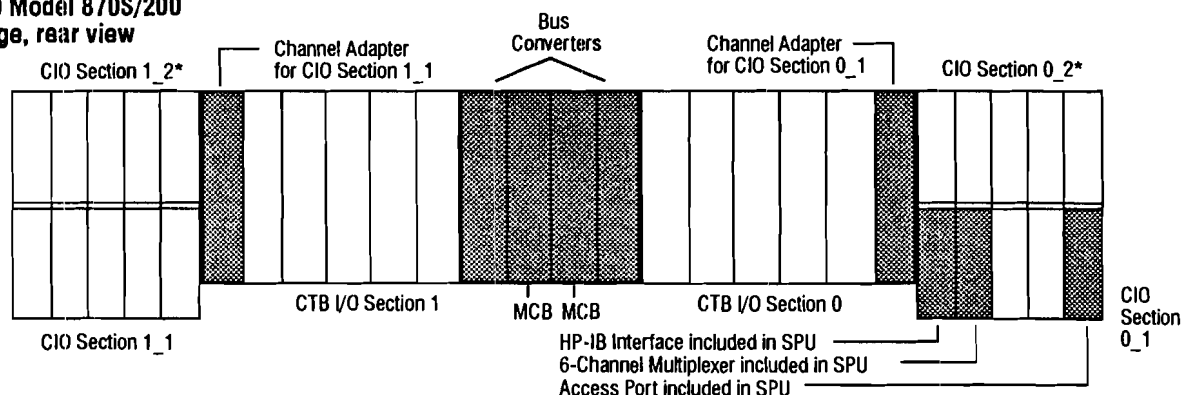
The Multiplexer and CIO Interface Use Records

Interface Use Records are provided for Multiplexers and for CIO interfaces. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces (on pages 117 and 138). Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces or the disks into the records for the HP 27111A HP-FL interfaces or into the records for the 27147A SCSI interface on page 128. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and one HP 27110B HP-IB interface are standard, and indicated as such in the records on pages 118 and 128. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

MODEL 870S/200 BASE SYSTEM PROCESSOR UNIT CARD CAGE RECORD

Enter memory and I/O Cards by product number in the appropriate card cage for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc., HP-IB interfaces as 27110B-D1, -M1, -PR1, etc., and HP-FL interfaces as 27111A-D1, -D2 for keying with the use records on pages 117, 128, and 138.

HP 9000 Model 870S/200 Card Cage, rear view



* CIO Section 0_2 or 1_2 requires an additional HP A1101A Channel Adapter (not included in SPU)

HP 9000 Model 870S/200 Card Cage, front view

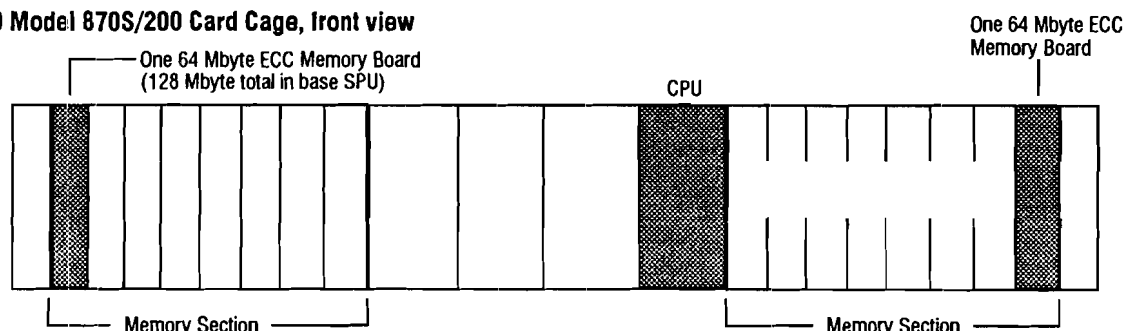


Figure 58. Model 870S/200 Base System Processor Unit Card Cage Record

MODEL 870S/200 CIO EXPANSION MODULE CARD CAGE RECORDS

Enter multiplexer interface cards by product number in the terminal expander card cages for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc. for keying with the use records in the section on pages 117 and 138. Each terminal expander and each terminal expansion module kit includes the CIO Channel Adapters required to connect it to the SPU CTB CIO Adapter slots; however, as each Terminal Expander is added, you may wish to enter the corresponding channel adapters in the SPU card cage record (two adapters for each 16-slot Terminal Expander).

HP A1122A CIO Terminal Expander Cabinet

First CIO Expansion Module

[illegible]

HP A1123A CIO Terminal Expansion Module Kit

Second CIO Expansion Module

[illegible]

HP A1124A Add-on CIO Terminal Expander Bay

Third CIO Expansion Module

[illegible]

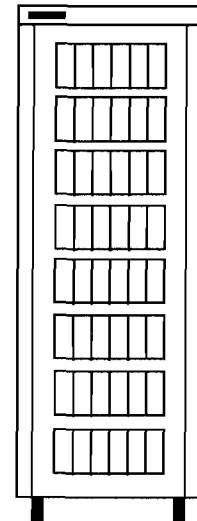
HP A1123A CIO Terminal Expansion Module Kit

Fourth CIO Expansion Module

[illegible]

A1125A Cable Management Rack

(supports 288 or 320 Terminals)



A1125A Cable Management Rack

(supports 288 or 320 Terminals)

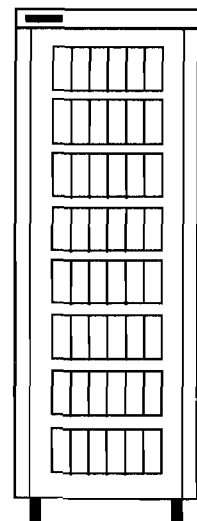


Figure 59. Model 870S/200 CIO Expansion Module Card Cage Records

Multiplexer, HP-IB, SCSI, and HP-FL CIO Interface Use Record

98190A 16-CHANNEL MULTIPLEXER INTERFACE USE RECORD

As each multiplexer interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers you've selected, and thereby determine if and when you have to select the next multiplexer. If necessary to accommodate all multiplexers, make additional copies of this record page.

98190A Multiplexer No. 1

Device P/N	Cable P/N

98190A Multiplexer No. 2

Device P/N	Cable P/N

98190A Multiplexer No. 3

Device P/N	Cable P/N

98190A Multiplexer No. 4

Device P/N	Cable P/N

98190A Multiplexer No. 5

Device P/N	Cable P/N

98190A Multiplexer No. 6

Device P/N	Cable P/N

Multiplexer, HP-IB, SCSI, and HP-FL CIO Interface Use Record, continued

HP-IB, SCSI, AND HP-FL INTERFACE USE RECORD

As each HP-IB, SCSI, and/or HP-FL interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the HP-IB, SCSI, and HP-FL interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

27110B HP-IB Interface No. D1
for Disks and/or Tapes (Std)

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D2
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D3
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D4
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D5
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PL1
for Plotters

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PR1
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PR2
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PL2
for Plotters

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G1
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G2
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G3
for General HP-IB Devices

Device P/N	Cable P/N
	Included with I/F

27111A HP-FL Interface No. D1

Device P/N	Cable P/N

27111A HP-FL Interface No. D2

Device P/N	Cable P/N

NOTE: HP 27111A HP-FL interfaces can connect up to eight C2204A disks when they are selected as the 46299A 10.72 Gbyte package, which contains all eight drives in a single cabinet. In any FL disk configuration on a HP 27111A interface card, the maximum PBUS (add-on drive interconnect) cable cannot exceed 6.4 meters.

Multiplexer, HP-IB, SCSI, and HP-FL CIO Interface Use Record, continued

HP-IB, SCSI, AND HP-FL INTERFACE USE RECORD, continued

As each HP-IB, SCSI, and/or HP-FL interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the HP-IB, SCSI, and HP-FL interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

27147A SCSI Interface No. 1

Device P/N	Cable P/N

27147A SCSI Interface No. 2

Device P/N	Cable P/N

27147A SCSI Interface No. 3

Device P/N	Cable P/N

27147A SCSI Interface No. 4

Device P/N	Cable P/N

27147A SCSI Interface No. 5

Device P/N	Cable P/N

27147A SCSI Interface No. 6

Device P/N	Cable P/N

27147A SCSI Interface No. 7

Device P/N	Cable P/N

27147A SCSI Interface No. 8

Device P/N	Cable P/N

27147A SCSI Interface No. 9

Device P/N	Cable P/N

27147A SCSI Interface No. 10

Device P/N	Cable P/N

Model 635SV General Purpose Server

Description

The HP 9000 Model 635SV is a General Purpose Server for PCs and diskless workstations. It is based on the powerful Model 835S System Processor Unit and includes a 670-Mbyte fixed disk and a 67-536 Mbyte autchanger cartridge tape subsystem. Figure 60 illustrates Model 635SV functions and Figure 61 shows Model 635SV backplane usage and interconnections.

CPU: PA-RISC Model 835, clocked at 30 MHz.

Cache: 16 Kbytes.

Bus Types: 64-plus-8-bit-ECC memory bus, 32-bit CTB bus, and 16-bit CIO bus.

Included Interfaces: Two HP-IB interfaces (to disk and cartridge tape drive), 6-channel multiplexer, and LAN/9000 Series 800/600 Link.

RAM: 24-Mbyte ECC, expandable to 128 Mbytes (each CTB slot taken for other uses reduces maximum memory capacity by 32 Mbytes).

Floating-Point Processor: 2.02 MFLOPs Floating-Point Coprocessor.

Direct Memory Access: Direct memory access via CIO bus is standard.

Operating System: Server License-to-use HP-UX is included. This license provides unlimited programmatic access while limiting direct log-ons to 2 users via multiplexer or LAN connection. One set of HP 92508A media and system administration manuals must be purchased separately to provide installable software for all licensed Model 635SV Servers at a site. HP-UX installed on disk before shipping.

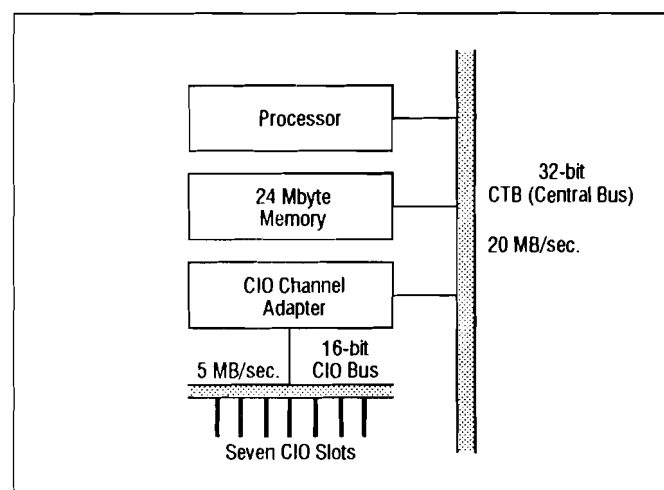


Figure 60. Model 635SV Functions

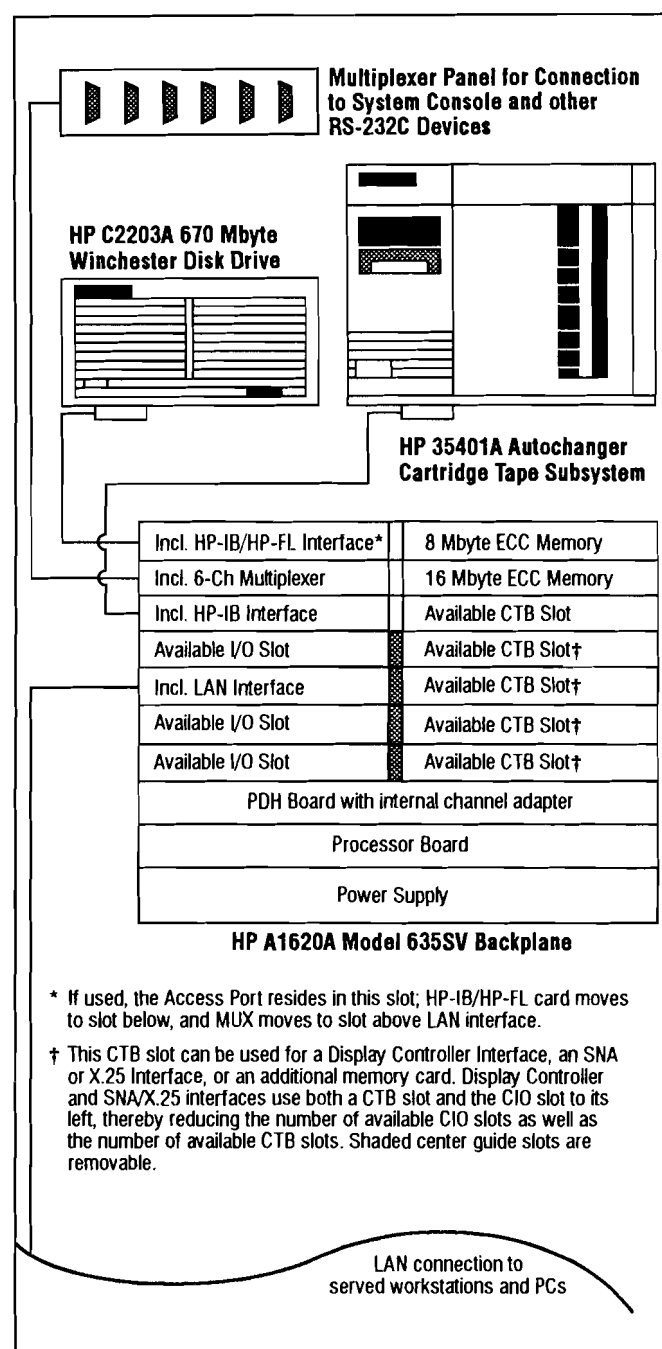


Figure 61. Model 635SV Backplane Usage and Interconnections

Model 635SV General Purpose Server, continued

Product Summary

Product/ Opt. No.	Description
A1620A	Model 635SV General-Purpose Server, consisting of: • System Processor Unit (SPU), including: • 32-bit PA-RISC Model 835 CPU with floating-point co-processor. • A1010A 8-Mbyte ECC Memory Array Card. • A1037A 16-Mbyte ECC Memory Array Card. • Two 27110B HP-IB interfaces, to system disk and cartridge tape subsystem. • 98196A 6-Channel Multiplexer interface to system console and other RS-232C devices. • 36967A LAN/9000 Series 800 Link. • Enclosure with 3 available CIO slots for I/O cards, 5 available CTB slots for additional memory or other CTB cards, and power supply. • C2203A 670-Mbyte Winchester Disk Drive. • 35401A 67-536 Mbyte Autochanger Cartridge Tape Subsystem. • 92211R Design Plus cabinet. • Software, including: • 8-user HP-UX License and General Usage Documentation. • B1030A ARPA/Services/800 Networking Software. • B1031A Network File System (NFS) Services/800 Software. • B1168A X Windows System Version 11. • 98870L SoftPC Emulation System Software. • Installation manuals. • A1620-90001 System Administration Notes. Must order either AA0 or AA1 below. Must order either 003, 004 or AFK below.
Options	
Opt. AA0	Provides furnished software on 1/4-inch cartridge tape.
Opt. AA1	Provides furnished software on 1/2-inch, 1600 cpi magnetic tape.
Opt. AFK	Adds 28685A Ether Twist MAU.
Opt. 1AN	Deletes 35401A Autochanger Cartridge Tape Subsystem.
Opt. 001	Adds 9145A 133 Mbyte 1/4-inch cartridge tape drive.
Opt. 002	Replaces C2203A disk and one 27110B HP-IB interface with C2201A 670 Mbyte HP-FL disk and one 27111A HP-FL interface.
Opt. 005	Replaces C2203A disk and one 27110B HP-IB interface with C2204A 1.34 Gbytes HP-FL disk and one 27111A HP-FL interface.
Opt. 0E1	Adds A1014A Battery Backup System.
Opt. 003	Adds 28641A ThinMAU.
Opt. 004	Adds 30241A ThickMAU.
Opt. 201	Adds B1740L Task Broker license to use for up to 10 seats.
Opt. 202	Adds B1741L Task Broker license to use for up to 50 seats.
Opt. 203	Adds B1742L Task Broker site license to use.
Opt. 501	Adds 8 Mbyte ECC RAM.
Opt. 502	Replaces A1010A 8 Mbyte ECC RAM with A1623A 32 Mbyte ECC RAM, increasing total RAM to 48 Mbyte.
Opt. 516	Adds 16 Mbyte ECC RAM.
Opt. 517	Replaces A1010A 8 Mbyte ECC RAM with A1037A 16 Mbyte ECC RAM, increasing total RAM to 32 Mbyte.
Opt. 532	Adds A1623A 32 Mbyte ECC RAM.
Opt. 533	Replaces A1037A 16 Mbyte ECC RAM with A1623A 32 Mbyte ECC RAM, increasing total RAM to 40 Mbyte.
Add-on Accessories	
B2438A	HP-UX 8.0 Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

System Rack Mounting

See page 245.

Operational Requirements

Description	Requirements
System Console	HP C1001A/G/W or (discontinued) 2392A Option S12 Terminal connected to the multiplexer panel via an HP 40242M cable.
System Disk	Select an additional disk(s) in Disk Drives Section, reference Tables 11-14, pages 191–194, if necessary to support the application.
Software Installation/Backup Device	Select a magnetic tape unit in Tape Drives Section, reference Table 19 on page 196, to install software from media option AA1.
RAM	Select additional RAM if needed to support the applications, operating system, and other software.

Model 645SV General Purpose Server

Description

The HP 9000 Model 645SV is a General Purpose Server for PCs and diskless workstations. It is based on the powerful Model 845S System Processor Unit and includes two 670-Mbyte fixed disks. Figure 62 illustrates Model 645SV functions and Figure 63 shows Model 645SV backplane usage and interconnections.

CPU: PA-RISC Model 845, clocked at 30 MHz.

Cache: 128 Kbyte instruction cache, 128-Kbyte data cache.

Bus Types: 64-plus-8-ECC-bit memory bus, 32-bit CTB bus, and 16-bit CIO bus.

Included Interfaces: **One HP-IB interface (to disks and optional cartridge tape drive), 6-channel multiplexer, and LAN/9000 Series 800/600 Link.

RAM: 32-Mbyte ECC, expandable to 192 Mbytes (each CTB slot taken for other uses may reduce maximum memory capacity).

Floating-Point Processor: 2.5 MFLOPs
Floating-Point Coprocessor.

Direct Memory Access: Direct memory access via CIO bus is standard.

Operating System: Server License to use HP-UX is included. This license provides unlimited programmatic access while limiting direct log-ons to 2 users via multiplexer or LAN connection. One set of HP 92508A option AA0 or AA1 media and system administration manuals must be purchased separately to provide installable software for all licensed Model 645SV Servers at a site.

** Disks and optional cartridge tape drive may be connected via one HP-IB. The customer may want to purchase an additional HP-IB card if peripheral performance is an issue. If the customer opts to purchase a 1/2-inch magnetic tape drive, an additional HP-IB card will be required.

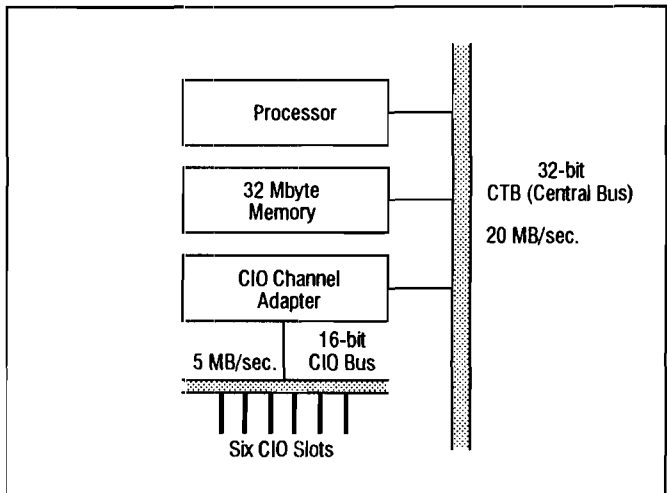


Figure 62. Model 645SV Functions

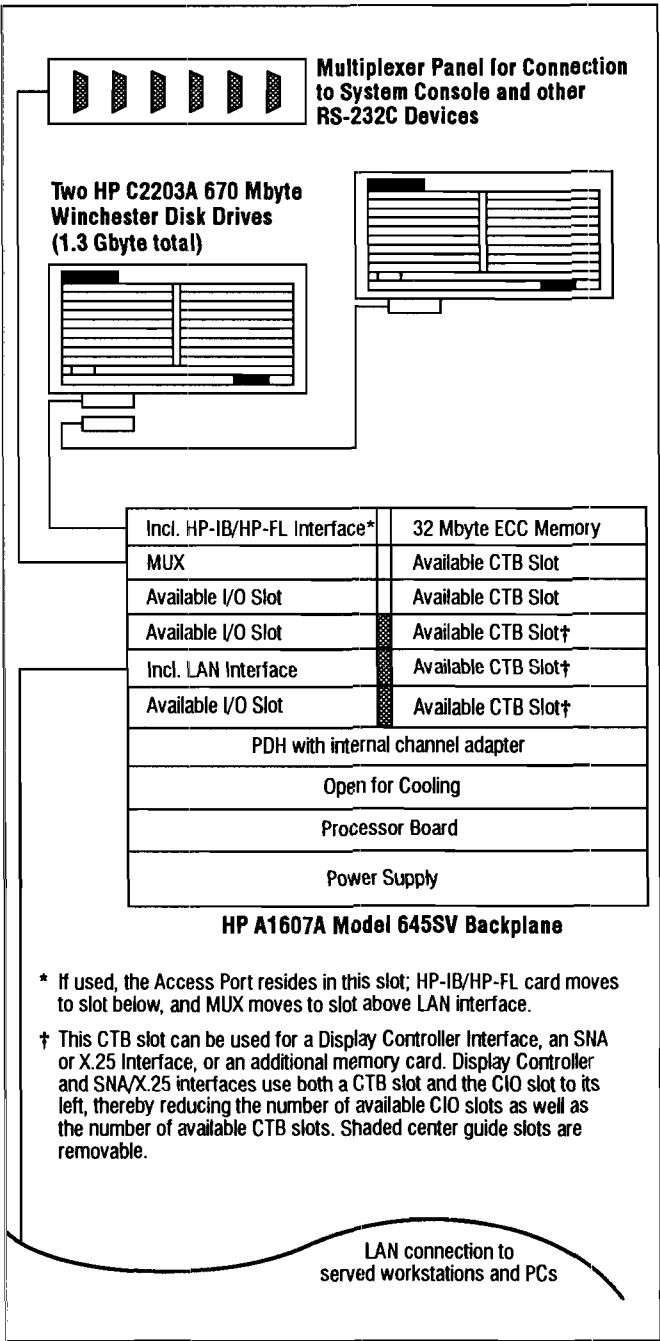


Figure 63. Model 645SV Backplane Usage and Interconnections

Model 645SV General Purpose Server, continued

Product Summary

Product/ Opt. No.	Description
A1607A	Model 645SV General-Purpose Server, consisting of: - System Processor Unit (SPU), including: 32-bit PA-RISC Model 845 CPU with floating-point co-processor. - A1623A 32-Mbyte ECC Memory Array Card. - One 27110B HP-IB interface, to system disks and optional cartridge tape subsystem. 98196A 6-Channel Multiplexer interface to system console and other RS-232C devices. 36967A LAN/9000 Series 800/600 Link. - Enclosure with 3 available CIO slots for I/O cards, 5 available CTB slots for additional memory or other CTB cards, and power supply. - Two C2203A 670-Mbyte Winchester Disk Drives (1.3 Gbytes total)) 92211R Design Plus cabinet - Software, including: 8-user HP-UX License and General Usage Documentation. - B1030A ARPA Services/800 Software. - B1031A Network File System (NFS) Services/800 Software. - B1168A X Windows System Version 11. - Installation manuals. - A1607-90600 System Administration Notes. Must order either AA0 or AA1 below. Must order either 003, 004 or AFK below.
Options	
Opt. AA0	Provides furnished software on 1/4-inch cartridge tape.
Opt. AA1	Provides furnished software on 1/2-inch, 1600 cpi magnetic tape.
Opt. AFK	Adds 28685A Ether Twist MAU.
Opt. 0E1	Adds A1014A Battery Backup System.
Opt. 003	Adds 28641A ThinMAU.
Opt. 004	Adds 30241A ThickMAU.
Opt. 201	Adds B1740L Task Broker license to use for up to 10 seats.
Opt. 202	Adds B1741L Task Broker license to use for up to 50 seats.
Opt/ 203	Adds B1742L Task Broker site license to use.
Opt. 501	Adds 8-Mbyte ECC RAM.
Opt. 516	Adds 16-Mbyte ECC RAM.
Opt. 532	Adds 32-Mbyte ECC RAM.
Opt. 001	Adds 9145A 133 Mbyte 1/4-inch cartridge tape drive.
Opt. 002	Replaces two C2203A disks with two C2201A 670 Mbyte FL disks. Replaces 27110B HP-IB interface with 27111A fiber optic interface.
Opt. 005	Replaces two C2203A disks with one C2204A 1.34 Gbyte FL disk. Replaces 27110B HP-IB interface with 27111A fiber optic interface.
Add-on Accessories	
B2438A	HP-UX 8.0 Server Operating System.
B2459A	HP-UX 8.0 User Licenses.
B2437A	HP-UX 8.0 Documentation.

CIO and CTB Interfaces

See page 168.

System Rack Mounting

See page 245.

Operational Requirements

Description	Requirements
System Console	HP C1001A/G/W or (discontinued) 2392A Option S12 Terminal connected to the multiplexer panel via an HP 40242M cable.
System Disk	Select an additional disk(s) in Disk Drives Section, Tables 11-14, pages 191–194, if necessary to support the application.
Software Installation/Backup Device	Select a magnetic tape unit in Tape Drives Section, Table 19, page 196, to install software from media option AA1.
RAM	Select additional RAM if needed to support the applications, operating system, and other software.

Model 635SV Interfacing Worksheet

Recording Card Cage and Interface Use

This page and page 138 are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage Record

The Model 635SV Card Cage Record, below, contains a diagram of the HP 9000 Model 635SV. Part of the division between CIO slots and CTB slots is shaded to indicate that the center guide slots can be removed to install CTB interfaces, such as the A1017A Display Controller Interface or the (HP 98173A or HP 98174A) HP-UX SNALink interface, the (HP 36969A or HP 36970A) OSI Express Map 3.0 Link interface, or the HP 36960A X.25 Link Interface, which occupy the full width of adjacent CTB and CIO slots. Interfaces in affected CIO slots have to move up to make room for CTB interfaces. As you determine the need and add memory or CIO interfaces, enter the respective product numbers into the card cage record. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

The Multiplexer and CIO Interface Use Records

On page 138 are Multiplexer and CIO Interface Use records. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces. Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces, into the records for the HP 27147A SCSI interface, or the disks into the records for the HP 27111A HP-FL interfaces. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and two HP 27110B HP-IB interfaces are standard, and indicated as such in the record. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

MODEL 635SV SYSTEM PROCESSOR UNIT CARD CAGE RECORD

Enter memory and I/O Cards by product number in the appropriate card cage for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc., HP-IB interfaces as 27110B-D1, -PR1, etc., and HP-FL interfaces as 27111A-D1, -D2 for keying with the use records in the section on page 138.

HP 9000 Model 635SV Card Cage

CIO Slots	CTB Slots
*Incl. HP-IB/HP-FL I/F	8 Mbyte ECC Mem
Incl. MUX	16 Mbyte ECC Mem
Incl. HP-IB I/F	
Incl. LAN I/F	
PDH with internal channel adapter	
CPU Card	
Power Supply	

* If used, the Access Port resides in this slot; HP-IB/HP-FL card moves to slot below, and MUX card moves to slot above LAN interface.

Figure 64. Model 635SV System Processor Unit Card Cage Record

Model 645SV Interfacing Worksheet

Recording Card Cage and Interface Use

This page and the next page are designed to be duplicated on a copier and utilized to keep track of card cage and interface usage for connection of peripheral devices as you proceed through a configuration.

The SPU Card Cage Record

The Model 645SV Card Cage Record, below, contains a diagram of the HP 9000 Model 645SV. Part of the division between CIO slots and CTB slots is shaded to indicate that the center guide slots can be removed to install CTB interfaces, such as the A1017A Display Controller Interface or the (HP 98173A or HP 98174A) HP-UX SNALink interface, the (HP 36969A or HP 36970A) OSI Express Map 3.0 Link interface, or the HP 36960A X.25 Link Interface, which occupy the full width of adjacent CTB and CIO slots. Interfaces in affected CIO slots have to move up to make room for CTB interfaces. As you determine the need and add memory or CIO interfaces, enter the respective product numbers into the card cage record. Remember that the HP 28667A Real-Time Interface requires two CIO slots.

The Multiplexer and CIO Interface Use Records

On the next page are Multiplexer and CIO Interface Use records. Into these records, enter the product numbers of the various terminals, printers, and plotters, and the cables used to connect them via HP 98196A 6-channel or HP 98190A 16-channel Multiplexer Interfaces. Similarly, enter the product numbers of the disks, magnetic tape units, printers, plotters, etc. into the record sections for HP 27110B HP-IB interfaces, into the records for the HP 27147A SCSI interface, or the disks into the records for the HP 27111A HP-FL interfaces. An HP 27110B HP-IB interface dedicated to disk connections, and also usable for mag tape or cartridge tape connections, is designated D1 and one dedicated to printer connections is designated PR1. One HP 98196A Multiplexer interface and one HP 27110B HP-IB interface are standard, and indicated as such in the record. These various record sections provide a graphic means of keeping track of device interfacing capacity as it is used for the configuration.

MODEL 645SV SYSTEM PROCESSOR UNIT CARD CAGE RECORD

Enter memory and I/O Cards by product number in the appropriate card cage for your system as items are selected in later sections of this guide. Identify multiplexer interfaces as 98196A-1, -2, etc. or 98190A-1, -2, etc., HP-IB interfaces as 27110B-D1, -PR1, etc., and HP-FL interfaces as 27111A-D1, -D2 for keying with the use records in the section on the next page.

HP 9000 Model 645SV Card Cage	
CIO Slots	CTB Slots
*Incl. HP-IB/HP-FL I/F	32 Mbyte ECC Mem
Incl. MUX	
Incl. LAN I/F	
PDH with internal channel adapter	
Open for Cooling	
CPU Card	
Power Supply	

* If used, the Access Port resides in this slot; HP-IB/HP-FL card moves to slot below, and MUX card moves to slot above LAN interface.

Figure 65. Model 645SV System Processor Unit Card Cage Record

635SV & 645SV Multiplexer and CIO Interface Use Record

MULTIPLEXER, HP-IB, SCSI, AND HP-FL INTERFACE USE RECORD

As each multiplexer, HP-IB, and/or HP-FL interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers, HP-IB, and HP-FL interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

98196A Multiplexer No. 1 (Std)

Device P/N	Cable P/N

98196A Multiplexer No. 2

Device P/N	Cable P/N

98190A Multiplexer No. 1

[illegible]27110B HP-IB Interface No. D1
for Disks and/or Tapes (Std)

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. D2
for Disks and/or Tapes

Device P/N	Cable P/N
	Included with I/F

271 10B HP-IB Interface No. PR1
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. PR2
for Printers

Device P/N	Cable P/N
	Included with I/F

27110B HP-IB Interface No. G1
for General HP-IB Devices[illegible]27110B HP-IB Interface No. G2
for General HP-IB Devices[illegible]

27110B HP-IB Interface No. PL1 for Plotters

Device P/N	Cable P/N
	Included with I/F

27111A HP-FL Interface No. D1

Device P/N	Cable P/N

27111A HP-FL Interface No. D2

Device P/N	Cable P/N

NOTE: The HP 27111A HP-FL Interface can connect up to eight C2204A FL disk drives when they are configured in a 46299A 10.72 Gbyte package, which contains all eight drives in a single cabinet.

In any FL disk configuration on a HP 27111A interface card, the maximum PBUS (add-on drive interconnect) cable length cannot exceed 6.4 meters.

MULTIPLEXER, HP-IB, SCSI, AND HP-FL INTERFACE USE RECORD

As each multiplexer, HP-IB, and/or HP-FL interface is selected for the configuration, place a check by its title and enter the product numbers of each of the devices it interfaces and the cable used for connection of that device. (Device and cable product numbers are given in later sections of this guide.) In this way you will be able to continuously keep track of how many more devices can be connected by the multiplexers, HP-IB, and HP-FL interfaces you've selected, and thereby determine if and when you have to select the next interface. If necessary to accommodate all interfaces of a particular type, make additional copies of this record page.

27147A SCSI Interface No. 1

Device P/N	Cable P/N

SCSI Interface No. 2

Device P/N	Cable P/N

SCSI Interface No. 3

Device P/N	Cable P/N

SCSI Interface No. 4

Device P/N	Cable P/N

Model 822S to 832S to 842S to 852S Upgrades

NOTE: For U.S. prices of upgrades, refer to the HP 9000 Series 800 Computer Systems Price Guide, 5091-0310EUS, or a later revision.

Model 822S to 832S to 842S to 852S Upgrades

Model 8X2S upgrades are summarized in Figure 66 through Figure 70. In addition to the illustrations and the product structure information, the following rules apply:

- Upgrades to the Model 832S require HP-UX 7.02 or later. Upgrades to the Models 842S and 852S require HP-UX 7.08 or later. HP-UX version updates will be provided automatically to customers subscribing to software update service. Other customers must purchase the latest version.

- The replaced processor board(s) resulting from any CPU upgrade is the property of Hewlett-Packard. Place all return parts into upgrade packaging material and return to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

Use prepaid label if provided.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

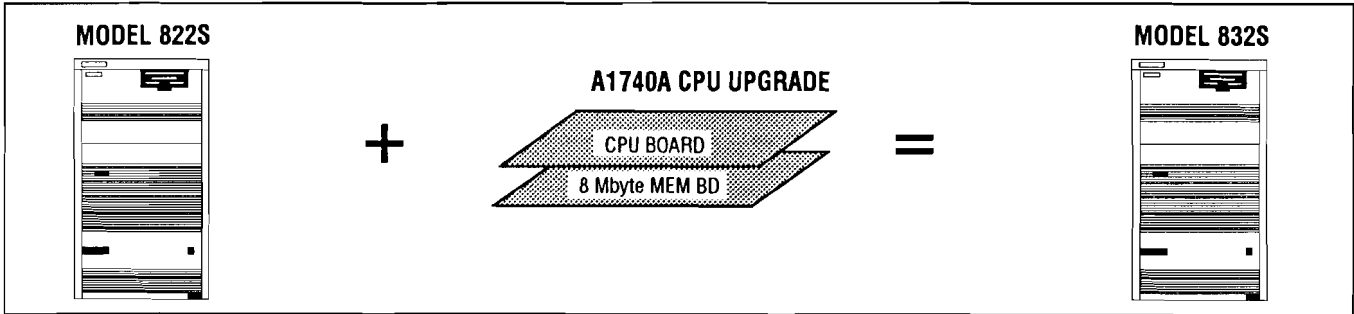


Figure 66. Model 822S to 832S Upgrade

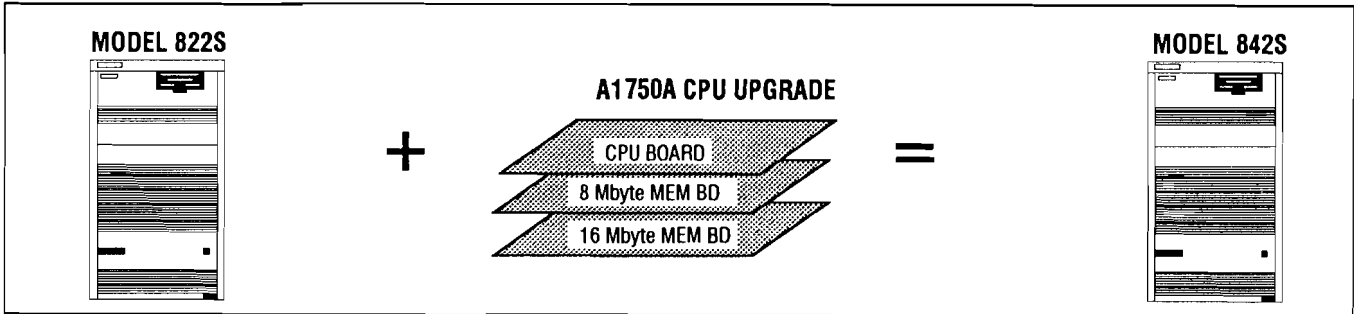


Figure 67. Model 822S to 842S Upgrade

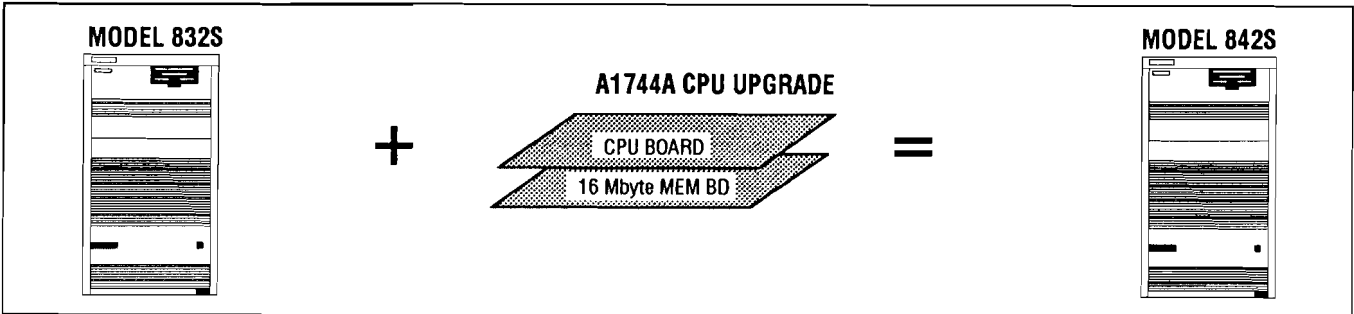


Figure 68. Model 832S to 842S Upgrade

Model 822S to 832S to 842S to 852S Upgrades, continued

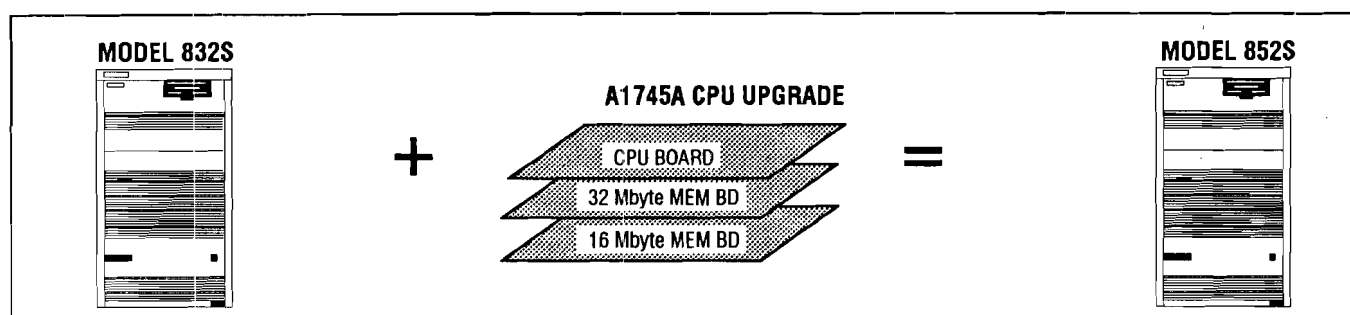


Figure 69. Model 832S to 852S Upgrade

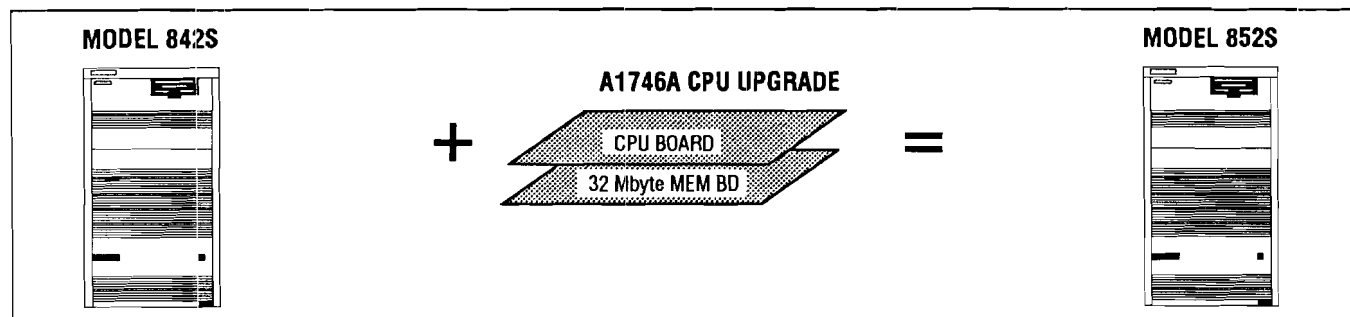


Figure 70. Model 842 to 852 Upgrade

HP A1740A Model 822S to 832S Upgrade, including:

Product/ Opt. No.	Description
A1740A	Model 822S to 832S UPGRADE Requires HP-UX 7.02 or later*. Also requires the return of the 822S CPU board. System upgrade consists of: - Model 832S Processor Board. 8-Mbyte ECC RAM board (A1404A).
Options	
Opt. 503	Add 8-Mbyte RAM (16 Mb total: (1) A1436A).
Opt. 504	Add 16-Mbyte RAM (24 Mb total: (1) A1436 + (1) A1404).
Opt. 505	Add 24-Mbyte RAM (32 Mb total: (1) A1437).
Opt. 507	Delete 8-Mbyte Memory (0 Mb total).

HP A1750A Model 822S to 842S Upgrade, including:

Product/ Opt. No.	Description
A1750A	Model 822S to 842S CPU UPGRADE Requires HP-UX 7.08 or later*. (HP-UX 7.08 MUST BE ORDERED SEPARATELY.) Also requires the return of the 822S CPU board. System upgrade consists of: - Model 842S Processor Board. 16-Mbyte ECC RAM board. 8-Mbyte ECC RAM board.
Options	
Opt. 827	Add Floating Point Coprocessor.
Opt. 601	Add (1) Access Port MUX.
Opt. 508	Add 8-Mbyte RAM (32 Mbyte total).
Opt. 518	Add 16-Mbyte RAM (40 Mbyte total).
Opt. 524	Add 24 Mbyte RAM (48 Mbyte total).
Opt. 507	Delete 8-Mbyte ECC RAM board.
Opt. 518	Delete 16-Mbyte ECC RAM board.

* HP-UX must be ordered separately.

Model 822S to 832S to 842S to 852S Upgrades, continued

HP A1744A Model 832S to 842S Upgrade, including:

Product/ Opt. No.	Description
A1744A	MODEL 832S to 842S UPGRADE Requires HP-UX 7.08 or later*. Also requires the return of the 832S CPU board. System upgrade consists of: • Model 842S Processor Board. • 16-Mbyte ECC RAM board (A1436A).
Options	
Opt. 8Z7	Add Floating Point Coprocessor.
Opt. 516	Add 16-Mbyte (32MB total: (1) A1437A).
Opt. 532	Add 32-Mbyte (48 MB total: (1) A1437A + (1) A1436A).
Opt. 548	Add 48-Mbyte (64 MB total: (2) A1437A).
Opt. 518	Delete 16 Mbyte ECC RAM board (0 MB total).

HP A1745A Model 832S to 852S Upgrade, including:

Product/ Opt. No.	Description
A1745A	MODEL 832S to 852S UPGRADE Requires HP-UX 7.08 or later*. Also requires the return of the 832S CPU board. System upgrade consists of: • Model 852S Processor Board. • 32 Mbyte ECC RAM board (A1437A). • 16 Mbyte ECC RAM board (A1436A).
Options	
Opt. 8Z7	Add Floating Point Coprocessor.
Opt. 601	Add (1) Access Port MUX.
Opt. 516	Add 16-Mbyte (64MB total: (2) A1437A).
Opt. 532	Add 32-Mbyte (80 MB total: (2) A1437A + (1) A1436A).
Opt. 548	Add 48-Mbyte (96 MB total: (3) A1437A).
Opt. 518	Delete 16-Mbyte ECC RAM board (32 MB total, or 0 MB total if ordered with the Opt. 534).
Opt. 534	Delete 32-Mbyte ECC RAM board (16 MB total, or 0 MB total if ordered with Opt. 518).

HP A1746A Model 842S to 852S Upgrade, including:

Product/ Opt. No.	Description
A1746A	MODEL 842S to 852S UPGRADE Requires HP-UX 7.08 or later*. Also requires the return of the 842S CPU board. System upgrade consists of: • Model 852S Processor Board. • 32-Mbyte ECC RAM board (A1437A).
Options	
Opt. 8Z7	Add Floating Point Coprocessor.
Opt. 516	Add 16-Mbyte RAM board (48 MB total: (1) A1437A + (1) A1436A).
Opt. 532	Add 32-Mbyte (64 MB total: (2) A1437A).
Opt. 548	Add 48-Mbyte (80 MB total: (2) A1437A + (1) A1436A).
Opt. 534	Delete 32-Mbyte ECC RAM board (0 MB total, or 16 MB total if ordered with Opt. 516).

* HP-UX must be ordered separately.

Model 825S to 835S to 835SE Upgrades

NOTE: For U.S. prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

- The replaced processor (CPU) and processor dependent hard hardware (PDH) boards from the Model 825S, or PDH board from the Model 835S, must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

Model 825S to 835S/SE Upgrades

Upgrades from Model 825S to 835S and 835SE and from Model 835S to 835SE System Processor Units (SPUs) are summarized in Figure 71 through Figure 73, below and on the next page. In addition to the information in Figure 71 through Figure 73, the following rules apply:

- The upgrade requires HP-UX release 2.1 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

Use prepaid label if provided.

NOTE: When upgrading from the 825S with the CIO expander, customers must order the A1038A 825S to 835SE upgrade with option 1AB (deletes CIO expander).

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

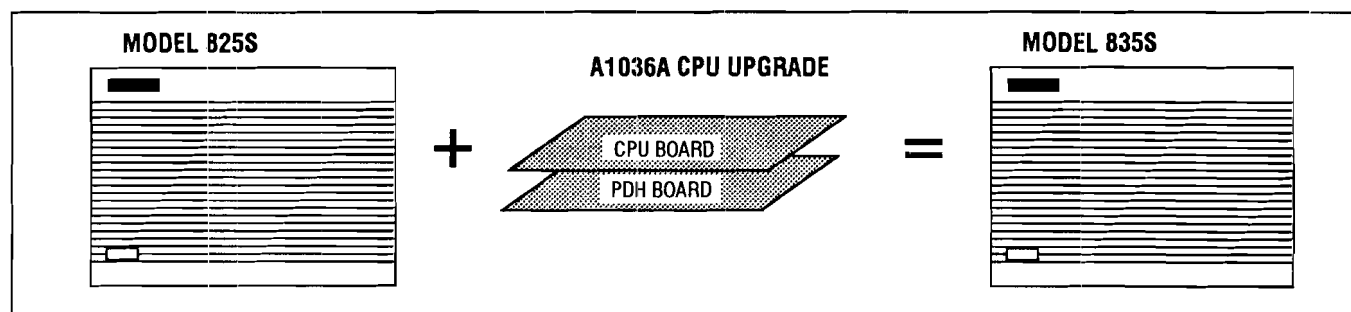


Figure 71. Model 825S to 835S Upgrade

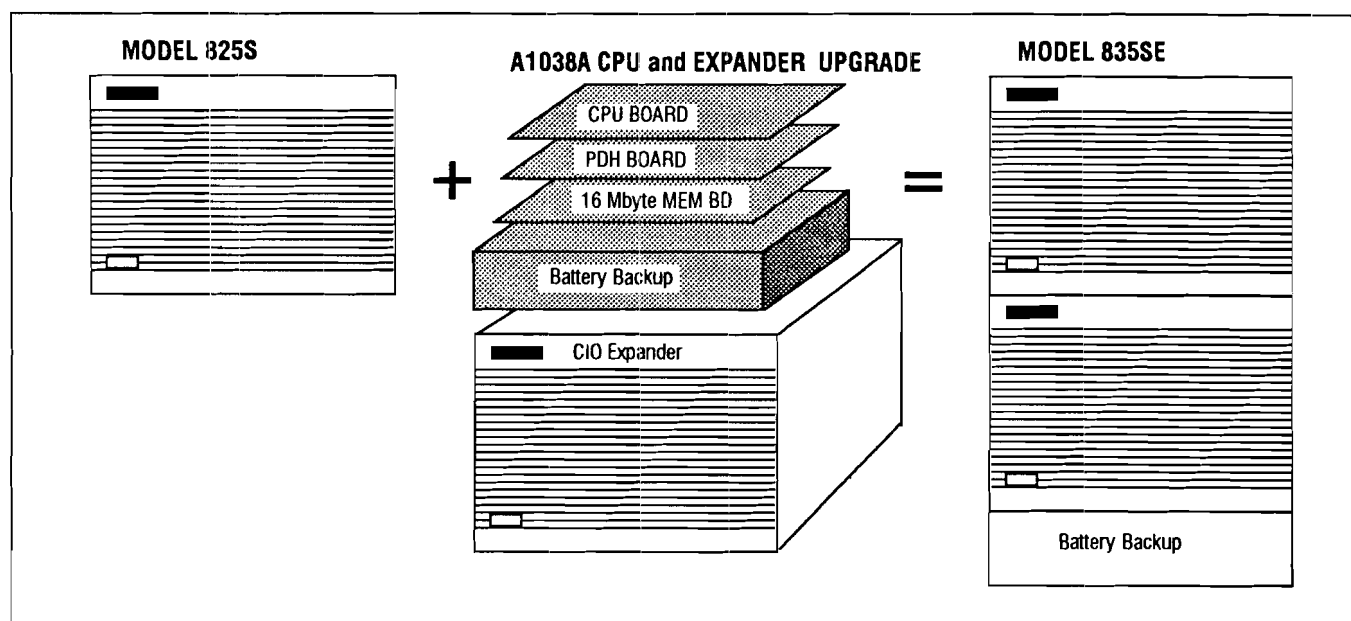


Figure 72. Model 825S to 835SE Upgrade

Model 825S to 835S to 835SE Upgrades, continued

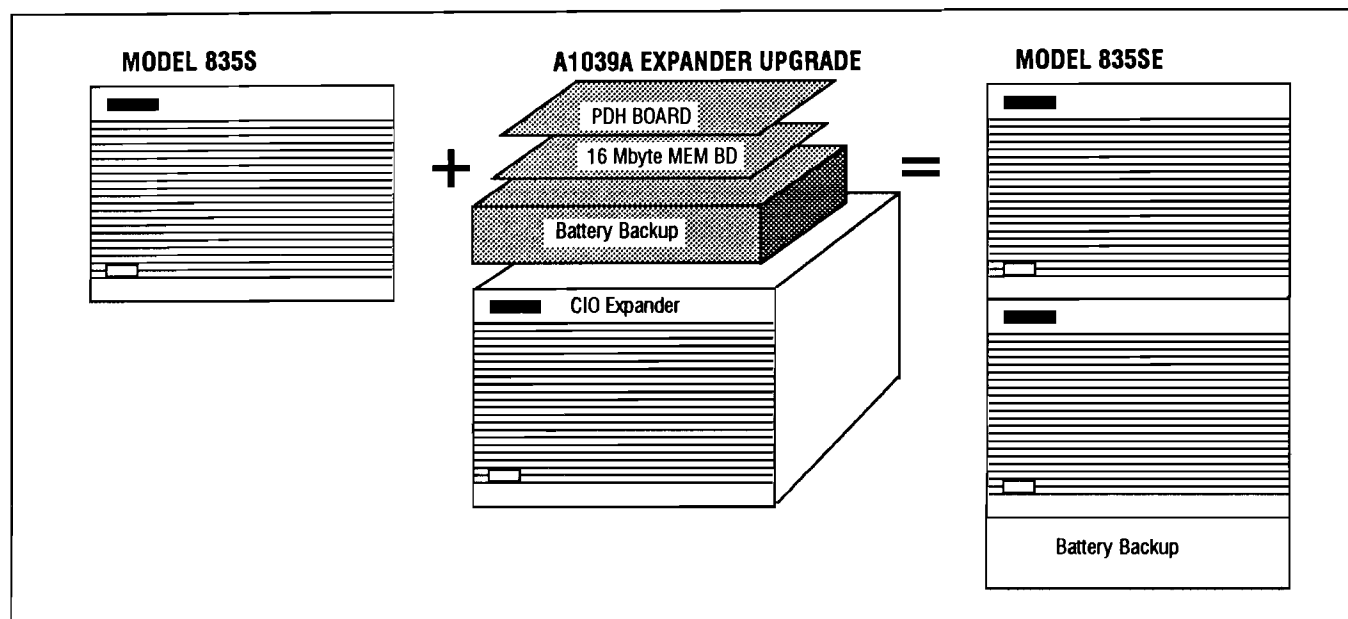


Figure 73. Model 835S to 835SE Upgrade

Upgrade Products and Options

HP A1036A Model 825S to 835S Upgrade, including:

Product/ Opt. No.	Description
A1036A	Model 825S to 835S UPGRADE Requires HP-UX 2.1 or later*. Also requires the return of the 825S CPU board. System upgrade consists of: • Requires the return of the 825S CPU board. • Model 835S/SE Processor Board. • Model 835S PDH Board (will NOT support a CIO Expander).

HP A1038A Model 825S to 835SE Upgrade, including

Product/ Opt. No.	Description
A1038A	Model 825S to 835SE UPGRADE Requires HP-UX 2.1 or later*. Also requires the return of the 825S CPU board. System upgrade consists of: • Model 835S/SE Processor Board. • Model 835SE PDH Board (includes second CIO adapter for support of the CIO Expander). • HP A1037A 16 Mbyte ECC Memory Array Card. • HP A1014A Battery Backup System. • CIO Expander.

Options

Opt. 1AB	Deletes CIO Expander.
Opt. 517	Deletes 8-Mbyte ECC memory card.
Opt. 518	Deletes 16-Mbyte ECC memory card.
Opt. 0E4	Deletes Battery Backup System.

* HP-UX must be ordered separately.

Model 825S to 835S to 835SE Upgrades, continued

HP A1039A Model 835S to 835SE Upgrade, including

Product/ Opt. No.	Description
A1039A	Model 835S to 835SE UPGRADE Requires HP-UX 2.1 or later*. Also requires the return of the 835S CPU board. System upgrade consists of: • Model 835SE PDH Board (includes second CIO adapter for support of the CIO Expander). • HP A1037A 16 Mbyte ECC Memory Array Card. • HP A1014A Battery Backup System. • CIO Expander.
Options	
Opt. 517	Deletes 8-Mbyte ECC memory card.
Opt. 518	Deletes 16-Mbyte ECC memory card.
Opt. 0E4	Deleted Battery Backup System.

* HP-UX must be ordered separately.

Model 825S to 845S to 845SE Upgrades

NOTE: For U.S. prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

- The replaced processor (CPU) and processor dependent hardware (PDH) board from the Model 825S must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

Model 825S to 845S/SE Upgrades

Upgrades from Model 825S to 845S and 845SE System Processor Units (SPUs) are summarized in Figure 74 and Figure 75, below. In addition to the information in Figure 74 and Figure 75, the following rules apply:

- The upgrade requires HP-UX release 7.0 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

Use prepaid label if provided.

NOTE: When upgrading from the 825S with the CIO expander, customers must order the A1611A 825S to 845SE upgrade with option 1AB (deletes CIO expander).

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

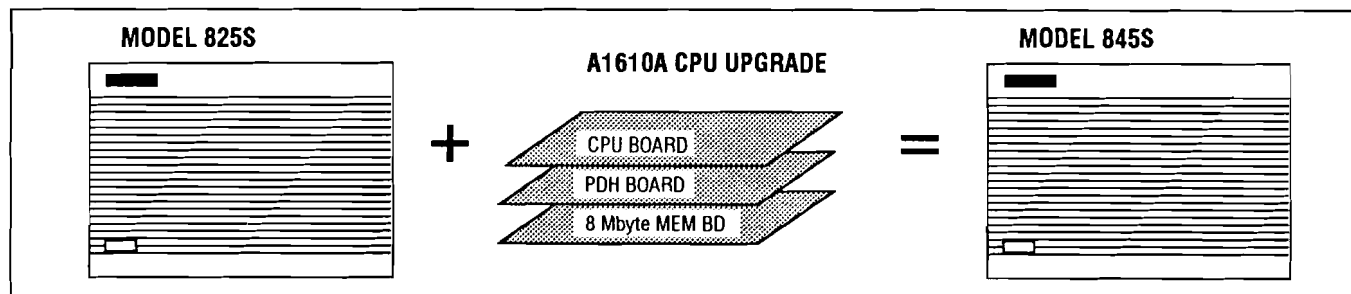


Figure 74. Model 825S to 845S Upgrade

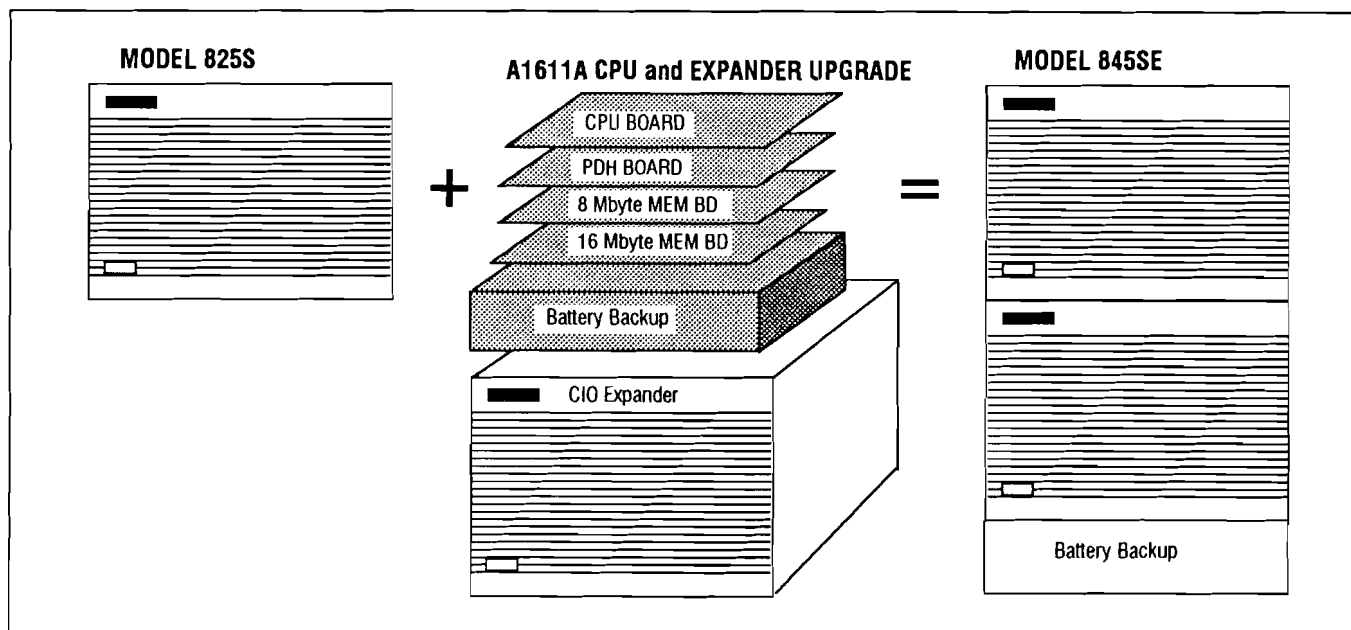


Figure 75. Model 825S to 845SE Upgrade

Model 825S to 845S to 845SE Upgrades, continued

Upgrade Products and Options

HP A1610A Model 825S to 845S Upgrade, including:

Product/ Opt. No.	Description
A1610A	Model 825S to 835S UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 825S CPU board. System upgrade consists of: • Model 845S/SE Processor Board. • Model 845S PDH Board (will NOT support a CIO Expander). • HP A1010A 8-Mbyte Memory Array Card
Options	
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 507	Delete 8-Mbyte ECC RAM
Opt. 501	Add 8-Mbyte RAM (A1010A)
Opt. 516	Add 16-Mbyte RAM (A1037)
Opt. 532	Add 32-Mbyte RAM (A1623A)

* Cannot be ordered concurrently.

HP A1611A Model 825S to 845SE Upgrade, including:

Product/ Opt. No.	Description
A1611A	Model 825S to 845SE UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 825S CPU board. System upgrade consists of: • Model 845S/SE Processor Board. • Model 845SE PDH Board (includes second CIO adapter for support of the CIO Expander). • HP A1037A 16 Mbyte ECC Memory Array Card. • HP A1010A 8 Mbyte ECC Memory Array Card. • HP A1014A Battery Backup System. • CIO Expander.
Options	
Opt. 1AB	Delete I/O expander and additional channel adapter
Opt. OE4	Delete powerfail battery backup system.
Opt. 507	Delete 8-Mbyte ECC RAM board.
Opt. 518	Delete 16-Mbyte ECC RAM board.
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 533	Substitute A1623A 32-Mbyte ECC RAM board for A1037A 16-Mbyte ECC RAM board.

* Cannot be ordered concurrently.

** HP-UX must be ordered separately.

Model 835S/SE to 845S to 845SE Upgrades

NOTE: For U.S. prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

- The replaced processor and processor dependent hardware (PDH) boards from the Model 835S/SE, or PDH board from the Model 845S, must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

Model 835S/SE to 845S/SE Upgrades

Upgrades from Model 835S to 845S and 845SE, from Model 835SE to 845SE and from Model 845S to 845SE System Processor Units (SPUs) are summarized in Figure 76 through Figure 78, below and on the next page. In addition to the information in Figure 76 through Figure 78, the following rules apply:

- The upgrade requires HP-UX release 7.0 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

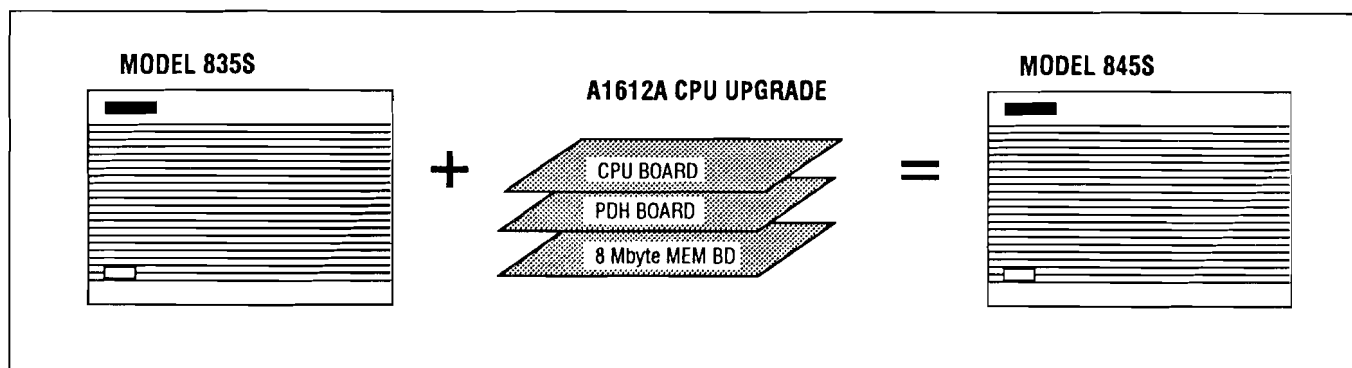


Figure 76. Model 835S to 845S Upgrade

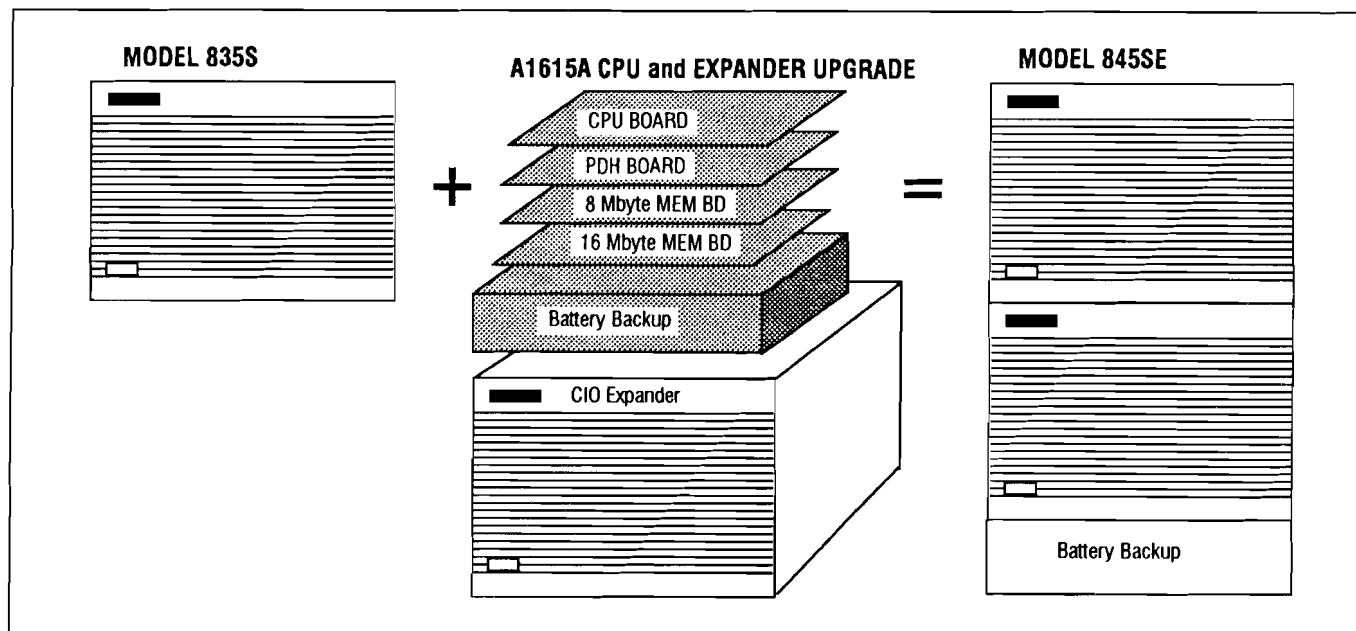


Figure 77. Model 835S to 845SE Upgrade

Model 835S/SE to 845S to 845SE Upgrades, continued

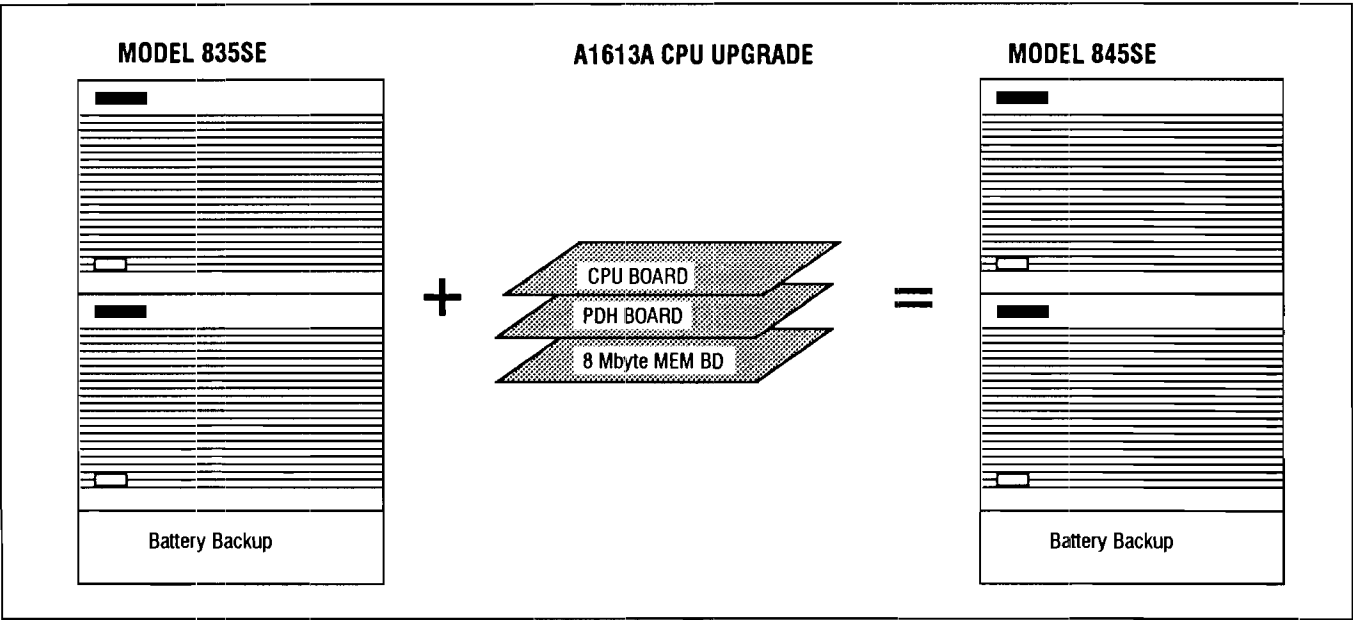


Figure 78. Model 835SE to 845SE Upgrade

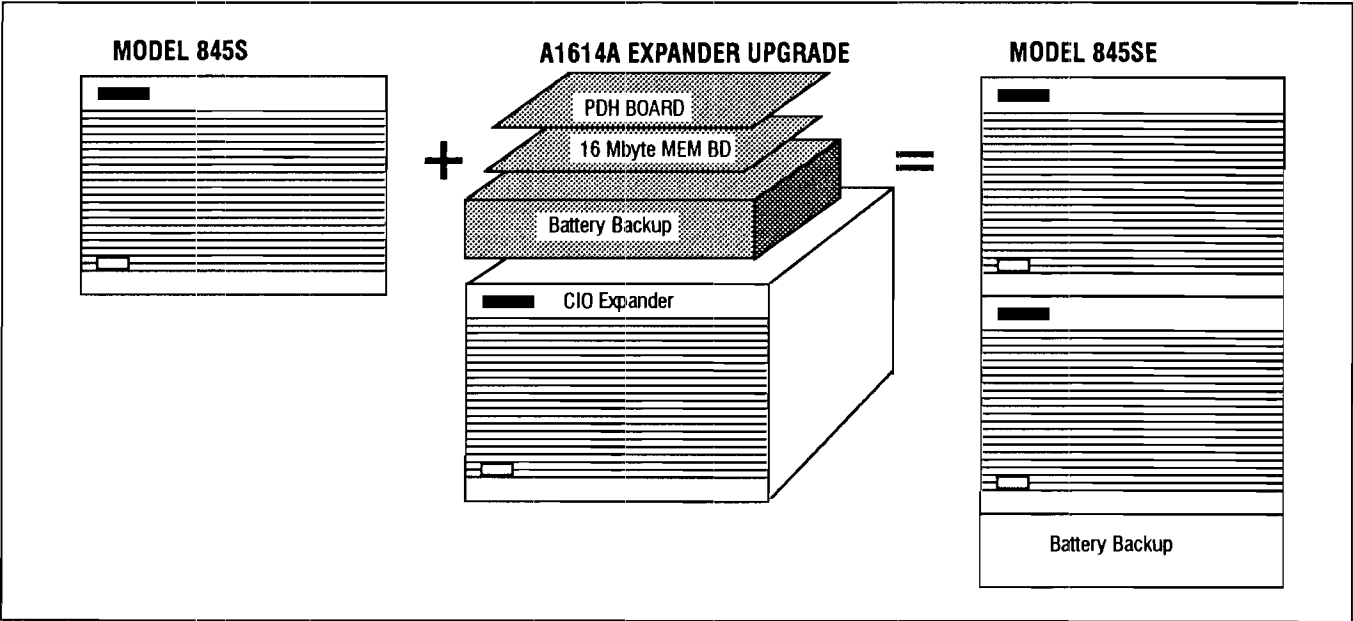


Figure 79. Model 845S to 845SE Upgrade

Model 835S/SE to 845S to 845SE Upgrades, continued

Upgrade Products and Options

HP A1613A Model 835SE to 845SE Upgrade, including:

Product/ Opt. No.	Description
A1613A	Model 835SE to 845SE UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 835S CPU board. System upgrade consists of: • Model 845S/SE Processor Board. • Model 845SE PDH Board. • HP A1010A 8-Mbyte ECC Memory Array Card.
Options	
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 501	Add 8-Mbyte ECC RAM board.
Opt. 516	Add 16-Mbyte ECC RAM board.
Opt. 532	Add 32-Mbyte ECC RAM board.
Opt. 507	Delete 8-Mbyte ECC RAM board.

* Cannot be ordered concurrently.

HP A1612A Model 835S to 845S Upgrade, including:

Product/ Opt. No.	Description
A1612A	Model 835S to 845S UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 835S CPU board. System upgrade consists of: • Model 845S/SE Processor Board. • Model 845S PDH Board. • HP A1010A 8-Mbyte ECC Memory Array Card.
Options	
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 501	Add 8-Mbyte RAM. (A1010A)
Opt. 516	Add 16-Mbyte RAM. (A1037A)
Opt. 532	Add 32-Mbyte RAM. (A1623A)
Opt. 507	Delete 8-Mbyte ECC RAM.

* Cannot be ordered concurrently.

** HP-UX must be ordered separately.

Model 835S/SE to 845S to 845SE Upgrades, continued

HP A1615A Model 835S to 845SE Upgrade, including:

Product/ Opt. No.	Description
A1615A	Model 835S to 845SE UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 835S CPU board. System upgrade consists of: • Model 845S/SE Processor Board. • Model 845SE PDH Board. • HP A1037A 16-Mbyte ECC Memory Array Card. • HP A1010A 8-Mbyte ECC Memory Array Card. • HP A1014A Battery Backup System. • CIO Expander.
Options	
Opt. 0E4	Delete powerfail battery backup system.
Opt. 507	Delete 8-Mbyte ECC RAM board. (A1010A)
Opt. 518	Delete 16-Mbyte ECC RAM board (A1037A).
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board.
Opt. 533	Substitute A1623A 32-Mbyte ECC RAM board for A1037A 16-Mbyte ECC RAM board.

* Cannot be ordered concurrently.

Upgrade Products and Options

HP A1614A Model 845S to 845SE Upgrade, including:

Product/ Opt. No.	Description
A1614A	Model 845S to 845SE UPGRADE Requires HP-UX 7.0 or later**. Also requires the return of the 845S CPU board. System upgrade consists of: • CIO Expander. • HP 1037A 16 Mbyte ECC Memory Array. • Powerfail Battery Backup system.
Options	
Opt. 0E4	Delete powerfail back-up system.
Opt. 518	Delete 16-Mbyte ECC RAM board.
Opt. 533	Substitute A1623A 32 Mbyte ECC RAM board for A1037A 16-Mbyte ECC RAM board.

** HP-UX must be ordered separately.

Model 635SV to 645SV to 835S/845SE Upgrades

NOTE: For U.S. prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, 5091-0310EUS, or a later revision.

- For the Model 635SV to 645SV upgrade, the replaced processor (CPU) and the Process Dependent Hardware (PDH) boards from the Model 635SV must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

Model 635SV to 645SV to 835S/845S Upgrades

The upgrade from a Model 635SV to a 645SV System Processor Unit (SPU) is detailed in Figure 80. Upgrades from a Model 635SV to a 835S and from a Model 645SV to a 845S are summarized in Figure 81 and Figure 82, respectively. In addition to the information in Figure 80 through Figure 82, the following rules apply:

- The upgrade requires HP-UX release 7.0 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

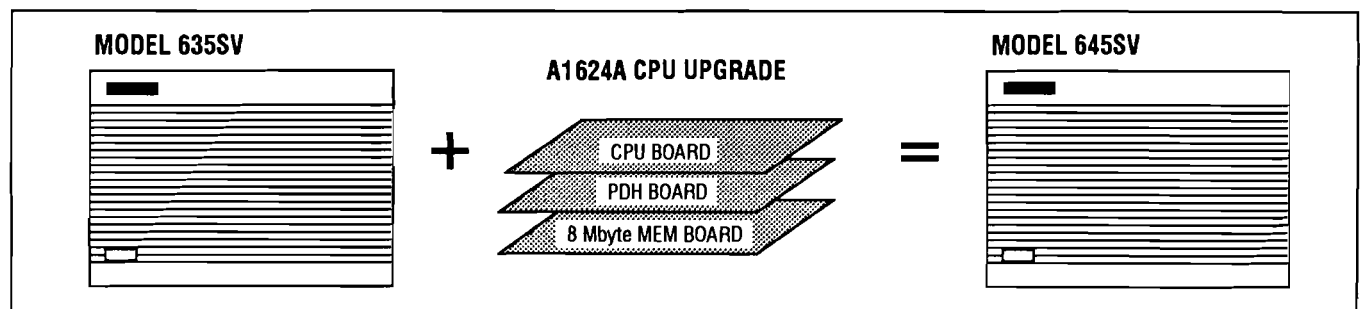


Figure 80. Model 635SV to 645SV Upgrade

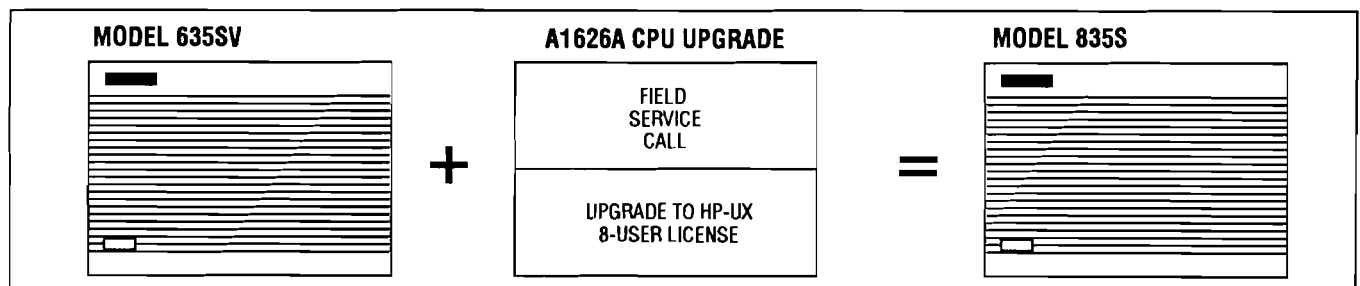


Figure 81. Model 635SV to 835S Upgrade

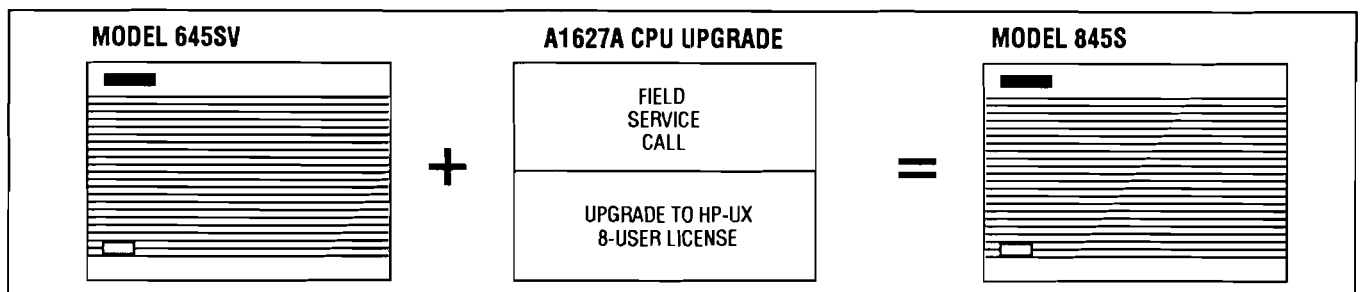


Figure 82. Model 645SV to 845S Upgrade

Model 635S to 645S to 835S/845SE Upgrades, continued

Upgrade Products and Options

HP A1624A Model 635SV to 645SV Upgrade, including:

Product/ Opt. No.	Description
A1624A	Model 635SV to 645SV UPGRADE Requires HP-UX 7.0 or later*. Also requires the return of the 635SV CPU board. System upgrade consists of: • 645SV processor board • PDH board • 8 Mbyte ECC RAM (A1010A)
Options	
Opt. 517*	Substitute A1037A 16-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board
Opt. 502*	Substitute A1623A 32-Mbyte ECC RAM board for A1010A 8-Mbyte ECC RAM board
Opt. 501	Add 8-Mbyte RAM (A1010A)
Opt. 516	Add 16-Mbyte RAM (A1037A)
Opt. 532	Add 32-Mbyte RAM (A1623A)
Opt. 507**	Delete 8-Mbyte ECC RAM

HP A1626A Model 635SV to 835S Upgrade, including:

Product/ Opt. No.	Description
A1626A	Model 635SV to 835S UPGRADE Requires HP-UX 7.0 or later*. Also requires the return of the 635SV CPU board. System upgrade consists of: • Field Service Call • Upgrade to HP-UX 8-User License

HP A1627A Model 645SV to 845S Upgrade, including:

Product/ Opt. No.	Description
A1627A	Model 645SV to 845S UPGRADE Requires HP-UX 7.0 or later*. Also requires the return of the 645SV CPU board. System upgrade consists of: • Field Service Call • Upgrade to HP-UX 8-User License

* HP-UX must be ordered separately.

Model 840S to 850S to 855S Upgrades

Model 840S and 850S Upgrades

Upgrades from Model 840S to 850S or 855S and from Model 850S to 855S are summarized in Figure 83 and Figure 84, below. In addition, the following rules apply:

- Upgrade to the Model 855S requires HP-UX release 3.1 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.
- Upgrade to faster floating-point in the Model 850S requires HP-UX release 2.1 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

- The replaced Model 840S System or replaced processor board(s) and firmware from the Model 850S must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

NOTE: For prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

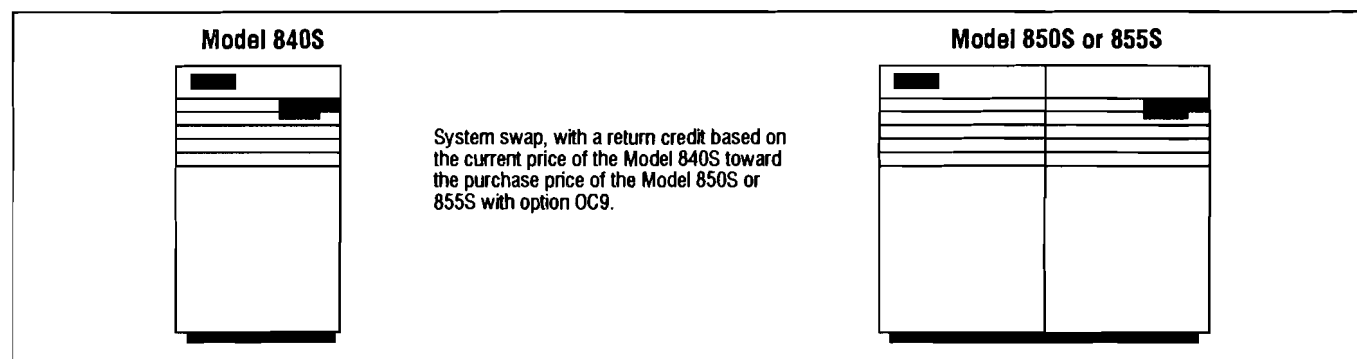


Figure 83. Model 840S to 850S or 855S Upgrade

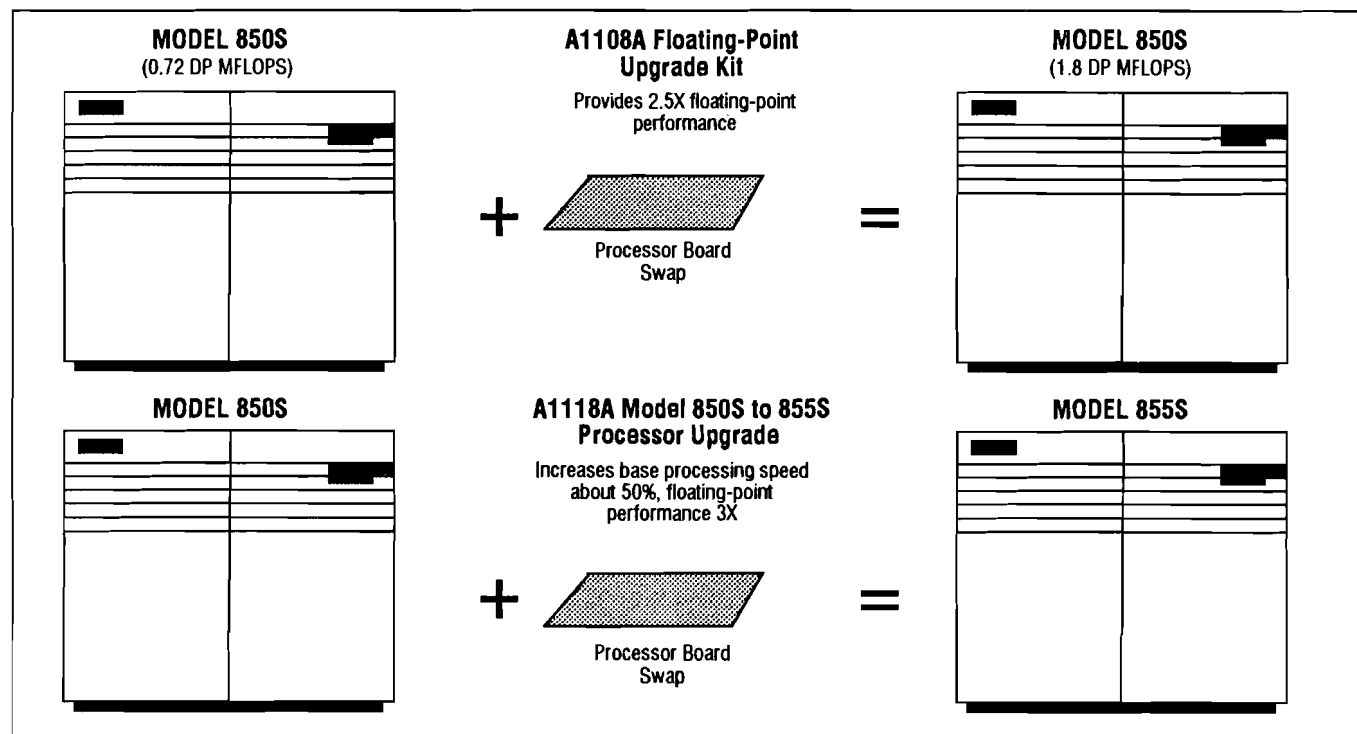


Figure 84. Model 850S Upgrades

Model 840S to 850S to 855S Upgrades, continued

Upgrade Products and Options

HP A1108A Floating-Point Upgrade, Kit Including:

Product/ Opt. No.	Description
A1108A	Floating-point upgrade kit requires HP-UX 7.0 or later*. Model 850S Processor Board with floating-point processor.

HP A1118A Model 850S to 855S Upgrade, Including:

Product/ Opt. No.	Description
A1118A	Model 850S to 855S upgrade requires HP-UX 7.0 or later*. Model 855S Processor Board (includes floating-point processor).

Options	
Opt. 001	Credit for floating-point processor.

* HP-UX must be ordered separately.

Model 850S and 855S to 860S Upgrades

Model 850S and 855S to 860S Upgrades

Upgrades from Model 850S to 860S or from Model 855S to 860S are summarized in Figure 85, below. In addition, the following rules apply:

- Upgrade to the Model 860S requires HP-UX release 7.06 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version separately.

- The replaced Model 850S or Model 855S processor board(s) must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

NOTE: For prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

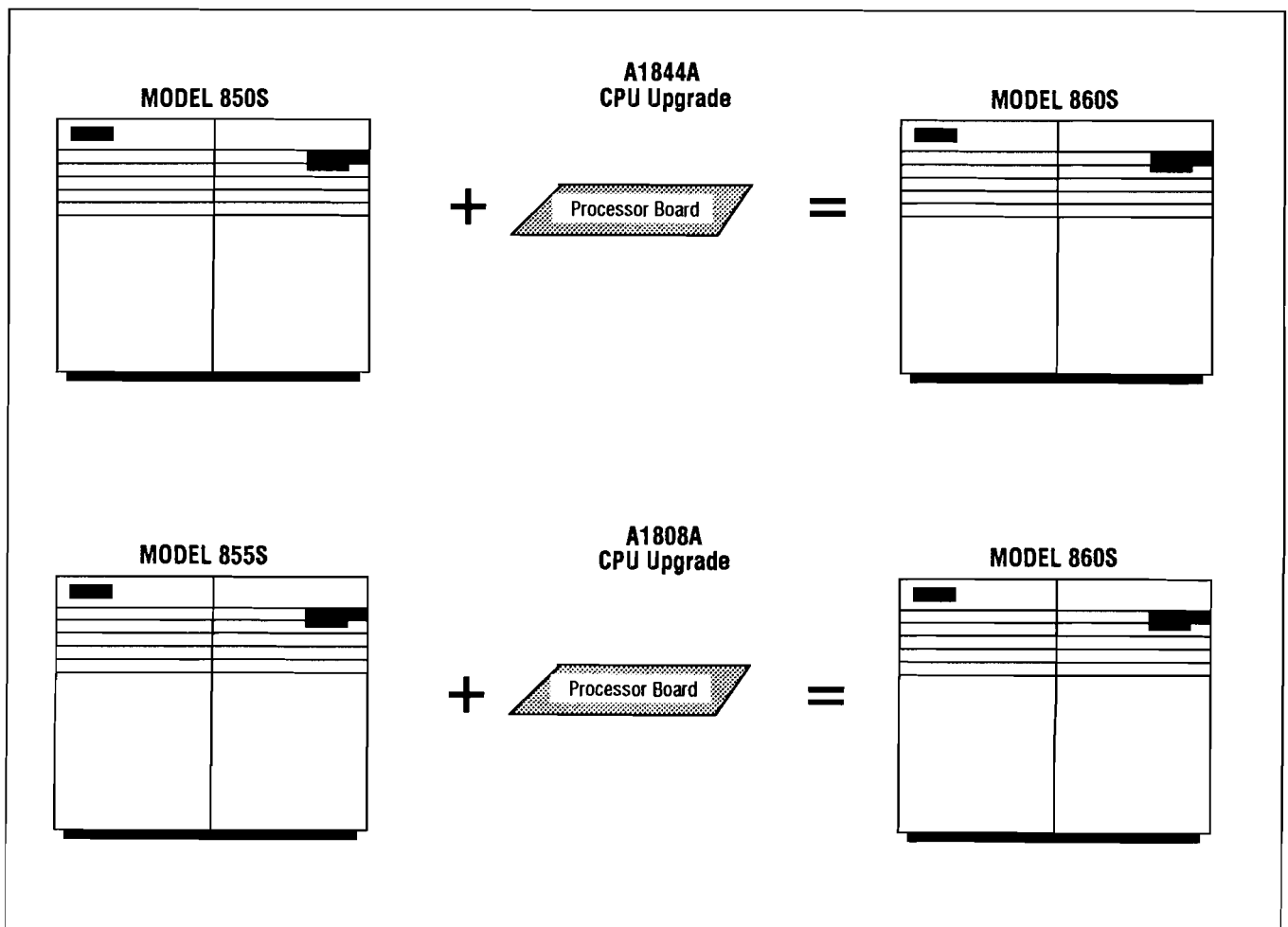


Figure 85. Model 860S Upgrades

Model 850S and 855S to 860S/100 Upgrades, continued

Upgrade Products and Options

HP A1844A Model 850S to 860S Upgrade, including:

Product/ Opt. No.	Description
A1844A	Model 850S to 860S UPGRADE Requires HP-UX 7.06 or later*. Also requires the return of the 850S CPU board. System upgrade consists of: • Model 860S Processor Board.
Options	
Opt. 001	Credit for Floating-Point Processor Board.

HP A1808A Model 855S to 860S Upgrade, including:

Product/ Opt. No.	Description
A1808A	Model 855S to 860S UPGRADE Requires HP-UX 7.06 or later*. Also requires the return of the 855S CPU board. System upgrade consists of: • Model 860S Processor Board.

* HP-UX must be ordered separately.

Model 850S/855S/860S to 865S Upgrades

Model 850S/855S/860S to 865S Upgrades

Upgrades from Models 850S, 855S or 860S, to 865S are summarized in Figure 86, below. In addition, the following rules apply:

- Upgrade to the Model 865S requires HP-UX release 8.0 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

- The replaced Models 850S, 855S or 860S processor board(s) must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

NOTE: For prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

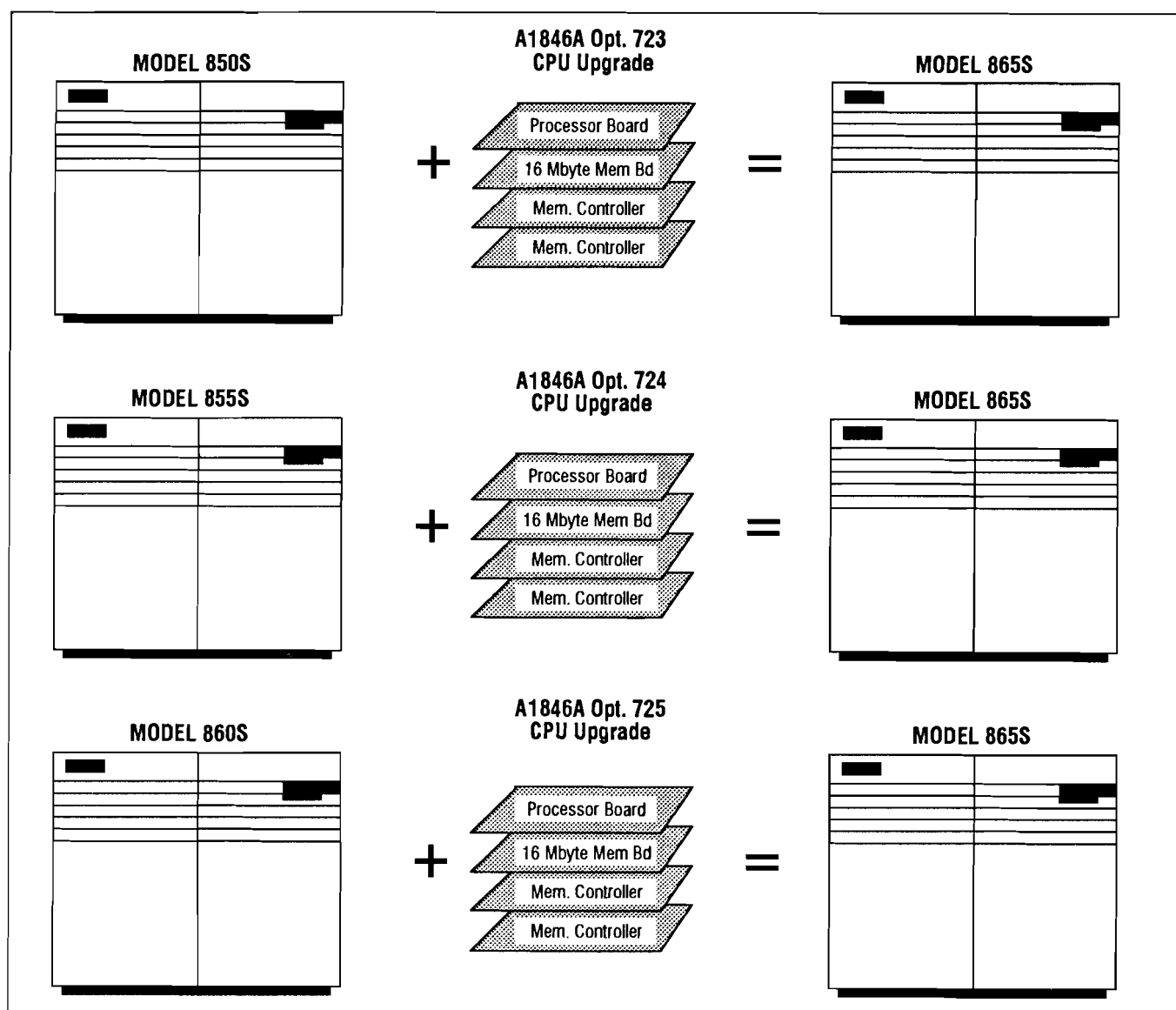


Figure 86. Model 865S Upgrades

Model 850S/855S/860S to 865S Upgrades, continued

Upgrade Products and Options

HP A1846A Opt. 723 Model 850S to 865S Upgrade, including:

Product/ Opt. No.	Description
A1846A Opt. 723	Model 850S to 865S UPGRADE Requires HP-UX 7.06 or later*. Also requires the return of the 850S CPU board. System upgrade consists of: • Model 865S Processor Board. • 16-Mbyte ECC Memory. • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 001	Credit for Floating-Point Processor Board.
Opt. 518	Delete 16 Mbyte of ECC Memory.

HP A1846A Opt. 724 Model 855S to 865S Upgrade, including:

Product/ Opt. No.	Description
A1846A Opt. 724	Model 855S to 865S UPGRADE Requires HP-UX 7.06 or later*. Also requires the return of the 855S CPU board. System upgrade consists of: • Model 865S Processor Board. • 16-Mbyte ECC Memory. • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 518	Delete 16 Mbyte of ECC Memory.

HP A1846A Opt. 725 Model 860S to 865S Upgrade, including:

Product/ Opt. No.	Description
A1846A Opt. 725	Model 860S to 865S UPGRADE Requires HP-UX 7.06 or later*. Also requires the return of the 860S CPU board. System upgrade consists of: • Model 865S Processor Board. • 16 Mbyte ECC Memory. • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 518	Delete 16 Mbyte of ECC Memory.

* HP-UX must be ordered separately.

Model 850S/855S/860S/865S to 870S/100 Upgrades

Model 850S/855S/860S/865S to 870S/100 Upgrades

Upgrades from Model 850S, 855S or 860S to 870S/100 are summarized in Figure 87, below. In addition, the following rules apply:

- Upgrade to the Model 870S/100 requires HP-UX release 8.02 or later, which will be provided automatically to customers who are subscribing to software update service. Other customers must purchase the latest version.

- The replaced Model 850S, 855S, 860S or 865S processor board(s) must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

NOTE: For prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

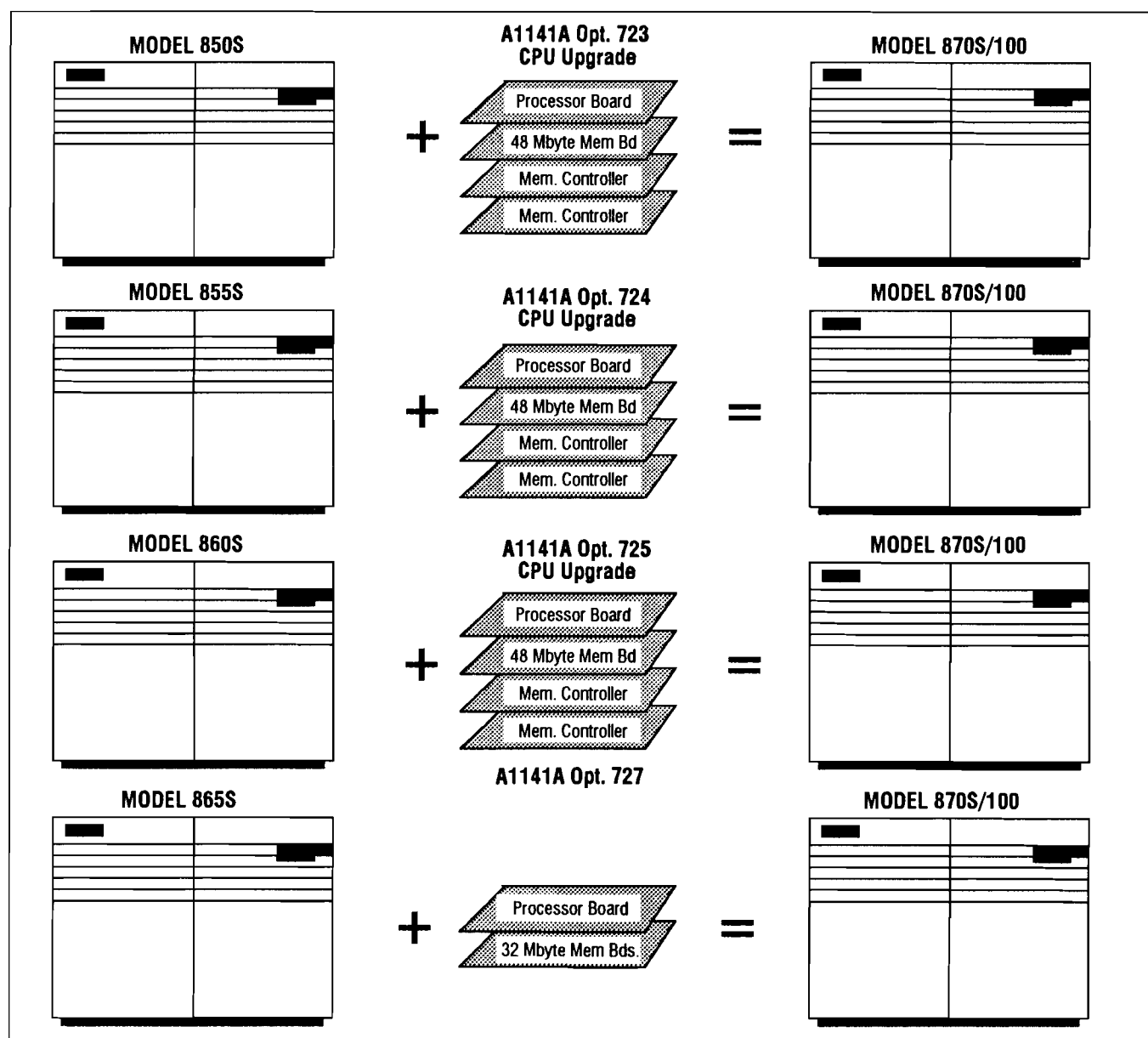


Figure 87. Model 870S/100 Upgrades

Model 850S/855S/860S/865S to 870S Upgrades, continued

Upgrade Products and Options

HP A1141A Opt. 723 Model 850S to 870S/100 Upgrade, including:

Product/ Opt. No.	Description
A1141A Opt. 723	Model 850S to 870S UPGRADE Requires HP-UX 8.02 or later*. Also requires the return of the 850S CPU board. System upgrade consists of: • Model 870S/100 Processor Board. • 48-Mbyte ECC Memory (Three 16 Mbyte Array Cards). • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 001	Credit for Floating-Point Processor Board.
Opt. 532	Delete 32-Mbyte of ECC Memory.

HP A1141A Opt. 724 Model 855S to 870S/100 Upgrade, including:

Product/ Opt. No.	Description
A1141A Opt. 724	Model 855S to 870S UPGRADE Requires HP-UX 8.02 or later*. Also requires the return of the 855S CPU board. System upgrade consists of: • Model 870S/100 Processor Board. • 48-Mbyte ECC Memory (Three 16 Mbyte Array Cards). • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 532	Delete 32-Mbyte of ECC Memory.

HP A1141A Opt. 725 Model 860S to 870S/100 Upgrade, including:

Product/ Opt. No.	Description
A1141A Opt. 725	Model 860S to 870S/100 UPGRADE Requires HP-UX 8.02 or later*. Also requires the return of the 860S CPU board. System upgrade consists of: • Model 870S/100 Processor Board. • 48-Mbyte ECC Memory (Three 16 Mbyte Array Cards). • Memory Controller Card. • Memory Controller Card.
Options	
Opt. 532	Delete 32-Mbyte of ECC Memory.

HP A1141A Opt. 727 Model 865S to 870S/100 Upgrade, including:

Product/ Opt. No.	Description
A1141A Opt. 727	Model 865S to 870S/100 UPGRADE Requires HP-UX 8.02 or later*. Also requires the return of the 865S CPU board. System upgrade consists of: • Model 870S Processor Board. • 32-Mbyte ECC Memory (Two 16 Mbyte Array Cards).
Options	
Opt. 532	Delete 32-Mbyte of ECC Memory.

* HP-UX must be ordered separately.

Model 870S/100 to 870S/200 Upgrade

Model 870S/100 to 870S/200 Upgrade

Upgrade from Model 870S/100 to 870S/200 is summarized in Figure 88 below. In addition, the following rules apply:

- Upgrade to the Model 870S/200 requires HP-UX 8.06 operating system. Contact Sales Development with any questions on the Model 870S/200 upgrade.
- If option 874 is selected, the original Model 870S/100 process board must be returned to:

Hewlett-Packard (SMO)
UPGRADE RETURNS
3625 Cincinnati Avenue
Rocklin, CA 95677

NOTE: For prices of upgrades, refer to the HP 9000 Computer Systems Price Guide, P/N 5091-0310EUS, or a later revision.

NOTE: Prepaid return is not available for some countries. If the customer's upgrade kit did not contain a country approved prepaid label, please ensure that all components are returned to the local HP sales office's order processing department.

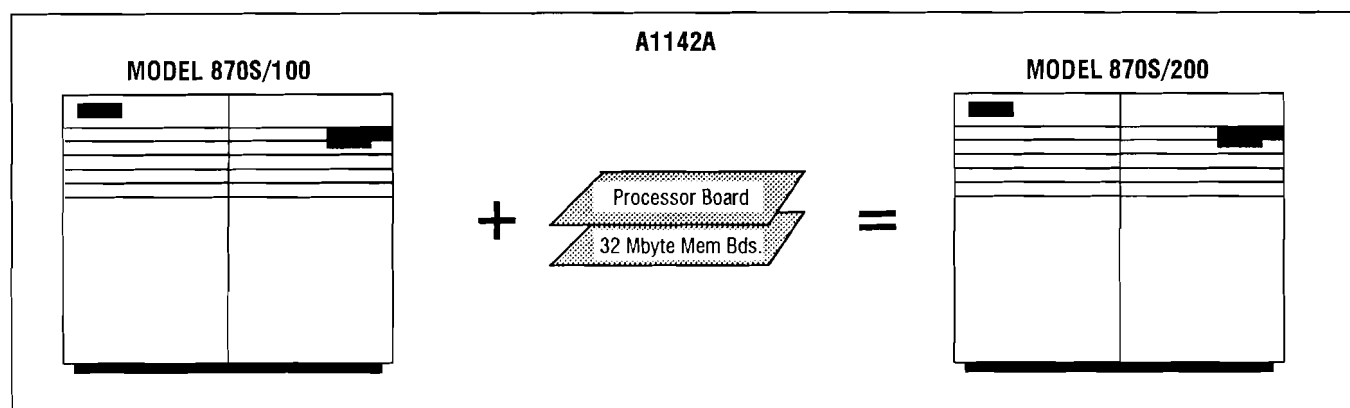


Figure 88. Model 870S/100 to 870S/200 Upgrade

Upgrade Products and Options

HP A1142A Model 870S/100 to 870S/200 Upgrade, including:

Product/ Opt. No.	Description
A1142A	Model 870S/100 to 870S/200 Upgrade: • Additional Model 870S Processor Board.* • Opt. 874 must be ordered if Processor Reference Label** is "NOT" present. • Opt. 875 must be ordered if Processor Reference Label "15" is present. • Additional +5 V Power Module* • Opt. 020 must be ordered if the system serial number prefix (first 4 digits)** is 2816 or less. • Opt. 021 must be ordered if the system serial number prefix (first 4 digits) is 2845 or greater. • 32-Mbyte ECC Memory (Two 16 Mbyte Array Cards).
Options	
Opt. 532	Delete 32-Mbyte of ECC Memory.

Note:

* The sales order is NOT complete without the required selection of a processor and +5 V Power Module option.

** The Processor Reference Label (PRL) and the system serial number prefix label are located on the rear lower-left corner of the processor bay.

HP-PB Interfaces

Input/output interfaces are the crucial connecting link between the system and external peripheral devices and other computer systems. Table 6, below, lists the

HP 9000 Series 800/600 HP Precision Bus (HP-PB) interfaces by category and size (single-high or double high).

Table 6. HP 9000 Series 800/600 HP-PB Interfaces

Category	Product Number and Name	Use	Interface Card Size
Provided on CPU (808S/815S only)	Unbuffered RS-232C Ports A and B	Interfacing system console <i>Note: High usage devices may cause performance degradations.</i>	Not Applicable
Multi-Device	HP 28655A HP-PB SCSI/Parallel Host Adapter	Interfacing disks, DDS tape devices, optional disk devices, magnetic tape devices, integrated peripheral packages via the SCSI connection. Centronics printers can be connected via the parallel port.	Single high
	HP 28650A HP-IB Interface	Interfacing disks, cartridge tape subsystems, magnetic tape units, plotters, and other HP-IB devices to the 808/815, 822-852 systems.	Single high
	HP 28650B HP-IB Interface	Interfacing disks, cartridge tape subsystems, magnetic tape units, plotters and other HP-IB devices to the 807S-857S systems.	Single high
	HP 40299B 8-Channel Multiplexer	Interfacing terminals, RS-232 or RS-422, printers, plotters, and other serial devices to the system, plus system console for 8X2S systems.	Single high
	A1749A	PBA-FL fiber optic peripheral interface for HP-PB systems.	Double high
	16-Channel Multiplexer Family	The most cost effective solution to connect terminals, printers and other asynchronous devices to the system.	
	HP J2092A 16 RS-232-C Direct Connect	Interface RS-232 peripherals in direct connect mode (using data signals only)	Single high
	HP J2093A 16 RS-423 Direct Connect	Interface RS-423 or RS-422 peripherals in direct connect mode (using data signals only) on long distance.	Single high
System to System Comm.	HP J2094A 16 RS-232-C Modem Connect	Interface RS-232 peripherals locally with full modem control, or through asynchronous modem.	single high
	HP 36967A LAN Link Interface (8 x 2S systems only)	Communication with other HP and non-HP systems via IEEE 802.3 or Ethernet Local Area Network connection. Communication with Datacommunication and Terminal Controllers (DTC) Terminal Access/9000.	Double high
	HP 36970A OSI Express MAP 3.0 Link Broadband Interface	Communication with MAP 3.0-compliant factory floor devices and systems via broadband cables.	2 x Double high
	HP J2146A LAN Link Interface (8 x 7S systems only)	Communication with other HP and non-HP systems via IEEE 802.3 or Ethernet Local Area Network connection. Communication with Datacommunication and Terminal Controllers (DTC) Terminal Access/9000.	Single high
	HP 36969A OSI Express MAP 3.0 Link Carrierband Interface	Communication with MAP 3.0-compliant factory floor devices and systems via carrierband cables.	2 x Double high
	HP 36960A X.25 Link Interface	Communication with other systems conforming to CCITT via public or private packet switching network.	Single high
Other Interfaces	HP 98173A SNA Link Interface With Opt. 005	Communication with IBM 370 or plug-compatible systems.	Single high
	HP 28651A General-Purpose Parallel I/O Interface	Interfacing 8 or 16-bit data buses to the system. Not supported on 8X7S systems.	Single high
I/O Real-Time Interface	HP 94181A Real-Time Interface	Via HP 28672A 8-channel SBX module or other SBX module connects system to real-time processes that require faster real-time response than the host system can routinely provide.	Double high

Multi-Device Interface Connections

Multiple devices connect to the HP 28650B HP-IB interface, the HP 40299B 8-Channel Multiplexer and the HP J209XA family of 16-channel multiplexers. The acronym HP-IB represents the full name "Hewlett-Packard Interface Bus", which is a bus cable whose connection should daisy-chain from one device to the next, as illustrated in Figure 90. PBA-FL interface connections are illustrated in Figure 91. The system console for 8X2S systems is connected to port 0 of the RS-232 HP 40299B multiplexer. A remote console can be connected (through modems) to port 7 of the first RS-232 40299B multiplexer.

16-Channel Asynchronous Multiplexers

The 16-channel multiplexers are the means to connect terminals, printers, and other asynchronous peripherals in either direct connect mode (RS-232-C or RS-423), or modem connect mode (RS-232-C) to the HP 9000 Series 800 systems that uses the HP-PB backplane. The 16-channel multiplexers are supported with HP-UX 8.0 or later.

Three products address three connection needs:

1. J2092A product:
16 RS-232-C peripherals in direct connect mode using data signals only (up to 15 meters).
2. J2093A product:
16 RS-423 or RS-422 peripherals in direct connect mode for long distance purpose (up to 1200 meters).
3. J2094A product:
16 RS-232-C peripherals connected locally but using data AND modem signals (up to 15 meters) or remotely through the use of asynchronous modems.

Each product comprises one single high HP-PB card and 2 distribution panels (8 ports each) with standard DB-25 female connectors for peripherals attachment. The distribution panels are linked to the MUX card through the use of a 4 meter cable.

For customers willing to use connectors different from the standard DB-25, the direct connect distribution panels (DDP) of the J2092A and J2093A products can be deleted, therefore allowing a customized connection scheme between the MUX card connector (fully documented) and the customer installation.

Ordering Information

For ease of ordering, the 16-channel multiplexer with RS-232-C direct connect ports and DB-25 connectors is integrated in the HP 9000 Series 8X7 systems when ordered with the options 60X.

For add-on cards or other configurations, use the following:

J2092A	HP-PB 16-channel RS-232-C Direct Connect Asynchronous Multiplexer
J2093A	HP-PB 16-channel RS-423 Direct Connect Asynchronous Multiplexer
J2094A	HP-PB 16-channel RS-232-C Modem Connect Asynchronous Multiplexer

Software media options:

For use with J2092A, J2093A, J2094A products (MUST add one of them for use in a 8 x 2S system running HP-UX 8.0)

Opt. AA0: software on 1/4" cartridge tape

Opt. AA1: software on 1/2" magnetic tape

Opt. AAH: software on DDS cartridge

Interface option:

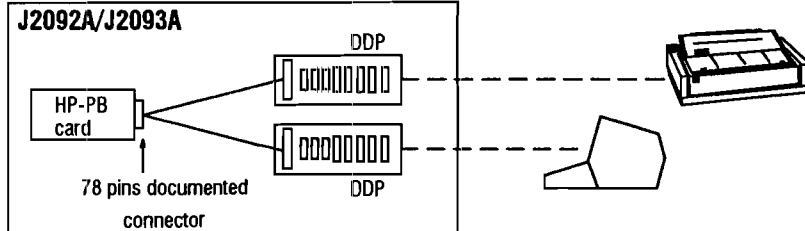
(can order one with J2092A, J2093A products)

Opt. 1BZ: delete the "DB-25 port connection kit"

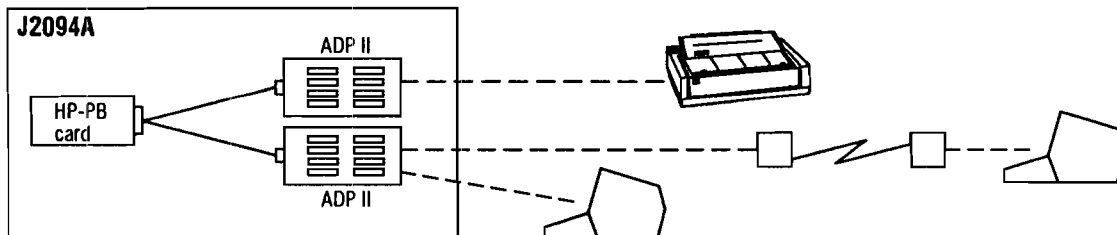
HP-PB Asynchronous Multiplexers

16-Channel Multiplexers

Direct Connect (RS-232-C or RS-423)

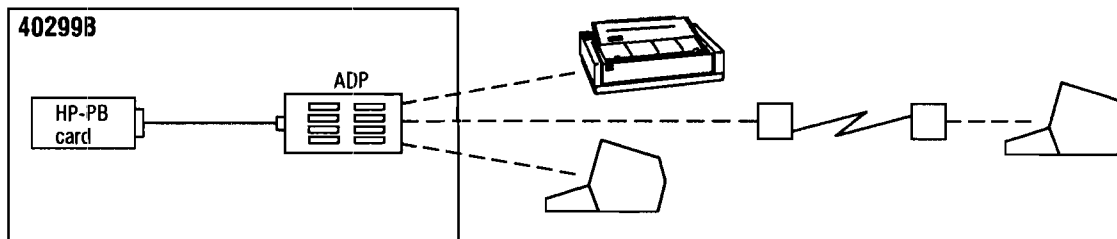


Modem Connect (RS-232-C)



8-Channel Multiplexer

Direct (RS-232-C or RS-422)/Modem Connect (RS-232-C)



- The HP-PB card is installed in the system.
- DDP (Direct Connect Distribution Panel) and ADP (Active Distribution Panel)
 - Provide eight standard DB-25 female connectors.
 - Can be rack mounted in 19" cabinets using the D235xA products.

Figure 89. Asynchronous Devices Connection via 8-Channel or 16-Channel Multiplexers

The Card Cage/Interface Use Record

Because connections to multi-device interfaces are not simply a one-interface-one-device relationship, it is desirable to keep track of the usage of those interfaces and of card cage capacity usage as well. To facilitate usage tracking, this guide provides blank forms on

pages 63, 65, and 73, which can be copied and used to record each memory or interface card or battery backup card, as it is added and the usage of multi-device interfaces as well.

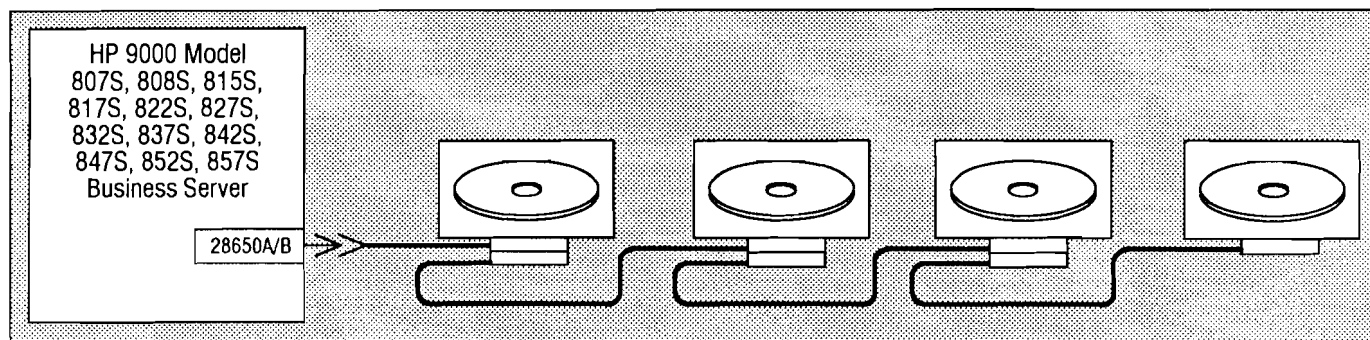


Figure 90. HP-IB Device Connections via 28650A HP-IB Interface

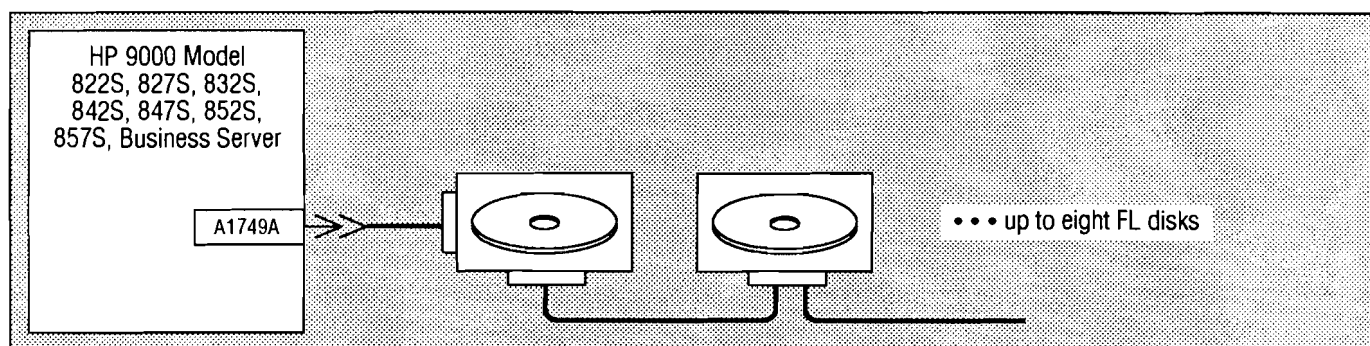


Figure 91. HP-FL Device Connections via A1749A PBA-FL Interface

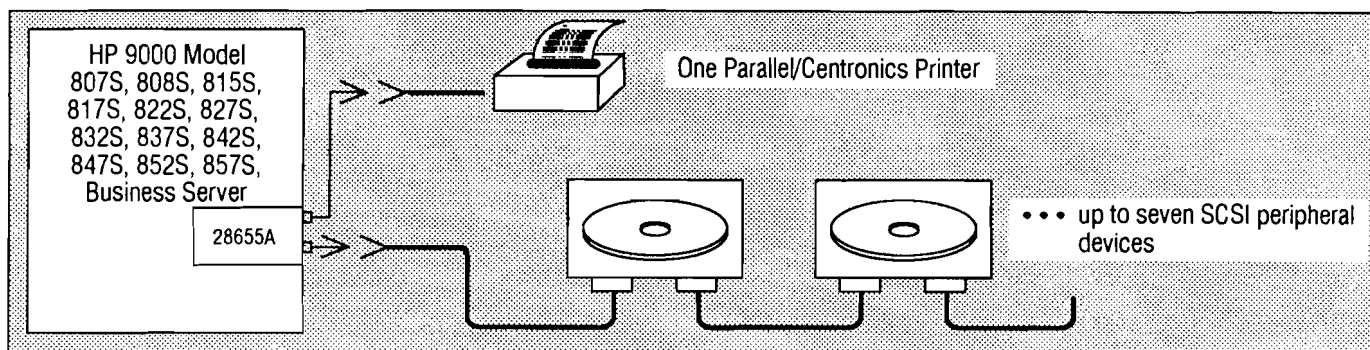


Figure 92. SCSI Device Connections via 28655A SCSI/Parallel Interface

HP-IB Bus Speed

The HP 28650A HP-IB interface card can be set for high or slow/medium speed. The speed of the interface card is software selectable. The HP 28650A defaults to high speed and is shipped with a resistor pack which simulates seven equivalent loads. Intermixing of high and slow/medium speed devices and other important configuration rules are discussed in the HP 28650A Installation Manual (included with the HP-IB interface card).

Extension of HP-IB Transmission Distances

The HP 37204A Multipoint HP-IB Extender can be used to extend the transmission distance between the system and peripheral devices to as much as 1.25 km.

The HP 37204A HP-IB Extender translates the parallel input from the HP-IB interfaces and devices into a high-speed serial bit stream, which it transmits to another extender via 75 ohm coaxial cable (or optionally via fiber optic cable) at rates to 60,000 bits per second. Provision of two coaxial ports supports daisy-chaining of multiple HP-IB Extenders as shown in Figure 93, below, for maximum configuration flexibility. The optional fiber optic connection works at full speed up to the maximum transmission distance of 1.25 km versus a drop to 1/10 the data rate for distances greater than 250 meters with coaxial cable links. Fiber optic communication also overcomes the effects of severe electrical noise, permits connection between buildings without concern for lightning hazards, and makes electronic eavesdropping extremely difficult.

Note: HP-IB Printers are not supported on HP-PB systems.

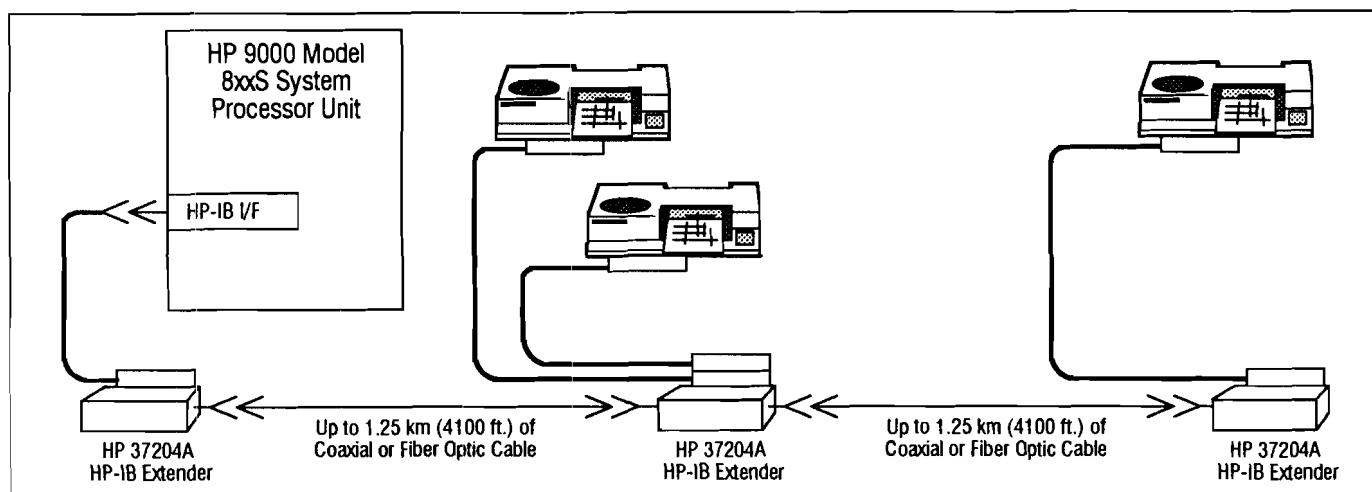


Figure 93. HP-IB Device Connections via HP 37204A HP-IB Extenders

CIO and CTB Interfaces

The Interfaces

Input/output interfaces are the crucial connecting links between the system and external peripheral devices and other computer systems. HP 9000 system Models 825S, 835S/SE, 845S/SE, 850S, 855S, 860S, 865S, 870S use CIO interfaces for most applications, but they use CTB interfaces for MAP 3.0 communications with factory floor devices, X.25 communications via packet switching networks, and SNA communications with IBM and plug-compatible systems. Table 7,

below, lists the HP 9000 Series 800/600 interfaces by CIO or CTB and their category of use. In the Model 825S, 835S, and 845S SPU card cage, the CTB interfaces actually occupy the width of both a CTB slot and the adjacent CIO slot. This is made possible by removable center guide slots, as shown in Figure 49, Figure 50, and Figure 51 (pages 114-116). With its piggy-backed SBX module, the 28667A interface is too thick to fit into a single CIO slot, so Table 7 provides an interface card size column that indicates how many slots each interface occupies.

Table 7. Input/Output Interfaces for HP 9000 Models 825S through 870S

Category	Product Number and Name	Use	Interface Card Size
CIO Multi-device	HP 27110B HP-IB Interface	Interfacing disks, cartridge tape subsystems, magnetic tape units, printers, plotters, and other HP-IB devices to the system.	One CIO slot
	HP 27111A HP-FL Interface	Interfacing HP-FL disks (up to 8 disks per interface).	One CIO slot
	HP 27147A CIO SCSI Host Adapter	Interfacing disks, DDS tape devices, optional disk devices, magnetic tape devices, integrated peripheral packages	One CIO slot
	HP 98196A 6-Channel Multiplexer	Interfacing system console, RS-232-C terminals, printers, plotters, and other devices to the system.	One CIO slot
	HP 98190A 16-Channel Multiplexer	The most cost-effective solution to connect RS-232-C or RS-422/423 terminals, printers, and other asynchronous devices to the systems.	One CIO slot
CIO System-to-System Comm.	HP 36967A LAN/9000 Series 800/600 Link Interfaces	Communication with other HP and non-HP systems via IEEE 802.3 or Ethernet Local Area Network connection. Communication with Datacommunication and Terminal Controller (DTC) Terminal Access/9000.	One CIO slot
IO Real-Time Interface	HP 28667A Real-Time Interface	Via HP 28672A 8-channel Serial SBX module or other SBX Module, connects system to real-time processes that require faster real-time response than the host system can routinely provide.	Two CIO slots
Other CIO Interfaces	HP 27114A Parallel Asynchronous FIFO Interface	Interfacing 8 or 16-bit data buses to the system.	One CIO slot
CTB Graphics Interfaces	HP A1017A Display Controller Interface	Interfacing graphics display controllers to the system.	One CTB slot*
	HP A1047A Graphics Animation Interface	Interfacing TurboSRX display controller to Model 835S (Not usable in same system with A1017A interface).	One CTB slot*
CTB System-to-System Comm. Interfaces	HP 36960A X.25/800 Link Interfaces	Communication via private or public X.25 Packet Switching Network.	One CTB slot*
	HP 98173A HP-UX SNA Link Interface	Interfacing standalone or gateway system to SNA Link to communicate with IBM or plug-compatible system.	One CTB slot*
	HP 36969A OSI Express MAP 3.0 Carrierband Link Interface	Communication with MAP 3.0-compliant factory floor devices and systems via carrierband cables (includes external CTB to HP-PB backplane converter and four-card MAP 3.0 OSI Express Carrierband Interface).	One CTB slot
	HP 36970A OSI Express MAP 3.0 Broadband Link Interface	Communication with MAP 3.0-compliant factory floor devices and systems via broadband cables (includes external CTB to HP-PB backplane converter and four-card MAP 3.0 OSI Express Broadband Interface).	One CTB slot

* CTB interface also occupies the adjacent CIO slot in Model 825S, 835S, 835SE, 845S, or 845SE.

Multi-Device Interface Connections

Multiple devices connect to the Model 825S, 835S/SE, 845S/SE, 850S, 855S, 860S, 865S, 870S systems via HP-IB, HP-FL, SCSI, and Multiplexer interfaces as shown in Figure 94, Figure 95, Figure 96, and Figure 97 on the following pages. The acronym HP-IB represents the full name "Hewlett-Packard Interface Bus," which is a bus cable whose connection should daisy-chain from one device to the next, as illustrated in Figure 94. HP-FL represents the full name "Hewlett-Packard Fiber Link," which is a fiber optic connection to HP-FL disks, made as shown in Figure 95. Multiple devices connect to the multiplexer via its 6-connector panel, as shown in Figure 97. Multiple devices connect to the 98190A multiplexer via its connector panel as shown in Figure 98.

HP-IB Bus Speed

The HP 27110B HP-IB interface can be set for slow or fast settling of signals on the HP-IB bus. Devices that require fast settling cannot be used on the same HP-IB bus with "slow" devices. See Table 8, page 171, for bus settling speeds (fast or slow) of supported HP-IB peripheral devices. For fast settling: 1)- move resistor pack 1810-0081 from U106 to U123, 2)- set switch S1(7) to fast position (down or closed), and 3)- install the high speed identification tag. For slow settling, 1)- move resistor pack 1810-0081 to U106, 2)- set switch S1(7) to slow position (up or open), and 3)- remove the high speed tag (if installed).

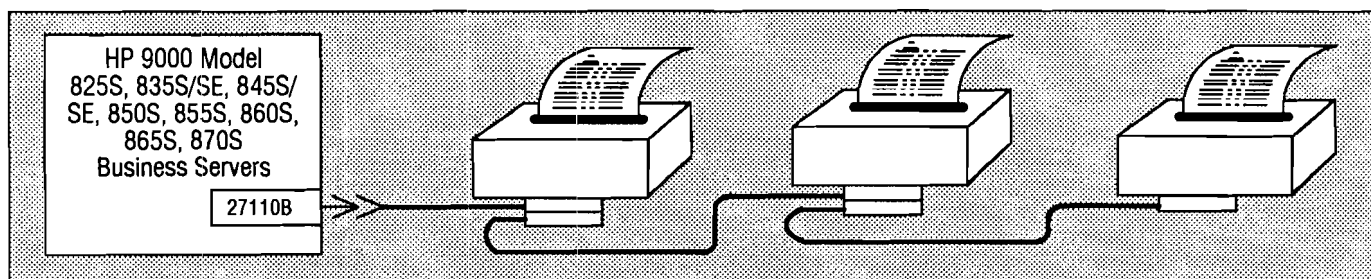


Figure 94. HP-IB Device Connections via 27110B HP-IB Interface

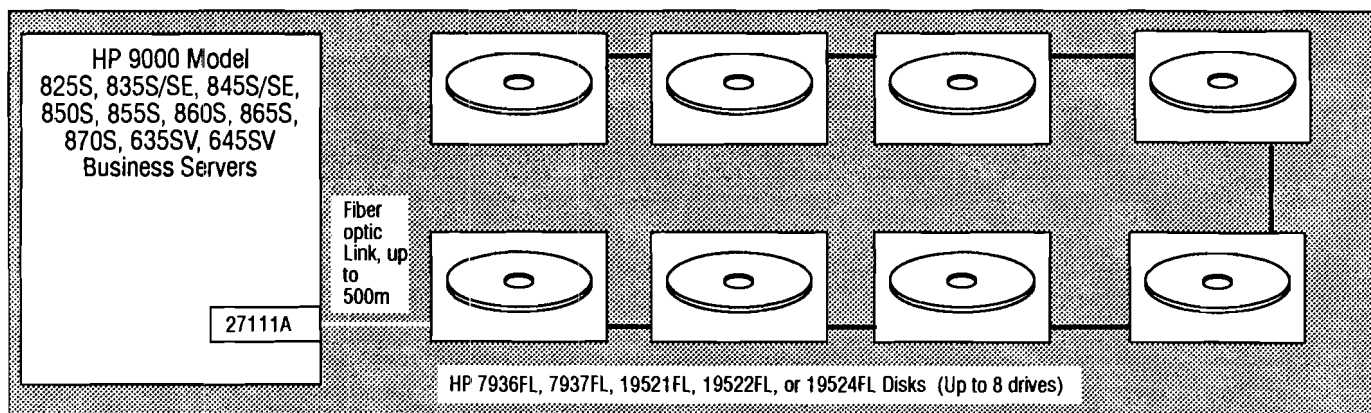


Figure 95. HP-FL Connections to Disks via 27111A HP-FL Interface

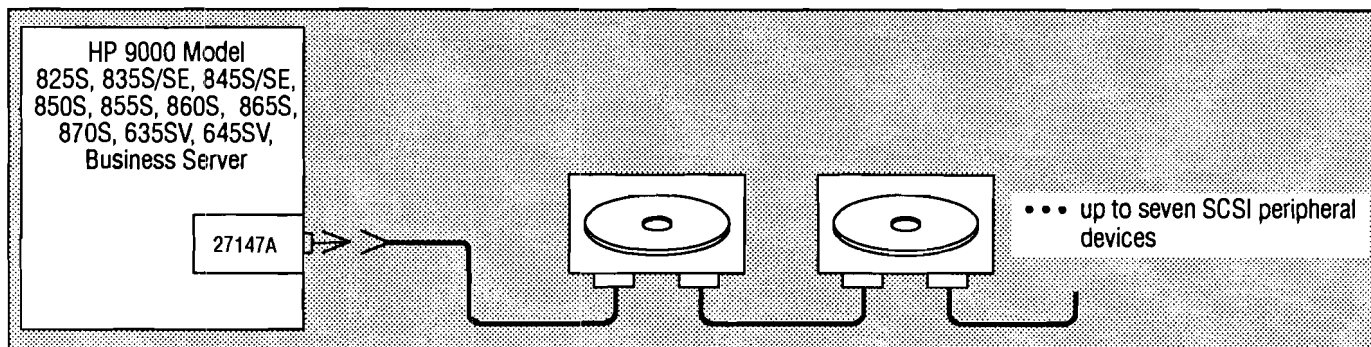


Figure 96. SCSI Device Connections via 27147A SCSI Interface

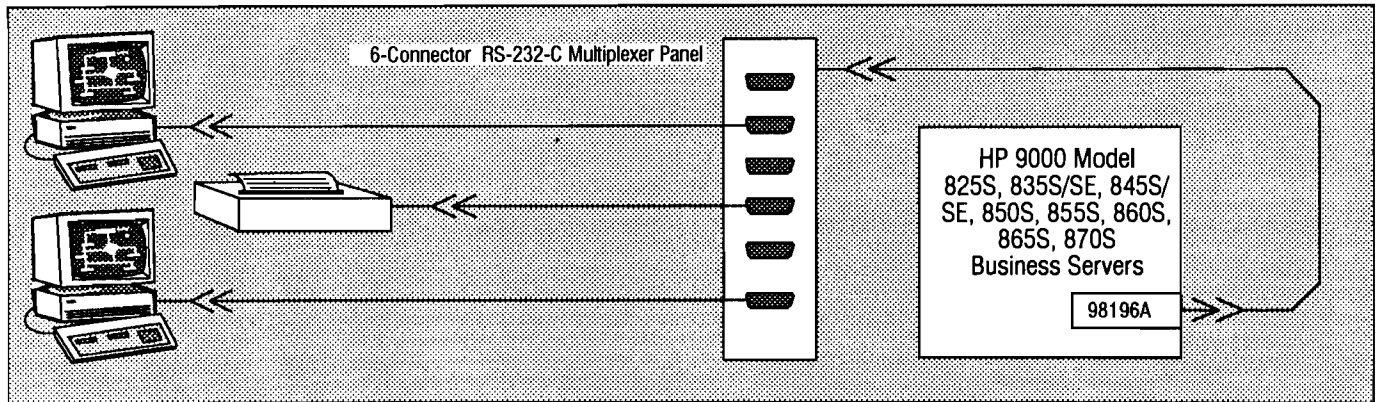


Figure 97. RS-232-C Device Connections via 98196A 6-Channel Multiplexer

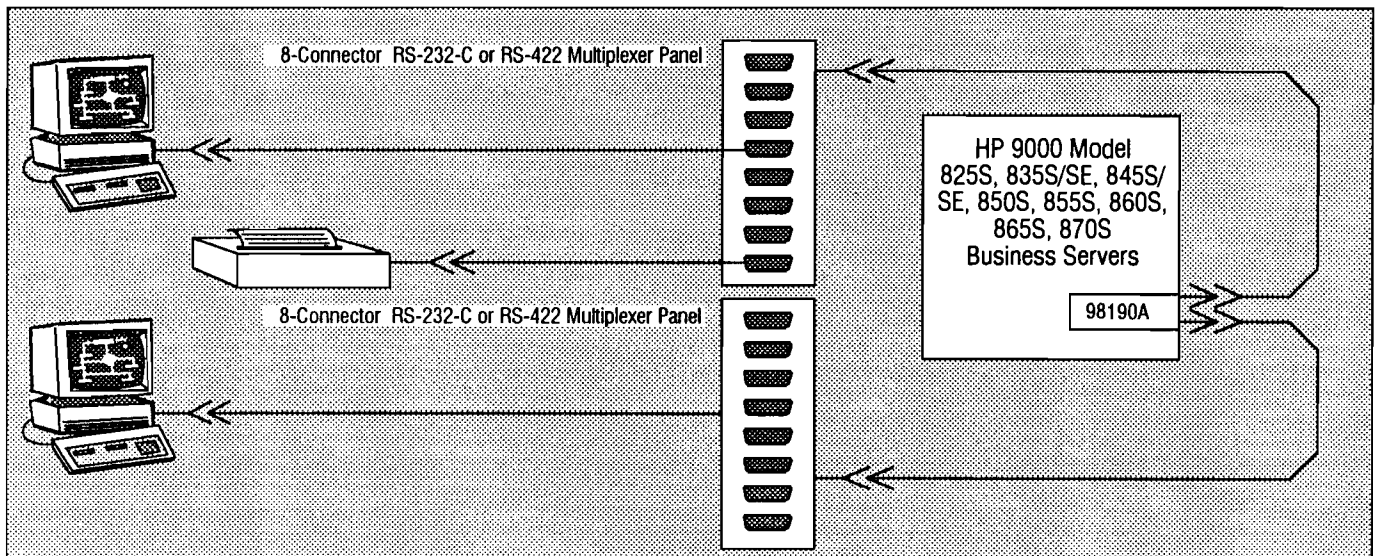


Figure 98. RS-232-C Device Connections via 98190A 16-Channel Multiplexer

Table 8. Bus Speed Requirements of Supported HP-IB Peripheral Devices

Product No. and Name	Bus Speed Requirement
C1202A + 1A8 Asian High Speed Printer	Slow
2227B QuietJet Plus Printer	Slow
2235B/D RuggedWriter Printer	Slow
2563C/2564C/2566C/2567C Line Printer	Slow
2608SR* Line Printer	Slow
2932A*/2934A Printer	Slow
C1625A/C1627A Electrostatic Plotter	Slow
7440A + 002 ColorPro Plotter	Slow
7475A + 002 Graphics Plotter	Slow
7550B Graphics Plotter	Slow
7570A + 17570A DraftPro Plotter	Slow
7580B*/7585B*/7586B* Drafting Plotter	Slow
7595B/7596B DraftMaster Plotter	Slow
C2200A Fixed Disk	Fast
C2203A Fixed Disk	Fast
C1501A** Internal DDS Mechanism	Fast
C1511A** DDS Drive	Fast
7907A* Fixed & Removable Disk	Fast
7914CT* Disk/Cartridge Tape Drive	Fast
7914P*/R* Disk/Cartridge Tape Drive	Fast
7914ST* Disk/Magnetic Tape Tape Drive	Fast
7933H* Fixed Disk	Fast
7935H* Removable Media Disk	Fast
7936H*/7937H* Fixed Disk	Fast
19521H*/19522H*/19524H* Disk Packages	Fast
7957A*/7958A* Fixed Disk	Fast
7957B/7958B/7959B* Fixed Disk	Fast
7962B*/7963B* Fixed Disk	Fast
9122C Microfloppy Disk Drive	Slow
9122D*/S* Microfloppy Disk Drive	Slow
9127A Flexible Disk Drive	Slow
9153C Fixed Disk	Slow
9262B/9263B Removable Disk	Fast
7974A* 1600 cpi Magnetic Tape Unit	Fast
7978B* 6250/1600 cpi Magnetic Tape Unit	Fast
7979A 1600 cpi Autoloading Magnetic Tape Unit	Fast
7980A 6250/1600 cpi Autoloading Magnetic Tape Unit	Fast
7980XC 6250/1600 cpi Autoloading Magnetic Tape Unit with Data Compression	Fast
35401A* 16-channel Autochanger Cartridge Tape Subsystem	Fast
9144A 16-channel Cartridge Tape Subsystem	Fast
9145A 32-channel Cartridge Tape Subsystem	Fast

* Identifies discontinued product, listed here for reference.

** Supported as of release 8.0 of HP-UX.

Extension of HP-IB Transmission Distances

The HP 37204A Multipoint HP-IB Extender can be used to extend the transmission distance between the system and peripheral devices to as much as 1.25 km. The HP 37204A HP-IB Extender translates the parallel input from the HP-IB interfaces and devices into a high-speed serial bit stream, which it transmits to another extender via 75 ohm coaxial cable (or optionally via fiber optic cable) at rates to 60,000 bits per second. Provision of two coaxial ports supports daisy-chaining of multiple HP-IB Extenders as shown in Figure 93, page 167, for maximum configuration flexibility. The optional fiber optic connection works at full speed up to the maximum transmission distance of 1.25 km versus a drop to 1/10 the data rate for distances greater than 250 meters with coaxial cable links. Fiber optic communication also overcomes the effects of severe electrical noise, permits connection between buildings without concern for lightning hazards, and makes electronic eavesdropping extremely difficult.

The Card Cage/Interface Use Records

Because connections to multi-device interfaces are not simply in a one-interface-one-device relationship, it is desirable to keep track of the usage of those interfaces and of card cage capacity usage as well. To facilitate usage tracking, this guide provides blank forms on the pages listed below, which can be copied and used to record each memory or interface card as it is added to the respective SPU, and the usage of multi-device interfaces as well.

Model	Use Records on Page(s)
Model 825S	80 and 83, 84, 85
Models 835S and 835SE	81 and 83, 84, 85
Models 845S and 845SE	82 and 83, 84, 85
Models 850S, 855S, and 860S	61, 62, 67, 68
Model 865S	86, 87, 88, 89
Models 870S/100 and /200	90 through 96
Model 635SV	103
Model 645SV	104



CIO Power Budgeting Configuration Requirements

CIO Power Budgeting Configuration Requirements

Configuration of I/O cards in the Series 800 Expander Bays is subject to power requirements which may not be specified in other sources. This section is designed to assist in determination of whether a mix of I/O cards will be supportable in the Expander Bay based on the power requirements for each I/O card. As a general rule, any mix of I/O cards will only be supported to the extent that total power required does not exceed the total power available in the Expander Bay.

Table 10 gives the maximum power drawn for each CIO I/O card currently supported in the Series 800 system Expander Bays. Power requirements are specified for each voltage level; +5V, +12V, and -12V. This table can be used to calculate the total power requirements for any given I/O card configuration and compared to the total power available in the Expander Bay to determine if the I/O card configuration will be supportable based on power limitations only.

For the CIO 6 or 16 channel Multiplexer, special considerations must be made depending on the type of terminal connection, direct 3-wire or modem. Consideration must also be made depending on which ADP panel is used, ADP0 or ADP1, in designing a multipoint configuration using the 16 channel MUX. The CIO Expander Power Budget Table (Table 10) allows for consideration of the different power requirements for each type of connection and ADP for the MUX cards.

Based on the power requirements per MUX card and the total power available in the CIO Expander Bays, Table 9 gives you the maximum number of MUX cards supported if all ports on every MUX card in the expander are dedicated to one type of connection: direct 3-wire or modem. If a mix of direct 3-wire or modem connections is desired, refer to the Power Budgeting Table (Table 10) to determine if the proposed mix will fall within the total power available and therefore be supportable.

Table 9. CIO MUX Card Configuration Maximums

MUX Card	Connect Type	CIO Expander Bay	Max Cards per Expander Bay	Max Ports per Expander Bay
CIO 6	Direct	A	6	36
CIO 6	Modem	A	4	24
CIO 6	Direct	B	16	96
CIO 6	Modem	B	11	66
CIO 16	Direct	A	8	128
CIO 16	Modem	A	6	96
CIO 16	Direct	B	16	256
CIO 16	Modem	B	16	256

A – CIO Expander Bay for 825S, 835SE, 845SE

B – CIO Expander Bay for 840S, 850S, 855S, 860S, 865S, 870S

CIO Power Budgeting Configuration Requirements, continued

This worksheet will allow the easy comparison of the power limits of a CIO expander bay with the actual power consumption of a proposed configuration of boards and connections within the expander bay. In making this comparison, you may determine the supportability of your proposed configuration. Use the worksheet as follows:

1. Enter the details of the proposed configuration in the quantity column of the table.

2. Multiply the quantity entered in each row by the power given in each of the three "Power Req./Card" columns. Put the result in the appropriate "Total Power Required" Column.
3. Sum each column and row and compare the results with the four power limits for the Expander Bay being used. The computed totals must be less the limits given.

Table 10. CIO Expander Power Budgeting Table

I/O Card or Connection	Quantity	Power Req./Card (Watts)			Total Power Required (Power/Card)*(# Cards)			Sum of +15V, +12V, -12V Power (watts)
		+5V	+12V	-12V	+5V	+12V	-12V	
HP-IB 27110B		8.4	0.42	0				
HP-FL 27111A		16.75	0.37	0.21				
SCSI 27147A		17.43	.05	.05				
AFI/A 27114A		11.25	0	0				
AFI/B 27114B		14.0	0	0				
LAN 27125A		15.0	6.0	0				
RTI 28667A		13.0	6.0	6.0				
CIO6 98198A		12.06	1.9	1.8				
Per Modem* Connect		0	0.24	0.24				
Per Direct 3-wire Connect		0	0.05	0.05				
CIO16 98190A		7.85	0.79	0.01				
Per Modem* Connect (ADP0)		0	0.24	0.24				
Per Direct Connect (ADP0)		0	0.05	0.05				
Per Modem* Connect (ADP1)		0.48	0.24	0				
Per Direct Connect (ADP1)		0.10	0.05	0				
Total Power Required For Expander Bay (Must not exceed total power available listed below)								
Total Power Available in CIO Expander Bays:								
A) 825S, 835SE, 845SE (8 Total Slots)					113	40	13	150
B) 840S, 850S, 855S, 860S, 865S, 870S (16 Total Slots)**					244.6	82.5	36	288

* Any connection greater than 3 wires.

** The 6- or 16-channel multiplexers are the only I/O cards supported in the 16 slot CIO expander bay.

Note: When using CIO16 with a mix of modem and 3-wire connections: -12V power consumption can be minimized by moving modem connections to ADP1; +5V and overall power consumption can be minimized by moving modem connections to ADP0.

User Communications Devices

User Communications Components

HP 9000 Series 800/600 Systems can use the following components for operator communication:

- **Display Terminals**, for screen display of system messages, keyboard for entry of commands and programs by the operator.
- **X Window Terminals** with monitor, keyboard, mouse, and/or RS-232C device, providing a high-resolution X Window graphical interface.
- **HP-HIL Cursor Control and Picking Devices**, such as the HP Mouse or Graphics Tablets. Since these are used principally for graphics I/O, they are discussed in the graphics I/O capabilities section, page 202.

Typical Active Operator Communications Devices

The typical maximum number of operator communications devices supported in the various HP 9000 Series 800/600 Models are given in the multi-column list below. This work load environment for logged-on users assumes the system is running a general purpose commercial application without a relational database.

(Does not apply to X terminals)

System Model	Typ. Dev.	System Model	Typ. Dev.	System Model	Typ. Dev.
807S	1-96	835SE	1-120	855S	1-250
808S	1-8	837S	1-320	857S	1-400
815S	1-30	842S	1-300	860S	1-300
817S	1-240	845S	1-198	865S	1-400
822S	1-82	845SE	1-198	870S/100	1-500
825S	1-75	847S	1-400	870S/200	1-800
827S	1-300	850S	1-140	635SV	2
832S	1-108	852S	1-400	645SV	2
835S	1-120				

System Console/Terminal Selection

A locally interfaced display terminal must be provided for operator communication in any HP 9000 Series 800/600 System. Except where otherwise noted, any of the display terminals listed in Table 11, next page, can be used as system console. These include previously purchased terminals that have been discontinued. However, it is most cost effective to specify a minimum-capability terminal for the system console,

because extra capability, such as graphics, usually cannot be put to good use on a system console. The other main consideration in selecting a system console is to specify one that uses the same type of cable as most of the other terminals in the system to facilitate connection of another terminal as system console if the system console terminal fails.

Console/Display Terminal Interfacing

Via RS-232C Ports

The interfaces used for connection of the system console and other display terminals to the system differ with the HP 9000 Series 800/600 Models, as follows:

In the HP 9000 Models 808S & 815S only, two unbuffered RS-232C ports are built into the CPU card. Because these built-in RS-232C ports are unbuffered, they do not have the same performance characteristics as multiplexer ports. Connection of a terminal with heavy usage or a fast RS-232C device to either built-in port can result in reduced overall system throughput. For that reason, the built-in ports should be used for the system console and one other low-usage terminal or slow RS-232C device. See Figure 99 for connections. Additional terminals can be connected via an HP 40299B Asynchronous 8-channel Multiplexer interface. Connection is shown in Figure 100, page 176.

In HP 9000 Models 822S, 832S, 842S, and 852S, the system console and additional terminals are connected via the HP 40299B Asynchronous 8-channel Multiplexer interface, which is included in the System Processor Unit. In the HP 9000 Models 807S/817S/827S/837S/847S/857S, the system console and additional terminals are connected via the integrated 8-channel multiplexer interface, which is on the system personality card. Connections are shown in Figure 100, page 176.

In HP 9000 Models 635SV, 645SV, 825S, 835S/SE, 845S/SE, 850S, 855S, 860S, 865S, and 870S, the system console and additional terminals are connected via an HP 98196A Asynchronous 6-channel Multiplexer interface, which is included in the System Processor Unit. Connections are shown in Figure 100, page 176. The system console uses one of the six multiplexer channels, and the access port (optional in Models 635SV, 645SV, 825S, 835S, 835SE, 845S, and 845SE) uses another, leaving four channels available in the first multiplexer for additional terminals or other RS-232C devices.

User Communications Devices, continued

Table 11. Display Terminals and PCs Supported in HP 9000 Series 800/600 Systems

Product Number	Name/Description	Connects to Model 815S via RS-232-C Port A or B or 98196A, 98190A, 40299B, or J209XA Multiplexer
C1001A/G/W	HP 700/92 Display Terminal, available with Amber (A), Green (G), or White (W) background display, 80/132 col.	40242M/40234A Cable
C1002A/G/W	HP 700/94 High Performance Terminal, available with Amber (A), Green (G), or White (W) background display, 80/132 col.	40242M/40234A Cable
C1003A/G	HP 700/41 Entry Level ASCII Terminal, available with Amber (A) or Green (G) display, 80 col. <i>Not supported as system console.</i>	40242Y/40234A Cable
C1004A/G/W	HP 700/22 DEC VT220 compatible Display Terminal, available with Amber (A), Green (G), or White (W) background display, 80/132 col. <i>Not supported as system console.</i>	40242C/40234A Cable
C1006A/G/W	HP 700/43 Full-Featured ASCII Terminal, available with Amber (A), Green (G), or White (W) background display, 80/132 col. <i>Not supported as system console.</i>	40242M/40234A Cable
C1007A/G/W	HP 700/44 PC Systems Terminal, available with Amber (A), Green (G), or White (W) background display, 80/132 col. <i>Not supported as system console.</i>	40242M/40234A Cable
C2301B	HP 700/X X Window Terminal base unit. <i>Not supported as system console.</i>	Connection by LAN only
C2303B	HP 700/X X Window VGA color terminal. <i>Not supported as system console.</i>	Connection by LAN only
C2304B	HP 700/X X Window 1024 x 768 color terminal. <i>Not supported as system console.</i>	Connection by LAN only
C2305B	HP 700/X X Window grayscale terminal. <i>Not supported as system console.</i>	Connection by LAN only
2393A	Monochrome Graphics Terminal, 80 columns. <i>Not supported as system console.</i>	40242M/40234A Cable
2397A	Color Graphics Terminal, 80 columns. <i>Not supported as system console.</i>	40242M/40234A Cable
9666A	Operator Interface Unit (ruggedized 2397A terminal in NEMA 12 enclosure). <i>Not supported as system console.</i>	40242M/40234A Cable

NOTE: The following are discontinued products, listed here for reference only.

2392A	Display Terminal, 80 column system console requires option S12.	40242M Cable
2394A	Alphanumeric Terminal with forms capability, 80 column <i>Not supported as system console.</i>	40242M Cable
3081A	Industrial Workstation Terminal, 80 columns. <i>Not supported as system console.</i>	40242C Cable
3082B	Industrial Touch Terminal, 80 columns. <i>Not supported as system console.</i>	40242C Cable
45610A/B	Touchscreen PC/Terminal, 80 columns. May require upgrade with the latest HP 150-II ROMs. Emulates 2623A. <i>Not supported as system console.</i>	40242M or 92218A Cable
45711A..D	Portable Plus PC/Terminal, 80 columns. Requires 82863K Option 400 software, which emulates the 2392A Terminal. <i>Not supported as system console.</i>	92221M Cable
72425A†	Vectra Model 25 PC, 80 columns. Emulates the 2392A Terminal. <i>Not supported as system console.</i>	24542M or 40242M Cable
72445A†	Vectra Model 45 PC, 80 columns. Emulates the 2392A Terminal. <i>Not supported as system console.</i>	24542M or 40242M Cable

† HP Vectra Model 25 and 45 PCs also require a monitor, graphics adapter, HP AdvanceLink software, the Vectra Disk Operating System, and a Serial/Parallel or Dual Serial Interface card for operation as an HP 9000 Series 800/600 Terminal.

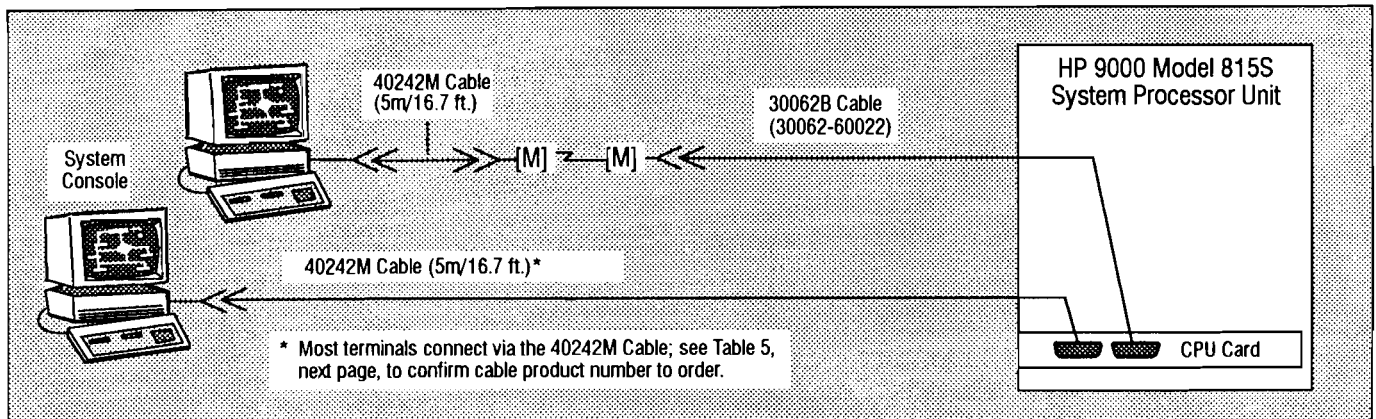


Figure 99. Console/Terminal Connection via RS-232C Ports on Models 808S and 815S CPU Card

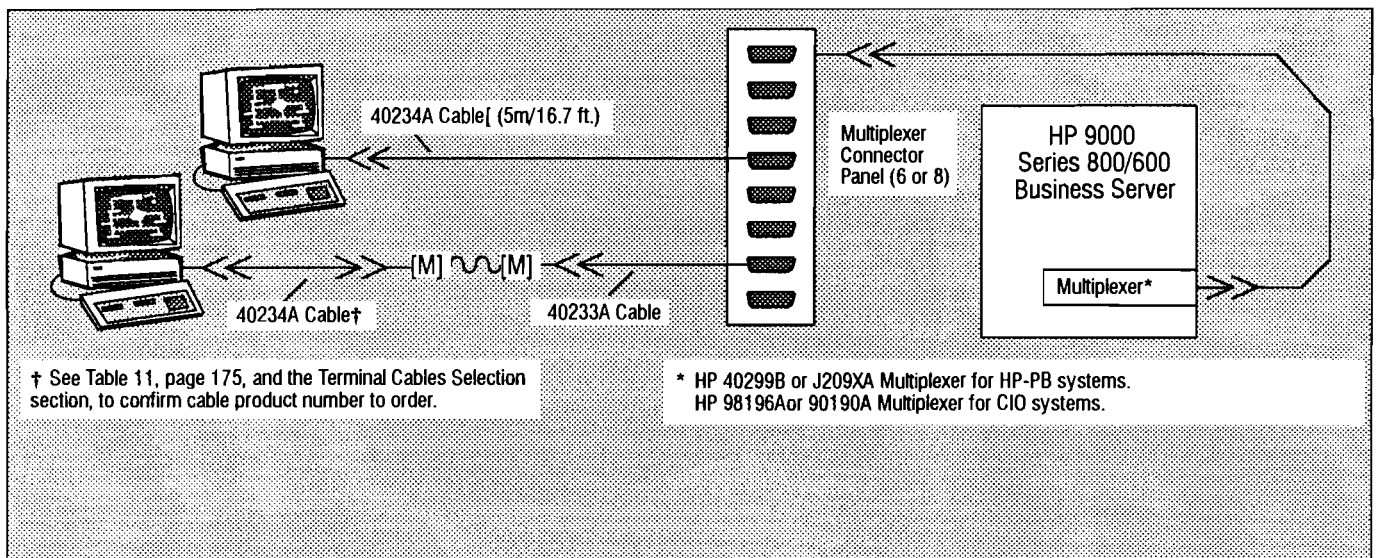


Figure 100. Terminal Connection via 6-Channel Multiplexer

Terminal Cable Selection

RS-232 terminals are connected to the HP 9000 asynchronous multiplexers via direct cables or via asynchronous modems.

The following cables are recommended:

- 40234A for direct connection to a peripheral
- 40233A for connection to a modem

Other cables can be used:

- 46242Y, 13242Y, 49242M, 13242M, 13242N for direct connect connection
- 92219Q for connection to a modem



DTC (Datacommunication and Terminal Controller)

The DTC is a modular and flexible LAN-based controller which provides asynchronous connectivity and PAD Support for local and remote terminals, PCs in terminal emulation mode and printers.

Previously, two versions of DTCs were available, the DTC/3000 and the DTC/9000. They are now combined into a single DTC providing multivendor location-independent access to HP and non-HP systems (*).

(For specific information about 900 Series HP 3000 connectivity, please refer to the HP 3000 Configuration Guide).

There are two DTCs available; they are 100% functionality compatible:

- The DTC16 (P/N 2340A) provides up to 16 asynchronous connections (RS-232 Direct Connect and RE-232 Modem Connect) and 1 X.25 link supporting up to 32 virtual circuits at speeds up to 19.2 kbps.

The DTC16 is an ideal solution in an environment where a small concentration of connections is needed (either centralized or distributed throughout buildings).

- The DTC48 (P/N 2345A) provides up to 48 asynchronous connection (RS-232 Direct Connect, RS-232 Modem Connect and RS-422 Direct Connect) and up to 3 X.25 links supporting up to 256 virtual circuits at speeds up to 64 kbps.

The DTC48 is best suited in an environment where a large number of connections is needed.

The DTC is supported on all 800 Series HP 9000, both Channel I/O (CIO) and HP Precision Bus (HP-PB) as well as on 300/400/700 Series.

ARPA/9000 software and LAN/9000 hardware are required.

Each 800 Series system can support multiple DTCs on the LAN. The number of active connections supported will be determined by the application load on the system. In some customer environments with heavy interactive traffic (for example transaction-processing with intense data entry), HP recommends the use of the DTC16.

Detailed performance data will be published to the field near the time of this publication.

Network Management

Two types of software are available to download and manage DTCs according to the level of functionality which is required and the network management needs (Figure 101).

For single system stand-alone environments, the HP OpenView DTC Entry-Level Manager/UX is recommended (P/N J2120A). This runs on 800 Series HP 9000.

When access to multiple systems or when PAD Support is needed, an appropriate configured PC with HP OpenView DTC Manager Software (P/N D2355A) is required. Customers can use the same PC to manage other equipments like X.25 switches and PADs through the use of the HP OpenView Switch/PAD Manager Software (J2017A).

A fully configured, turn-key HP OpenView Workstation is available to ease ordering and installation, the HP OpenView Windows Workstation (P/N 32054B).

Local and Remote End-User Access

Local and remote (from X.25/PADs) end-users can access systems through:

- Direct access on the LAN: This is true for the 700/300/400/800 Series HP 9000, 900 Series HP 3000, HP 1000 and for other non-HP Telnet/TCP/IP systems
- Back-to-Back: Any system with asynchronous (RS-232) links can be connected to the asynchronous ports of the DTC. Terminal users hooked to the DTC can access systems connected to the same DTC (local switching) or to an other DTC (extended switching).

PAD support is provided through the use of an X.25 Network Access Card. This X.25 card is strictly identical to the one used for HP 3000 Series 900 X.25 networking. As stated above, this functionality requires a configured PC with HP OpenView DTC Manager software.

The DTC TCP/IP implementation makes the best use of standards. This includes symbolic name addressing (DNS) and support of extended LAN configurations with bridges and level 3 IP routers. Although this means that a DTC user can access a system located beyond a level 8 IP router, a PC management station is needed on each segment of LAN to download and manage the local DTCs. Improvements will be provided in next releases. The first step will be to allow HP OpenView DTC Manager PCs to communicate across IP routers.

Printer Support

In order for an HP 9000 to access and share printers connected to DTCs or to access printers connected to a remote PAD, DTC Device Access/ARPA Software is required on that host. This software allows any 300/800 Series HP 9000 to route spooler output to DTC-connected printers. In addition, it provides a set of programmatic calls that allow you to write applications to access arbitrary RS-232-C devices on your DTC. The DTC Device Access/ARPA software is included with the HP OpenView DTC Entry-Level Manager/UX product but must be ordered separately when using the PC-based HP OpenView DTC Manager.

For more information about all the above, consult the AdvanceNet Specifications Guide.

(*) Footnote: For access to Multiple systems, the DTC48 must have data code 3110 or later. DTC48 with date code less than 3110 must be upgraded with the DTC48 Upgrade Kit HP 2348A (memory extension for the HP 2345A).

The DTC16 does not require any upgrade kit.

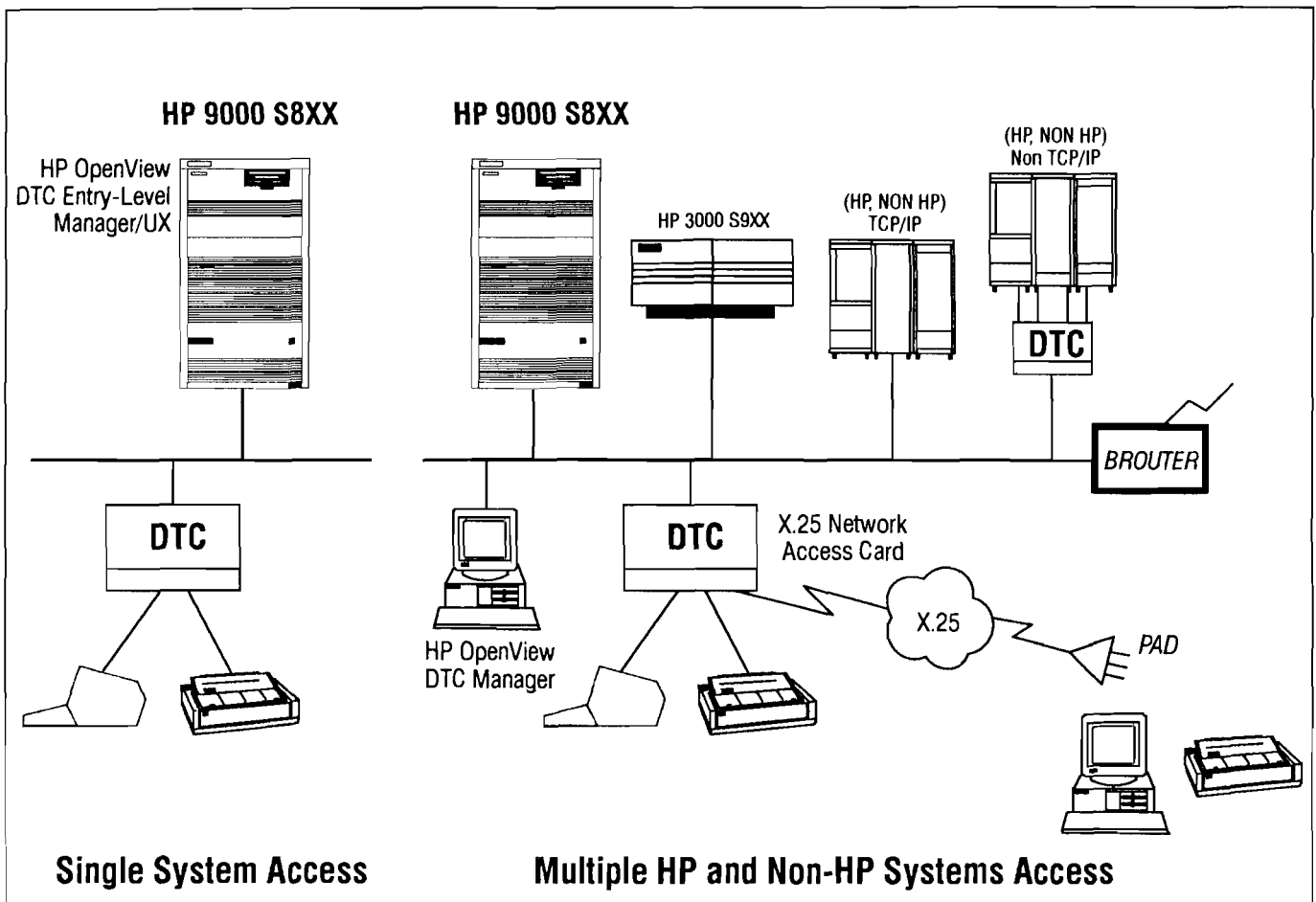


Figure 101. DataCommunication and Terminal Controller/9000

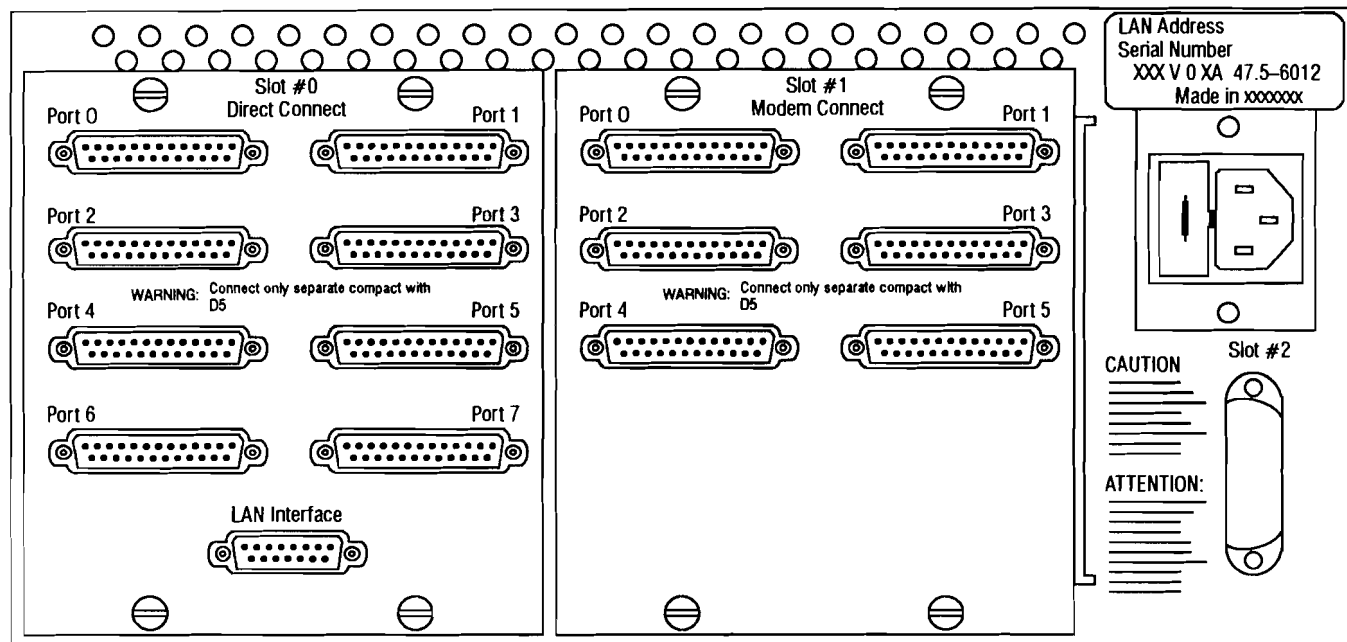
User Communications Devices, continued

Configuring the DTC in Your HP 9000 System Environment

Service	DTC16	DTC48	Network Management
Local End-User Access:			
Sing HP 9000 S 800	2340A + asynchronous cards + LAN options	2345A + asynchronous cards + LAN options	J2120A
Multiple Systems:			
HP 9000 + Access to non-TCP/IP hosts ("back-to-back") + HP 3000 S 900 + Multivendor connect	2340A + asynchronous cards + LAN options	2345A + asynchronous cards + LAN options + DTC48 Upgrade Kit (HP 2348A) (if DTC48 date code is less than 3110)	HP OpenView PC with D2355A Release 10.5 or later
Remote End-User Access (single and multiple)			
+ HP 9000 + HP 3000 S 900 + Multivendor Access to non-TCP/IP hosts ("back-to-back")	2340A + asynchronous cards (minimum 1 in slot 0) + LAN options + X.25 card	2345A + asynchronous cards (minimum 1 in slot 0) + LAN options + X.25 card + DTC48 Upgrade Kit (HP 2348A) if DTC48 date code less than 3110	HP OpenView PC with D2355A Release 10.5 or later

Configuring the DTC16

From one to two asynchronous modules may be ordered with the DTC16. Each DTC16 supports a maximum of two asynchronous modules and one X.25 Network Access Card (slot # 2 on the diagram).



DTC16 with 8 ports DC + 6 ports MC, configured for thick LAN

DTC16 Ordering

Port Connect	Thin LAN Configuration	AUI Port (no MAU)* Configuration	Thick LAN Configuration
2340A DTC16	DTC16		
6 Modem Ports	2340A, #642	2340A, #641	2340A, #640
8 Direct Ports	2340A, #842	2340A, #841	2340A, #840
12 Modem Ports	2340A, #642, #650	2340A, #640, #650	2340A, #640, #650
6 Modem & 8 Direct	2340A, #642, #850	2340A, #641, #850	2340A, #640, #850
16 Direct	2340A, #842, #850	2340A, #841, #850	2340A, #840, #850
X.25	2340A, #310	2340A, #310	2340A, #310

Note: The ordering instructions for the DTC48 and DTC16 are different. The DTC48 LAN connection is a separate option. On the DTC16, the LAN connection is tied to the first asynchronous module.

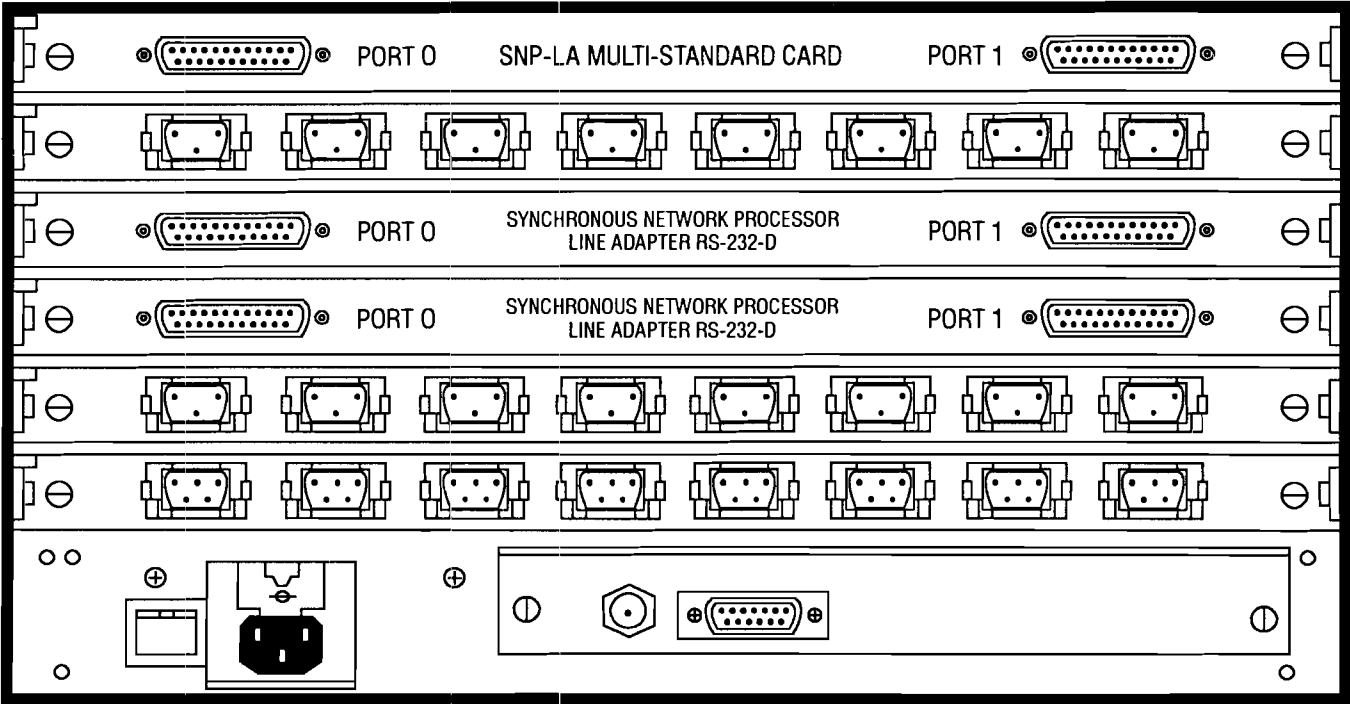
No ROM upgrades are necessary for the DTC16 for X.25 connectivity.

* To connect EtherTwist, also order the EtherTwist MAU (P/N HP 28685A).

Configuring the DTC48

When ordering the DTC48, a LAN interface option must be specified. Asynchronous and X.25 interface cards may be ordered as options to the DTC or as

standalone products. From one to six interface cards may be ordered with the DTC48. Each DTC48 supports a maximum of six interface cards including no more than three X.25 Network Access Cards.



DTC48 with 2 RS-232 (3 pins) cards, + 1 RS-422 (5 pins) card + 3 X.25 cards

DTC48 Ordering

Port Connect	Thin LAN Configuration	AUI (no MAU) Configuration (1)	Thick LAN Configuration
	2345A, #242	2345A, #241	2345A, #240
Order from 1 to 6 following asynchronous cards:			
8 Direct Ports	2345A, #803	2345A, #803	2345A, #803
6 Modem Ports	2345A, #625	2345A, #625	2345A, #625
8 RS-422 Ports	2345A, #805	2345A, #805	2345A, #805
X.25	Add #310 (RS-232), #320 (V35), #330 (V36) or #340 (RS-422) to the DTC48 configuration (HP 2346D/E/F/G when ordered after initial DTC48 purchase)		
8 Addit. Direct	Order HP 2346A (when ordered after initial DTC48 purchase)		
8 Addit. RS-422	Order HP 2346B (when ordered after initial DTC48 purchase)		
6 Addit. Modem	Order HP 2346C (when ordered after initial DTC48 purchase)		

Note: Option #015 — Set for 220 V operation.

(1) To connect EtherTwist, also order the EtherTwist MAU (P/N HP 28685A).

Product Summary

Product/Opt. No.	Description
Options	
HP 2345A	Datcommunications and Terminal Controller with 48 ports (DTC48).
Opt. 015	Set for 220V operation.
Opt. 240	Configure DTC for ThickLAN operation.
Opt. 241	Configure DTC for ThickLAN, no MAU or AUI provided.
Opt. 242	Configure DTC for ThinLAN operation for BNC T-connector.
Opt. 310	X.25 Network Access card for the DTC48, RS-232 interface.
Opt. 320	X.25 Network Access card for the DTC48, V.35 interface.
Opt. 330	X.25 Network Access card for the DTC48, V.36 interface.
Opt. 335	X.25 Network Access card for the DTC48, RS-422 interface.
Opt. 803	Eight 3-pin RS232C direct connect ports installed in DTC.
Opt. 805	Eight 5-pin RS422 direct connect ports installed in DTC.
Opt. 825	Six 25-pin RS232C modem connect ports installed in DTC
HP 2340A	Datcommunications and Terminal Controller with 16 ports (DTC16). Must order one and only one option 640, 641, 642, 840, 841 or 842. A maximum of one option 650 or 850 can be ordered. A maximum of one option 310 can be ordered.
Opt. 015	Set for 220V.
Opt. 310	X.25 Network Access card for the DTC16, RS-232 interface.
Opt. 640	Configure DTC16 for ThickLAN and provides six RS-232-C 25-pin modem connections installed in the DTC16. (Thick MAU and 6m AUI cable provided)
Opt. 641	Configure DTC16 for AUI use and provides six RS-232-C 25-pin modem connections installed in the DTC16. (No MAU provided)
Opt. 642	Configure DTC16 for ThinLAN and provides six RS-232-C 25-pin modem connections installed in the DTC16. (BNC-T connector provided)
Opt. 650	Provides six additional SE-232-C 25-pin modem connections installed in the DTC16.
Opt. 840	Configure DTC16 for ThickLAN and provides eight SE-232-C 25-pin direct connections installed in the DTC16. (Thick MAU and 6m AUI cable provided)
Opt. 841	Configure DTC16 for AUI use and provides eight RS-232-C 25-pin direct connections installed in the DTC16. (No MAU provided)
Opt. 842	Configure DTC16 for ThinLAN and provides eight RS-232-C 25-pin direct connections installed in the DTC16. (BNC-T connector provided)
Opt. 850	Provides eight additional RS-232-C 25-pin direct connections installed in the DTC16.
HP Field Installed Add-On Cards	
HP 2343A	Add-on Datcommunications and Terminal Controller DTC16 Asynchronous Connector card. Provides eight additional RS-232-C 25-pin direct connections.
HP 2343C	Add-on Datcommunications and Terminal Controller DTC16 Asynchronous Connector card. Provides six additional RS-232-C 25-pin modem connections.
HP 2343D	Add-on X.25 Network Access for the DTC16.
HP 2346A	Add-on Eight 3-pin RS-232 direct connections.
HP 2346B	Add-on Eight 5-pin RS-422 direct connections.
HP 2346C	Add-on six 25-pin RS-232 modem connections.
HP 2346D	Add-on X.25 Network Access for the DTC48, RS-232 interface.
Opt. 001	Hardware Upgrade Kit (required for DTC48 with date code less than 2851).
HP 2346E	Add-on X.25 Network Access for the DTC48, V.35 interface.
Opt. 001	Hardware Upgrade Kit (required for DTC48 with date code less than 2851).
HP 2346F	Add-on X.25 Network Access for the DTC48, V.36 interface.
Opt. 001	Hardware Upgrade Kit (required for DTC48 with date code less than 2851).
HP 2346G	Add-on X.25 Network Access for the DTC48, RS-422 interface.
Opt. 001	Hardware Upgrade Kit (required for DTC48 with date code less than 2851).
HP 2348A	DTC48 Upgrade Kit (memory extension for the HP 2345A).
HP 36950A	DTC48/X.25 Start up package (provides a 25% discount).
HP 36954A	DTC16/X.25 Start up package (provides a 25% discount).

User Communications Devices, continued

Product Summary (continued)

Product/Opt. No.	Description
Options	
Downloading and Managing the DTC	
HP D2355A	HP OpenView DTC Manager.
Opt. AA0	DTC Device Access/ARPA on 1/4" cartridge.
Opt. AA1	DTC Device Access/ARPA on 1/2" Mag. Tape 1600 bpi.
HP 32054B	HP OpenView Windows Workstation.
Opt. ABA-ABZ	Localisation options.
Opt. 101	ThinLan Connection.
Opt. 102	ThickLan Connection.
Opt. 103	Ethertwist Connection.
Opt. 201	HP Openview DTC Manager software.
HP J2120A	HP OpenView Entry-Level DTC Manager/UX.
Opt. AA0	Software on 1/4" cartridge.
Opt. AA1	Software on 1/2" Mag. Tape 1600 bpi.
Opt. AAH	Software on DDS cartridge.
Opt. OCC	Update to latest version.
Other Product Requirements	
*	HP-UX release 7.0 or later.
*	An HP 9000/800 LAN link and ARPA services (product numbers vary based on processor, please consult section Communication With LAN-Connected Systems, pg. 207 or your HP 9000 price guide).
*	For additional information on supported LAN devices, please consult the "Data Communications and Terminal Controller Family" Datasheet (P/N 5956-4144).

User Communications Devices, continued

Table 12. Supported Workstations

Terminals		Note: The specified firmware is necessary for the following terminals
HP 2392A, 93A, 94A, 97A		2622A: ROM 3199 or later
HP 700/22, 32, 41, 43, 44		2623A: ROM 3223 or later
HP 700/92, 94, 96, 98		2624B: ROM 3139 or later
HP 3081A, 3082A/B		2627A: ROM 1818–3487 or later
HP 2622A, 23A, 24B, 25A, 27A		
Personal Computers		Note: These personal computers have been supported when operating in terminal emulation mode with HP AdvanceLink 2392.
HP 150A/B/II		
HP Portable PLUS		
HP VECTRA		
HP VECTRA CS/ES/RS/QS		
IBM PS/2 Model 30, 50, 60, 80		
COMPAQ DESKPRO		
Printers and Plotters		Note: Xon/Xoff protocol is used between the DTC and printers. Modem connections are not supported with the HP laser printer.
HP 7550A	Plotter	
HP 2225D	Thinkjet	
HP 2227A, 28A	Quietjet	
HP 2276A, 77A	Deskjet	
HP 2235C	Rugged Writer	
HP 2562A, 63A/B/C, 64B/C	Line Impact Dot Matrix	
HP 2932A, 33A, 34A	Impact Printer	
HP 2684D/P, 86A/D	Laser	
HP 33440A/F, 47A/F, 49A, 59A		

Table 13. DTC-to-Workstation Connection Cables

Devices	DTC Connectors		
		DTC48 only	
	DTC16 and DTC48 RS232 25 pins (modem or direct)	RS232 3 pins	RS422 5 pins
Terminals and Personal Computers			
HP 2392A/93A/94A/97A	40234A	40242X	40242P
HP 700/22/32/43/45/92/94/96/98			
HP 150X			
HP VECTRA with HP24541B/ptB (25 pins)			
HP 3081A, 3082A/B			
HP 2622A/23A/24B/27A	*13222M/N	13222X	13222P
HP 2625A, 24B (port2)	40234A	40242X	N/A
Portable +	92221M	N/A	N/A
HP VECTRA (9 pins)			
24540B/ptA	24542M	N/A	N/A
24541B/ptA			
Printers and Plotters			
HP 7550A	17355D	30152A	N/A
HP 2227A, 28A, 76A, 77A	40234A	40242X	N/A
HP 2235C			
HP 2562A, 63A/B/C, 64A/B/C			
HP 2932A, 33A, 34A			
HP 2684D/P, 86A/D	40234A	40242X	40242P
HP 33440A/F, 47A/F, 49A, 59A			
	* M for European mode N for US modem		
Modem	30062B	N/A	N/A
Extended Switching Access Through "Back-to-Back" Configurations			
HP 2334/2335A X.25 multiplexer			
— terminal	40221A	N/A	N/A
— printer	40220A	N/A	N/A
HP 2342A	30062B	N/A	N/A
HP 3000 ATP, ATPM	40233A	N/A	N/A
HP 9000 40299A, 98642A			

N/A: Not Available

HP 700/X Terminals Via LAN Link

The HP 700/X family of color and grayscale X Window graphics terminals, when connected to an EtherNet LAN as shown in Figure 102, provide the user with interactive access and simultaneous display of multiple applications. The number of terminals that can access a specific application is limited by the amount of RAM and by the available performance on the HP 9000 Series 800/600 Business Server. HP 700/X terminals op-

erate well on systems where LAN loading is below 15% of capacity.

HP 9666A Operator Interface Unit

The HP 9666A is an HP 2397A Color Graphics Terminal housed in a NEMA-12 enclosure to protect it from the harsh factory floor environments. The HP 9666A connects to the system in the same way as the HP 2397A.

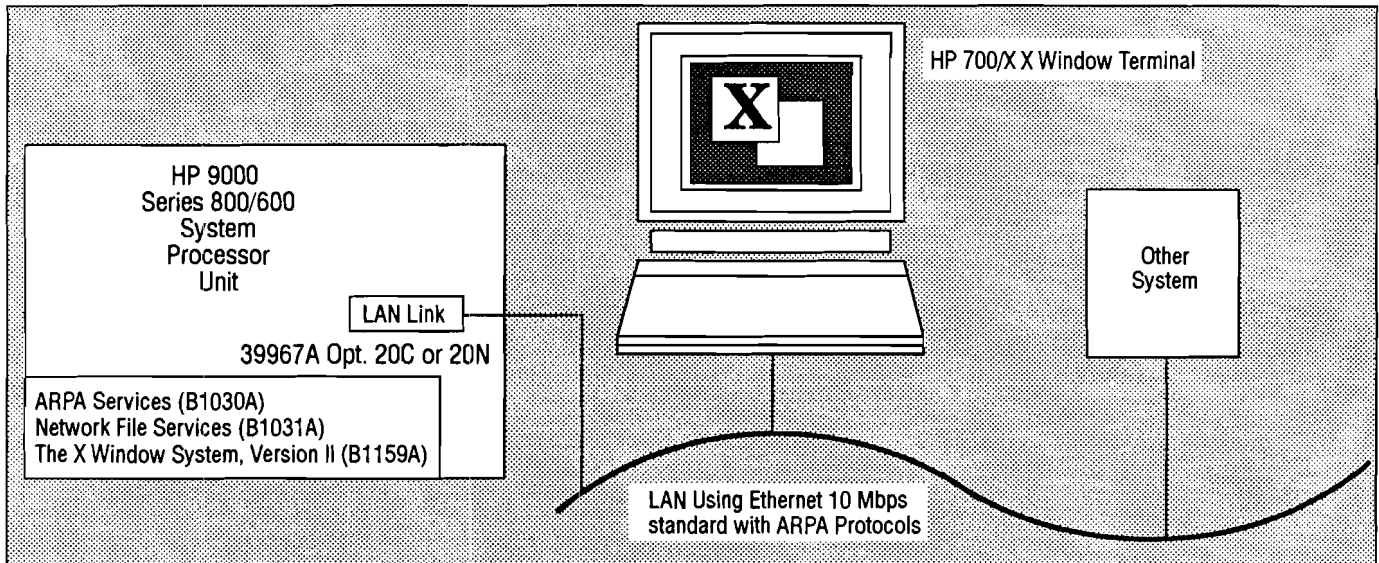


Figure 102. HP 700/X X Window Terminal Connection Via LAN Link

Disk Storage Systems

Mass Storage Drive Functions

Disks (disk storage system) provide high-capacity, non-volatile, fast-access mass storage for programs and data for the system. The key functions performed by disk drives are discussed below.

Support of System Boot-up

The most cost-effective way of supporting system boot-up is from a mass storage device that is capable of fast transfers, such as a disk drive. If not supported from the drive in an adjacent host system, the boot-up device is usually a locally connected disk drive. When the boot-up device is a local drive, it is called the system disk. For this function, fast transfer shortens the time required to boot up the system. Minimum capacity for the system disk is 335 Mbytes except for Model 808S which requires only 152 Mbytes.

Fast-Access Storage and Retrieval

Applications in all but the harshest environments typically use a local disk drive for storing programs and data not currently in use, from which these are retrieved when and as needed. For this function, hard drives are preferred because of the greater capacity and faster storage and retrieval rates available with hard disk drives.

HP-UX Swap Space

Under HP-UX, when the total size of executing processes and their data exceeds the capacity of installed RAM, process data is written to disk temporarily when needed to make room for other processes or data. It is also possible for individual programs to exceed the capacity of installed RAM. The capability of shifting

code and data from RAM to a disk drive, which thus becomes “virtual” memory (VM), is managed by the virtual memory system.

Each process has a virtual memory space of 4 Gbytes, which is in practice limited by available disk space. Whenever a process is dispatched (run), a space equal to its “total” size is allocated in swap space. Swap space must therefore at least equal the installed RAM and should, in fact, equal the total size of all the processes to be run in a maximum simultaneous mix.

Each CPU may have up to 8 disk drives with swap space on them, on separate or shared buses.

Series 800/600 Disk Drive Requirements and Performance

HP-UX commands and utilities are usually read in from disk each time they are executed. Disk drive performance is, therefore, key to providing adequately fast response to user’s requests. In multiuser systems and in certain single-user applications, multiple system disk drives provide an aggregate performance which exceeds that of a single drive. The I/O capacity (I/Os per second) of two similar drives is at least 1.5 times that of one drive alone, provided that the system and user demands are well distributed between the two disk drives.

A slight performance increase can be gained in a multi-disk system by connecting the drives via separate HP-IB and/or HP-FL interfaces. Using the SCSI Interface, performance gains cannot be expected by connecting disk drives via separate interfaces.

WARNING: Simple HP-IB devices (such as printers) cannot be connected to the same HP-IB interface as a mounted file system or swap disk drive.

Three Types of Disk Interfaces

HP-IB Interface

Most disk drives connect to HP 9000 Series 800/600 Systems via an HP-IB interface, the HP 28650B inter-

face, in Model 808S, 815S, 822S, 832S, 842S and 852S, the HP 27110B interface in other Series 800/600 Systems. Figure 103, below, shows disk connections via HP-IB interface. Note that a maximum of four disks is supported by each HP-IB interface.

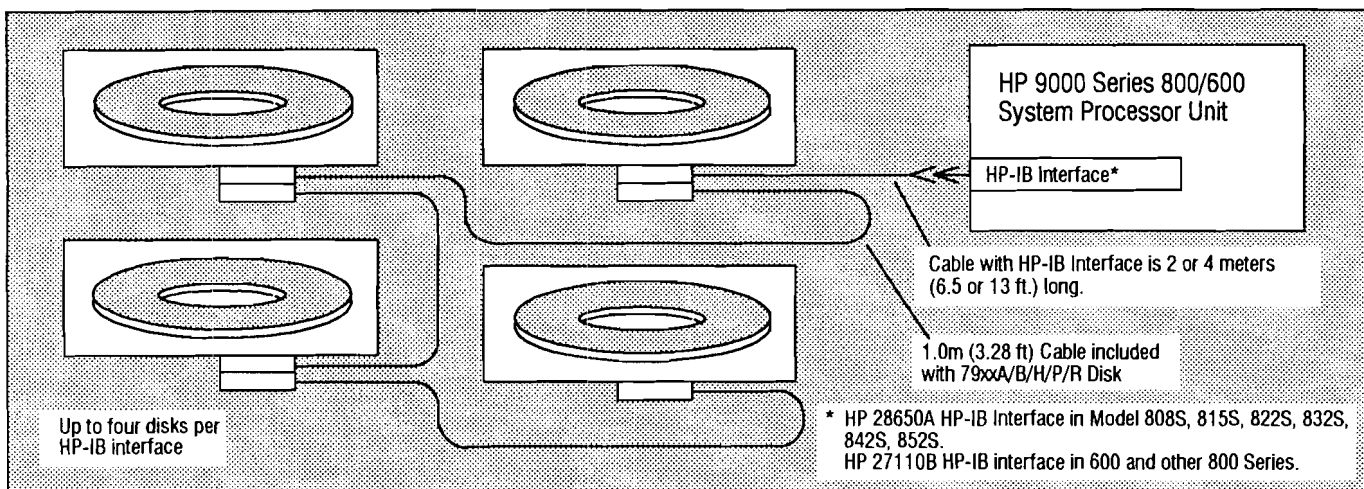


Figure 103. HP-IB Disk Memory Connections to HP 9000 Series 800/600 Systems

Maximum Number of Disks

Refer to section "HP 9000 Series 800/600 SPUs at-a-Glance" pages 2-9 for information on maximum disk support.

HP-FL Disk Connections

Disks connect to Series 800/600 Multiuser/Server Systems via HP-IB or HP-FL interfaces, are shown in Figure 104, next page (the 807S, 808S and 815S, 817S and 837S do not support HP-FL).

As shown in Figure 104, the fiber optic link connects from the system to one or a group of disk drives. A 30 meter fiber optic cable is included with the 27111A or A1749A interface. The 30 meter cable can be replaced by a custom fiber optic cable, up to 500m long, which is ordered from Hewlett-Packard as HFBRAWQ nnn , where nnn is length in meters.

The HP-FL disk drives in a group connect to each other via electrical PBus cables. Eight drives are supportable when installed in a single cabinet. The HP

92211Y, 325 mm cabinet can hold up to four HP C2201A and/or HP C2204A disk drives. The HP 46299Y is a 19 inch EIA cabinet, 1.6m tall. It can hold up to eight HP C2201A and/or C2204A disk drives.

PBus cabling limitations restrict the number of HP-FL disk drives supported in multiple cabinets. Up to eight HP C2201A or C2204A disk drives are supported in two HP 92211R cabinets or one HP 46299A cabinet. Up to six HP-FL disks can be supported in three HP 19511A cabinets. Disks in adjacent cabinets are connected using a long PBus cable. The C220XA product PBus cables are backward compatible. The older PBus cables on the 793X products are not forward compatible.

Option 1BG available on the HP C2201A and C2204A disk drives deletes the fiber optics hardware from the controller. These disk drives can be interconnected via the PBus, but not directly to the system via the fiber optic cable. At least two disk drives on the channels should have fiber optic circuits (the standard drive).

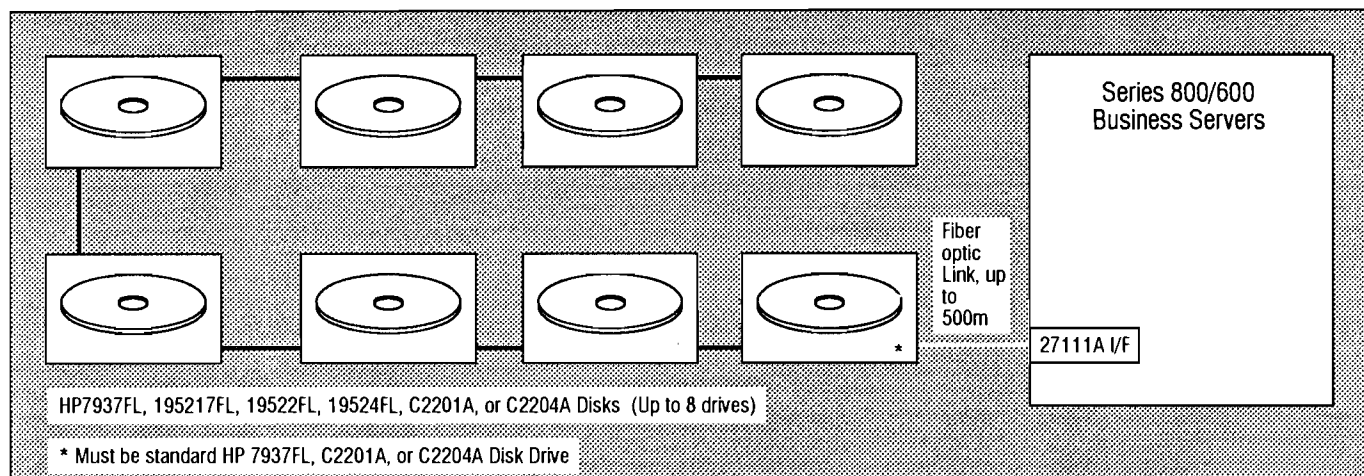


Figure 104. Connection of HP-FL Disks to Series 800/600 Business Servers

SCSI Interface

SCSI is an ANSI standard bus which allows connection of peripherals such as disk and tapes to a computer system. There are two SCSI Host Adapters supported: HP 28655A for HP-PB systems (807, 808, 815, 817, 822, 827, 832, 837, 842, 847, 852, and 857) and HP

27147A for CIO systems (825, 835, 845, 850, 855, 860, 865, 870, 635 and 645). The HP 28655A SCSI/Parallel Adapter includes both a SCSI port and a Centronics port. The Centronics port is a parallel port used for connecting printers. The same Models 807/817/827/837/847/857 do support powerfail/auto restart on HP-UX 8.02 (e.g. LaserJet).

Specifications

HP 28655A	HP-PB SCSI/Parallel Adapter
SCSI	Fully compatible with ANSI X3.131-1990 (SCSI-2) Specification 8 bit SCSI bus 3.0 Mb/sec asynchronous transfer rate 5.0 Mb/sec synchronous transfer rate Parity support (SCSI Data only) Connects up to 7 devices per adapter Alternative-2 Termination Maximum cable length is 6 meters
Centronics	64-byte FIFO 330 Kb/s burst transfer rate Connects one peripheral per adapter Support for output devices (printers and plotters) only Maximum cable length is 2 meters
HP 27147A	CIO SCSI Host Adapter
SCSI	Fully compatible with ANSI X3.131-1990 (SCSI-2) Specification 8 bit SCSI bus 1.5 Mb/sec asynchronous transfer rate 5.0 Mb/sec synchronous transfer rate Parity support (SCSI Data only) Connects up to 7 devices per adapter Maximum cable length is 6 meters

First Release Limitations (HP-UX 8.0)

- The first release (HP-UX 8.0) of SCSI does not support system powerfail recovery. System powerfail recovery is automatically disabled when a SCSI peripheral is connected to a Series 800 system. System powerfail recovery is planned for a future release of HP-UX. Customers requiring powerfail re-

covery should consider delaying their purchase of SCSI devices until the availability of system powerfail recovery.

NOTE: This guide deals with current (HP-UX 8.0) configuration guidelines for SCSI. When system powerfail recovery becomes available, there may be further configuration restrictions.

HP-UX 8.0 Maximum SCSI Support Matrix

SPU	#Cards	#Disks	#Gb	#Tapes (DDS, Mag, CT)	HPC1700A (2 per card)	#Centronics Printers (1 per card)
807	1	9	10.9	2	2	1
817	2	21	28.5	2	4	3
827	4	35	47.6	4	4	5
837	2	24	28.5	2	4	3
847	4	35	47.6	4	4	5
857	4	35	47.6	4	4	5
808	3	12	8.0	8	4	3
815	3	12	8.0	8	4	3
822	4	16	10.6	8	4	4
832	4	16	10.6	8	4	4
842	6	32	21.2	8	4	6
852	6	32	21.2	8	4	6
825	4	16	10.6	8	4	na
835	4	16	10.6	8	4	na
835	4	16	10.6	8	4	na
850	10	32	21.2	8	4	na
855	10	32	21.2	8	4	na
860	10	32	21.2	8	4	na
865	10	32	21.2	8	4	na
870	10	32	21.2	8	4	na
635	4	16	10.6	8	4	na
645	4	16	10.6	8	4	na

- There are seven available SCSI device addresses on each Host Adapter Card. Most SCSI peripheral devices use one SCSI address. The Optical Disk Library System (HP C1700A) uses three SCSI addresses (two for the MO drives and one for the AutoChanger).
- SCSI peripherals (disks and tapes) can be mixed and matched in any combination on the same SCSI bus as long as the total number of SCSI addresses does not exceed seven.
- Total disk drive support is limited to 32 devices. The HP C1700A counts as two disk drives.
- Even if two C1700As are racked on the same cabinet (using options 1AC and 133), they still count as 4 disks and 2 Optical Disk Library Systems, requiring 6 SCSI device addresses.
- Up to seven devices can be connected to a Host Adapter. Seven disks have been tested on a single Host Adapter without a performance penalty.
- Use of third party peripherals is at user's risk and is not supported by HP's standard support process.

IODC Requirement for CIO Based SPU's

- For installed base S800 CIO system customers whose systems have been installed prior to HP-UX 8.0 and want to order the CIO SCSI Host Adapter card (27147A), the Sales Team must ask if the customer will be using a SCSI peripheral device for boot (system disk capability) or install/update. If so, the IODC firmware revision must be checked. If the customer's S800 CIO system IODC firmware revision is prior to 6 on the 825/35/45 or 635/45 or prior to 8 on the 850/55/60/65/70, the IODC Firmware Upgrade Kit must be ordered with the CIO SCSI Host Adapter and HP-UX 8.0 (B2436A). The IODC Firmware Upgrade Kit will not be needed if customers use SCSI peripherals for secondary storage only, or if the IODC firmware version is later than 6 or 8 (as noted above). For high-end S800 CIO systems (850/855/860/865/870) with a dual SCSI boot path over separate CIO channels, two IODC Firmware Upgrade Kits will be needed.

IODC (Input/Output Dependent Code) is required for booting on PA-RISC systems (HP 9000 Series 800). IODC is part of the Channel Adapter on CIO based machines. IODC is included in the Device (Host) Adapters on HP-PB based machines.

Ordering Information:

Product Number	Description
A1756A	IODC Firmware Upgrade Kit (Must order one processor option)
Opt 420	825 with CIO Expander option*
Opt 421	835S/SE, 635SV, Base 825S Processor option
Opt 422	845S/SE, 645SV Processor option
Opt 423	850/855/860/865/870 Processor option

* Option 420 updates the Channel Adapter driving the CIO Expander and the 825S internal channel.

Cabling Guidelines

- Ensure that the total cable length (including external and internal cables) does not exceed 6 meters. Refer to Table 01 for internal cable length of supported peripherals.
- The length of the SCSI bus cable should be kept as short as possible. However, do not use cables shorter than 0.5 meters (HP-CS recommends no shorter than 0.3 meters).
- Make sure that all cables are attached to a device at both ends, except for the Host Adapter of course.
- SCSI cable impedance and construction can have significant effect on signal quality. For this reason, we recommend that only HP cables be used.

Termination Power

- All devices that can supply termination power (refer to Table 01) should do so. The first two devices that supply termination power should be located at each end of the SCSI bus. Other devices supplying termination power can be placed anywhere along the bus.

Termination Resistors

- Terminator resistors must be installed in the Host Adapter. This terminator provides impedance matching on the bus circuits. Without the terminator, the SCSI bus may fail intermittently.
- The last SCSI device in the chain must have a terminator installed on its second connector.
- Use only active terminators like those supplied with the Host Adapter card (part number 1252-3920). A passive terminator will work but it is not recommended.

Usage Guidelines

- Power on all SCSI peripherals and make sure they have time to complete their selftest before powering on the SPU (System Processor Unit).

NOTE: Some devices require termination power to pass the selftest. These devices may fail selftest if they are powered on before the Host. If this occurs, the system will still boot up successfully AND clear the error on the device.

- Power on all SCSI peripherals that provide termination power first.
- Keep all devices powered on during and after system boot-up.
- Do not add or remove SCSI devices while the system or any SCSI peripheral providing Term Power is powered on.

NOTE: Power-cycling any SCSI device or breaking any of the SCSI connections while the system is in operation may result in data corruption.

Cable Pin-Outs

Cable pin-outs can be referenced in the HP Peripheral Configuration Guide, P/N 5959-2479.

Disk Selection

Table 14, Table 13, and Table 33 list the available SCSI, HP-FL, and HP-IB disks, respectively, giving capacity and basic disk hardware performance information for them. HP-FL disks on Series 800/600 Business Servers provide the best performance. Capacity and basic performance information for currently available disks is given in Table 33. Table 17 lists discontinued disks that are also supported in HP 9000 Series 800/600 systems. Additional peripherals supported as of HP-UX revision 8.0 are listed in Table 16.

Disk Storage Systems, continued

Table 14. Currently Available HP-IB Disks Supported in Series 800/600 Business Servers

Product Number	Name/Description (Command Set)	Usable as System Disk?	Capacity (Mbyte per Product)	Average Access Time (msec)	Average Transfer Rate (Kbytes per sec)*
C2200A ♦	Fixed Disk (CS/80)	Yes	335	24.5	1,000
C2203A ♦	Fixed Disk (CS/80)	Yes	670	24.5	1,000
7935HR	Removable Disk (CS/80)	Yes	404	35.1	1,000
7957B	Fixed Disk (CS/80)	No	81	25.96	875
7958B	Fixed Disk (CS/80)	No	152	25.96	875
9122C Opt 001	Dual 3.5-inch Flexible Disks (SS/80) Delete one drive	No	2 x 1.42 1 x 1.42	185	35
9127A	5.25-inch Flexible Disk (SS/80)	No	0.5	93	259
9153C Opt 010 Opt 020 Opt 040	Fixed Disk and 3.5-inch Flexible Disk (SS/80) 10 Mbyte Fixed/3.5-inch Flexible 20 Mbyte Fixed/3.5-inch Flexible 40 Mbyte Fixed/3.5-inch Flexible	No	 10/1.42 20/1.42 40/1.42	 75/200 75/200 75/200	 185/32 185/32 185/32

* The average transfer rates listed here indicate the capability of the disk-system interface hardware; they are not system achievable transfer rates.

♦ An HP C2206A upgrade kit is available to convert C2203A disks to HP-FL operation.

The following devices were supported on S800/600SV at HP-UX release 8.0.

Table 15. Currently Available Disks Supported in HP 9000 Series 800/600 Computer Systems

Product Number	Name/Description	System Interface	System Disk?	Capacity (Mbyte per Product)	Average Access Time (millisec)	Transfer Rate (Kbyte per sec)†
7957B	Fixed Disk (CS/80) HP-IB	No		81	25.96	875
7958B	Fixed Disk (CS/80) HP-IB	No		152	25.96	875
9122C	Dual 3.5-inch Flexible Disks (SS/80)	HP-IB	No	2 x 1.42	185	63
9127A	5.25-inch Flexible Disk Drive (SS/80)	HP-IB	No	0.5	93	250
9153C	Fixed Disk and 3.5-inch Flexible Disk (SS/80)	HP-IB	No			
97963B	Additional Fixed Disk for 7963B‡	HP-IB	n/a	304	25.96	875
C2200A	Fixed Disk (CS/80)	HP-IB	Yes	335	24.5	1,000
C2201A	Fixed Disk with Fiber Optic and PBus Controller	HP-FL	Yes	670	24.5	1,400*
C2203A	Fixed Disk (CS/80)	HP-IB	Yes	670	24.5	1,000
C2204A	Fixed Disk with Fiber Optic and PBus Controller	HP-FL	Yes	1340	24.5	1,400*

† The average transfer rates listed here indicate the capability of the disk hardware; they are not system-achievable transfer rates.

‡ Maximum of one additional removable drive per 9262B or 9263B; maximum of two additional fixed disks per 7962B or 7963B.

* Transfer rate for full volume. Smaller transfers are at rates of 1,800 Kbytes/sec or more.

Disk Storage Systems, continued

SCSI disks supported in HP 9000 8 x 7 computer systems at HP-UX release 8.02.

Table 16. External Standalone Disk Storage Systems

Model*	420F	420R	670F	670R	1350F	1350R	1300D/F	1300D/R
Product Number*	C2460F	C2460R	C2461F	C2461R	C2462F	C2962R	C2463F	C2463R
Expansion Kits	C2472F, C2472R, C2472S — 422 Mbyte kit (3.5 inch disk) C2473F, C2473R, C2473S — 677 Mbyte kit (5.25 inch disk) C2474F, C2474R, C2474S — 1355 Mbyte kit (5.25 inch disk) C2475F, C2475R — 1300 Mbyte DAT kit (full height) C2476F, C2476R — 600 Mbyte CD-ROM kit (half height)							
Interface	Single-Ended SCSI-2							
Capacity	422 MB	422 MB	677 MB	677 MB	1355 MB	1355 MB	DAT 1300 MB	DAT 1300 MB
Seek Time m/sec	12.6	12.6	13.5	13.5	1.35	1.35	Avg. 20 sec. with fast search	Avg. 20 sec. with fast search
Transfer Rate Mbytes/sec. (burst)	2.2	2.2	2.88	2.88	2.88	2.88	1.5	1.5

- * F = Floor standing, supports 3 full or 7 half height devices (disk, SAT, or CD-ROM).
 R = 19" EIA rack mounted, supports 2 full or 4 half height front loading (disk, DAT, or CD-ROM).
 S = Internal installation within the CPU enclosure.
- ** F = For installation in floor standing cabinet modules.
 R = For installation in 19" EIA rack mounted cabinet/enclosure.
 S = Internal installation within the CPU enclosure.

Note: HP-UX release 8.02 will only be supported on Models 807S/817S/827S/837S/847S/857S.
 The DIS-n-DAT products (P/N C2212A and C2213A) should not support powerfail. The new SCSI II disk products (P/N C246X and C247X) will support powerfail.

Disk Storage Systems, continued

Table 17. Discontinued Disks Supported in HP 9000 Series 800/600 Computer Systems

Product Number	Name/Description	Interface	System Disk?	Access (Mbyte per Product)	Average Access Time (millisec)	Transfer Rate (Kbyte per sec)†
7914CT	Disk/Cartridge Tape Drive	HP-IB	No	132	36.4	1,000
7914P/R	Disk/Cartridge Tape Drive	HP-IB	No	132	36.4	1,000
7914ST	Disk/Magnetic Tape Drive	HP-IB	No	132	36.4	1,000
7933H	Fixed Disk	HP-IB	Yes	404	35.1	1,000
7935H	Removable Media Disk	HP-IB	Yes	404	35.1	1,000
7936H	Fixed Disk	HP-IB	Yes	307	28.8	1,000
7957B	Fixed Disk	HP-IB	No	81	37.3	853
7958B	Fixed Disk	HP-IB	No	130	37.3	853
9122D	Dual Microfloppy Disks	HP-IB	No	2 x 0.63	175	63
9122S	Single Microfloppy Disks	HP-IB	No	0.63	175	63
9133L	Fixed Disk and Microfloppy Disk	HP-IB	No	39.9 0.63	55 478	180 63
9134L	Fixed Disk	HP-IB	No	39.9	55	180
9153B	Fixed Disk and Microfloppy Disk	HP-IB	No	20 0.63	75 175	50 63
9154B	Fixed Disk	HP-IB	No	20	75	150
7936FL	Fixed Disk	HP-FL	Yes	307	28.8	1,890
7937FL	Fixed Disk	HP-FL	Yes	571	28.8	1,890
7937H	Fixed Disk (CS/80)	HP-IB	Yes	571	28.8	1,000
19521H	Two 7937H Disks in 19511A cabinet	HP-IB	Yes	1142	28.8	1,000
19521FL	Two 7937FL Disks in 19511A cabinet	HP-FL	Yes	1142	28.8	1,890
19522H	Four 7937H Disks in 19514A cabinet	HP-IB	Yes	2284	28.8	1,000
19522FL	Four 7937FL Disks in 19514A cabinet	HP-FL	Yes	2284	28.8	1,890
19524H	Eight 7937H Disks in 19514A cabinet	HP-IB	Yes	4568	28.8	1,000
19524FL	Eight 7937FL Disks in 19514A cabinet	HP-FL	Yes	4568	28.8	1,890
7959B	Fixed Disk (CS-80) HP-IB	HP-IB	Yes	304	25.96	875
7962B	Fixed Disk (CS-80) HP-IB	No	Yes	152	25.96	875
7963B	Fixed Disk (CS-80)	Yes	Yes	304	25.96	875
97962B‡	Addition Fixed Disk for 7962B/7963B	HP-IB	N/A	152	25.96	875
97963B‡	Add'l Fixed Disk for 7963B (CS/80)		No	304	25.96	875
7957S	107 MB Fixed Disk Drive	SCSI	Yes	107		
7958S	161 MB Fixed Disk Drive	SCSI	Yes	161		
7959S	323 MB Fixed Disk Drive	SCSI	Yes	323		

‡ Maximum of two additional fixed disks per 7962B or 7963B.

† The average transfer rates listed here indicate the capability of the disk hardware; they are not system-achievable transfer rates.

Disk Storage Systems, continued

Table 18. Peripherals Supported As of HP-UX 8.0

Product Number	Description	#SCSI Disk	System Disk
7957S	107 MB fixed disk drive	1	Yes
7958S	161 MB fixed disk drive	1	Yes
7959S	323 MB fixed disk drive	1	Yes
C1700A Opt. 1AB	20 GB autochanger diskside	3	No
C1700A Opt. 1AC	20 GB autochanger rack mountable	3	No
C1701A	Rewritable optical drive		No
C2212A	332 MB disk storage system		Yes
Opt. 001	Add-on 332 MB disk		Yes
Opt. 003	Add-on 1.3 GB DAT drive		Yes
Opt. 004	Add-on CD ROM drive		No
Opt. 005	Add-on 650 MB optical drive		Yes
Opt. 024	Add-on two CD ROM drives	2	No
C2213A	664 MB disk storage system		Yes
Opt. 001	Add-on 332 MB disk		Yes
Opt. 002	Add-on 664 MB disk		Yes
Opt. 003	Add-on 1.3 GB DAT drive		Yes
Opt. 004	Add-on CD ROM drive		No
Opt. 005	Add-on 650 MB optical drive		Yes
Opt. 022	Add-on two 664 MB disks		Yes
Opt. 024	Add-on two CD ROM drives		No

Tape Drives

Types of Software Installation and Backup Capabilities

Cartridge Tape Subsystems

For smaller HP 9000 Series 800/600 Systems, software can be installed and the system backed up using a cartridge tape subsystem. The manual-loading HP 9144A or 9145A Cartridge Tape Subsystem cost less to purchase than magnetic tape units. If necessary to minimize interfacing costs, cartridge tape subsystems can connect to the same HP-IB interface as the disk memories. However, for fastest backup, the Cartridge Tape Subsystem should be connected via a separate HP-IB interface from that used for the disk memories. Cartridge Tape Subsystems cannot be connected on the HP-FL bus.

DDS Tape Units

High capacity 4 mm DDS-Format Digital Audio Tape provides low-cost, unattended back-up. The C1511A and C1512A are fully supported on Series 800 Business Servers. As of release 8.0, fast search will also be supported. This capability will allow the access of any file in an average of 20 seconds. Furthermore, software is now available via DAT for all Series 800 systems.

Optical Storage

High capacity Magneto-Optical systems provide quick access to archival data. Optical storage is best suited for storing, retrieving and modifying large text, image and graphic files. Series 800 Business Server support for optical products will be available as of HP-UX revision 8.0.

Magnetic Tape Units

Magnetic Tape Units are a good choice for software installation and backup in larger HP 9000 Series 800/600 systems because of their high sequential transfer rates. However, they can not be connected to the same HP-IB interface as the disk memories in the Series 800/600 CIO Systems.

Interfacing

Cartridge Tape Subsystems and Magnetic tape units (MTUs) connect to HP 9000 Series 800/600 systems via the 27110B or 28650A HP-IB interface. As shown in Figure 105, Cartridge Tape Subsystems should connect to the system via their own HP-IB interface. However, if interfacing cost is more important than performance, Cartridge Tape Subsystems can connect via the interface used to connect HP-IB disks. Up to four MTUs can connect to the system via one HP-IB interface, or a lesser number can connect to the system via the disk interface. In either case, a maximum of four devices per interface is supported.

Cable Pin-Outs

Cable pin-outs can be referenced in the HP Peripheral Configuration Guide, P/N 5959-2479.

Installation and Backup Selection Criteria

Transfer Rate and Capacity

See Table 19, for relative transfer rates and capacities of the DDS Tape Drives, Cartridge Tape Subsystems, and Magnetic Tape Units that are supported for use in HP 9000 Series 800/600 Systems. The HP 7978A Magnetic Tape Unit is NOT supported.

Mag Tape Compatibility Considerations

Where a library of magnetic tapes already exists, the ability of the magnetic tape unit to read those tapes can be quite important. A magnetic tape recorded at 800 cpi can only be read on a tape unit at that density. If only one tape unit can be provided for the system, the need for compatibility with existing tapes may conflict to some extent with the need for fast transfers. Of all of the currently available supported mag tape units, the 7980XC Magnetic Tape Unit is the only one that cannot be optionally equipped with option 800 to read 800 cpi mag tapes.

Additional Supported Devices

Additional tape devices supported as of revision 8.0 of HP-UX are listed in Table 18.

Tape Drives, continued

Table 19. Cartridge Tape Subsystems, Digital Data Storage Tape Drives, and Magnetic Tape Units Support in Series 800/600 Business Servers

Product Number	Name/Description	For Series	Interface Used	Recording Density	Operating Mode	Transfer Rate (KB/sec)	Reel/ Cartridge Capacity
9144A	16-Track Cartridge Tape Subsystem	600 & 800	HP-IB	10,000 bpi	Streaming	35	67 Mbyte per cartridge
9145A	32-Track Cartridge Tape Subsystem	600 & 800	HP-IB	20,000 bpi	Streaming	70	133 Mbyte per cartridge
35401A***	16-Track Autochanger Tape Subsystem	600 & 800	HP-IB	10,000 bpi	Streaming	35	Magazine of eight 67 Mbyte cartridges (536 Mbyte total)
7979A	Autoloading Mag Tape Unit	600 & 800	HP-IB	1600 cpi, 800 cpi optional	Streaming	200	40 Mbyte in 2400 ft.
7980A	Autoloading Mag Tape Unit	600 & 800	HP-IB	6250/1600 cpi 800 cpi optional	Streaming	781/200	140/40 Mbyte in 2400 ft.
7980XC	Autoloading Mag Tape Unit with data compression	600 & 800	HP-IB	CPR†/6250/1600 cpi	Streaming	C†/781/200	280-420/140/40 Mbyte in 2400 ft.
7974A*	Magnetic Tape Unit	600 & 800	HP-IB	1600 cpi, 800 cpi optional	St-Stp/Str	80/40/160/80	40 Mbyte in 2400 ft.
7978B*	Magnetic Tape Unit	600 & 800	HP-IB	6250/1600 cpi	Streaming	468/120	140/40 Mbyte in 2400 ft.
C1511A**	DDS Format Tape Drive Mechanism	Models 8X2S Only	HP-IB Internal Mech Only	61,000	Streaming	183	1300 Mbyte per cassette

‡ The 9145A 32-track Cartridge Tape Subsystem can read 16-track Cartridge Tapes for installation of software or exchange of programs and data recorded by 9144A or 35401A Cartridge Tape Subsystems.

† CPR (compression) gives 2 to 3 times tape data capacity and transfer rate of 6250 cpi recording density without compression.

* Discontinued product, listed here for reference.

*** Listed for reference only; product has been discontinued.

Table 20. Additional Products to be Supported on Series 800/600 Business Servers as of HP-UX 8.0

Product Number	Description	Interface
C1511A	1.3 Gbyte DDS Drive	HP-IB
C1512A	1.3 Gbyte DDS Drive	SCSI
C2292A	1.3 Gbyte DAT Upgrade Kit	SCSI
7980S	1/2" 1600/6250 cpi Tape Drive	SCSI
7980S, Opt. 800	Add 800 cpi NRZI	SCSI
7980SX	1/2" 1600/6250/6250XC cpi Tape Drive	SCSI
7980SX, Opt. 800	Add 800 cpi NRZI	SCSI

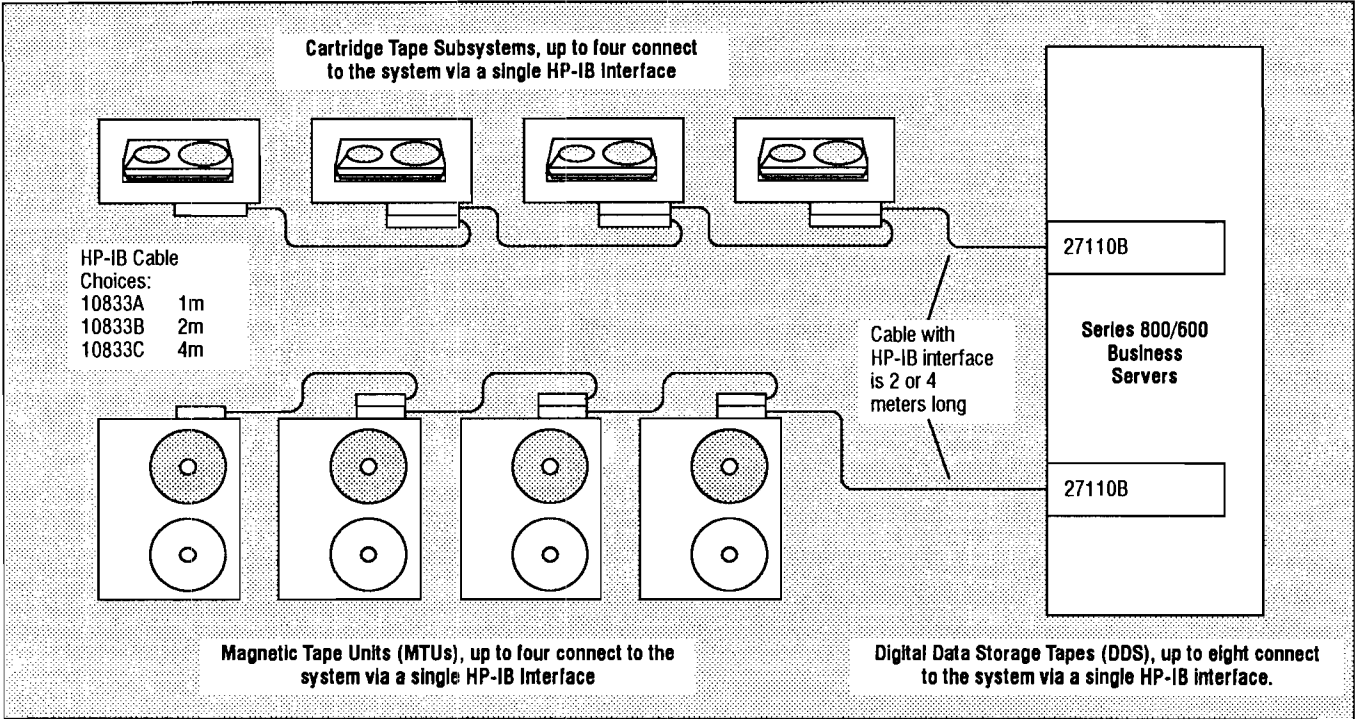


Figure 105. Connection of Cartridge Tape Subsystems and Magnetic Tape Units to Series 800/600 Business Servers Systems

Rewritable Optical Disk Libraries and Drives

Rewritable Optical Disk Libraries and Drives

Rewritable Optical Libraries provide low cost, random access data storage in capacities starting at 20 gigabytes. The large capacities of optical libraries are best suited for on-line archival storage of infrequently accessed data, unattended backups, and large data files such as electronic images. The C1700A optical library and the C1701A optical disk drive is supported on the Series 800 as of the release of HP-UX revision 8.0.

Interfacing

The C1700A and C1701A are connected via the 27147A SCSI interface card. The C1700A optical library occupies 3 out of the 7 SCSI devices supported on a single interface card.

Applications

OmniBack/Turbo supports up to two C1700A libraries to provide a high speed unattended image backup solution. Writing in parallel to two libraries, the backup rate is greater than 3 GB/Hr. F-backup/F-recover also supports the C1700A as a backup device.

Rewritable Optical Library and Drive

Product Number	Description	Interface Used	Recording Density	Operating Mode	Transfer Rate (Kbytes/sec)	Cartridge Capacity	Number of Cartridges
C1700A	20 Gbyte Optical Library	SCSI	15,000 TPI	Raw	340 Writes* 680 Reads*	650 MB	32
C1701A	650 Mbyte Drive	SCSI	15,000 TPI	Raw	340 Writes* 680 Reads*	650 MB	1
C1704A**	60 Gbyte Optical Library	SCSI	15,000 TPI	Raw	340 Writes* 680 Reads*	650 MB	88
C1705A**	100 Gbyte Optical Library	SCSI	15,000 TPI	Raw	340 Writes* 680 Reads*	650 MB	144

* Theoretical maximum (application and operating system dependent)

** Supported only with an AMSO special software driver.

Printers

Printer Selection

The four types of printers supported on Series 800/600 Business Servers are compared in Table 21 with respect to relative cost, print speed, noise level, and estimated print quality. They are further compared in Table 22, below, with respect to paper type, text quality, and bar code printing capability.

Table 21. Types of Printers Available for Series 800/600 Business Servers

Printer Type	Times ThinkJet Price	Print Speed	Noise Level (dBA)	Print Quality
Monochrome Inkjet	1.0-2.0	150-240 cps	50	NLQ
Color Inkjet	2.8-5	167 cps	50	NLQ
Dot-Matrix Impact Serial	3.8-6.1	40-480 cps	56-63	NLQ
Laser	5.4-40	8-20 ppm	50	LQ
Dot-Matrix Impact Line	11.1-58.9	300-1200 lpm	55-65	NLQ

Inkjet Printers

Inkjet (ThinkJet, QuietJet, DeskJet, and PaintJet) printers offer low price, reasonably fast print speed, and the quietest operation of all printers. Of these printers, the DeskJet offers Laser printer print quality.

The PaintJet has the added advantage of being able to make full-color overhead transparencies. This type of printer is useful mainly as a low-cost, light-workload, workstation printer. It should never be considered for use as the only printer in a system.

Dot-Matrix Serial Impact Printers

Dot-matrix serial impact printers combine versatility at reasonable cost with good print speed. Versatility can include graphics image and bar code printing and the ability to trade print speed for better print quality. Good print speed means that a dot-matrix serial impact printer can be used as the only printer on a system with modest-to-average printing requirements.

Laser Printers

Laser printers combine excellent print quality with print speed faster than the fastest dot-matrix serial printers at higher cost. Laser printers are recommended for systems with average printing workload in which high print quality is important and the lack of multipart forms print capability is irrelevant.

Dot-Matrix Impact Line Printers

Dot-matrix impact line printers offer versatility similar to dot-matrix serial impact printers at faster print speeds and higher prices. A dot-matrix impact line printer should be selected for uses with large printing requirements.

Table 22. Currently Available System-Connected Printers Supported on HP 9000 Series 800/600 Business Servers

Printer Product Number and Name	Support In Series	Maximum Print Rate	Paper Type	Print Quality	Bar Codes
2225A*/D ThinkJet Printer 2227A/B QuietJet Plus Printer 2228A QuietJet Printer C2106A DeskJet 500 3630A PaintJet Printer C1602A PaintJet XL Printer	600 & 800	150 cps 160/192 cps 160/192 cps 120/240 cps 167 cps 167 cps	Std fanfold/cut sheets Wide fanfold/cut sheets Std fanfold/cut sheets Std fanfold/cut sheets Std fanfold/cut sheets Wide cut sheets with autofeed	Draft NLQ/Draft NLQ/Draft LQ/Draft NLQ NLQ	No No No No No No
2235A/B/C/D RuggedWriter 2932A° General Purpose Printer 2934A Office Printer 41063A Asian Workstation Printer	600 & 800	240/480 cps 200 cps 40/67/200 cps 40/80 cps†	Wide fanfold, 6-part forms Wide fanfold, 6-part forms Wide fanfold, 6-part forms Wide fanfold/cut sheets	LQ/Draft Draft LQ/Draft NLQ/Draft	No No Yes No
33449A LaserJet III Printer 33459A LaserJet IIID Printer 33491A LaserJet III Si Printer*	600 & 800 600 & 800	8 pages/min. 8 pages/min. 17 pages/min.	Single sheets Single sheets & Duplex Single sheets & Duplex	Letter Quality Letter Quality Letter Quality	Yes Yes Yes
2562C Industrial (Line) Printer 2563C Line Printer** 2564C Line Printer** 2566C Line Printer** C1200A Asian Line Printer		300/150 lpm 300/150 lpm 600/300 lpm 900/248 lpm 270/330 lpm	Wide fanfold, 6-part forms Wide fanfold, 6-part forms Wide fanfold, 6-part forms Wide fanfold, 6-part forms Wide fanfold, 6-part forms	Draft/NLQ Draft/NLQ Draft/NLQ Draft/NLQ NLQ/Draft	Yes Opt Opt Opt No
2567B Line Printer**	800 only	1200/320 lpm	Wide fanfold, 6-part forms	Draft/NLQ	Opt

Print Quality Legend: NLQ = Near Letter Quality LQ = Letter Quality

* Not supported in Series 800/600

° Discontinued product, listed for reference.

† Rates when printing two-byte Asian characters.

‡ Rates when printing Roman8 and other one-byte characters

** Centronics interface will be supported on HP-PB systems as of HP-UX 8.0.

Printers, continued

Printer Interfacing

Printer connections for HP 9000 Series 800/600 Business Servers are summarized in Table 23 and illustrated in Figure 106, below.

Table 23. Interfacing of System-Connected Printers to HP 9000 Series 800/600 Business Server

MULTIPLEXER CONNECTED PRINTERS		HP-IB CONNECTED PRINTERS†	
Each printer uses one multiplexer channel, connected via the indicated multiplexer-to-printer cable.		Each printer is connected via a 10833B/C cable.	
PRINTER	CONNECTS VIA	PRINTER	COMMENTS
2562C with Option 049** 2563C with Option 049** 2564C with Option 049** 2566C with Option 049** 2567C with Option 049**	92218A (15m) Cable or 40242M (5 m) Cable	2562C Std 2563C with Option 290 2564C with Option 290 2566C with Option 290 2567C with Option 290 2608SR* with Option 290	HP-IB printers are not supported on HP-PB systems.
2235B 2932A* & 2934A 2225D 2227A & 2228A 3630A with Option 001 2684A 33440A 41063A C1200A C1202A with Option 1A9 C1602A with Option 1AX C2106A	92218A (15 m) Cable or 40242M (5 m) Cable	2235B 2932A* with Option 046 2934A with Option 046 2227B C1202A with Option 1A8 C1602A with Option 1A8	HP-IB printers are not supported on HP-PB systems.
2686A* 2686A* with Option 300	92218A (15 m) Cable or 13242N (5 m) Cable		

† The Model 808S, 815S, 822S, 832S, 842S, and 852S support only RS-232C Printers; HP-IB printers are not supported on the Model 808S, 815S, 822S, 832S, 842S, or 852S.

* discontinued product, listed here for reference only.

** Centronics interface will be supported on HP-PB systems at HP-UX 8.0.

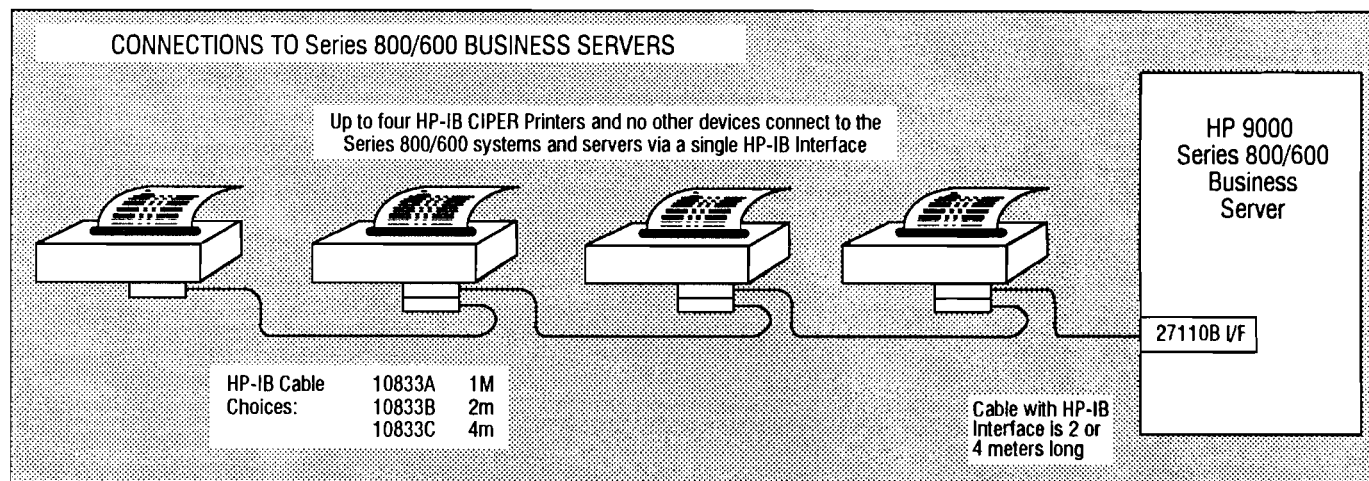


Figure 106. Printer Connections to HP 9000 Series 800/600 Business Servers

In Series 800/600 Business Servers or Superworkstations, the only supported HP-IB interface for 256xB printers is the Option 290 HP-IB CIPER interface.

Printers, continued

Centronics/Parallel Printers Supported on HP 9000 Series 800 Business Server.

Device	Description	Comments
2225C	Thinkjet	To be used with the 28655A HP-PB SCSI/Parallel Host Adapter
2225D	Thinkjet	
2225P	Thinkjet	
2227A	Quietjet Plus	
2228A	Quietjet	
2228B	Quietjet	
2235A	RuggedWriter 480	
2235C	RuggedWriter 480	
2276A	Deskjet	
2277A	Deskjet Plus	
C2106A	Deskjet 500 Printer	
2562C	Impact Printer; 420 lpm	
2563A	Line Printer; Dot Matrix 300 lpm	
2563B	Line Printer; Dot Matrix 300 lpm	
2565C	Line Printer; 600 lpm	
2563C	Line Printer; Dot Matrix 420 lpm	
2564B	Line Printer; Dot Matrix 600 lpm	
2564C	Line Printer; Dot Matrix 840 lpm	
2565A	Line Printer; Dot Matrix 600 lpm	
2566B	Line Printer; Dot Matrix 900 lpm	
2566C	Line Printer; Dot Matrix 1200 lpm	
2567B	Line Printer; Dot Matrix 1200 lpm	
2567C	Line Printer; Dot Matrix 1600 lpm	
2932A Opt 042	Centronics Interface for 2932A Printer	
2934A Opt 042	Centronics Interface for 2934A Printer	
2684A	Laserjet 2000	
2684D	Laserjet 2000	
2684P	Laserjet 2000	
2686A	Laserjet 2000	
2686D	Laserjet 500 +	
33438P	Laserjet IID Postscript Cartridge	
33440A	Laserjet Series II	
33447A	Laserjet IID Dual Tray, Duplex Printer	
33449A	Laserjet III	
33459A	Laserjet IIID	
33471A	Laserjet IIP	
3630A Opt 004	Centronics Parallel Interface	
C1202A	Asian highspeed Serial Printer	
33481A	Laserjet IIIP	
33491A	Laserjet III Si Printer	



Graphics Input/Output Devices

Basic Requirements

In addition to the graphics devices that are listed in this section, HP 9000 Series 800/600 Computer Systems require the HP 92445A or 92463A Starbase Graphics Library for graphics I/O. The Starbase Graphics Library provides device interface subroutines for all of the supported graphics devices listed in this section.

Graphics Kernal System (GKS) Compatibility

For Series 800/600 Multiuser systems, order 92521A HP-GKS/HP-UX, which offers a choice of 1/4-inch cartridge tape (option AA0) or 1/2-inch magnetic tape (option AA1) media. GKS requires *Starbase*.

Interactive Graphics

Interactive graphics involves pointing and picking using a mouse or graphics table. It may also involve image control using a multi-axis control dial box, which is used interactively while observing a mono-

chrome or color graphics display. Series 800/600 Multiuser/Servers Systems offer a choice of high-resolution graphics displays.

High Resolution Graphics

In Models 825S, 835S, and 845S high-resolution graphics is based on 19-inch or 16-inch 1280 x 1024 Color Monitors that connect to the system via an HP A1017A Display Controller (CTB) Interface card and a 2-D Display Controller or a 3-D Solid Rendering Display Controller. (See Figure 107, next page.) The keyboard for the system and the mouse or graphics digitizer tablet used for cursor control also connects to the display controller via an HP Human Interface Loop (HP-HIL) port. The multi-axis control dial used to control 3-D objects in the display space also connects to the common HP-HIL. Up to four high-resolution displays can be connected to one system, but only two of them can be interactive if any are 3-D displays; the other two must be passive. For Model 825 and 835 Superworkstations that bundle high-resolution graphics capabilities with Model 825 and 835 SPUs, see the HP 9000 Workstations Configuration Guide.

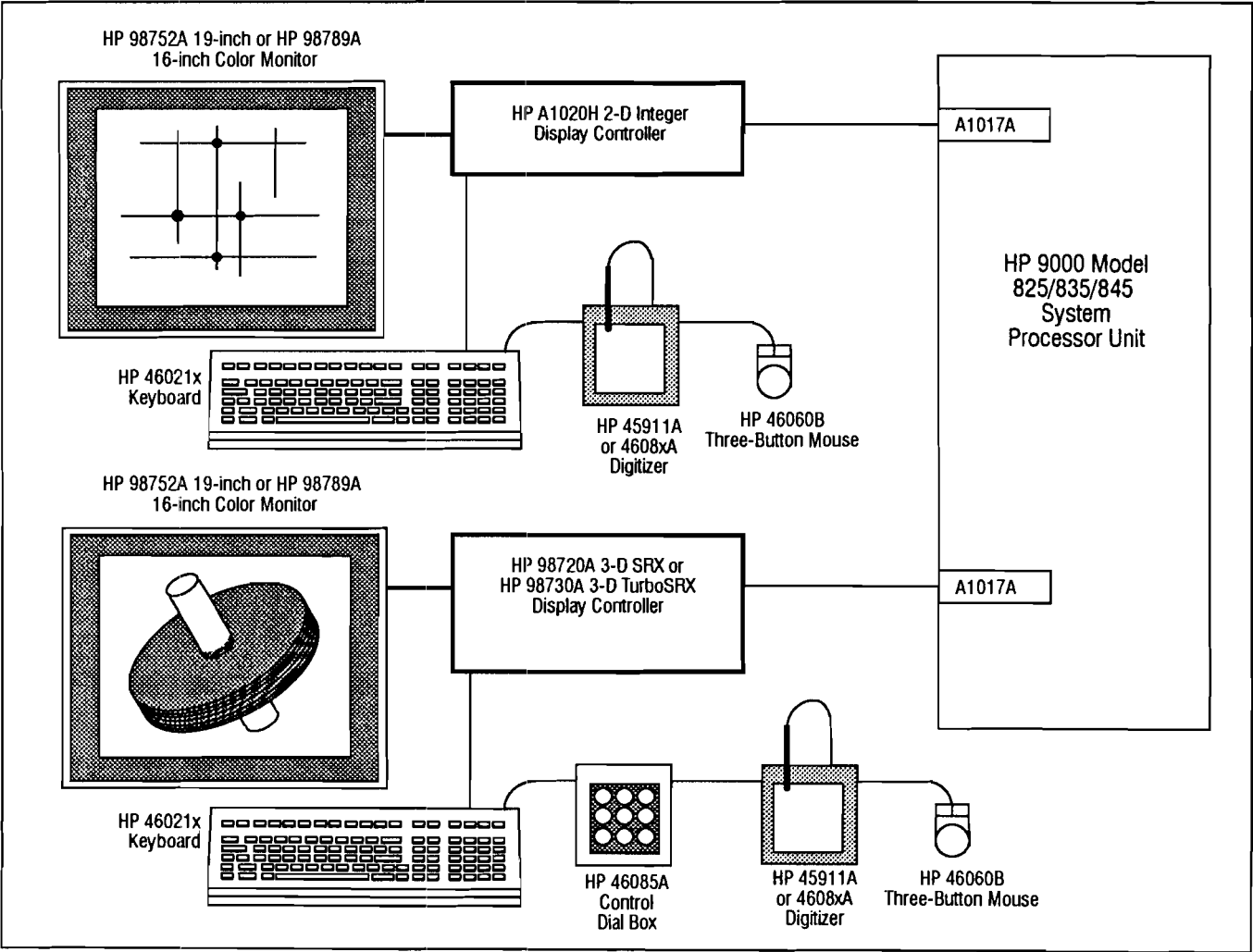


Figure 107. High-Resolution Interactive Graphics Connections

Medium-Resolution Graphics

Medium-resolution graphics is based on the HP 2393A (monochrome) Graphics Terminal, the 2397A Color Graphics Terminal, and the 9666A Operator Interface Unit and a mouse or graphics digitizer tablet for cursor control or picking. This type of graphics does not involve 3-D objects, so there is no use for a control dial box with the medium-resolution graphics terminals. The graphics terminals connect to the system via an 8-channel or 6-channel multiplexer, as shown in Figure 108 and Table 24. For comparisons, see Table 25 and Table 26.

Graphics Hardcopy Output

Plotters

Graphics plotters are available for plotting hardcopy on media ranging from A-Size (ISO A4 size) on up to E-size (ISO A0 size). Available are fast electrostatic plotters and multicolor plotters with a carousel capable of holding 6 or 8 pens. They connect to the system as shown in Figure 108 and Table 24. For selection information, see Table 27.

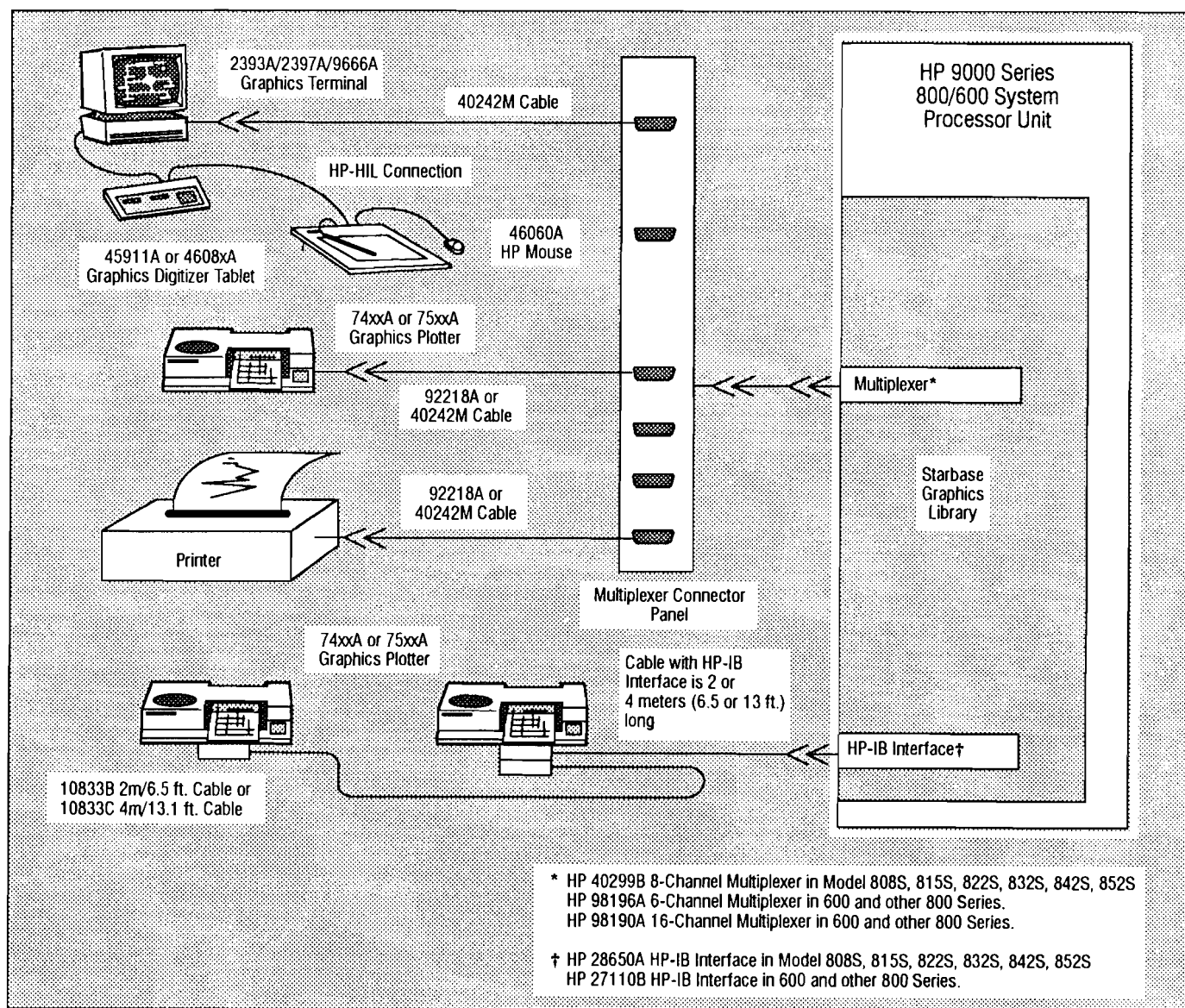


Figure 108. Graphics Device Connections via Multiplexer and HP-IB interfaces

Graphics Input/Output Devices, continued

Printers

All of the currently available HP 9000 Series 800/600 supported printers that use dot-matrix impact technology can be used to print graphics as well as alphanumeric output. These print a raster output which has

been converted from vector inputs. In addition, the HP 9000 Series 800/600 systems support graphics output on monochrome and color inkjet printers and the LaserJet Series II laser printer. See Figure 108 and Table 24 for connections and Table 28 for selection information.

Table 24. Interfacing of Multiplexer Connected and HP-IB Connected Graphics Devices

MULTIPLEXER CONNECTED DEVICES		HP-IB CONNECTED DEVICES	
Each device uses one multiplexer channel, connected via the indicated multiplexer cable.		Each device is connected via a 10833B/C cable.	
DEVICE	CONNECTS VIA	DEVICE	COMMENTS
2393A or 2397A 9666A	40242M Cable	Terminals are not connected via HP-IB	Terminals are not connected via HP-IB.
2563C with Option 049 2564C with Option 049 2566C with Option 049 2567C with Option 049	92218A (15 m) Cable or 40242M (5 m) Cable	2563C with Option 290 2564C with Option 290 2566C with Option 290 2567C with Option 290	HP-IB printers are not supported in HP-PB systems.
2225D 2227A or 2228A 2235B 2932A* or 2934A 33440A 3630A 41063A C1202A with Option 1A9	92218A (15 m) Cable or 40242M (5 m) Cable	2235B 2934A with Option 046 2227B C1202A with Option 1A8	HP-IB printers are not supported in HP-PB systems.
C1625A or C1627A 7440A+001 7475A+001	92218A (15 m) Cable or 40242M (5 m) Cable	C1625A or C1627A 7440A+002 7475A+002	Four plotters and NO OTHER DEVICES per HP-IB interface.
7550B	92215F (15 m) Cable or 40242C (5 m) Cable	7550B	Four plotters and NO OTHER DEVICES per HP-IB interface.
7570B 7595B 7596B	92218A (15 m) Cable or 40242M (5 m) Cable	7570B+17570A 7595B 7576B	Four plotters and NO OTHER DEVICES per HP-IB interface.
7580B* 7585B* 7586B*	92218A (15 m) Cable or 40242M (5 m) Cable	7580B* 7585B* 7586B*	Four plotters and NO OTHER DEVICES per HP-IB interface.

* discontinued product, listed here for reference only.

Table 25. Graphics Displays for HP 9000 Series 800/600 Business Servers

Device Product Number and Name	Display/Plot/Print Area	Data Rate or Plotting Speed	Usable Resolution	Graphics Features	Comments
2393A Graphics Terminal	8.4 x 6.3 in. (214 x 160 mm)	210 vectors/sec	512 (h) x 390(v) or 640 (h) x 400 (v),	Polygon fill, 11 line types	Monochrome display
2397A Color Graphics Terminal	8.4 x 6.3 in. (214 x 160 mm)	210 vectors/sec	512 (h) x 390(v) or 640 (h) x 400 (v),	Polygon fill, 11 line types, 8 colors from a palette of 64	Color display
9666A Operator Interface Unit					9666A is a ruggedized 2397A
98752A 19-inch Color Graphics Monitor	10.7 x 13.5 in. (274 x 343 mm)	276,000 vectors per second	1280 (h) x 1024 (v)	Determined by display ctrlr	Color display
98789A 16-inch Color Graphics Monitor	9.3 x 11.6 in. (238 x 297 mm)	276,000 vectors per second	1280 (h) x 1024 (v)	Determined by display ctrlr	Color display

Graphics Input/Output Devices, continued

*Table 26. Currently Available Graphics Input Devices for HP 9000 Series 800/600 Business Servers**

Device Product Number and Name	Display/Plot/Print Area	Data Rate or Plotting Speed	Usable Resolution	Comments
45911A Graphics Digitizer Tablet	11 x 11 in. (279 x 279)	65 coordinate pairs per sec	48 lines per millimeter	Connects between keyboard and display unit of 239xA Graphics Terminal or to HP-HIL port of Display Controller.
46087B Graphics Digitizer Tablet	8.5 x 11.7 in. (216 x 297 mm)	65 coordinate pairs per sec	40 lines per millimeter	
46088B Graphics Digitizer Tablet	11.7 x 17 in. (297 x 432 mm)			
46060A/B HP Mouse	Not applicable	Not applicable	Not applicable	
46085A Control Dial Box	Not applicable	Not applicable	480 counts/rev.	
46084A ID Module	Not applicable	Not applicable	Not applicable	
M1309A 3-button Trackball	Not applicable	Not applicable	Not applicable	
46080A HP-HIL Extension	Not applicable	Not applicable	Not applicable	2.4m, no audio
46081A HP-HIL Extension	Not applicable	Not applicable	Not applicable	2.4m, with audio
46082A HP-HIL Extension	Not applicable	Not applicable	Not applicable	15m, w/audio & 0.5m RGB cable extension
46082B HP-HIL Extension	Not applicable	Not applicable	Not applicable	30m, w/audio & 0.5m RGB cable extension

* Graphics input devices are not supported on the Model 808S and 815S.

Table 27. Currently Available Graphics Plotters for HP 9000 Series 800/600 Business Servers

Device Product Number and Name	Display/Plot/Print Area	Data Rate or Plotting Speed	Usable Resolution	Graphics Features	Comments
C1625A Electrostatic Plotter	23.6 in. width (600 mm width)	0.67 in./sec (1.6 cm/sec)	406 dots/in. (160 dots/cm)	Prints across full width	Complete drawing takes < 1 minute
C1627A Electrostatic Plotter	35.3 in. width (896 mm width)	0.86 in./sec (2.2 cm/sec)	406 dots/in. (160 dots/cm.)	Prints across full width	Complete drawing takes < 1 minute
7440A ColorPro Plotter	7.5 x 10.7 in. (191 x 272 mm)	15.7 in./sec (40 cm/sec)	0.004 in. (0.1 mm)	8 pens	Multicolor plotting
7475A Graphics Plotter	10.8 x 16.2 in. (275 x 414 mm)	15 in./sec (38.1 cm/sec)	0.004 in. (0.1 mm)	6 pens	Multicolor plotting
7550B Graphics Plotter	10.7 x 16.1 in. (272 x 411 mm)	31.5 in./sec (80 cm/sec)	0.004 in. (0.1 mm)	8 pens, auto sheet feed	Multicolor plotting
7570B DraftPro Plotter	25.2 x 39.4 in. (550 x 1000 mm)	15.7 in./sec (40 cm/sec)	0.004 in. (0.1 mm)	8 pens	Multicolor plotting
7595B DraftMaster I Plotter	36.5 x 48.5 in. (927 x 1232 mm)	24 in./sec (60 cm/sec)	0.004 in. (0.1 mm)	8 pens	Multicolor plotting
7596B DraftMaster II Plotter	36.5 x 48.9 in. (927 x 1243 mm)	24 in./sec (60 cm/sec)	0.004 in. (0.1 mm)	8 pens, auto roll feed	Multicolor plotting

Graphics Input/Output Devices, continued

Table 28. Currently Available Graphics Printers for HP 9000 Series 800/600 Business Servers

Device Product Number and Name	Display/Plot/Print Area	Data Rate or Plotting Speed	Usable Resolution
C1200A Asian Line Printer	345 x 241 mm	Not specified	70.8 x 70.8 dots per cm
C1202A Asian High Speed Printer	345 x 241 mm	Not specified	70.8 x 70.8 dots per cm
2227A/B QuietJet Plus Printer	13.2 x 9.5 in. (335 x 241 mm)	Not specified	96 x 96 dots per in. (37.7 x 37.7 dots per cm.)
2228A QuietJet Printer	7.5 x 9.5 in. (190 x 241 mm)		
2235B RuggedWriter Printer	13.6 x 9.5 in. (345 x 241 mm)	Not specified	90 x 90 dots per in. (35.4 x 35.4 dots per cm.)
C2106A DeskJet Printer	7.5 x 9.5 in. (190 x 241 mm)	Not specified	300 x 300 dots per in. (118 x 118 dots per cm.)
2563C Line Printer	13.2 x 42.6 in. (335 x 1083 mm)	14.5 in./min. (36.8 cm/min.)	70 x 72 dots per in. (27.5 x 28.3 dots per cm.)
2564C Line Printer	13.2 x 42.6 in. (335 x 1083 mm)	29 in./min. (73 cm/min.)	
2566C Line Printer	13.2 x 42.6 in. (335 x 1083 mm)	50 in./min. (127 cm/min.)	
2567C Line Printer	13.2 x 42.6 in. (335 x 1083 mm)	50 in./min. (127 cm/min.)	
2684x LaserJet/2000 Printer	8 x 10.6 in. (203 x 269 mm)	Up to 20 ppm	300 x 300 dots per in. (118 x 118 dots per cm.)
2932A* General-Purpose Printer	11.3 x 42.6 in. (289 x 1083 mm)	8 in./min. (20.3 cm/min.)	90 x 90 dots per in. (35 x 35 dots per cm.)
2934A Office Printer			
33449A/33459A LaserJet Series III/IIID Printer	8 x 10.6 in. (203 x 269 mm)	8 ppm	300 x 300 dots per in. (118 x 118 dots per cm.)
3630A PaintJet Color Printer	8 x 10.6 in. (203 x 269 mm)	4 min. for page of color graphics, 8 min. for transparency.	180 x 180 dots per in. (70.8 x 70.8 dots per cm.)
41063A Asian Workstation Printer	345 x 241 mm	Not specified	70.8 x 70.8 dots per cm.

* Discontinued product, listed here for reference.

Communication With LAN-Connected Systems

The universality of IEEE 802.3/Ethernet Local Area Network (LAN) communications and the availability of three different high-level communications software packages means that HP 9000 Series 800/600 Systems

can communicate with a wide variety of systems. The software packages and their capabilities are summarized in Table 29, below.

Table 29. LAN-Based Communications Software Packages for HP 9000 Series 800/600 Business Servers

Communications Packages	For HP 9000 Model	Use Product Number	Capabilities	Supports Communication with
LAN/9000 Series 800/600 Link	808 815/822 825/832 835/842 840/845/852 850/855/860/865 870 635SV/645SV	36967A	Interface, AUI or ThinMAU Assembly, and lower-level software collectively supporting OSI Model layers 1 – 5	All of the systems listed below when also supported by appropriate higher-level Communications Package.
Network Services/9000 Series 800/600 (also requires LAN/9000 Series 800/600 Link, listed above)	808 815/822 825/832 835/842 840/845/852 850/855/860/865 870 635SV/645SV	B1029A	Network File Transfer Resource Sharing with other HP-UX based systems Inter-process communications	HP 1000 A-Series System with Network Network Services/1000 software HP 3000 System with Network Services/3000-V or 3000-XL software HP 9000 Series 300 System with NS/ARPA Services Series 300 software HP 9000 Series 400 system with NS/ARPA Service Series 400 software HP 9000 Series 500 System with NS Services Series 500 software
ARPA Services/800 (also requires LAN/9000 Series 800/600 Link, listed above)	808 815/822 825/832 835/842 840/845/852 850/855/860/865 870 635SV/645SV	B1030A	File Transfer Protocol (FTP) (ARPA) TELNET Virtual Terminal Capability (ARPA) Simple Mail Transfer (ARPA) Remote Copy (BSD 4.2) Remote Login (BSD 4.2) Remote Who (BSD 4.2) Remote Uptime (BSD 4.2) Remote Shell (BSD 4.2) Sendmail (BSD 4.2) Berkeley Sockets (Inter-process Comm. (BSD 4.2)	HP 9000 Series 300 System with HP-UX 7.0 or later and NS/ARPA Services Series 300 software DEC VAX 7xx/BSD UNIX 4.3/4.3 System with BSD 4.3/4.3 networking DEC VAX 7xx/VMS 4.0 System with Wollongong's WIN/VX Rel. 2.2 (ARPA services only) IBM PC-AT or HP Vectra with MS-DOS or PC-DOS 3.xx and ARPA Services/Vectra and ARPA ThinLAN Link/Vectra Supports FTP and TELNET only) SUN 68010 or 68020 computer with SUN Release 3.0 operating system and SUN ARPA
Network File System Services/800 (also requires LAN/9000 Series 800/600 Link, listed above)	808 815/822 825/832 835/842 840/845/852 850/855/860/865 870 635SV/645SV	B1031A	Network File Sharing Remote Procedure Call External Data Report (XDR) Network Information Services (NIS) Virtual Home Environment (VHE)	HP 9000 Series 300 System with HP-UX 7.0 or later and Network File System Services/300 DEC VAX 7xx-8xxx/VMS 4.0 System with Wollongong's WIN/TCP 3.0 and WIN/NFS 1.1 IBM PC-AT or HP Vectra with MS-DOS or PC-DOS 3.xx and Sun Microsystems PC NFS 1.0 or 2.0 SUN 2/xxx or 3/xxx system with SUN Release 3.x operating system and SUN NFS
HP LAN Manager/X	808 815/822 825/832 835/842 840/845/852 850/855/860/865 870 635SV/645SV	B1011A	Transparent File and Peripheral Sharing. Standard Program Interface for Development of Distributed Applications.	DOS & OS/2 Workstations
LAN/9000 Series 800 Link	807/817/837 827/847/857	J2146A	Interface, AUI or ThinMAU Assembly, lower level software collectively supporting OSI Model layers 1–5, ARPA, NFS LM/X	All of the systems listed above when also supported by appropriate higher-level Communications Package.

HP LAN Manager/X

HP LAN Manager/X for Series 800/600 Business Servers is based on the industry-standard Microsoft LAN Manager, allowing DOS and OS/2 workstations to be fully integrated with the HP 9000 Business Servers. LAN Manager/X allows transparent file and peripheral sharing for all PC users through network connectivity. It also provides a standard application program interface to which developers can write distributed application between the PC workstations and the HP-UX systems. The network connectivity is provided using the de facto standard TCP/IP over Ethernet/802.3 using ThickLAN or ThinLAN coax or unshielded twisted pair wiring. LAN Manager/X is supported on all HP 9000 series 800 and 600 Business Servers (P/N B1011A).

Bundled with the HP LAN Manager/X product is both the software running on the server and a copy of the client software for both DOS and OS/2 workstations. A license is purchased for the number of clients that

will be connected to the server at one time, with licenses ranging from 8 clients up to a maximum of 512 (See Table 30). Other software for the DOS workstations that work with LAN Manager/X are ARPA Services/2.0 (P/N D1812A), providing standard services such as telnet (virtual terminal access) and ftp (file transfer capabilities), and Network Services/2.0 (P/N D1811A), which provides connection to the HP 9000, HP 3000, and HP 1000 computers.

Interfacing

HP LAN Manager/X runs over the LAN/9000 Series 800 Link (P/N 36967A or J2146A – see Table 29, page 208 for more information on the options), which includes the interface card and TCP/IP software. For the PC LAN link, HP supports several Ethernet interfaces. Information on supported cards can be found in the PC Networking Hardware Technical Reference Guide, P/N 5953–5056, or the HP AdvanceNet Specification Guide and Addendum, P/N 5956–4144 and 5956–4144A.



Table 30. LAN Manager/X Software for the HP 9000 Series 800/600 Business Servers (B1011A)

Number of Clients	Cartridge	Media Option Number 1/2" Magazine Tape	DAT Tape
8	001	002	041
16	003	004	043
32	005	006	045
64	007	008	047
128	009	010	049
256	011	012	051
512	013	014	053
Upgrade (From # of Clients)	Option Number	Additional Users Guide	Option Number
8	020	DOS Users	030
16	021	OS/2 Users	031
32	022		
64	023		
128	024		
256	025	Delete PC Client Media/Manuals	030

Additional Information

See data sheets on HP LAN Manager/X, ARPA Services/2.1, or Network Services/2.0.

MAP 3.0 Communication

Introduction

Manufacturing Automation Protocol 3.0 (MAP 3.0) communication for Series 800/600 Business Servers is illustrated in Figure 109, below. Series 800/600 Business Servers connect to a plant-wide broadband or carrierband backbone via an HP OSI Express MAP 3.0 Link interface. HP MAP 3.0 Manufacturing Message Specification/800 (MMS/800) is an OSI layer 7 service that provides a set of service calls for cell controller communication with factory floor devices. HP MAP 3.0 File Transfer, Access, and Management/800 (FTAM/800) is also an OSI layer 7 service that provides distributed file capabilities for OSI communication systems. Together, the HP OSI Express MAP 3.0 Link, MAP 3.0 MMS/800, and MAP 3.0 FTAM/800 provide the most complete MAP 3.0 communications offering available from any major computer systems vendor. Table 31, next page, summarizes the MAP 3.0 products by processor.

Interfacing

In Models 815S/822S/827S/832S/842S/847S/852S/857S

The HP OSI Express MAP 3.0 Carrierband Link (36969A) or Broadband Link (36970A) interface uses two double-width slots in the SPU backplane. This card set consists of one HP OSI Express MAP 3.0 802.4 card and one modem card (Carrierband or Broadband). Specify hardware option number 20N.

In Models 825S/835S/850S/855S/870S

The HP OSI Express Map 3.0 Carrierband Link (36969A) or Broadband Link (36970A) interface uses two double-width slots in an external converter box that comes with the product when specifying option number 20C. The external converter box provides conversion from HP-PB to CTB and uses one CTB slot in the SPU. The MAP 3.0 card set consists of one HP OSI Express MAP 3.0 802.4 card and one modem card (Carrierband or Broadband). To receive the external converter box, and MAP 3.0 card set specify hardware option number 20C.

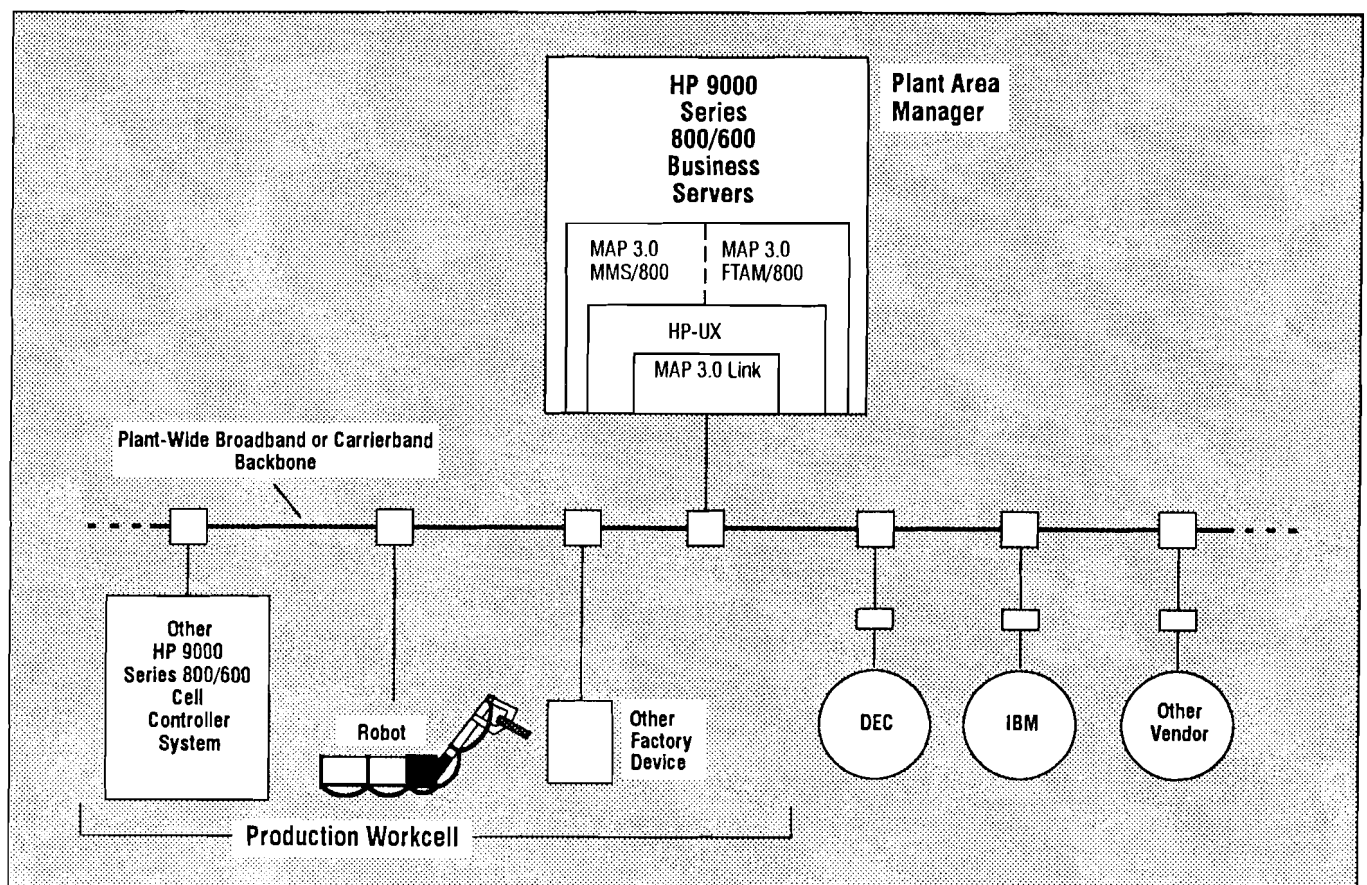


Figure 109. HP 9000 Series 800/600 MAP 3.0 Communication

MAP 3.0 Communication, continued

Table 31. MAP 3.0 Communications Software Packages for HP 9000 Series 800/600 Business Servers

Communications Packages	For HP 9000 Model	Use Product Number	Capabilities
HP OSI Express MAP 3.0 Carrierband Link	815S 822S 825S 827S 832S 835S/842S 847S 852S 850/855S 857S 870S	36969A	Interfaces to IEEE 802.4 Carrierband backbone.
HP OSI Express MAP 3.0 Broadband Link	815S 822S 825S 827S 832S 835S/842S 847S 852S 850/855S 857S 870S	36970A	Interfaces to IEEE 802.4 Broadband backbone.
HP MAP 3.0 MMS/800 (Requires MAP 3.0 Link, listed above)	815S 822S 825S 827S 832S 835S/842S 847S 852S 850/855S 857S 870S	B1007A	Provides comprehensive control of factory floor devices, Binary file transfer between computer systems on the backbone, and Program-to-program messaging between computer systems on the backbone.
HP MAP 3.0 FTAM/800 (requires MAP 3.0 Link, listed above)	815S 822S 825S 827S 832S 835S/842S 847S 852S 850/855S 857S 870S	B1008A	Provides text and binary file transfer between MAP 3.0 nodes, Remote file access (record-level read, write, and delete), and Remote file management (create and delete files and read or change attributes).
MMS/9000 (Requires OTS/9000 and LAN Link)	808S, 815S, 822S, 825S, 827S, 832S, 835S, 842S, 845S, 847S, 850S, 852S, 855S, 857S, 860S, 865S, 870S	32019A	Provides comprehensive control of factory floor devices, binary file transfer between computer systems on the backbone, and program-to-program messaging between computer systems on the backbone.

Additional Information

For data sheets on the MAP 3.0 products, see the HP AdvanceNet Specification Guide, (P/N 5956-4144) and HP AdvanceNet Specification Guide Addendum (P/N 5956-4144A).

X.25 Communication

Introduction

X.25/9000 provides wide area networking capabilities in compliance with CCITT, DDN and other defacto standards. The product allows support of both TCP/IP and OSI transports. The link product contains both the hardware and software with options to purchase additional hardware and cabling.

X.25 Communication for Series 800 Business Servers is illustrated in Figure 110 below and summarized in Table 27, next page. Communication to remote terminals and printers are supported via an HP 2335A X.25 Multiplexer in addition to PAD emulation for remote terminals.

Configuration Choices

Series 800 systems with X.25 Link can be configured as a DTE (Data Terminating Equipment) to transmit via a public or private X.25 network. Data rates up to 64 Kbps are achievable. The Link can also be configured as a DEC (Data Circuit Terminating Equipment) to run over direct, hardwired lines. (A modem or modem eliminator is required in this configuration to provide clocking.)

Additional Information

For data sheets on the X.25 Links and associated transports and services, see the HP AdvanceNet Specification Guide, (P/N 5956-4144) and addendum (P/N 5956-4144A).

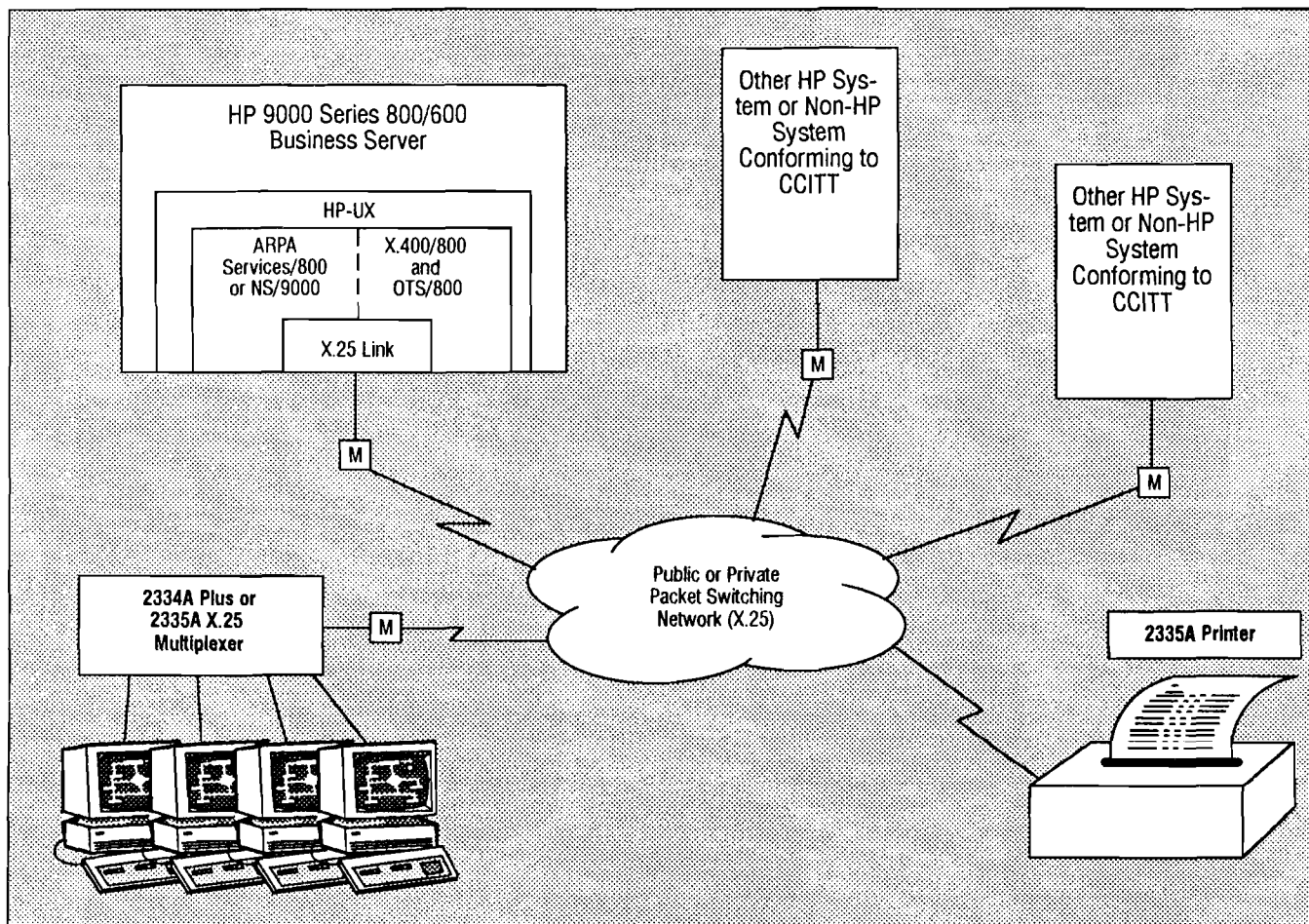


Figure 110. X.25 Communications for HP 9000 Series 800/600 Business Servers

X.25 Communication, continued

Table 32. X.25-Based Communications Software Packages for HP 9000 Series 800/600 Business Servers

Communications Packages	For HP 9000 Model	Use Product Number	Capabilities	Supports Communication with:
X.25/800 Link	*All S/800	36960A	Connection to Public or Private Packet Switching Network (X.25)	All of the systems listed below when also supported by appropriate higher-level Communications Package.
Network Services/9000 Series 800/600 (also requires X.25/800 Link, listed above)	*All S/800	B1029A	Network File Transfer Resource Sharing with other HP-UX based systems Inter-process communications	HP 3000 System with Network Services/3000-V software HP 9000 Series 300 System with NS/ARPA Services Series 300 software
ARPA Services/800 (also requires X.25/800 Link, listed above)	*All S/800	B1030A	File Transfer Protocol (FTP) TELNET Virtual Terminal Capability Simple Mail Transfer Remote Copy Remote Login Remote Shell Sendmail Berkeley Sockets	HP 9000 Series 300 System with HP-UX 6.5 or later and NS/ARPA Services Series 300 software SUN computer with SunLink X.25 Release 5.0
X.400/800 (also requires OSI Transport Services/800)	*All S/800	32032A	Standards-based Electronic Mail	Other systems that comply with the X.400 standard.
OSI Transport Services/800	*All S/800	32070A	Provides OSI Model Layers 4 and 5 for transport between the X.25/800 Link and the X.400/800 communications package	Not applicable
FTAM/800	*All S/800	B1033A	Provides multivendor file system interoperability	HP 9000 S/300 & S/800 Other systems that support FTAM

Communication with IBM Systems

HP 9000 Series 800/600 systems can communicate with IBM System/370-compatible mainframes by direct connection or via an HP 9000 Series 300/400 or 800/600 Gateway system and the LAN connection to that system. See Figure 111, below.

For data sheets on the IBM communication products, see the HP Networking Specification Guide, which is available from Hewlett-Packard Field Offices.

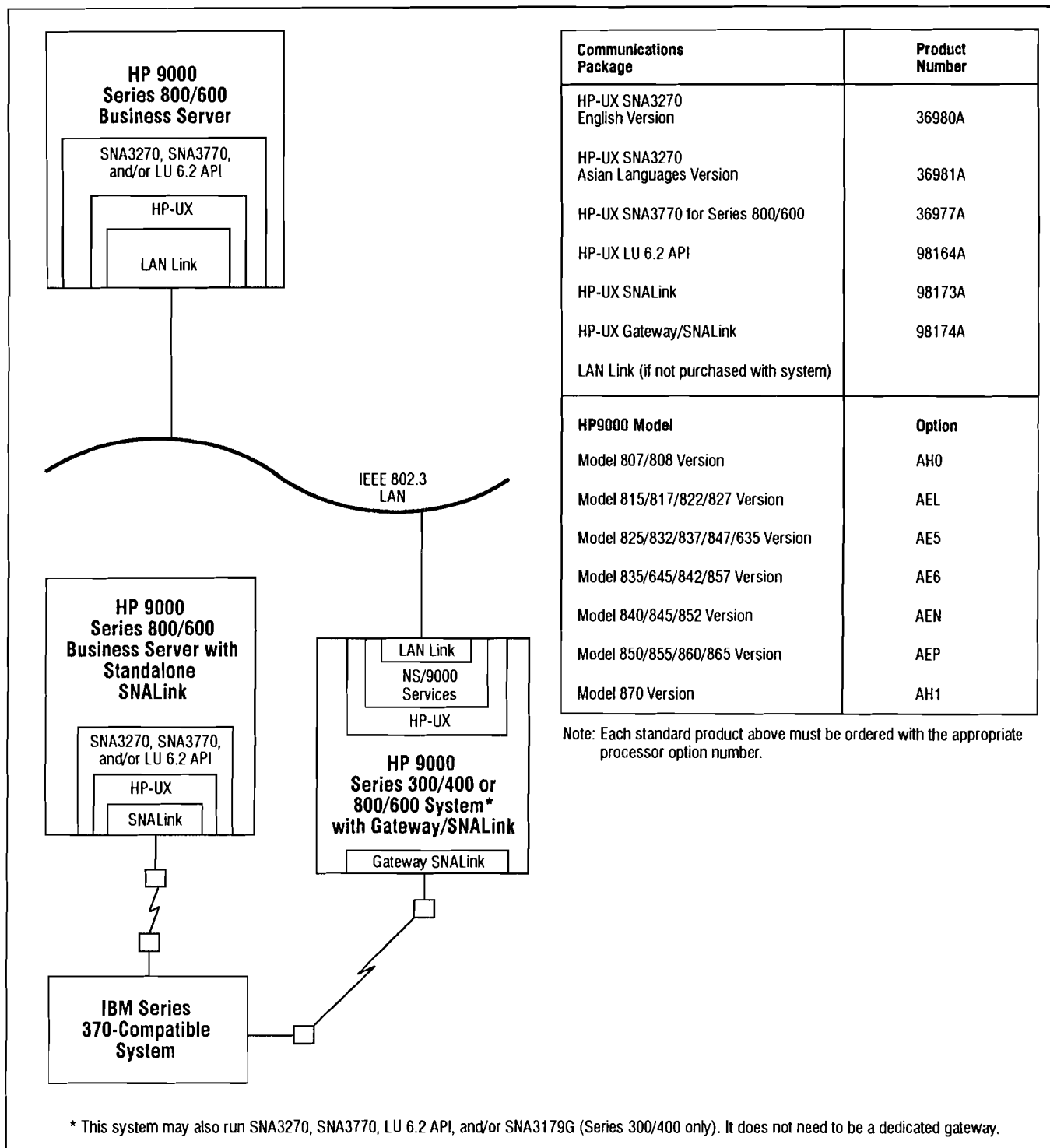


Figure 111. HP 9000 Series 800/600 Communication with IBM Systems

HP ARPA Services 2.1/MS-DOS

HP ARPA Services 2.1/MS-DOS

With HP ARPA Services 2.1/MS-DOS, a PC running MS-DOS can communicate in a multivendor environment using the networking services defined by the Department of Defense Advanced Research Project Agency (ARPA) and Berkeley Software Distribution (BSD) UNIX® 4.3 system. ARPA services, like UNIX, are de facto standards in the scientific and engineering communities and are becoming much more prevalent in the commercial world.

Features

- File Transfer (FTP, MIL-STD 1780).
- Virtual Terminal (TELNET, MIL-STD 1782).
- Berkeley Sockets Run Time/Development Support.
- Berkeley Remote Commands (rep, rsh).
- Supports Industry Standard TCP/IP Transport.
- Full Integration with HP LAN Manager for OS/2 and MS-DOS and HP Network Services 2.1/MS-DOS.

Product Requirements

Required Hardware

- A PC with 512 Kbytes of memory (plus memory needed for the terminal emulator or application).
- Each PC will need one of the following interface cards to connect to the LAN:

HP StarLAN 10 Link II (D1808A, Opt. 100)

HP StarLAN 10 Micro Channel Link (D1808A, Opt. 200)

HP StarLAN 10 Link (D1802A)

HP ThinLAN Link (50927A)

Various 3rd Party Interface Cards (for a listing of these cards, consult the PC Networking Hardware Technical Reference Guide, Part Number 5953-5056).

Required Software

- DOS Version 3.1 or later.

Ordering Information

Product/ Opt. No.	Description
D1812B	HP ARPA Services 2.1/MS-DOS (must order at least one of the following options):
Options	
Opt. 001	HP ARPA Services 2.1/MS-DOS – Media and Manuals (includes license for one user, user manual, configuration manuals and all software on 3.5" and 5.25" disks).
Opt. 002	Right to copy one time.
Opt. 003	Right to copy media eight times.
Opt. 004	Right to copy media 32 times.
Opt. 006	Additional user manual.
Opt. 005	Upgrade from HP ARPA Services/Vectra – HP ARPA Services 2.0/MS-DOS – Media and Manuals (includes license for 1 user, user manual, configuration manuals and all media).
Opt. 007	Upgrade from HP ARPA Services/Vectra – Right to copy one time.
Opt. 008	Upgrade from HP ARPA Services/Vectra – Right to copy media eight times.
Opt. 009	Upgrade from HP ARPA Services/Vectra – Right to copy media 32 times.
Opt. 010	Upgrade from HP ARPA Services 2.0/MS-DOS

Note: Customers must order at least one option 001 (option 006 if upgrading) to receive software and documentation. After that, options 002 through 005 provide rights to copy and additional user manuals.

HP ARPA Services 2.1/MS-DOS, continued

Communications Packages	For HP 9000 Model	Use Product Number	Capabilities	Supports Communications with
HP ARPA Services 2.1/MS-DOS	800 600 300	D1812B	Gives MS-DOS PC users the capability to access computers using the widely accepted ARPA/Berkeley networking services FTP, TELNET, Berkeley Sockets, and Berkeley Services (rcp, rsh).	DOS Workstations (either running LAN Manager or standalone)
HP ARPA Services 2.1/MS-DOS for NetWare	800 600 300	D1823A	Gives MS-DOS PC users the capability to access computers using the widely accepted ARPA/Berkeley networking services FTP, TELNET, Berkeley Sockets and Berkeley Services (rcp, rsh).	DOS Workstations running Novell NetWare

Database Management

ALLBASE/SQL Configuration Guidelines

ALLBASE/SQL is HP's strategic relational database management system (RDBMS) on the HP 9000 Series 800 and Series 300/400 families of systems. It offers

OLTP customers the best performing RDBMS on PA-RISC for mission critical applications, interoperability with other vendors' database and tools offerings, and superior data reliability and supportability.

ALLBASE/SQL on the HP 9000 requires the HP-UX operating system.

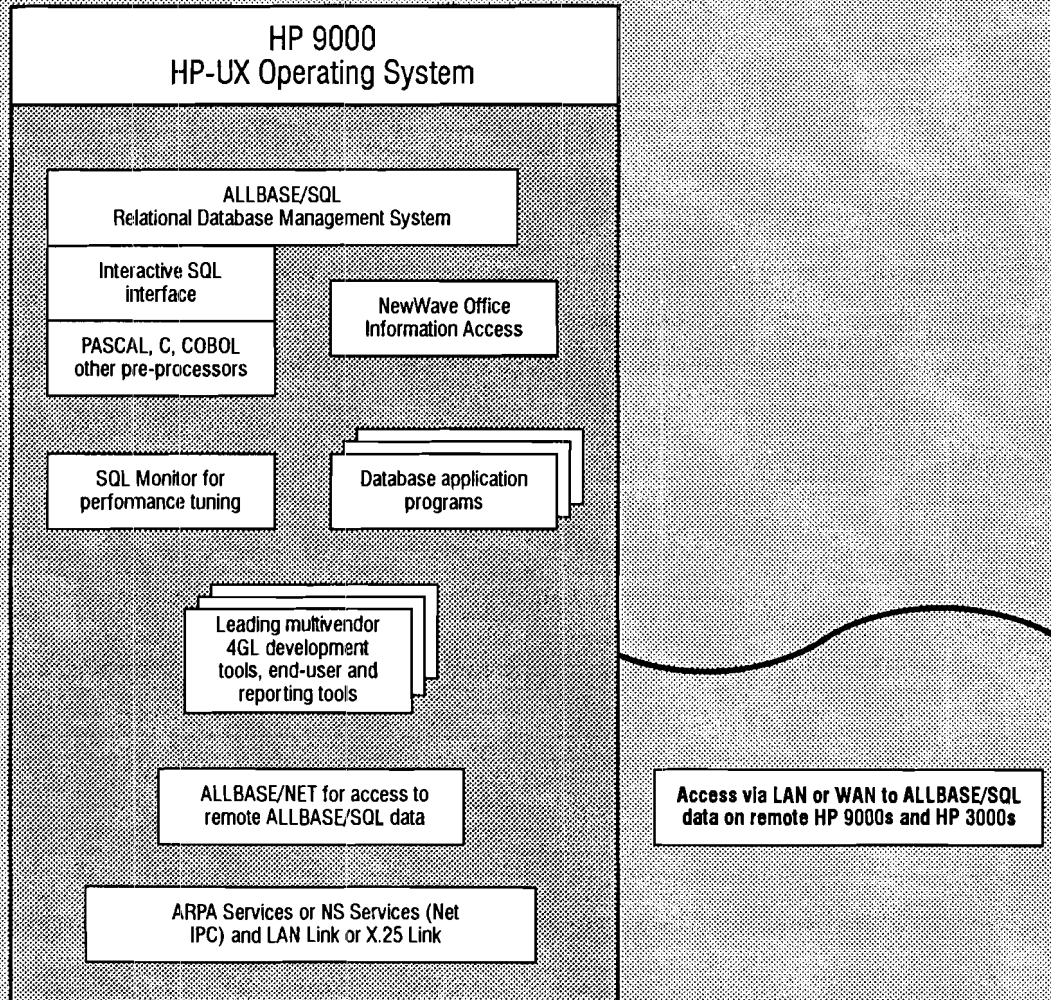


Figure 112. ALLBASE/SQL on the HP 9000

The components of a complete ALLBASE/SQL solution are shown in Figure 112. The requirements for configuring ALLBASE/NET on a network of HP 9000s and HP 3000s are shown in Figure 113

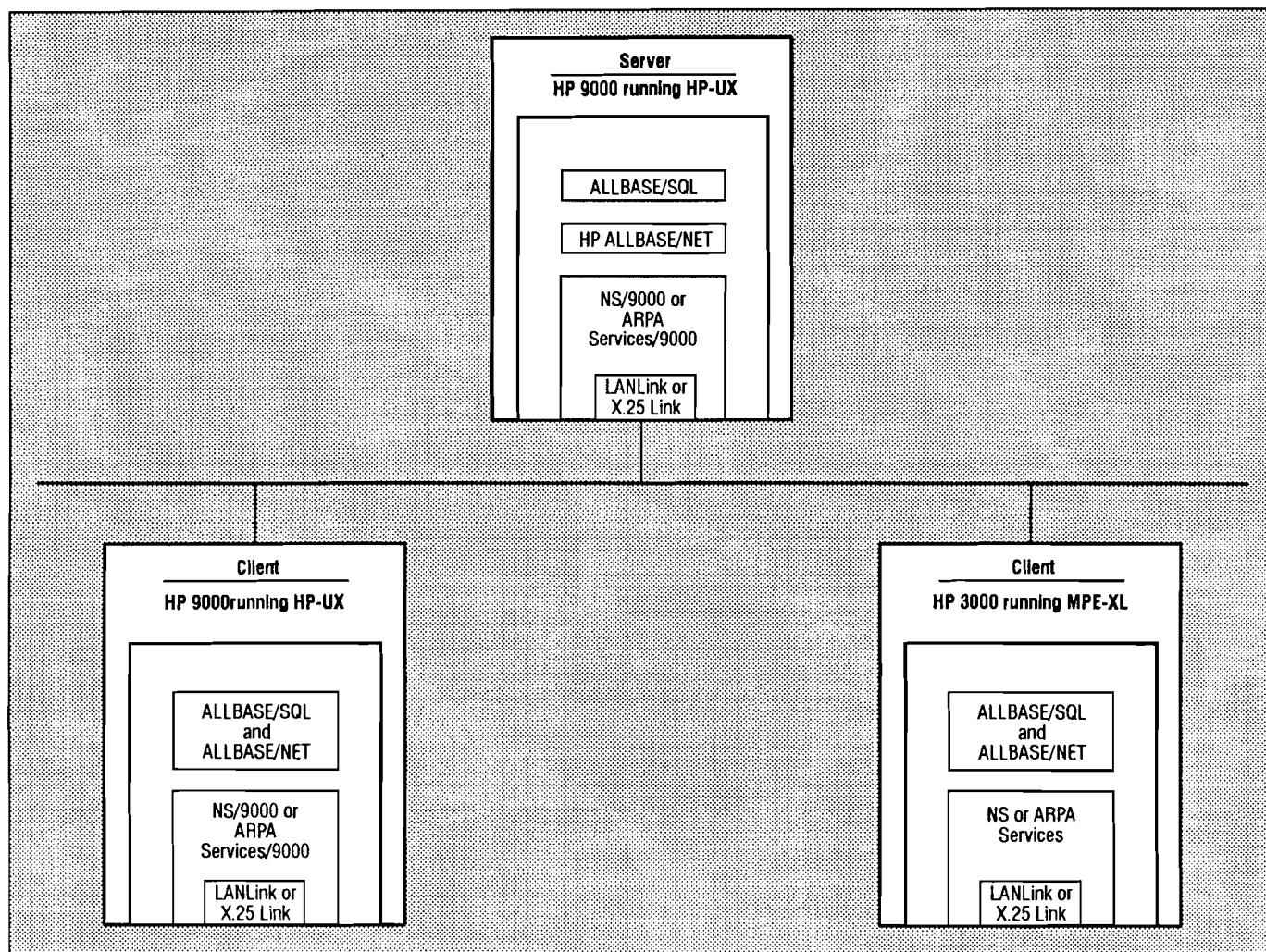


Figure 113. HP ALLBASE/NET on the HP 9000

NOTE: ALLBASE/SQL requires 3 to 4 Mbytes of memory and 8 Mbytes of disk space. Consult the ALLBASE/SQL Database Administration Guide for additional requirements based on the particular application being run.

For guidance on selecting terminals, disks, magnetic tape units and printers, see the appropriate sections of this guide.

ALLBASE/4GL Configuration Guidelines

ALLBASE/4GL is HP's advanced application development tool for the design and creation of business applications on the HP 9000. Compared to COBOL and other third generation languages, ALLBASE/4GL dramatically increases programmer productivity by removing the need to specify code step-by-step. Simply

describe the desired result with features like Screen Painter and the Reports facility, and ALLBASE/4GL delivers applications in a fraction of the time consumed by traditional 3GL coding.

ALLBASE/4GL, like ALLBASE/QUERY, is a companion product of ALLBASE/SQL, HP's relational database management system. ALLBASE/4GL operates across both the HP-UX and MPE XL operating systems.

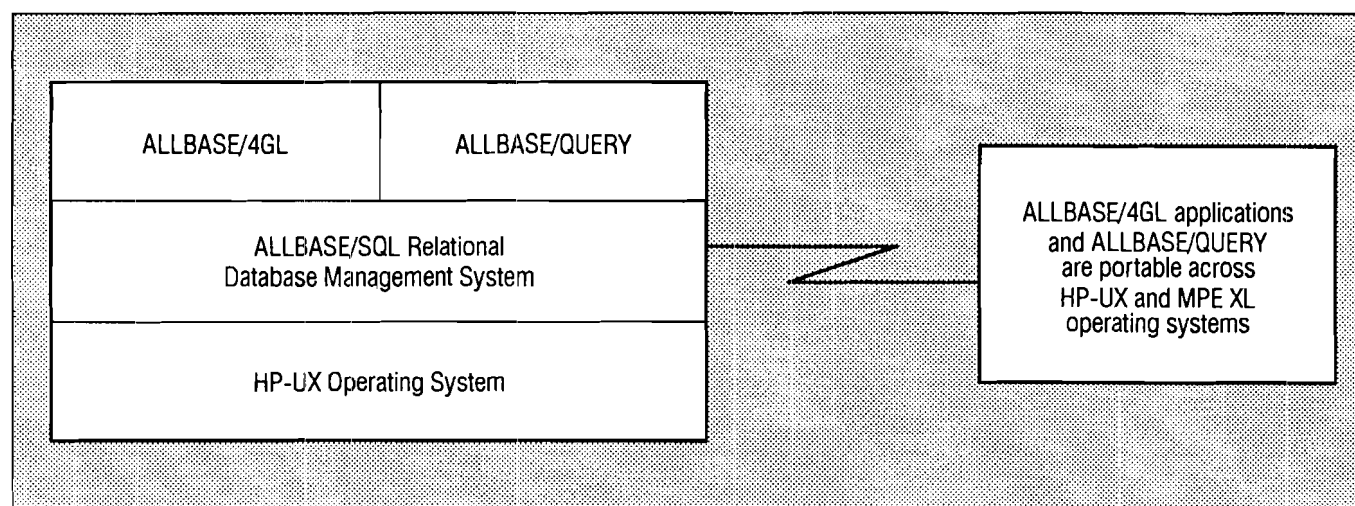


Figure 114. ALLBASE/4GL and ALLBASE/QUERY

ALLBASE/4GL supports HP-UX operating system versions prior to 7.08. Support for 7.08, 8.0 and later versions is expected second half 1991. The recommended minimum configuration for a Developer version includes three megabytes of RAM, 55 megabytes of disk storage, one terminal and one printer. 4GL

Runtime will run on a two megabyte system, with performance dependent on the application and available disk storage.

NOTE: The Digital Data Storage media option is not a supported option for ALLBASE/4GL.

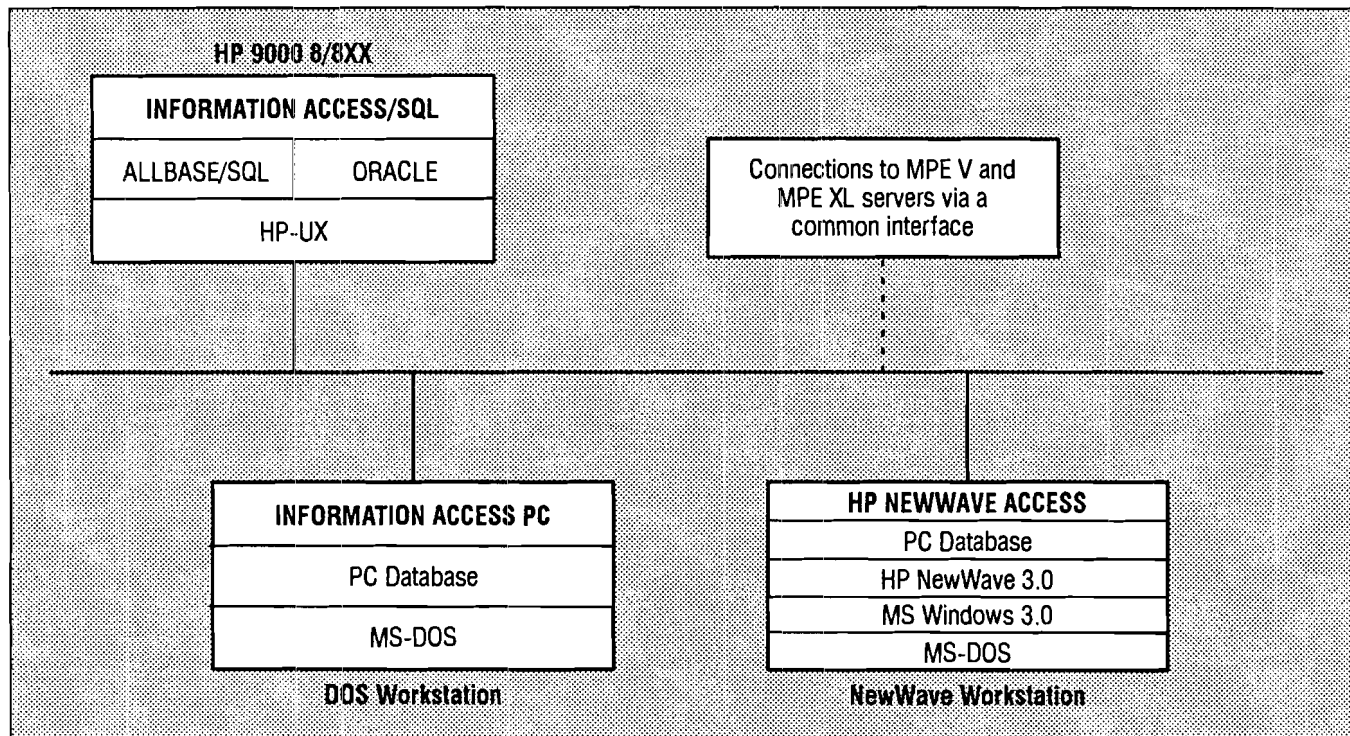
The Database Management Products

Database Product	For HP 9000 Model	Use Product Number
HP ALLBASE/SQL Development	808S	92689A
	807S/815S/817S/822S/827S/837S	92684A
	825S/832S/835S/840S/842S	92685A
	845S/845SE/852S/635S/645S/847S/857S	
	850S/855S/860S/865S/870S	92683A
HP ALLBASE/SQL Run-time	808S	92690A
	807S/815S/817S/822S/827S/837S	92686A
	825S/832S/835S/840S/842S	92688A
	845S/845SE/852S/635S/645S/847S/857S	
	850S/855S/860S/865S/870S	92687A
HP ALLBASE/SQL 4GL/Query Developer Pack	808S	30671A
	815S/822S	92632A
	825S/832S/635S	30672A
	835S/645S/842S	36362A
	840S/845S/852S	30697A
	850S/855S/860S/865S	35361A
	870S	30673A
HP ALLBASE/NET User-based License for 800 Series (HP-UX 7.0 on earlier)	808S	92593A
	815S/822S	
	825S/832S/835S/840S/842S	
	845S/845SE/852S/635S/645S	
	850S/855S/860S/865S/870S	
HP ALLBASE/4GL Developer Pack	808S	30662A
	807S/815S/817S/822S/827S/837S	92646A
	825S/832S/635S	30663A
	835S/645S/842S	35305A
	840S/845S/847S/852S/857S	92440A
	850S/855S/860S/865S	35307A
	870S	30664A
HP ALLBASE/4GL Run-time Environment	808S	30665A
	807S/815S/817S/822S/827S/837S	92633A
	825S/832S/635S	30666A
	835S/645S/842S	35306A
	840S/845S/847S/852S/857S	92441A
	850S/855S/860S/865S	35308A
	870S	30667A
HP ALLBASE/Query	808S	30668A
	807S/815S/817S/822S/827S/837S	92635A
	825S/832S/635S	30669A
	835S/645S/842S	92533A
	840S/845S/847S/852S/857S	92534A
	850S/855S/860S/865S	92535A
	870S	30670A

Information Access Configuration Guidelines

Information Access services within HP NewWave Office allows users to select a range of data sources on their HP 9000 systems and to output the data to PC

applications and remote servers. Information Access SQL/UX server software on the HP 9000 enables PCs to connect and retrieve data from HP ALLBASE/SQL and ORACLE relational databases. Requested data is transferred from the host server to the PC client software, which provides additional capabilities for manipulation, formatting, and application integration.



HP 9000 Environment

Supported Hardware:

- All Series 800 systems

Note: Certification of the Series 700 is expected in FY '91 and is currently in this process.

Supported Data Sources:

- HP ALLBASE/SQL version A.07 or later
- ORACLE version 6.0 or later

System Requirements (Series 800):

- Minimum 8 MB main memory
- HP-UX 7.0 or later
- Information Access server software version A.05.32 or later

Networking Environment

Serial PC to HP 9000 connections require one of the following hardware options:

- Direct connection to CIO MUX or NIO MUX
- Configurations using a TS 8 (HP 2342A) in either back-to-back or direct access configurations

- HP certified HP 2335 configurations such as back-to-back HP 2335 statistical multiplexers, HP X.25/800

- Modem connections

LAN connections between PC and HP 9000 require one of the following:

- ThinLAN
- StarLAN
- StarLAN 10

AND

- LAN/9000 Series 800 Link

Personal Computer Environments

Supported Personal Computer (PC) Systems:

- HP Vectra Personal Computer Family
- IBM PC, PC/XT, PC/AT
- IBM PS/2 Model 30, 50, 60, 70, 80
- Compaq DeskPro Models 286, 386, 386S

All of the above PCs require a hard disk.

Database Management, continued

Software Requirements for Standard MS-DOS PCs (i.e., 640K systems):

- Information Access PC software
- MS-DOS 2.11 or later for HP Vectra systems or PC-DOS 2.11 for IBM PS/2 Model 30
OR
PC-DOS 3.10 or later for IBM PS/2 Models 50, 60, 70, 80
OR
PC-DOS 3.31 or later for Compaq DeskPro Model 286, 386 or 386S
- For network connection:
OfficeShare 2.XX or later
OR
ARPA Services 2.1
OR
Network Services 2.1

Software Requirements for NewWave PCs:

- NewWave Access software (recommended) or Information Access PC software
- Minimum MS-DOS 3.3 or later
- MS Windows 3.0 or later
- HP NewWave version A.03.00 or later
- For network connections:
ARPA Services 2.1
OR
Network Service 2.1

PC Input Data Sources (applies to both NewWave Access and Information Access PC unless noted):

- R:BASE for DOS, System V
- Rbase 5000, 4000 (Information Access PC only)
- dBASE IV, III Plus, III
- CONDOR (Information Access PC only)
- Lotus 1-2-3 (WK1) (Information Access PC only)

Output Data Formats:

HP 9000

- HP ALLBASE/SQL
- ORACLE

PC

- R:BASE for DOS, System V
- Rbase 4000, 5000 (Information Access PC only)
- dBASE IV, III Plus and III (both); dBASE II (Information Access PC)
- Lotus 1-2-3 (WK1)
- Information Access Report Writer (Information Access PC only)
- File formats:
DIF, ASCII (both)
SYLK (NewWave Access only)
Quoted Basic (Information Access PC only)

System Availability

SwitchOver/UX

SwitchOver/UX provides near-continuous operation of mission critical systems by significantly decreasing downtime due to system hardware or software failures. A SwitchOver/UX configuration has one to seven primary systems and one designated standby system. This standby SPU is connected to the disks of all primaries in the SwitchOver/UX configuration. The standby continuously monitors the health of the primaries with a "heartbeat" message over the LAN. Should a primary fail, it stops sending the heartbeat. The standby reboots, assuming control of the failed primary's disks and takes over the "identity" of the failed primary. Users can then transparently log onto the standby and resume work as if they were logging onto the primary.

To increase the availability of your entire system, we recommend customers include HP DataPair/800 software in the SwitchOver/UX configuration. HP DataPair/800 provides data integrity and on-line backup capability. It prevents data loss due to disk failures by maintaining two copies of data on separate disks so that data is still accessible after any single disk failure.

Key points:

1. SwitchOver/UX software must be purchased for each SPU within the configuration.
2. HP DataPair/800 is recommended on the systems to provide added data availability.
3. To minimize single points of failure, the following are recommended:
 - Redundant LAN
 - Separate Fiber-Link Interfaces for Mirrored sets of disks
 - Separate circuits for each SPU and sets of disks
4. Software applications should be licensed to run on both the primary and backup CPUs.

Minimum Configuration Requirements

- HP9000 Series 800
- FL Disks
- FL cards:
 - CIO systems: P/N 27111A
 - HP-PB systems: P/N A1749A
- LAN Connection
- SwitchOver/UX Software (one copy per SPU)
P/N 92668A
- Recommended:
DataPair/800 Software P/N 92625A

HP9000 Series 800 Systems

There are four "categories" of SwitchOver/UX configurations:

Category	SPU models
Mid-range CIO 800s	825-845
High-end CIO 800s	850-870
HP-PB 800s	822, 832, 842, 852
Entry Level HP-PB	827, 847, 857

All SPUs of a SwitchOver/UX group must be composed of members from the same category. For example an 825S can back up an 835S. However, an 852 cannot back up an 870.

SwitchOver/UX requires at least two systems on a LAN; a primary SPU and a standby SPU. There can be up to seven primaries backed up by one standby system. Non-critical applications or development activities can be done on the standby system. However, all processes will be shut down on the standby in the event of a primary failure. Using one standby system for up to seven primary systems is less expensive to a customer than the approach of configuring one standby per primary. With each additional primary, availability decreases slightly, but the probability of a second primary failing before the first failed primary is repaired is very small. (Software failures could result in repeat failures.) Customers requiring maximum availability with SwitchOver/UX should consider a one-to-one relation of the primary to the standby system.

Fiber-Link Interface (FL) Disks

Requires two or more FL disks from the following table:

*Table 33. HP-FL Disks Supported in Series 800 Business Servers
(except the Models 807S, 808S, 815S, 817S, and 837S)*

Product Number	Name/Description	Usable as System Disk?	Capacity (Mbyte per Product)	Access Time (msec)	Average Transfer Rate (KB per sec)*
C2201A	Fixed Disk with Fiber Optic and PBus Controllers	Yes	670	24.5	1,410**
C2204A	Fixed Disk with Fiber Optic and PBus Controllers	Yes	1340	24.5	1,410**
7936FL***	Fixed Disk	Yes	307	28.8	1,890
7937FL***	Fixed Disk	Yes	571	30.8	1,890
19521FL***	Two 7937FL Disks in 19511A Cabinet	Yes	1142	30.8	1,890
19522FL***	Four 7937FL Disks in 19514A Cabinet	Yes	2284	30.8	1,890
19524FL***	Eight 7937FL Disks in 19514A Cabinet	Yes	4568	30.8	1,890

* The average transfer rates listed here indicate the capability of the disk hardware; they are not system-achievable transfer rates.

** Transfer rate for full volume, smaller transfers are at higher speeds of 1,800 Kbytes per second or more (track average).

*** Disks are out of production and no longer orderable.

Precision Bus Adapter and Fiber Link Interface Card

HP-PB systems require the PBA-FL Interface Card, P/N A1749A. The A1749A comprises an HP-PB/CIO converter, an HP FL CIO card and associated manuals.

LAN Connection

Peripherals (terminals, printers) should be connected to the host group with a DTC over a LAN. (A Switch-Over/UX host group consists of primary and standby processors.) This allows communication and access to be re-established easily with the standby in the event a primary fails.

When the standby re-boots, taking over the failed primary's disks, it assumes the LAN address of the failed primary.

We recommend redundant LANs to avoid a single point of failure. This provides your customer with added security in the event of a LAN failure. If there is a LAN failure, the following will occur based on the connection:

1. DTC. A switch can be used on the LAN to provide the flexibility of switching to the alternate LAN when problems occur. Previously established connections will be lost and users will need to re-establish their environment. The DTC will need to be re-downloaded with the new IP address of the LAN.
2. Workstations can have two LAN cards and be connected to both LAN cables. The configuration should include a route statement to facilitate the redundant LAN being automatically used for re-connection.
3. PCs can have two LAN cards and be connected to both LAN cables. The user will need to alter the LAN configuration to provide the alternate IP address of the redundant LAN.

HP DataPair/800 Software

SwitchOver/UX provides your customer with security in the event of a system failure. To increase data availability, HP DataPair/800 (P/N 92625A) is recommended for each primary system in the SwitchOver/UX configuration (all systems within a symmetrical configuration — defined below). With HP DataPair/800, data loss is prevented and applications can continue to access data even after a single disk failure. In addition, your customer can perform on-line backups to avoid user and application disruption. Like SwitchOver/UX, HP DataPair/800 only supports FL disks. To prevent the failure of a single I/O interface from causing a system failure, we recommend the mirrored disks be connected to separate FL interface cards.

To order DataPair/800, 92625A	Use Option Number
-------------------------------	-------------------

For Models 822S/827S	AEL
For Models 825S/832S/847S/857S	AE5
For Models 835S/842S/847S/857S	AE6
For Models 845S/852S	AEN
For Models 850S/855S/860S/865S	AEP
For Models 870S/100, 870S/200	AH1

Types of Configurations

A SwitchOver/UX configuration can be one of two types: symmetrical or asymmetrical. A symmetrical configuration consists of two or more SPU's, each of which can have access to all disks in the configuration. In an asymmetrical configuration, only the standby SPU can access all the FL disks.

Choosing Symmetrical Versus Asymmetrical Configurations

Symmetrical

- **Advantage:** This configuration allows a primary that has failed and been repaired to be brought back up as the new standby. There is no need to have the original roles resumed and therefore avoid additional disruption.
- **Disadvantage:** Need to hook all SPU's to all FL disks. This requires more HP-FL cards (with 8 maximum per P-bus).

Asymmetrical

- **Advantage:** May be a less expensive solution since fewer HP-FL cards are required.
- **Disadvantage:** When the failed primary is repaired, you need to plan downtime so standby and primary can resume their original roles.

General Configuration Items

1. There can be a maximum of 8 P-bus connected disks on one FL interface card.
2. HP-PB systems require the PB-FL Interface Card, P/N A1749A.
3. There is a maximum fiber-link cable limitation of 500 meters. Therefore, system to disk distances is 500 meters or distance between two systems is 1000 meters.
4. Only FL drives can be mirrored. HP-IB and SCSI drives are not supported by SwitchOver/UX.
5. Only FL drives will be taken over by a standby system with SwitchOver/UX. HP-IB and SCSI drives are not supported SwitchOver/UX.
6. The integrated HP-IB disk or SCSI disk included in the HP-PB systems cannot be mirrored or switched in the SwitchOver/UX configuration.
7. A single dump device can be shared among the SPU's in the SwitchOver/UX configuration. (A dump device is used for core dumps in the event of a failure. No data may be stored on the device designated as the dump disk.) For HP-PB systems, it is recommended that the integrated disk be designated as the dump disk for each system.
8. Systems in SwitchOver/UX configuration can only include other SPU's of the same category.
9. Switch info file changes are necessary. Refer to the Managing SwitchOver/UX Manual, P/N 92668-90001.
10. The following is the maximum number of FL interface cards per system:

System	Number of FL Interface Cards
<i>Category 1</i>	
822	2 [Requires HP-PB to CIO Converter]
832	2 [Requires HP-PB to CIO Converter]
842	4 [Requires HP-PB to CIO Converter]
852	4 [Requires HP-PB to CIO Converter]
<i>Category 2</i>	
825	2
835	2
845	2
635	2
645	2
<i>Category 3</i>	
850	4
855	4
860	4
865	8
870	8
<i>Category 4</i>	
827	2 [Requires HP-PB to CIO Converter]
847	2 [Requires HP-PB to CIO Converter]
857	2 [Requires HP-PB to CIO Converter]

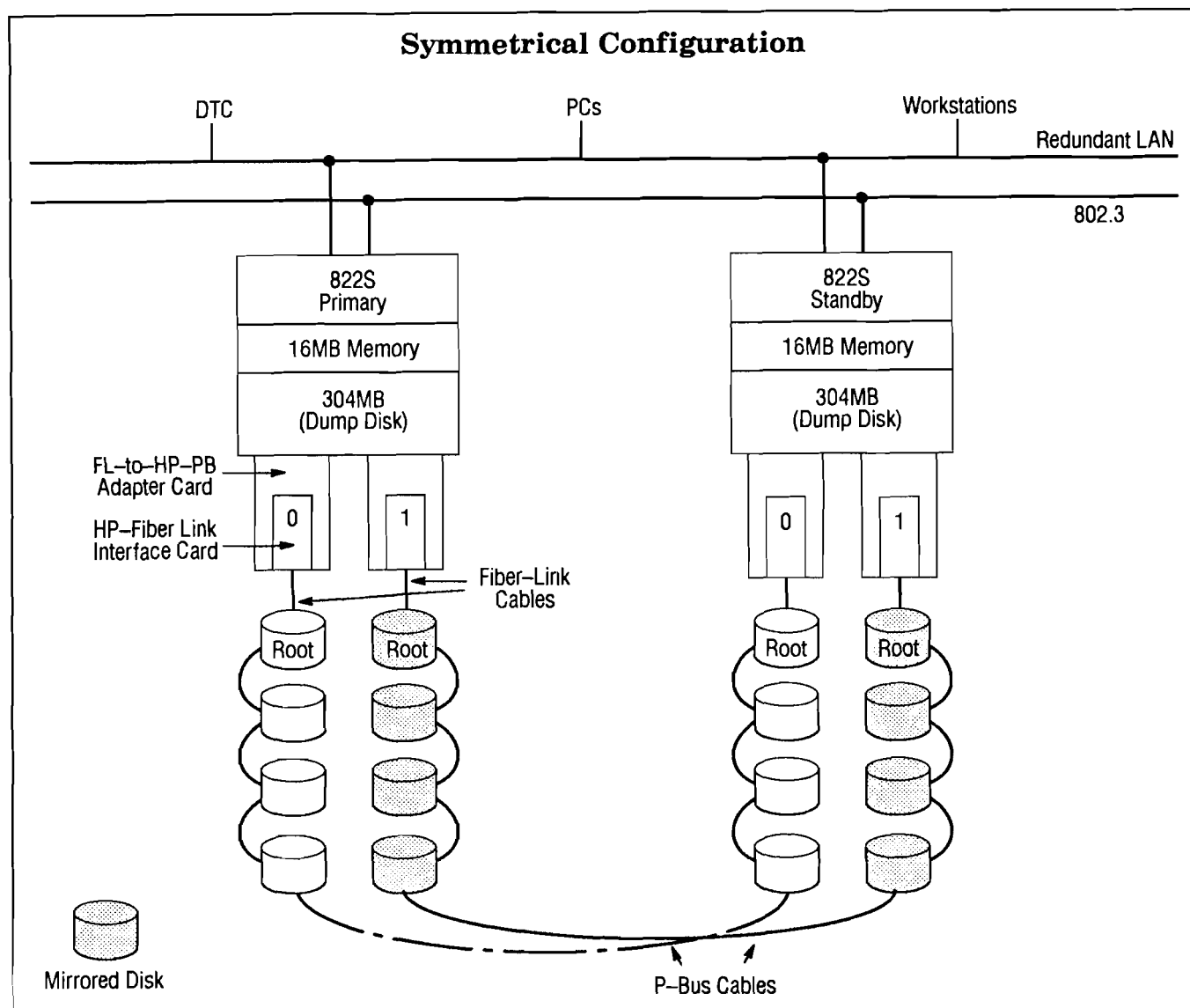


Figure 115. An example of a symmetrical HP-PB SwitchOver/UX configuration.

Notes:

1. Configuration:

Quantity	Description
2	822S Business Servers
2	92625A Option AEL (HP DataPair/800)
2	92668A Option AEL (SwitchOver/UX)
4	A1749A Precision Bus Adapter and Fiber Link Interface Card
16	HP-FL disks

- Dump disks are not mirrored. The integrated HP-IB disks are used as dump disks.
- Systems and associated peripherals are connected to LAN.
- The I/O card configuration of the standby must be identical to that of the primary system.

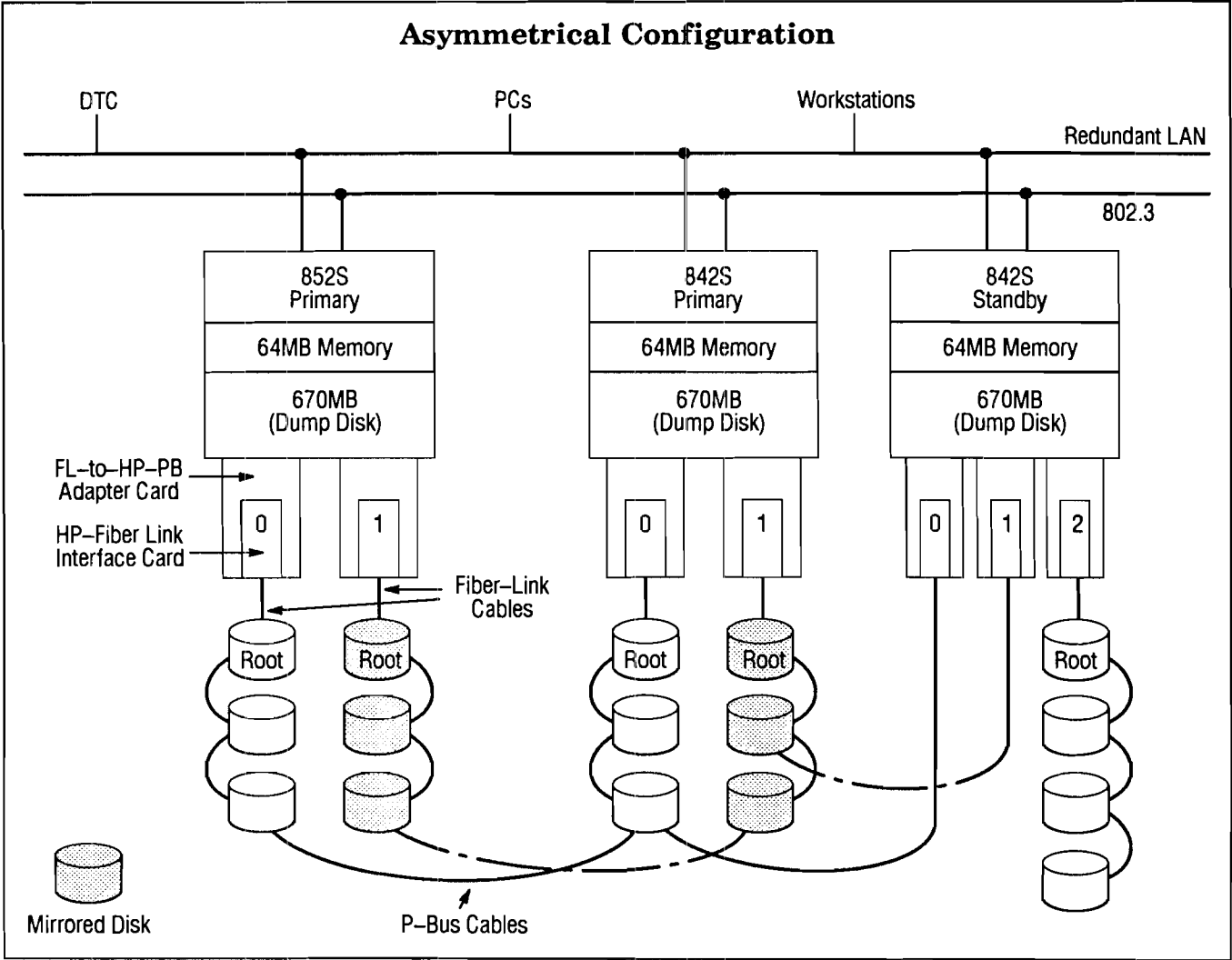


Figure 116. An example Asymmetrical HP-PB SwitchOver/UX Configuration.

Notes:

1. Configuration:

Quantity	Description
2	842S Business Servers
1	852S Business Servers
2	92625A Option AE6 (HP DataPair/800)
1	92625A Option AEN (HP DataPair/800)
2	92668A Option AE6 (SwitchOver/UX)
1	92668A Option AEN (SwitchOver/UX)
7	A1749A Precision Bus Adapter and Fiber Link Interface Card
16	HP-FL disks

2. Dump disks are not mirrored. The integrated HP-IB disk is used as the dump disk for each system.
3. Systems and associated peripherals are connected to LAN.
4. The I/O card configuration of the standby must have identical card placement to that of the primary systems.

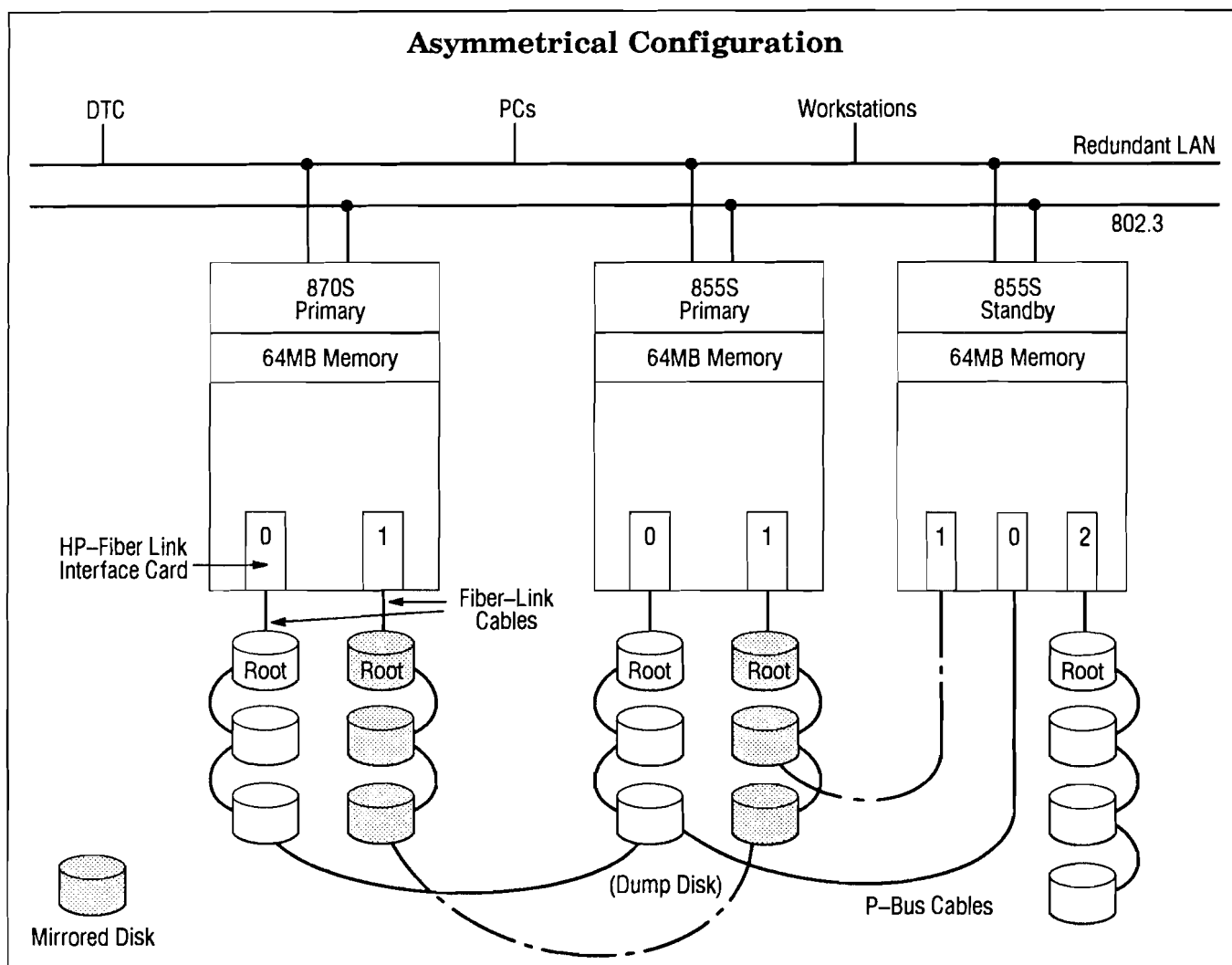


Figure 117. An example Asymmetrical CIO SwitchOver/UX configuration

Notes:

1. Configuration:

Quantity	Description
2	855S Business Servers
1	870S Business Servers
2	92625A Option AEP (HP DataPair/800)
1	92625A Option AH1 (HP DataPair/800)
2	92668A Option AEP (SwitchOver/UX)
1	92668A Option AH1 (SwitchOver/UX)
7	HP-FL Interface cards
16	HP-FL disks

- There is one dump disk which is shared among all these systems within the configuration.
- Systems and associated peripherals are connected to LAN.
- The I/O card configuration of the standby must have identical card placement to that of the primary systems.

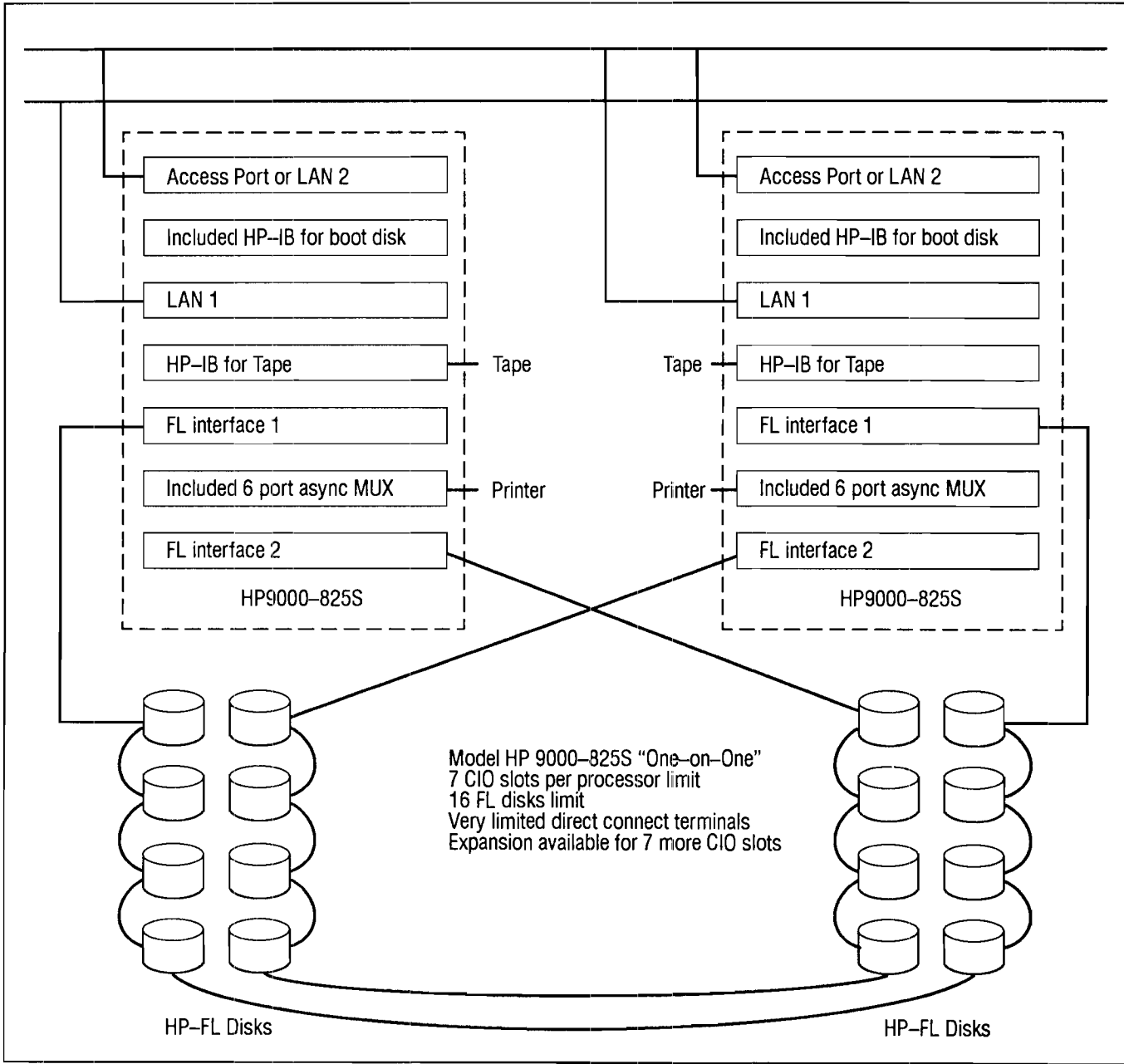


Figure 118. An 825S I/O configuration.

Note: On an 825S, either a second LAN can be connected or the slot could be used as an Access Port.

System Availability, continued

SwitchOver/UX Configuration Worksheet

Step 1 — Systems

Select the number of primary systems and the associated standby system. All systems within the SwitchOver/UX configuration must be within the same category.

There can be up to seven primary systems backed up by a single standby system. The number of primary systems within the configuration should be based on the customer's applications, users and performance expectations.

	NIO Systems	Midrange Systems	High End Systems	Entry Level HP-PB Systems
Primary	_____ 822	_____ 825	_____ 850	
min 1	_____ 832	_____ 835	_____ 855	
max 7	_____ 842	_____ 845	_____ 860	_____ 827
	_____ 852		_____ 865	_____ 847
			_____ 870	_____ 857
Standby	_____ 822	_____ 825	_____ 850	
min 1	_____ 832	_____ 835	_____ 855	_____ 827
max 1	_____ 842	_____ 845	_____ 860	_____ 847
	_____ 852		_____ 865	_____ 857
			_____ 870	

Step 2 — Disks

Requires one or more of the following FL disks:

7936FL	308-Mbyte (Obsolete)
7937FL	571-Mbyte (Obsolete)
Series 6000 C2201A	670-Mbyte
Series 6000 C2204A	1.34-Gbyte

HP-PB systems require the PB-FL Interface Card, P/N A1749A. The A1749A comprises an NIO/CIO converter, an HP-FL CIO card and associated manuals.

- Are the systems in the configuration within the HP-PB category? If yes, skip to question 2.

A single dump device can be shared among the SPU's in the SwitchOver/UX configuration. For

HP-PB systems, it is recommended that the integrated disk be designated as the dump disk for each system.

Dump Disk:

_____ 7936FL	308-Mbyte (Obsolete)
_____ 7937FL	571-Mbyte (Obsolete)
_____ Series 6000 C2201A	670-Mbyte
_____ Series 6000 C2204A	1.34-Gbyte

- There can be a maximum of 8 P-bus connections from an FL interface card. The following table defines the maximum number of FL interface cards supported on the S800 systems. Please refer to this table when determining the maximum number of disks per system.

	HP-PB Systems	Midrange Systems	High End Systems
Max Number of FL Interface Cards Supported	822 2 827 2 832 2 842 2 847 2 852 4 857 3	825 2 835 2 845 2	850 4 855 4 860 4 865 8 870 8

System Availability, continued

	SPU	Quantity of Disks	Number of FL Interfaces
Standby	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 27111A (CIO) _____ A1749A (NIO)
Primary 1	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 2	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 3	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 4	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 5	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 6	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)
Primary 7	_____	_____ 7936FL _____ 7937FL _____ C2201A _____ C2204A	_____ 2711A (CIO) _____ A1749A (NIO)

Step 3 — LAN Connection

We recommend redundant LANs to avoid a single point of failure. This provides your customer with added security in the event of a LAN failure.

Please refer to the Series 800/600 Configuration Guide and the Series 800/600 Price Guide for details.

Step 4 — Peripherals

Peripherals (terminals, printers) should be connected to the host group with a DTC over a LAN. (A Switch-Over/UX host group consists of primary and standby processors.) This allows communication and access to automatically be re-established with the standby in the event a primary fails.

Please refer to the Series 800/600 Configuration Guide and the Series 800/600 Price Guide for details.

System Availability, continued

Step 5 — SwitchOver/UX Software Optionally
DataPair/800

One copy per SPU is required.

SwitchOver/UX 92668A

_____ AEL (822/827)	_____ AA0	Software on cartridge tape
_____ AE5 (825/832/847/857)	_____ AA1	Software on mag tape
_____ AE6 (835/842)	_____ AAH	Software on DDS
_____ AEN (845/852)		
_____ AEP (850/855/860/865)		
_____ AH1 (870)		

DataPair/800 92625A

_____ AEL (822/827)	_____ AA0	Software on cartridge tape
_____ AE5 (825/832/847/857)	_____ AA1	Software on mag tape
_____ AE6 (835/842)	_____ AAH	Software on DDS
_____ AEN (845/852)		
_____ AEP (850/855/860/865)		
_____ AH1 (870)		

SwitchOver/UX provides your customer with the security in the event of a system failure. To increase data availability, HP DataPair/800 is recommended for each primary system in the SwitchOver/UX configuration (all systems within a symmetrical configuration — defined below). With HP DataPair/800, data loss is prevented and applications can continue to access data

even after a single disk failure. In addition, your customer can perform on-line backups to avoid user and application disruption. Similar to SwitchOver/UX, HP DataPair/800 only supports FL disks. To prevent the failure of a simple I/O card from causing a system failure, we recommend the mirrored disks be connected to separate interface cards.

Performance Management

Obtaining Timely Performance Information

HP's leading-edge performance tools assist with ongoing, in-house performance management requirements and provide the information you need to make system resource investments and management decisions with confidence.

HP's performance tools help reduce information overload. Instead of burdening you with reams of performance data, they provide concise reports with meaningful recommendations and presentation-quality graphic overviews that help you evaluate situations quickly and easily.

Diagnostic and Resource Management Tools Resolve Performance Problems

HP GlancePlus/UX, HP's on-line performance monitoring and diagnostic tool, gives you the system activity information you need to monitor performance and quickly restore satisfactory service levels when occasional problems occur. HP GlancePlus/UX provides high-level summaries as well as extensive detail on current system activity (CPU, memory, disk, etc.) for in-depth diagnoses and problem resolution. HP GlancePlus/UX is host resident interactive software and can be viewed from a terminal device anywhere in your network.

HP LaserRX/UX, HP's diagnostic and resource management solution, combines historic performance data collection with graphic analysis capability to help you

analyze current and past system bottlenecks, manage service levels, and control resource costs. HP LaserRX/UX provides long-term trending and in-depth data on CPU, disk, memory, transaction rates, and response times for planning, load balancing, and diagnosis.

HP LaserRX/UX consists of collector and analyzer softwares. The HP LaserRX/UX collector executes on the HP 9000 host where it continuously collects and logs performance data. The HP LaserRX/UX analyzer is personal computer based, interfacing to the host collector via a serial or LAN communication link. The analyzer utilizes the Microsoft Windows 3.0 graphical interface to display performance information to the user. A CD-ROM drive on the PC is also required for operation of the LaserRX/UX analyzer.

Capacity Forecasting and Planning with Confidence

With HP's capacity forecasting and planning tool, HP RXForecast, you can analyze workloads and forecast future system resource utilization and performance levels.

HP RXForecast helps you perform regular system resource forecasting and supports ongoing capacity and budget planning. Forecasts are based on past trends and projected future business demands. HP RXForecast is built on the HP LaserRX/UX performance management software through utilization of the same user-interface and performance data logfiles. HP LaserRX/UX is a prerequisite product for purchase of HP RXForecast.

Performance Management, continued

The Performance Management Products

When ordering HP performance tools, select the product number that corresponds to the HP-UX version you are operating. To ensure compatibility with future

versions of HP-UX, you must include HP Software Update Materials service for the performance products on your software support contract.

Performance Product	Performance Management Need Addressed	For HP 9000 Model	Use Product Number
HP GlancePlus/UX for HP-UX 7.0 HP GlancePlus/UX for HP-UX 8.0	On-line system monitoring and diagnosis: "What's happening on my system now?"; "Why is my system so slow?"	808 815/822 825/635/832 835/645/842 840/845/852 850/855/860/865 870 807/808/817 815/822/827/837 825/635/832/847/857 835/645/842 840/845/852 850/855/860/865 870	B1790A, Opt. AH0 B1790A, Opt. AEL B1790A, Opt. AE5 B1790A, Opt. AE6 B1790A, Opt. AEN B1790A, Opt. AEP B1790A, Opt. AH1 B2660A, Opt. AH0 B2660A, Opt. AEL B2660A, Opt. AE5 B2660A, Opt. AE6 B2660A, Opt. AEN B2660A, Opt. AEP B2660A, Opt. AH1
HP LaserRX/UX Analyzer* HP LaserRX/UX Collector for HP-UX 7.0* HP LaserRX/UX Collector for HP-UX 8.0*	Resource management and diagnosis: "Why is my system slow at 3 pm?"; "Can I better balance my workload across my systems?"	All Models** 808 815/822 825/635/832 835/645/842 840/845/852 850/855/860/865 870 807/808/817 815/822/827/837 825/635/832/847/857 835/645/842 840/845/852 850/855/860/865 870	B1766B B1768B, Opt. AH0 B1768B, Opt. AEL B1768B, Opt. AE5 B1768B, Opt. AE6 B1768B, Opt. AEN B1768B, Opt. AEP B1768B, Opt. AH1 B2663B, Opt. AH0 B2663B, Opt. AEL B2663B, Opt. AE5 B2663B, Opt. AE6 B2663B, Opt. AEN B2663B, Opt. AEP B2663B, Opt. AH1
HP RXForecast	Capacity forecasting and planning: "When should I budget for additional resources given current growth?"	All Models**	B1764B, Opt. AG1

* One HP LaserRX/UX Collector and one Analyzer are required for a functionally complete product.

** The HP LaserRX/UX Analyzer and HP RXForecast/UX software interface with the HP LaserRX/UX host-based Collector and require a HP Vectra or IBM-AT compatible personal computer with a CD-ROM drive.

Application Development

Three Types of Application Development are Available

HP 9000 Series 800/600 Business Servers support three different types of application development, as follows:

- Fast interactive development of screen-based applications using HP ALLBASE/4GL, a fourth-generation language.
- High-level development and testing of cell controller-to-plant floor device communications software using the HP Device Interface System.
- Conventional program development, using editor, compilers, debugger, etc.

Using HP ALLBASE/4GL

The HP ALLBASE/4GL Developer Pack provides a dictionary, screen painter, logic commands, and report layout facilities for interactive development of screen-based applications for transaction processing or data processing. (See Figure 119) These applications typically interact with HP ALLBASE/SQL or other data bases. An external program interface, with full parameter passing, affords access to existing packages or computationally intensive code or other code written in conventional program languages. An HP ALLBASE/4GL run-time environment is available for execute-only support of completed HP ALLBASE/4GL applications on target systems.

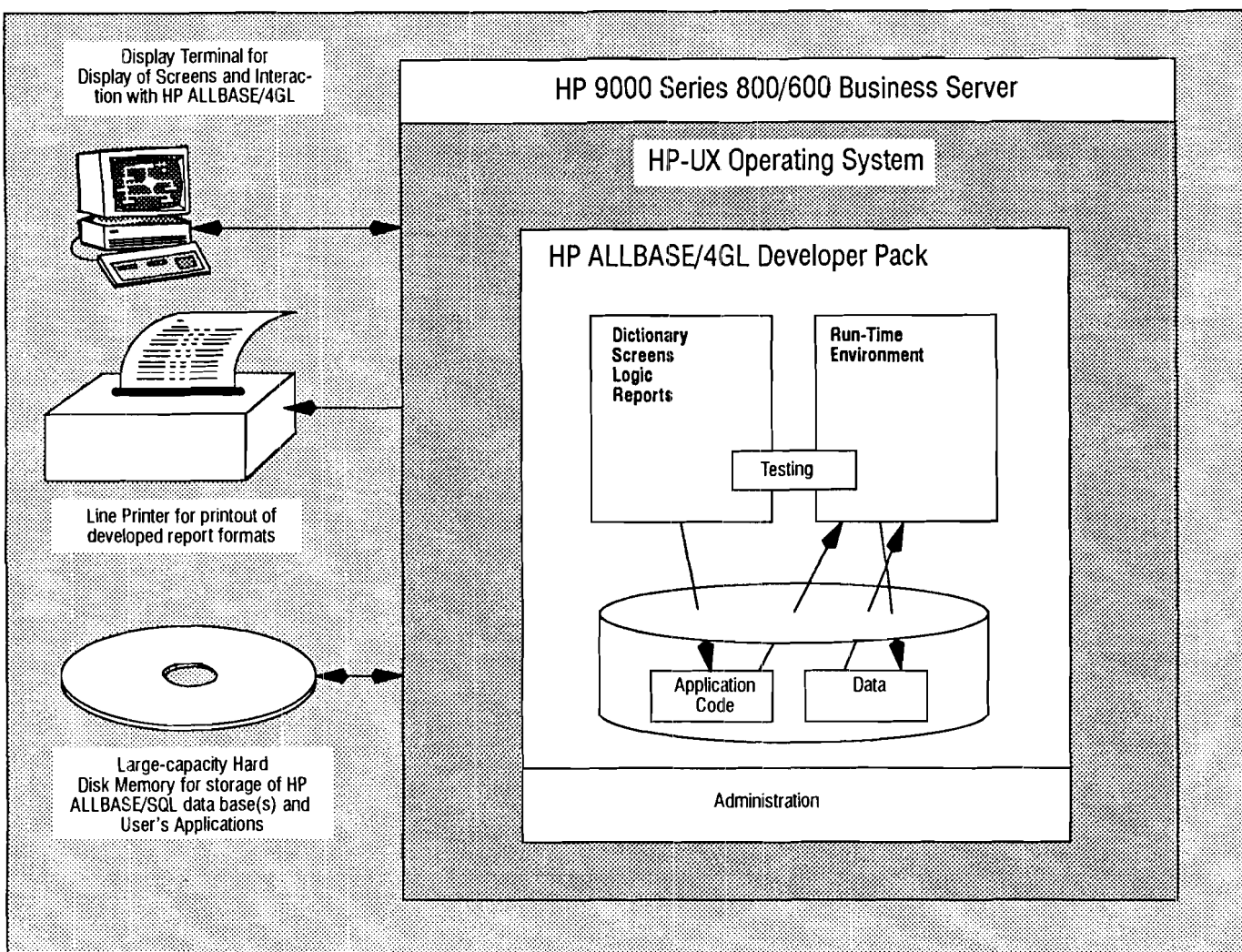


Figure 119. HP ALLBASE/4GL in HP 9000 Series 800/600 Business Servers

Conventional Program Development

The basic requirements for conventional program development are illustrated in Figure 120, below, which also generally outlines the conventional program development process.

Step 1 - Entry of Program Code

A terminal other than the system console is required by each concurrent user for calling up the appropriate program development software from the disk and for entry, or commanding the entry of the source program, which is accomplished via an editor (for instance vi).

Step 2 - Compilation of the Program

Upon entry or completion of the source/program, the user must invoke a compiler, assembler or interpreter, using the source program as input, to provide an object file which is then linked to produce an executable program in object (machine) code form. The compilation process often involves printout of a hard copy program listing, which requires some type of system printer, preferably a fast line printer to conserve programmer's time.

Step 3 - Loading and Test Execution

The object program output of the compiler must be tested. If it functions as intended by the programmer, the program development process can skip directly to Step 5, routinely executing the program. Otherwise development must continue with Step 4.

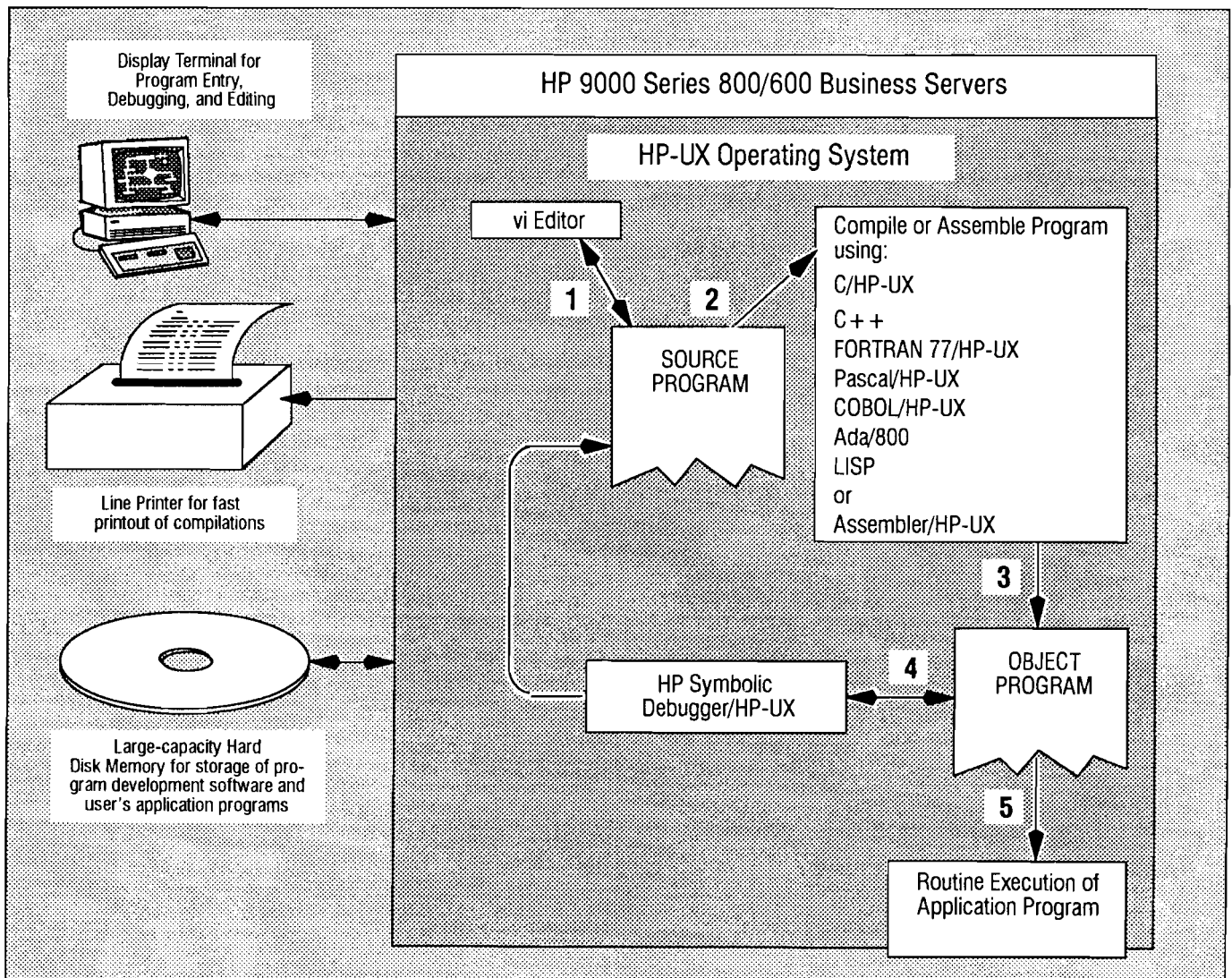


Figure 120. Conventional Program Development in HP 9000 Series 800/600 Business Servers

Step 4 – Debugging of the Program

Program defects need to be isolated and corrected, a process that is aided by the Symbolic Debugger/HP-UX. Symbolic Debugger/HP-UX is window-oriented and can support multiple panes for viewing source statements and assembly instructions at the same time. It provides controlled execution that facilitates program fault isolation. With corrections made to the source code, it can be recompiled and retested. Symbolic Debugger/HP-UX provides complete support for programs written in C, C++, FORTRAN, Pascal, and Assembly Language.

Step 5 – Routine Execution

After debugging and compilation of an error-free program, the program development process ends with routine execution of a successful application program.

C++ Program Development

For program development in C++, the C++ Developer is a powerful class browsing and construction tool that provides graphical editing, viewing, and construction of classes and class hierarchies in a C++ software system.

HP SoftBench

Conventional program development under HP-UX is greatly facilitated in the HP SoftBench window-oriented program development environment for C, FORTRAN, and PASCAL. HP SoftBench provides these integrated program development tools:

- Program Editor, an easy-to-use, window-based, language-sensitive editor.

- Program Builder for coordination of compilations of source files.
- Program Debugger, based on the Symbolic Debugger/HP-UX, with a mouse/menu interface added.
- Static Analyzer for determining program structure cross reference information, which facilitates maintenance and re-use of program code.
- Development Manager for all files related to a software project, including version control.
- Mail for easy communication among members of the development team.

HP SoftBench integrates these tools and the compilers they use. It also provides distributed computing services, communication among the tools, OSF/Motif™ appearance and behavior across all tools, and an integrated on-line help facility.

As a separate product, C++/SoftBench is also available. C++/SoftBench includes HP C++, C++ Developer, and HP SoftBench with full support for C++.

Ada software developers can benefit greatly from Ada/SoftBench. Ada/SoftBench is a window-based Ada program development environment built on top of HP SoftBench. (HP SoftBench & HP Ada must be ordered separately.)

HP Encapsulator

HP Encapsulator affords users the means of extending and customizing the HP SoftBench environment. HP Encapsulator establishes communication between the standard HP SoftBench tools and user-added tools. Tools with a command-line interface can be added to SoftBench with no changes to source code.



Application Development, continued

The Application Development Products

Application Development Product Model	For HP 9000 Number	Use Product
HP ALLBASE/4GL Developer Pack	807S/815S/817S/822S/827S/837S 825S/832S/635SV 835S/SE/645SV/842S 840S/845S/SE/852S/847S/857S 850S/855S/860S/865S 870S	92646A 30663A 35305A 92440A 35307A 30664A
HP ALLBASE/4GL Developer Pack and HP ALLBASE/HP-UX	807S/815S/817S/822S/827S/837S 825S/832S/635SV 835S/SE/645SV/842S 840S/845S/SE/852S/847S/857S 850S/855S/860S/865S 870S	92632A 30672A 36362A 30697A 35361A 30673A
C/ANSIC*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2412A
FORTRAN 77/HP-UX*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2409A
Pascal/HP-UX*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2415A
COBOL/HP-UX Developer Pack: includes COBOL/HP-UX compiler, Animator Debugging tool, Forms-2 screen generator*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2433A
COBOL/HP-UX compiler*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2434A
COBOL/HP-UX Run-time System*	807S**/817S 815S/822S/827S/837S 825S/832S/635SV/847S 857S/835S/SE/645SV 842S/840S/845S/SE 852S/850S/855S/860S 865S/870S	B2435A

*Requires options with this product number. Refer to HP 9000 Series 800 Price Guide (P/N 5091-0310EUS) for details.

**Recommend a minimum configuration of 16 Mbytes of memory.

The Application Development Products

Application Development Product Model	For HP 9000 Number	Use Product
Ada/800 Development System License to Use		92610A** (not available on tier 1)
Ada/800 Development System Media/Documentation		92609A** (not available on tier 1)
Ada/800 Bindings License to use		92605L** (not available on tier 1)
Ada/800 Bindings Media/Manuals		92605A** (not available on tier 1)
Ada/SoftBench License to use		92670L** (not available on tier 1)
Ada/SoftBench Media & Manuals		92670A (not available on tier 1)
LISP Development System		Common Lisp is now available directly from Lucid, Inc. In California contact Lucid at 800-225-1386; elsewhere, contact Lucid at 800-843-4204, 415-329-8400 or by fax at 415-329-8480.
LISP Application Environment		
C++ Compiler License to use		B2404A (on all tiers)
C++ Compiler Media and Manuals		B2405A (on all tiers)
C++ Developer License		B1696A (on all tiers)
C++ Developer Media and Manuals		B1697A (on all tiers)
C++ Softbench		B2619A (on all tiers)
C++ Softbench Media/Manuals		B2619AJ (on all tiers)
SoftBench*	815S/822S 825S/832S/635SV 835S/SE 840S/845S/SE 850S/855S/860S/865S	B2602A B2602AJ
Encapsulator*	808S 815S 825S/832S/635SV 835S/SE/645SV 840S/845S/SE 850S/855S 870S	B2608A B2608AJ

*Requires options with this product number. Refer to HP 9000 Series 800 Price Guide (P/N 5091-0310EUS) for details.

**These products currently are only supported on 7.0 operating system.

HP Software Integration Sockets

HP Software Integration Sockets (HP Sockets) is a software tool which allows a user to integrate new or existing applications in a network of heterogeneous computers. HP Sockets provides flexible data transfer, transformation, manipulation, and process control. You can use HP Sockets to connect applications on the same computer or on different computers across a LAN.

Features

- Comprehensive program-to-program communication capabilities.
- High performance data translation, manipulation, and record reformatting.
- Programmatic process start and stop, for local and remote processes.
- Administration capabilities.
- Interface development and debugging aids.

Functional Description

Figure 121 shows an example configuration for an HP Sockets domain consisting of two computers, both HP 9000s and three applications. The application adaptor is the interface between applications and HP Sockets. Adaptors are programs created with a library of routines provided by HP Sockets. It is either a separate program (Adaptors A and B in Figure 121) or a set of routines linked into the application (Application C).

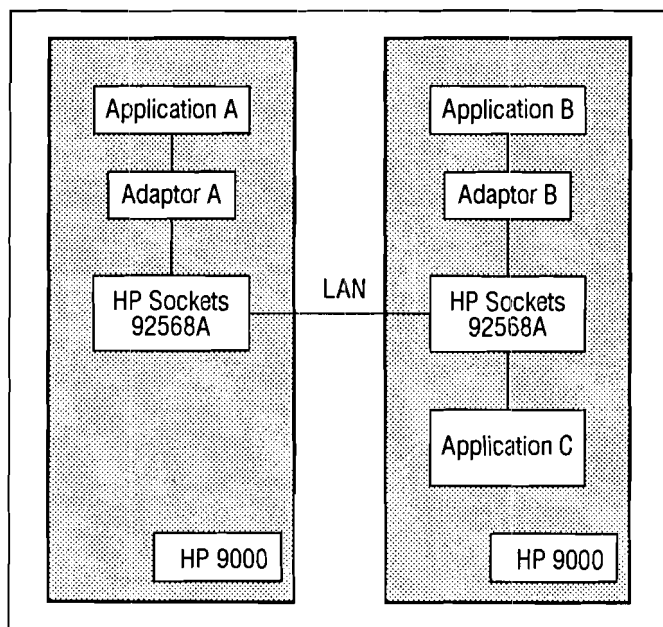


Figure 121. HP Sockets Architecture

The components of HP Sockets and how it interfaces to user-provided applications and the network services is shown in Figure 122.

The process of integrating applications using HP Sockets can be broken down into five activities: Functional Requirements Analysis, Data Flow Analysis, Configuration, Adaptor Code Development, and Testing.

The first two activities consist of defining your interfacing needs and analyzing the flow of data between the applications. These activities are usually done first, before using HP Sockets.

Configuration means describing the applications, network, processes, files, links, and manipulations to HP Sockets.

Adaptor Code Development consists of creating an application adaptor for each application program that uses HP Sockets to transfer data.

Finally, the testing of adaptors and links is done using HP Sockets' interactive Command Processor.

Required Products

- HP 9000 Series 800, Series 400 or Series 300 running HP-UX 7.0 or later version.
- A C compiler must be installed on at least one S800 to serve all S800s in the domain and on one S300/400.
- 36967A LAN for Series 800
- 7 Mbyte disk space for /usr on each node
- 8 Mbyte main memory on each node (will run slower with less)

Installation Policy

HP Sockets is customer-installable. Full installation instructions are included in the HP Sockets installation guide. If required, hardware and software installation can be provided by HP on a time and materials basis. Additional support services for interface planning and design are available for customer purchase.

Ordering Information

92568A HP Sockets option UAU license to use on one HP 9000.

Media Options:

AA0 1/4-inch tape cartridge

AA1 1/2-inch 1600 bpi tape

AAH DDS/DAT tape cartridge

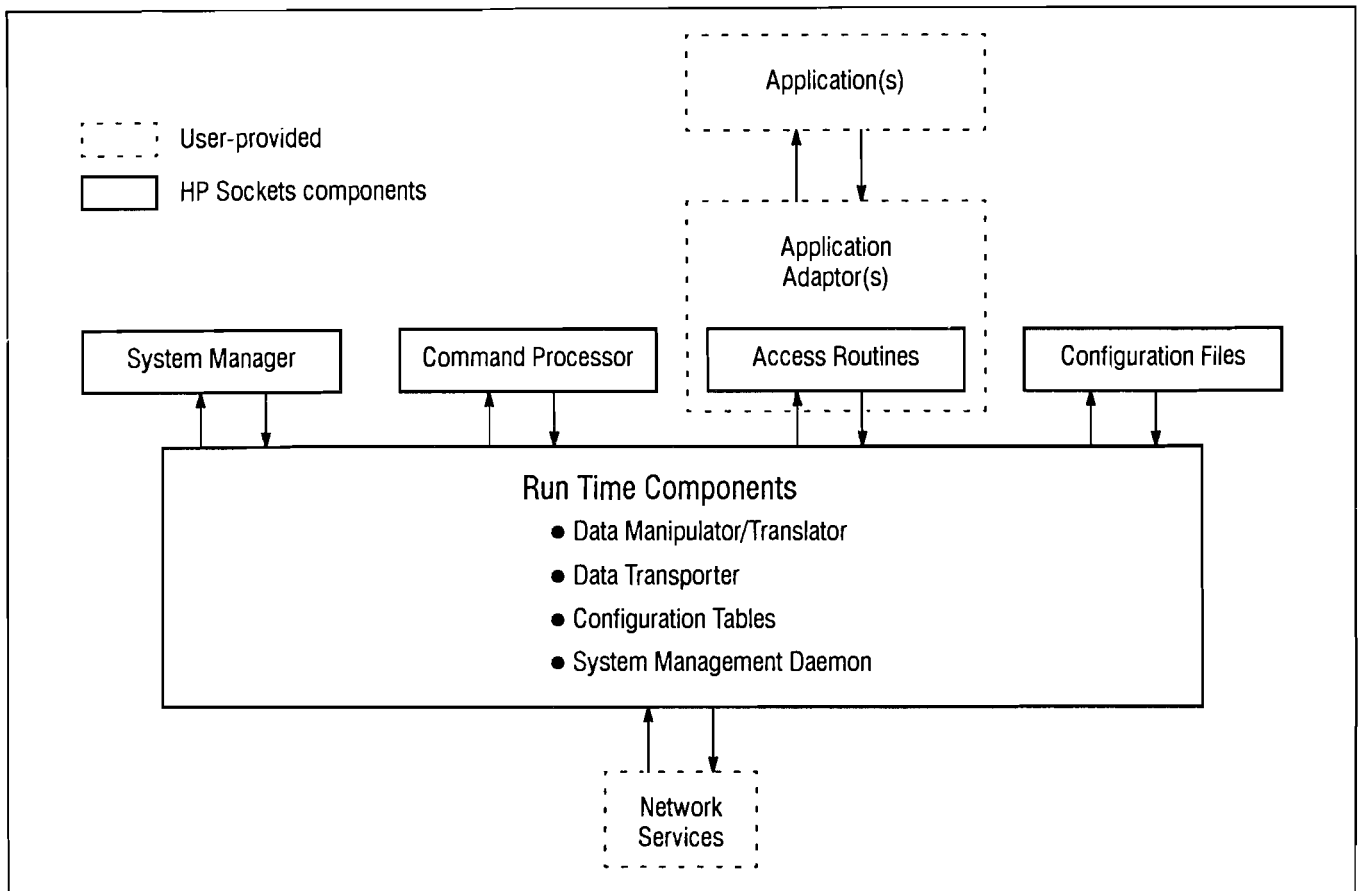


Figure 122. HP Sockets Components

Documentation

- 92568-90001** HP Sockets Programmer Manual
- 92568-90002** HP Sockets System Administrator Manual
- 92568-90003** HP Sockets Self-Paced Tutorial
- 92568-90004** HP Sockets Installation Guide

Programmatic Interface

This is a listing of the HP Sockets Access Routine Library which is used to create data access capabilities. The routines in this library can be linked into applications or used to create separate adaptor processes.

SpInit Initiate communication between HP Sockets and a calling process

SpEnd End communication and clean up resources allocated for the calling process

SpStartProcess Start an HP Sockets-configured user process

SpStopProcess Stop an HP Sockets-configured user process

SpErrLog Log a user error message in HP Socket's error logfile

SpError Retrieve ASCII messages corresponding to an HP Sockets error code

SpSendMsg Send a message to a local or remote process

SpSendFile Copy a file to a destination file on a local or remote node

SpControl Control the HP Sockets access routine options (such as timeout or message notification), available to the calling process

SpReadQ Read messages from the incoming message queue

SpFlush Flush pending requests and clear the timeout list

SpDelGuaranteedMsg Remove a guaranteed message from the guaranteed message spool file

Applications Migration

Applications Migration Packages

Customers with HP 1000 or DEC VAX/VMS Computer Systems are offered products that are designed to facilitate migration to HP 9000 Series 800/600 Systems, as shown in Figure 123, below.

The Applications Migration Products

Applications Migration Product	Use Product Number
PORT/RX Toolset	92562A
PORT/RX Manual Set	92561K
PORT/VX Migration Product	50729A
PORT/VX Migration Toolset	50730A

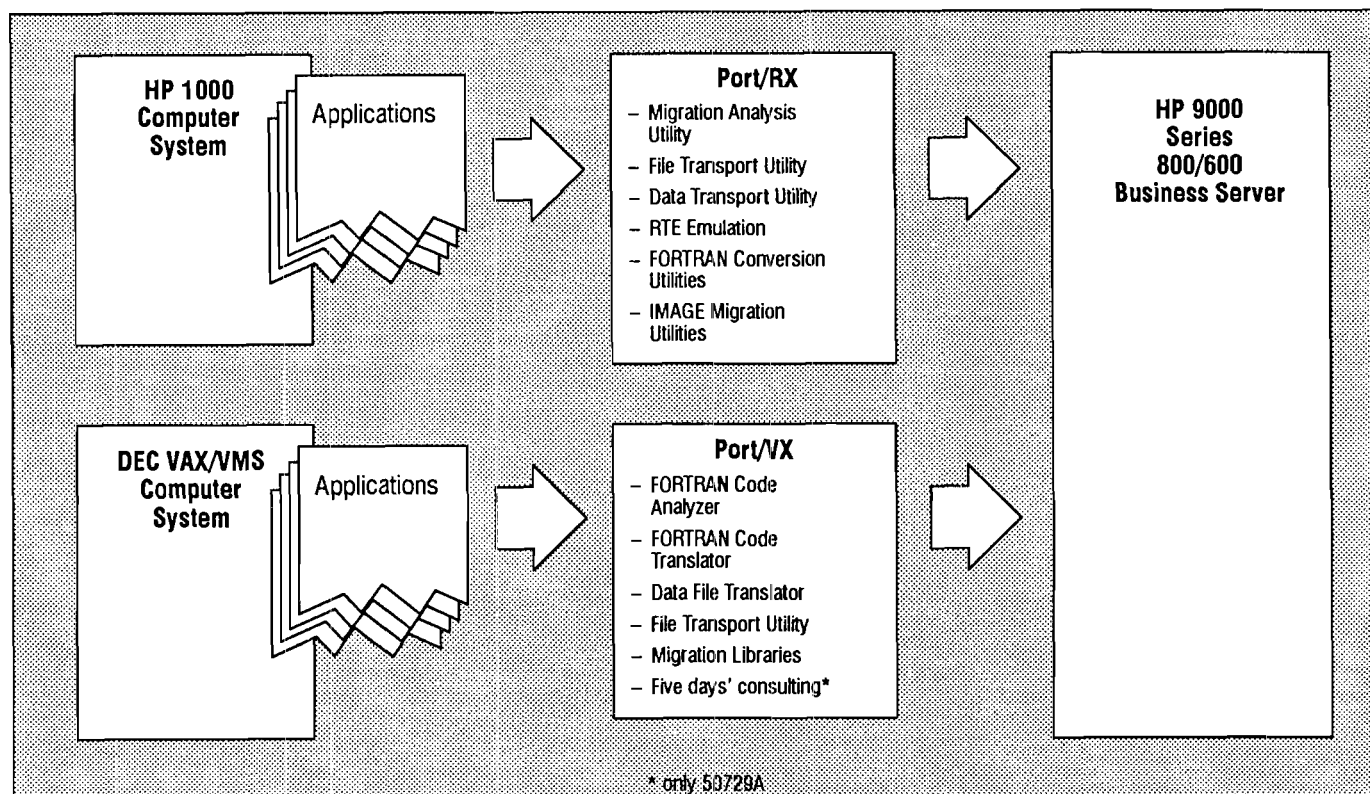


Figure 123. Applications Migration from HP 1000 and DEC VAX/VMS Systems to HP 9000 Series 800/600 Business Servers

Model 815S/825S/835S/835SE/ 845S/845SE/635SV/645SV Racking Information

Rack-Mounting Information

Computers, extenders, disks, tape units, and other equipment available for HP 9000 Model 815S, 825S, 835S, 835SE, 635SV/645SV and 845S/SE Systems are

installable in Design Plus rack cabinets as summarized in Table 34, below. Figure 124 through Figure 127, next pages, shows how the rack mounted Model 815S, 825S, 835S, 835SE and 845S/SE SPUs, and the Model 635SV/645SV servers fit physically into HP 92211R and A1001A Cabinets.

Table 34. HP 9000 Model 815S/825S/835S/835SE/635SV/845S/845SE/645SV Systems Equipment Rack Mounting Information Summary

RACK-MOUNTING EQUIPMENT				RACK-MOUNTING INFORMATION		
Product No. and Name	Vertical Space Required	Max. Power (Watts)	Internal Air Flow Direction	Cabinet Product Number	Vertical Panel Space Available in the Cabinet	Rack Adapter or Adaptation Required
HP A1410A MODEL 815S SPU	31.1 cm (12.25 in.)	400	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
HP A1004A MODEL 825S SPU	23.4 cm (9.2 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	97099A*
HP A1013A I/O EXPANDER (and CIO Channel Adapter)	23.4 cm (9.2 in.)	None	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	97099A*
HP A1035A MODEL 835S SPU	23.4 cm (9.2 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	A1035A OPT 1A4 or 97099A*
HP A1040A MODEL 835SE SPU	46.8 cm (18.4 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	A1040A OPT 1A4 & 004 or 97099A*
HP A1608A MODEL 845S	23.4 cm (9.2 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	A1608A OPT 1A4 or 97099A
HP A1609A MODEL 845SE	46.8 cm (18.4 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S
				A1001A	SEE Figure 127	A1609A OPT 1A4 & 004 or 97099A
HP A1620A MODEL 635SV	23.4 cm (9.2 in.)	600	Front-to-rear	92211L	52 cm (20.47 in.)	None
				92211R	57.2 cm (22.5 in.)	92211S
HP A1607A MODEL 645SV	23.4 cm (9.2 in.)	600	Front-to-rear	92211L	52 cm (20.4 in.)	None
				92211R	57.2 cm (22.4 in.)	92211S

* If racked SPU includes BBU, order rail kit number A1019A in addition to 97099A.
97099A is the racking kit for SPUs and expanders.

Racking Information, continued

RACK-MOUNTING EQUIPMENT				RACK-MOUNTING INFORMATION		
Product No. and Name	Vertical Space Required	Max. Power (Watts)	Internal Air Flow Direction	Cabinet Product Number	Vertical Panel Space Available in the Cabinet	Rack Adapter or Adaptation Required
HP 35401A CARTRIDGE AUTOCHANGER TAPE SUBSYSTEM	26.7 cm (10.5 in.)	125	Front-to-rear	92211L	52 cm (20.47 in.)	None
				92211R	57.2 cm (22.5 in.)	92211S
				19511A	53.4 cm (21 in.)	None
HP 7957A* or 7958A* FIXED DISK	13.3 cm (5.25 in.)	85	Front-to-rear	92211L	52 cm (20.47 in.)	None
				92211R	57.2 cm (22.5 in.)	92211S
HP 7957B, 7958B WINCHESTER DISK	13.3 cm (5.25 in.)	85	Front-to-rear	92211L	52 cm (20.47 in.)	None
				92211R	57.2 cm (22.5 in.)	92211S
C2203A, C2201A, or C2204A WINCHESTER DISK	13.3 cm (5.25 in.)	85	Front-to-rear	A1001A	1.6 m	35199C
				92211R	57.2 cm (22.5 in.)	92211S
HP 9262B or 9263B, REMOVABLE DISK	13.3 cm (5.25 in.)	85	Front-to-rear	92211R	57.2 cm (22.5 in.)	92211S
HP 7979A Autoloading MAG TAPE UNIT	Includes cabinet	N/A	N/A	Includes cabinet	N/A	None
HP 7980A/XC Autoloading MAG TAPE UNIT	Includes cabinet	N/A	N/A	Includes cabinet	N/A	None
HP 9144A/9145A TAPE CARTRIDGE SUBSYSTEM	13.3 cm (5.25 in.)	100	Front-to-rear	92211L	52 cm (20.47 in.)	None
				92211R	57.2 cm (22.5 in.)	92211S

Model 815S/825S/835S/835SE/845S/845SE/635SV/645SV
Racking Information, continued

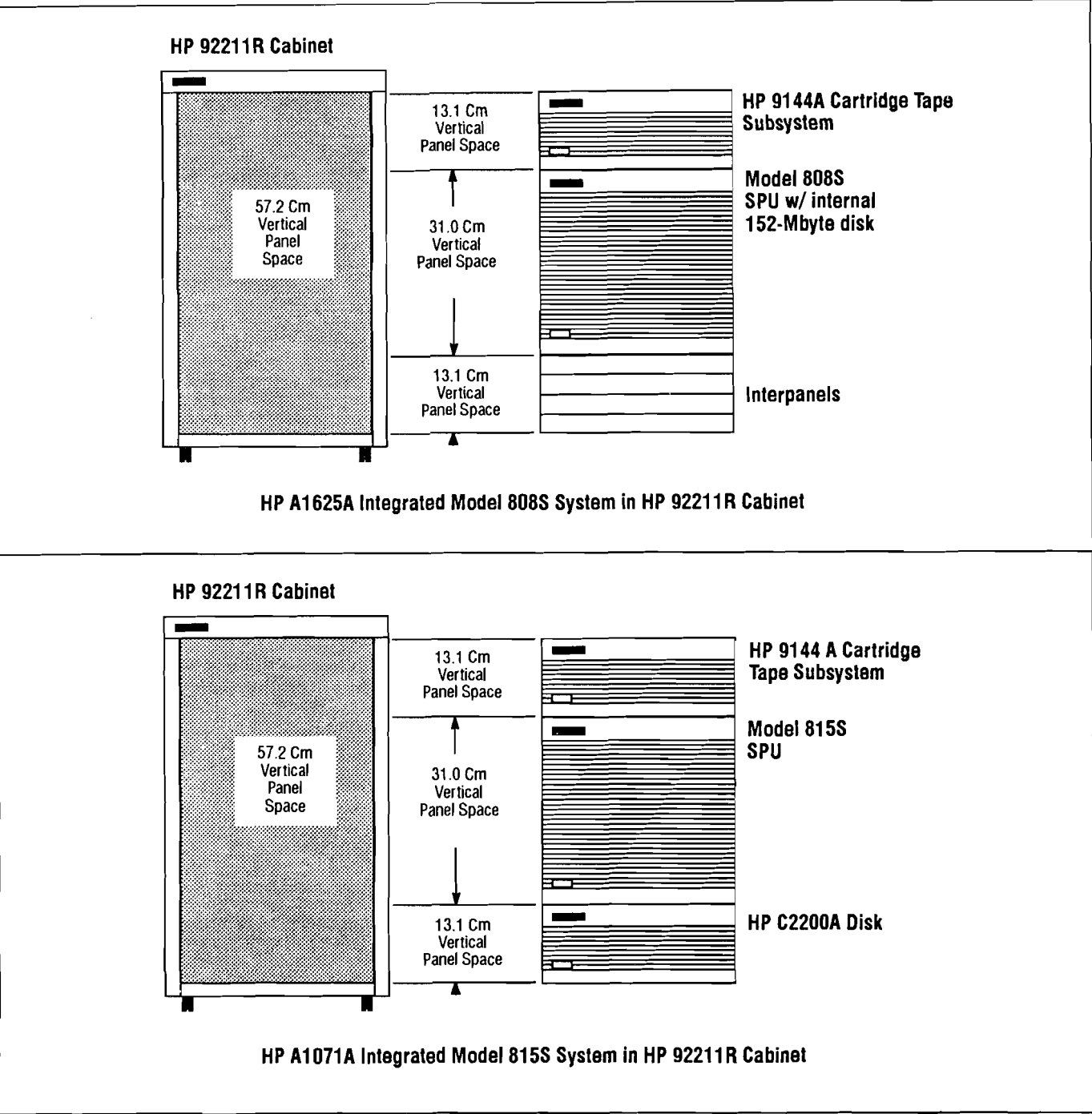


Figure 124. HP 9000 Model 808S/815S System Processor Unit Racking in 92211R Cabinet

Racking Information, continued

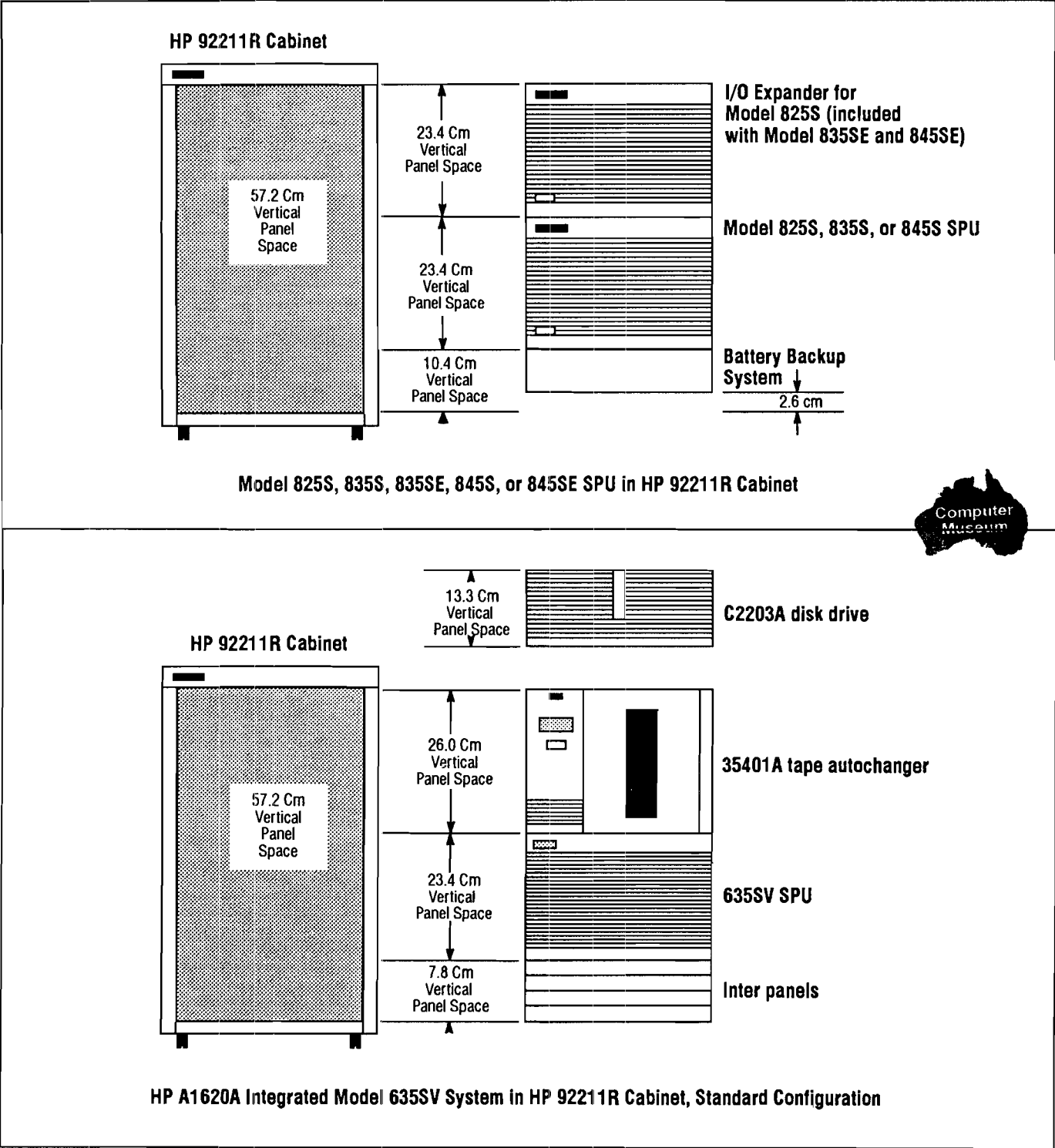


Figure 125. HP 9000 Model 825S/835S/835SE/845S/845SE/635SV System Processor Unit Racking in 92211R Cabinet

Racking Information, continued

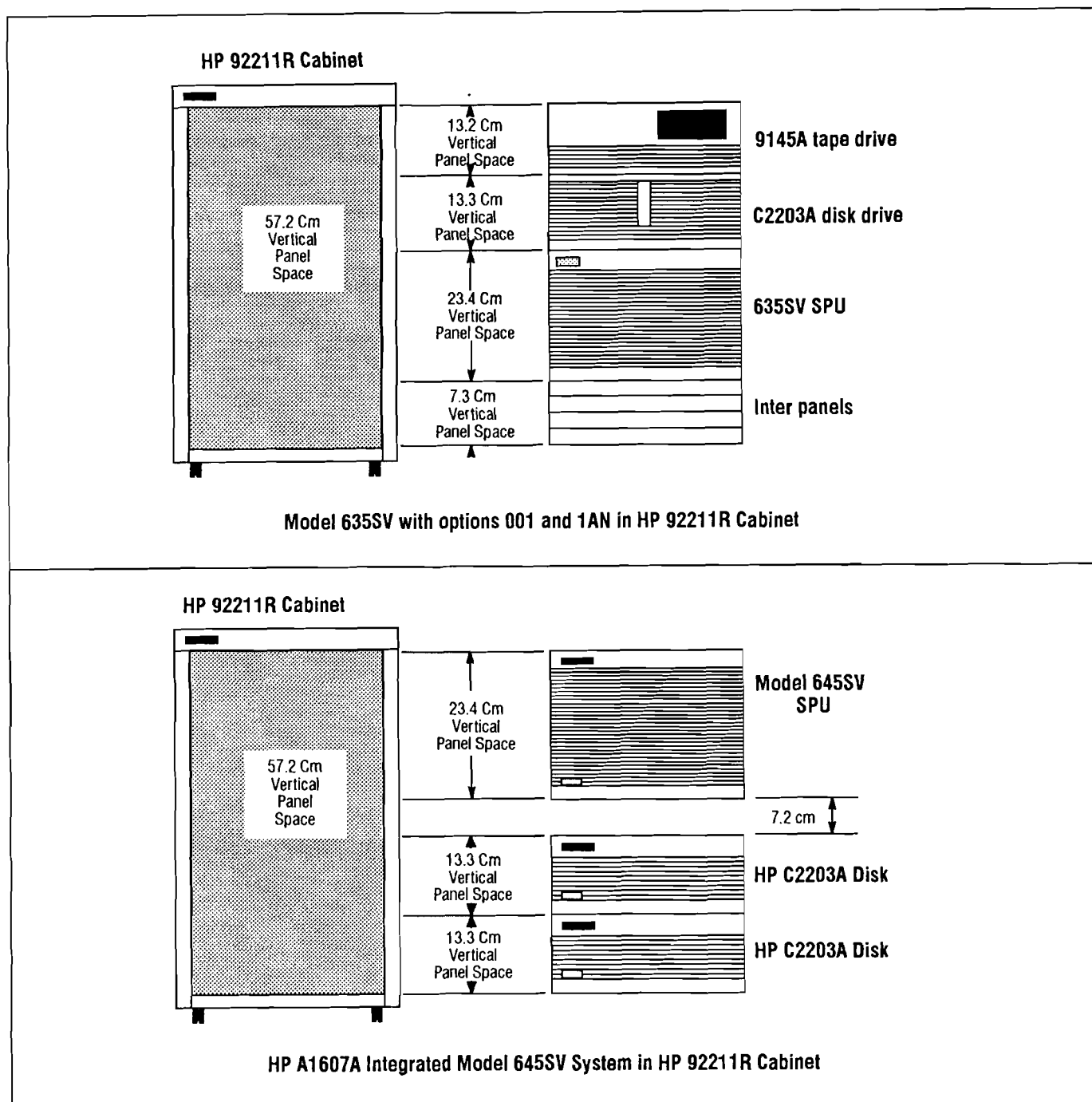


Figure 126. HP 9000 Model 635SV (with options) and 645SV System Processor Unit Racking in 92211R Cabinet

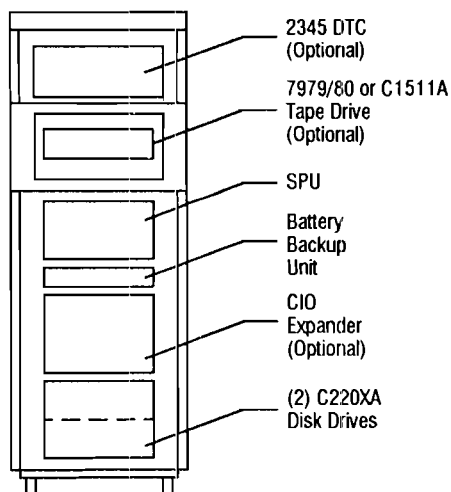
Racking Information, continued

Cabinet Configurations

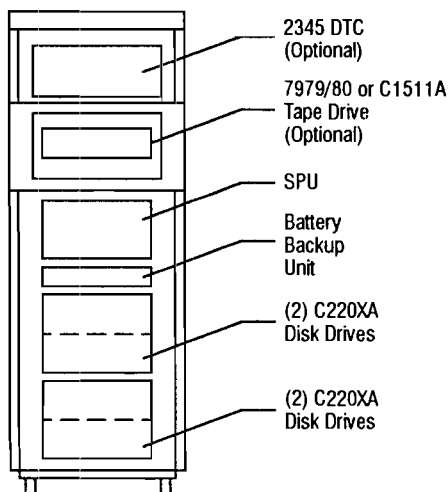
The system can be housed in a mini-rack HP 92211R Cabinet or a 1.6 meter, rack-mount HP A1001A Cabinet. Various configurations are available for each cabinet, as shown in Figure 127. Some units are standard; others are optional. Note that the HP 7936/7937 Disk Drive is always installed on the bottom of the HP A1001A Cabinet for stability.

net, as shown in Figure 127. Some units are standard; others are optional. Note that the HP 7936/7937 Disk Drive is always installed on the bottom of the HP A1001A Cabinet for stability.

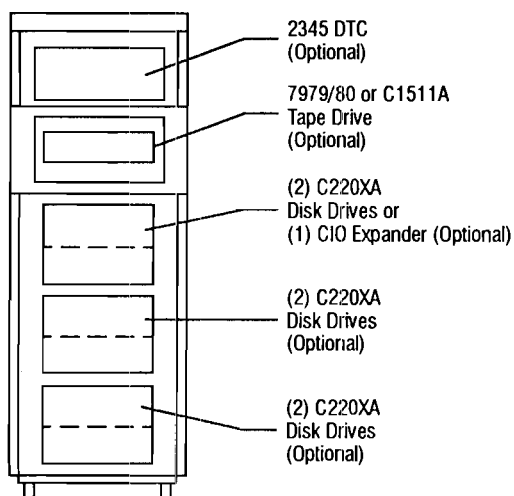
Configuration 1



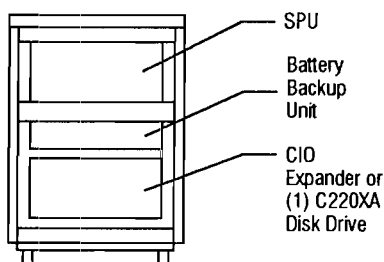
Configuration 2



Configuration 3
(Peripherals Only)



SPU in
HP 92211R Cabinet



Front View

Figure 127. Cabinet Configurations for Series 8X5S Family Computers



Racking Information, continued

Active Distribution Panel (ADP) Rack Installation

This section explains how to install the ADP Installation Kit. Three versions of the ADP installation kit are available depending on which cabinet you intend to use.

ADP Installation Kit	Cabinet
HP D2350A	The HP 46298B or an EIA 19-inch x 1 meter cabinet allows you to install up to 20 ADPs.
	The HP 46298C or an EIA 19-inch x 1.6 meter cabinet allow you to install up to 40 ADPs, however, you will need to order two D2350 ADP Installation Kits.
HP D2351A	For the HP 46298C or an EIA 19-inch x 1.6 meter cabinet. Allows you to install up to 10 ADPs with your computer system.
HP D2352A	For HP 92211R Mini Rack. Allows you to install up to 4 ADPs with your computer system.

Tools Required

To install the ADP Rack Installation kit you will need to have the following tools:

- Size 2 cross-head screwdriver.
- Size 2, (1/8") flat-blade screwdriver.
- Size M3 wrench.
- Linear millimeter rule.

Use the D2350A to mount up to 20 ADPs into a standard EIA 19 inch x 1.0 meter cabinet, such as the HP 46298B. If you have a standard EIA 19 inch x 1.6 meter cabinet, such as the HP 46298C, you can install up to 40 ADPs using two D2350 ADP installation kits.

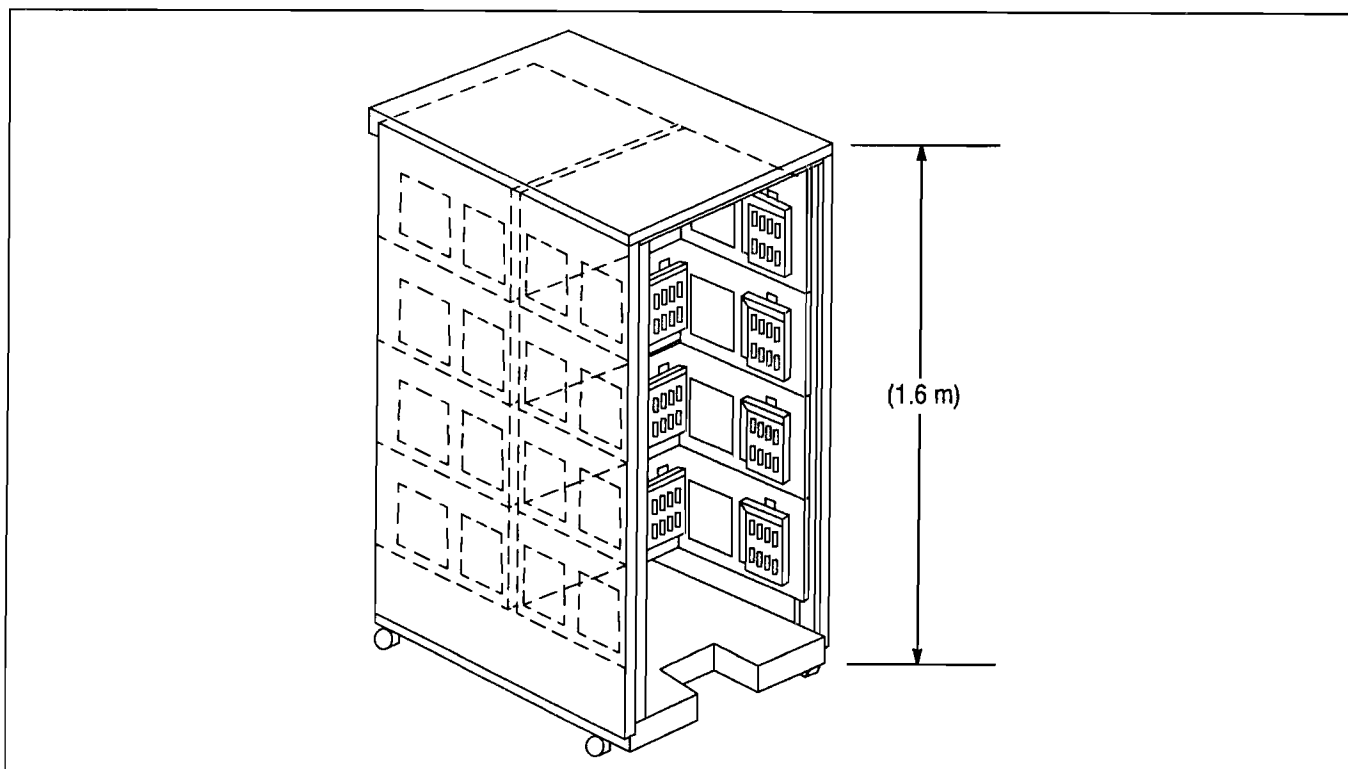
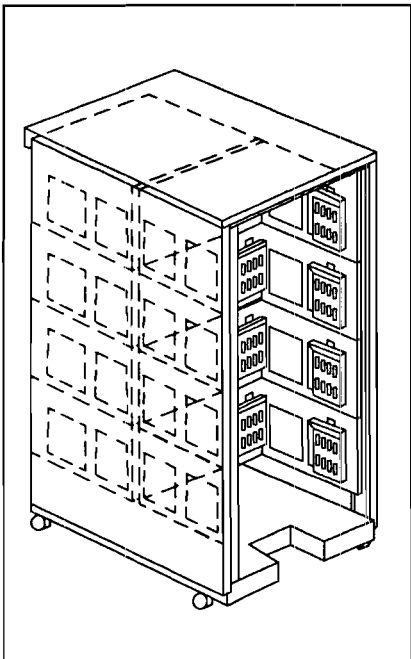
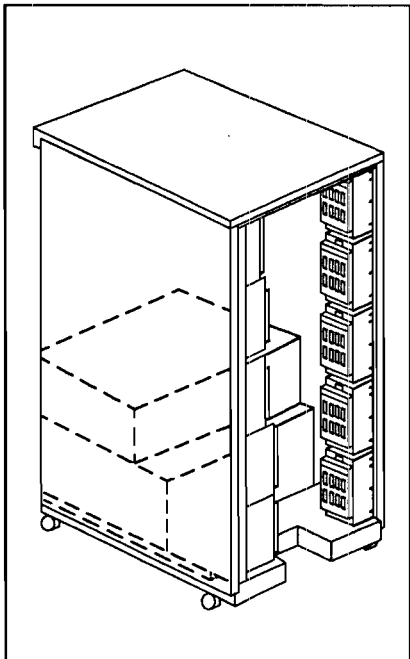


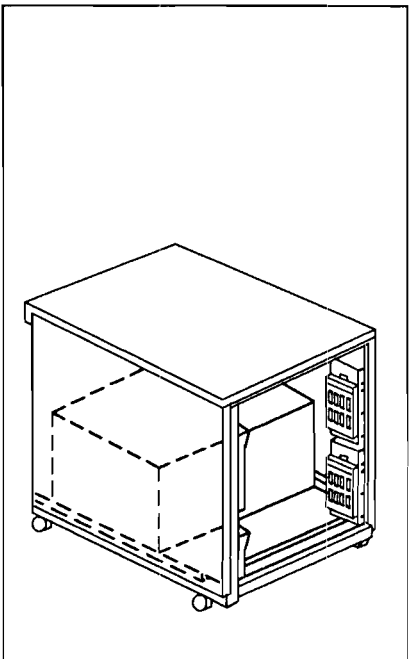
Figure 128. HP 46298C Cabinet with 40 ADPs



D2350A



D2351A



D2352A

Figure 129. Active Distribution Panel (ADP) Installation Kits

Terminology

Access Port

The Access Port supports diagnostics, monitoring, and management of the system. It is not available with the Models 808S, 815S, 822S, 832S, 842S and 852S. It is included with the Models 850S, 855S, 860S, 865S and 870S systems, but must be ordered separately for Models 825S, 835S, 835SE, 845S, 845SE and 635SV/645SV. The Access Port resides in a dedicated CIO slot and contains self-test firmware, access port firmware, and a connection to the 6-channel multiplexer. Two multiplexer channels are used for the local system console and a remote console. Channel zero is the default for the local system console, but control can be transferred to other channels, including the remote channel. Both the local and remote consoles display the same information. The access port will be connected via the 8-channel MUX card on 8X2S Business Servers as of HP-UX 8.0.

Bus Hierarchy

HP 9000 Models 825S, 835S/SE, 845S/SE, and 635SV/645SV use a two-tier I/O bus structure (CTB-CIO). Models 850S, 855S, 860S, 865S, and 870S systems use a three-tier I/O bus structure (SMB-CTB-CIO). The buses on the various levels are used for different purposes requiring different bus speeds. For example, on the 825S the Central Bus (CTB) used for data transfer between the CPU and memory requires a higher speed than the Channel I/O (CIO) Bus, which is used for connecting peripheral devices. Internal interfaces for timing and bus protocol management are used to connect buses with different speeds. The interface between CTB and CIO is called the CIO Channel Adapter, and the interface between the System Memory Bus (SMB) and CTB in the Models 850S, 855S, and 870S systems is called the Bus Converter. Bus hierarchy is not used in the Models 808S, 815S, 822S, 832S, 842S or 852S. See the HP Precision Bus discussion later in this section.

Business Server

HP 9000 Series 800 systems are now being called Business Servers. The name recognizes the HP 9000 Series 800 is well positioned as either a server or a traditional multiuser system. By calling them Business Servers, HP is also stressing the fact that the HP 9000 Series 800 products provide outstanding business computer solutions for customers. Refer to the December 1990 Sales Guide (P/N 5091-0318E) for a more detailed description of Business Servers.

Channel Adapter

In Model 825S, 835S, 845S, 850S, 855S, 860S, 865S, 870S and 635SV/645SV SPU's, the Channel Adapter (CA) provides the interface between the Central System Bus (CTB) and the Channel I/O (CIO) Bus. It synchronizes the different speeds and bandwidths of the CTB and CIO buses. The CA also manages DMA transfers between CIO interfaces to the associated peripherals and main memory. Thus, large blocks of data can be transferred to and from main memory with minimal CPU intervention, reducing CPU overhead.

Channel I/O (CIO) Buffer Card

In Model 825S, 835S, 845S, 850S, 855S, 860S, 865S, 870S and 635SV/645SV SPU's, the CIO buffer card drives CIO signals from the Channel Adapter and the CIO backplane. Together, the Channel Adapter and the CIO buffer card effectively function as one unit. The buffer card is capable of fanning out CIO bus signals from the Channel Adapter to a maximum of 16 interface cards. On VLSI Channel Adapters, only a maximum of eight slots is supported. There is one CIO buffer card for each Channel Adapter.

Channel I/O (CIO) Bus

HP 9000 Models 825S, 835S, 845S, 850S, 855S, 860S, 865S, 870S and 635SV/645SV use a common, general-purpose Channel I/O (CIO) Bus. This 16-bit I/O bus is used to connect most peripheral devices and data communication cards. The typical maximum transfer rate through the CIO Channel Adapter is 5 Mbytes per second.

Channel I/O Device Adapters (Interface Cards)

Device adapters, also known as interface cards, provide an interface between peripheral devices, such as terminals, disk drives, and printers, and the CIO bus.

Central Bus (CTB)

In Models 825S, 835S, 845S, 850S, 855S, 860S, 865S, 870S and Models 635SV/645SV, the Central Bus (CTB) is the communication path between the CPU, the main memory modules, and the Channel I/O Adapter. The CTB provides a 32-bit wide data path. Display Controller, Animation, SNA Link, X.25 Link, and OSI Express MAP 3.0 Link interfaces also connect to the CTB.

ECC Main Memory

Each HP 9000 Series 800/600 Business Server includes 8, 24, 32, 64 or 96 Mbytes of ECC memory, expandable in different increments. (For information, see the *SPUs-at-a-Glance* section on pages 2 through 5.) The memory subsystem uses either 256 Kbit or 1 Mbit dynamic RAMs. The ECC capability corrects single-bit errors and detects multi-bit errors. Main memory is supported by battery backup such that if power is lost and restored within 15 minutes, the operating system is automatically restarted and processing can resume without data loss. Battery backup is optional on Models 808S, 815S, 825S, 835S, 845S, 635SV, 845S, and 645SV.

HP-IB Interface

The Hewlett-Packard Interface Bus (HP-IB) is HP's implementation of IEEE Standard 488-1978 and identical ANSI standard MC1.1. The term "HP-IB" is also used to identify HP instruments conforming to this standard. The HP-IB interface is used to connect HP-IB devices, such as disks, printers, plotters, and magnetic tape units to HP 9000 Series 800/600 systems.

HP Precision Bus (HP-PB)

Hewlett Packard Precision Bus is the I/O bus for the following systems:

807S	817S	832S	847S
808S	822S	827S	852S
815S	827S	842S	857S

HP-PB Interfaces

HP-PB interfaces are interfaces designed to function in the Model 807S, 808S, 815S, 817S, 822S, 827S, 832S, 837S, 842S, 847S, 852S, and 857S computers.

Multiplexer

The Multiplexer provides multiple asynchronous ports with full duplex control capability for connection of terminals or other RS-232C devices to HP 9000 Series 800/600 systems. The multiplexer supports direct or remote (via modem) connection of terminals, printers, plotters, and other asynchronous devices. It also supports peripherals using the RS-422 or RS-423 standard as their electrical interface for long distance connection.

Parallel Card

The Parallel Asynchronous FIFO (CIO) Interface is designed to provide 8 or 16-bit parallel communications between external instruments and HP 9000 Model 825S, 835S, 845S, 850S, 855S, 860S, 865S, 870S, and Models 635SV/645SV systems. The same function is performed by the General-Purpose I/O card in the Models 808S, 815S, 822S, 832S, 842S, and 852S.

System Processor Unit (SPU)

The System Processor Unit (SPU) is a package, consisting of the computer, interfaces, and the HP-UX operating system, to which are added the peripheral devices needed to complete the HP 9000 Series 800/600 system to meet its targeted application requirements, which usually involve multiple users or server support of multiple systems.

807S/817S/827S/837S/847S/857S Configuration Flowchart

I. Select A System

MODEL	807S	817S	827S	837S	847S	857S
MEMORY	8 Mb	16 Mb	16 Mb	16 Mb	32 Mb	64 Mb
DISK	234 Mb	328 Mb	328 Mb	328 Mb	677 Mb	677 Mb
1.3 Gb DDS TAPE	std	std	std	std	std	std
PORTS	8	8	8	8	8	8
SCSI I/F	std	std	std	std	std	std
802.3 LAN	Optional	std	std	std	std	std
700/92 CONSOLE	std	std	std	std	std	std
SLOTS	2	2	6	2	6	12
SLOTS AVAILABLE	2	1	5	1	5	11

PRICE

I/O Slots
Available

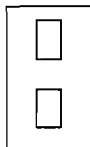
MODEL #	PRODUCT #	PRICE
Model 807S	A1751A	\$ _____
Model 817S	A1703A	\$ _____
Model 827S	A1765A	\$ _____
Model 837S	A1704A	\$ _____
Model 847S	A1766A	\$ _____
Model 857S	A1706A	\$ _____

\$ _____

Choose a system, note the number of slots available in the Summary on page 257.

II. Additional Memory

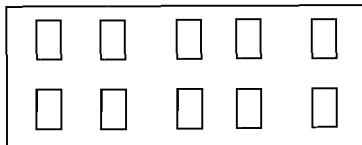
Memory Expansion Module



807S

Maximum Memory = 64 Mb

Memory Expansion Module



817S, 837S
827S, 847S
857S

Maximum Memory = 192 Mb

Notes:

1. 32 Mb ECC Modules are required to reach maximum memory.
2. Memory does not occupy HP-PB slots.
3. Each ECC Module occupies two slots in the above memory diagram.
4. First ECC Module is on processor board.

Model	Description	Option #	Price
807S	Go to 16 Mb	501	
	Go to 24 Mb	502	
	Go to 32 Mb	503	
817S & 837S	Go to 24 Mb	502	
	Go to 32 Mb	503	
	Go to 48 Mb	505	
	Go to 64 Mb	506	
827S	Go to 24 Mb	502	
	Go to 32 Mb	503	
	Go to 48 Mb	505	
	Go to 64 Mb	506	
	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	
847S	Go to 48 Mb	505	
	Go to 64 Mb	506	
	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	
857S	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	

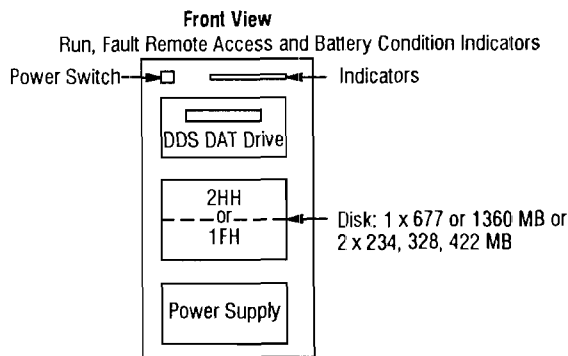
Model _____ Option _____ \$ _____

STANDALONE MEMORY PRODUCTS

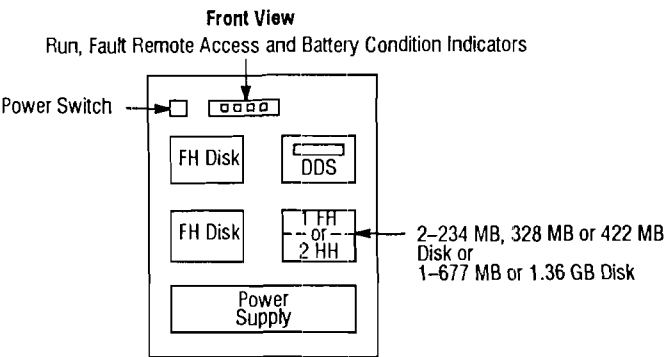
QTY	Product #	Description	Price
_____	A2230A	8 Mb ECC Module	\$ _____
_____	A2231A	16 Mb ECC Module	\$ _____
_____	A2232A	32 Mb ECC Module	\$ _____

III. Internal Disk & Tape

Models 807S, 817S, 837S



Models 827S, 847S, 857S



Model	Description	Option #	Price
807S	Go to 328 Mb	001	
	Go to 422 Mb	002	
	Go to 677 Mb	003	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	
817S & 837S	Go to 677 Mb	003	
	Go to 844 Mb	005	
	Go to 1.36 Gb	007	
	Delete DDS Tape	1CD	
827S	Go to 677 Mb	003	
	Go to 844 Mb	005	
	Go to 1.3 Gb	007	
	Go to 2.0 Gb	008	
	Go to 2.7 Gb	009	
	Go to 4.0 Gb	010	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	
847S 857S	Go to 1.3 Gb	007	
	Go to 2.0 Gb	008	
	Go to 2.7 Gb	009	
	Go to 4.0 Gb	010	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	

Model _____ Option _____ \$ _____

For standalone disk drives, see the Disk Drives section of the Configuration Guide.

IV. Additional Ports

Prior I/O Slots Used (from P. 253)	Model	Description	Option #	Price
	807S &	Add 1-16 RS-232 mux card	602	
	817S	Add 1-16 RS-232 mux card	602	
	837S	Add 2-16 RS-232 mux cards	604	
	827S &	Add 1-16 RS-232 mux card	602	
	847S	Add 2-16 RS-232 mux cards	604	
		Add 3-16 RS-232 mux cards	605	
		Add 4-16 RS-232 mux cards	606	
	857S	Add 1-16 RS-232 mux card	602	
		Add 2-16 RS-232 mux cards	604	
		Add 3-16 RS-232 mux cards	605	
		Add 4-16 RS-232 mux cards	606	
		Add 5-16 RS-232 mux cards	607	
		Add 6-16 RS-232 mux cards	608	

Model _____ Option _____ \$ _____

STANDALONE ASYNCHRONOUS MUX PRODUCTS

QTY	Product #	Description	Price
_____	J2092A	16 RS-232 ports	\$ _____
_____	J2093A	16 RS-422/423 ports	\$ _____
_____	J2094A	16 RS-232 Modem ports	\$ _____
_____	40299B	8 RS-232 Modem ports	\$ _____

\$ _____

In addition to asynchronous mux products, all Series 800 systems support LAN based DTCs (Datacommunication and Terminal Controllers) which provide asynchronous connections. The number of active connections supported will be determined by the application load on the system. See the "User Communication Devices" section for guidelines on configuring DTCs.

807S/817S/827S/837S/847S/857S Configuration Flowchart, continued

V. Other Options

Prior I/O
Slots Used

I/O Slots
Available

Model	Description	Slots	Option #	Price
807S	HP-UX Documentation	None	AAH	
	Add Powerfail/BBU	None	OE1	
	Add LAN/9000 Link	Single high	1F7	
	Delete Console	None	1B6	
	Add X.25 Link (RS-232)	Single high	030	
	Add X.25 Link (V.35)	Single high	031	
	Add Rack Mount Kit	None	1CM	
817S & 827S & 837S & 847S & 857S	HP-UX Documentation	None	AAH	
	Add SCSI I/F	Single high	401	
	Add HP-IB I/F	Single high	405	
	Add X.25 Link (RS-232)	Single high	030	
	Add X.25 Link (V.35)	Single high	031	
	Add FP Coprocessor	None	827	
	Add Powerfail/BBU	None	OE1	
	Delete LAN/9000 Link	Single high	1F8	
	Delete Console	None	1B6	
	Add Rack Mount Kit	None	1CM	

Model _____

Option _____

\$ _____

Summary

	Section	Slots Used	Slots Available	Price
I.	SPU	None		
II.	Memory	None	N/A	
III.	Internal Disk & Tape	None	N/A	
IV.	Ports			
V.	Other Options			
	Total			

TOTAL PRICE

\$ _____

Note:

Model 857S Configuration need to be verified. See the Model 857S section for Configuration Verification.

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Model 815S Business Server	A1410A	44
Model 815S Business Server Bundle	A1071A	44, 45, 62, 64
Model 817S Business Server	A1703A	16, 17, 20, 22, 257
Model 822S Business Server	A1716A	1, 3, 16, 17, 36, 37, 38
Model 825S Business Server	A1004A	76
Model 827S Business Server	A1704A	16, 17, 20, 23, 257
Model 832S Business Server	A1044A	48, 52, 56, 60
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Model 842S Business Server	A1154A	1, 5, 25, 36, 37, 38
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Model 855S Business Server	A1114A	92, 97, 112
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825/835 8 Mbyte Memory Board Add-On	A1010A	76, 79, 82
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16 Mbyte ECC RAM Board for 825/835S/SRX	A1037A	76, 79
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Model 850S Expansion Module Kit	A1123A	87, 92, 97, 102, 107, 112, 119, 120, 121, 122, 123, 124, 125, 126
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Trackball	M1309A	206

807S/817S/827S/837S/847S/857S

Configuration Flowchart

I. Select A System

MODEL	807S	817S	827S	837S	847S	857S
MEMORY	8 Mb	16 Mb	16 Mb	16 Mb	32 Mb	64 Mb
DISK	234 Mb	328 Mb	328 Mb	328 Mb	677 Mb	677 Mb
1.3 Gb DDS TAPE	std	std	std	std	std	std
PORTS	8	8	8	8	8	8
SCSI I/F	std	std	std	std	std	std
802.3 LAN	Optional	std	std	std	std	std
700/92 CONSOLE	std	std	std	std	std	std
SLOTS	2	2	6	2	6	12
SLOTS AVAILABLE	2	1	5	1	5	11

PRICE

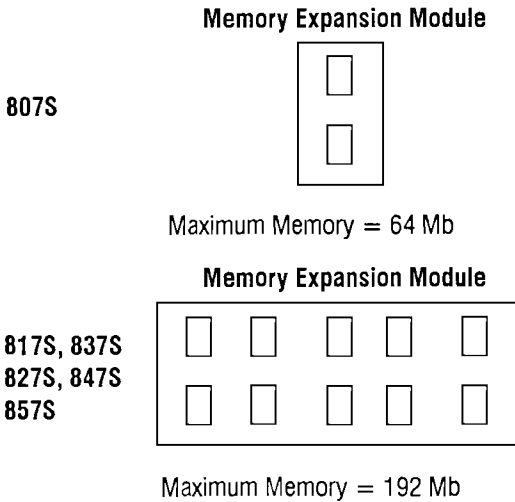
I/O Slots
Available
☐

MODEL #	PRODUCT #	PRICE
Model 807S	A1751A	\$ _____
Model 817S	A1703A	\$ _____
Model 827S	A1765A	\$ _____
Model 837S	A1704A	\$ _____
Model 847S	A1766A	\$ _____
Model 857S	A1706A	\$ _____

\$ _____

Choose a system, note the number of slots available in the Summary on page 257.

II. Additional Memory



- Notes:
- 1. 32 Mb ECC Modules are required to reach maximum memory.
 - 2. Memory does not occupy HP-PB slots.
 - 3. Each ECC Module occupies two slots in the above memory diagram.
 - 4. First ECC Module is on processor board.

Model	Description	Option #	Price
807S	Go to 16 Mb	501	
	Go to 24 Mb	502	
	Go to 32 Mb	503	
817S & 837S	Go to 24 Mb	502	
	Go to 32 Mb	503	
	Go to 48 Mb	505	
	Go to 64 Mb	506	
827S	Go to 24 Mb	502	
	Go to 32 Mb	503	
	Go to 48 Mb	505	
	Go to 64 Mb	506	
	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	
847S	Go to 48 Mb	505	
	Go to 64 Mb	506	
	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	
857S	Go to 80 Mb	507	
	Go to 96 Mb	508	
	Go to 112 Mb	509	
	Go to 128 Mb	510	

Model _____ Option _____ \$ _____

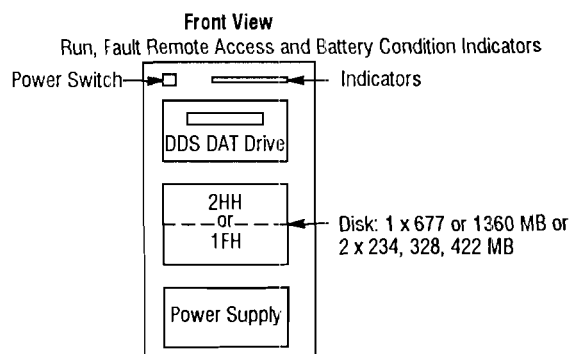
STANDALONE MEMORY PRODUCTS

QTY	Product #	Description	Price
_____	A2230A	8 Mb ECC Module	\$ _____
_____	A2231A	16 Mb ECC Module	\$ _____
_____	A2232A	32 Mb ECC Module	\$ _____

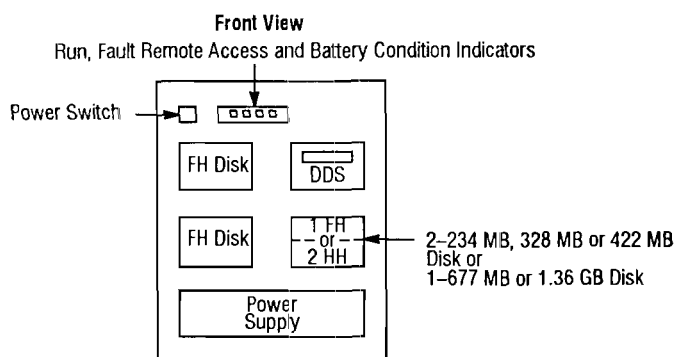
807S/817S/827S/837S/847S/857S Configuration Flowchart, continued

III. Internal Disk & Tape

Models 807S, 817S, 837S



Models 827S, 847S, 857S



Model	Description	Option #	Price
807S	Go to 328 Mb	001	
	Go to 422 Mb	002	
	Go to 677 Mb	003	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	
817S & 837S	Go to 677 Mb	003	
	Go to 844 Mb	005	
	Go to 1.36 Gb	007	
	Delete DDS Tape	1CD	
827S	Go to 677 Mb	003	
	Go to 844 Mb	005	
	Go to 1.3 Gb	007	
	Go to 2.0 Gb	008	
	Go to 2.7 Gb	009	
	Go to 4.0 Gb	010	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	
847S 857S	Go to 1.3 Gb	007	
	Go to 2.0 Gb	008	
	Go to 2.7 Gb	009	
	Go to 4.0 Gb	010	
	Delete Disk	1AN	
	Delete DDS Tape	1CD	

Model _____ Option _____ \$ _____

For standalone disk drives, see the Disk Drives section of the Configuration Guide.

807S/817S/827S/837S/847S/857S Configuration Flowchart, continued

IV. Additional Ports

Model	Description	Option #	Price
807S &	Add 1-16 RS-232 mux card	602	
817S	Add 1-16 RS-232 mux card	602	
837S	Add 2-16 RS-232 mux cards	604	
827S &	Add 1-16 RS-232 mux card	602	
847S	Add 2-16 RS-232 mux cards	604	
	Add 3-16 RS-232 mux cards	605	
	Add 4-16 RS-232 mux cards	606	
857S	Add 1-16 RS-232 mux card	602	
	Add 2-16 RS-232 mux cards	604	
	Add 3-16 RS-232 mux cards	605	
	Add 4-16 RS-232 mux cards	606	
	Add 5-16 RS-232 mux cards	607	
	Add 6-16 RS-232 mux cards	608	

Prior I/O Slots Used
(from P. 253)

Additional I/O
Slots Used

I/O Slots
Available

Model _____

Option _____

\$ _____

STANDALONE ASYNCHRONOUS MUX PRODUCTS

QTY	Product #	Description	Price
_____	J2092A	16 RS-232 ports	\$ _____
_____	J2093A	16 RS-422/423 ports	\$ _____
_____	J2094A	16 RS-232 Modem ports	\$ _____
_____	40299B	8 RS-232 Modem ports	\$ _____

\$ _____

In addition to asynchronous mux products, all Series 800 systems support LAN based DTCs (Datacommunication and Terminal Controllers) which provide asynchronous connections. The number of active connections supported will be determined by the application load on the system. See the "User Communication Devices" section for guidelines on configuring DTCs.

807S/817S/827S/837S/847S/857S Configuration Flowchart, continued

V. Other Options

Prior I/O
Slots Used

I/O Slots
Available

Model	Description	Slots	Option #	Price
807S	HP-UX Documentation	None	AAH	
	Add Powerfail/BBU	None	OE1	
	Add LAN/9000 Link	Single high	1F7	
	Delete Console	None	1B6	
	Add X.25 Link (RS-232)	Single high	030	
	Add X.25 Link (V.35)	Single high	031	
	Add Rack Mount Kit	None	1CM	
817S & 827S & 837S & 847S & 857S	HP-UX Documentation	None	AAH	
	Add SCSI I/F	Single high	401	
	Add HP-IB I/F	Single high	405	
	Add X.25 Link (RS-232)	Single high	030	
	Add X.25 Link (V.35)	Single high	031	
	Add FP Coprocessor	None	827	
	Add Powerfail/BBU	None	OE1	
	Delete LAN/9000 Link	Single high	1F8	
	Delete Console	None	1B6	
	Add Rack Mount Kit	None	1CM	

Model _____

Option _____

\$ _____

Summary

	Section	Slots Used	Slots Available	Price
I.	SPU	None		
II.	Memory	None	N/A	
III.	Internal Disk & Tape	None	N/A	
IV.	Ports			
V.	Other Options			
	Total			

TOTAL PRICE

\$ _____

Note:

Model 857S Configuration need to be verified. See the Model 857S section for Configuration Verification.

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