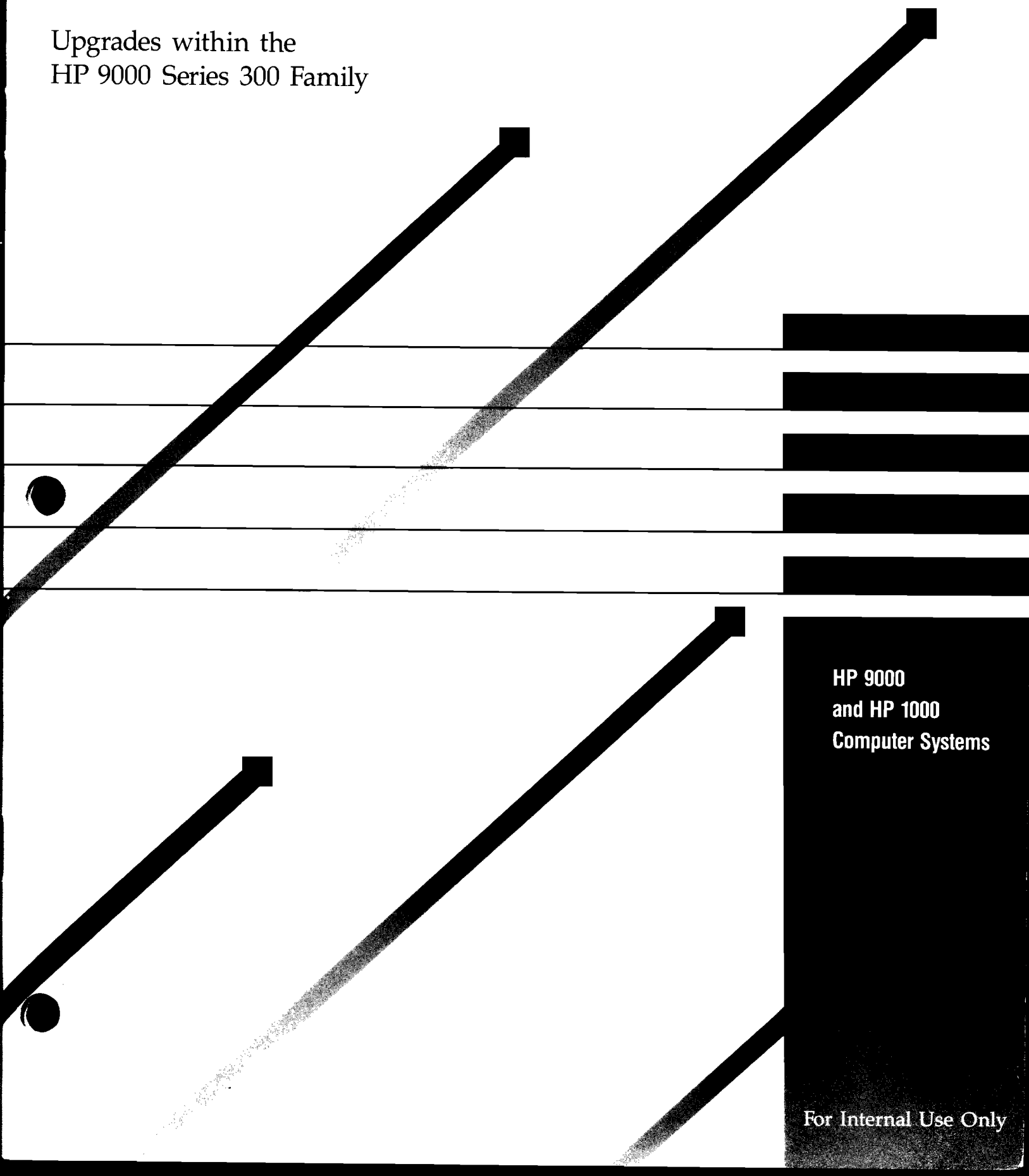


Technical Computer Upgrade Program



Upgrades within the
HP 9000 Series 300 Family



HP 9000
and HP 1000
Computer Systems

For Internal Use Only

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

Contents

Page

Model 310 to Model 330

Introduction	1
The Process	2
The Benefits	2
SPU Return Credit	4
Memory Return Credit	4
Interface and Accessory Return Credit	5
Bus Expanders	5
Graphics Subsystems	6
Software	6
Sample Orders	7
Worksheet	9
Upgrade Issues and Answers	10

Model 330 to Model 350

Introduction	11
The Process	12
Configuration Information	13
Benefits	14
Price Comparison, 330 -> 350	14
Competition	15
Prospects	16
Sample Orders	17
Worksheet	19



Model 310 to Model 330 Introduction



The Model 310 to Model 330 Upgrade Program was made available on the January 1, 1988 Corporate Price List. This group of products allows you to upgrade a standard 0.6 MIP Model 310 system to a Model 330 with a full 2 MIPS, significantly increasing performance.

The Model 330 is basically object code/load-store compatible with Model 310. There may be differences based on the system configuration (peripherals, number and type of interface cards), operating system and version, applications, and other factors. Check the Series 300 Support Matrix (peripheral, interface and accessory support document) or consult your local SE/CE to verify compatibility.

For more information, refer to the following documents.

Publication #	Name
5954-9401	HP-UX Multi-User Performance Brief
N/A	HP Series 300/HP 520/HP 236C/IBM PC AT Benchmarking Results

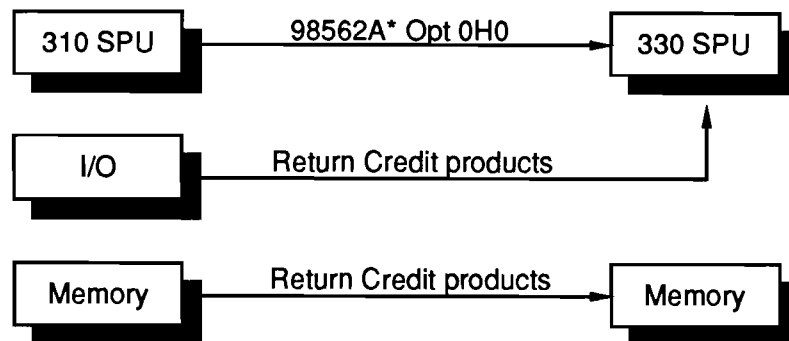
Both Models 310 and 330 are being currently sold as primary products and thus there is currently no time limit on the upgrade. The program will be reviewed periodically and the amount of the return credits may be adjusted to reflect the re-marketability of the returned Model 310s and the profitability of this upgrade.

Any trade customer who owns a Model 310 may order this upgrade. This program is not available to persons within HP who purchased their Model 310 as an "I1" capital equipment order.

Most customers can disconnect the Model 310 and install the Model 330 by themselves. Although the services of a CE are not required, customers can purchase CE assistance locally if they wish.

In North America, the Model 310 must be returned to HP at the customer's expense within 30 days after factory shipment of the Model 330 to receive proper credit. A letter describing this process will be sent to each responsible Sales Representative after an order is placed. This information can also be found in the installation manual. In areas other than North America, please contact the appropriate marketing center for details.

The Process



Note: Bus expanders and graphics subsystems can be reused on Model 330, in some cases with additional products. Operating systems are common to all Series 300 models. Subsystem software support varies.

The Benefits

General Performance Comparison (Relative)

		BASIC	Pascal	HP-UX
I/O Intensive				
	Model 310	1	1	1
	Model 330	1-2	1-2	1.5-3
Computation Intensive				
Integer				
	Model 310	1	1	1
	Model 330	3	3	4
Floating Point				
	Model 310	1	1	1
	Model 310 with 98635A (FPP)	1.5	3	1.5-4
	Model 330	4	15	20
	Model 330 with 98248A (FPA)	—	—	35

NOTE: The above information is general case and is provided for reference data only. Actual performance depends on the application being run and hardware configuration. A benchmark using your customer's application is recommended when actual performance improvement data is necessary.

For more information refer to the following documents:

Publication #	Name
5954-9401	HP-UX Multi-User Performance Brief
N/A	HP Series 300/HP 520/HP 236C/IBM PC AT Benchmarking Results

Comparison with Model 310 to Model 320 Field Upgrade

	Model 310 to 330 Upgrade	Model 310 to 320 Upgrade
Price	\$ 9245 - Alpha*	\$ 5930
RAM (Mbyte)	4	1
2-channel DMA	Built-in	Optional
ThinLAN	Built-in	Optional
Bus	32-bit DIO II	16-bit DIO
Expandability		
FPA (98248A)	Optional	Not Available
VME (98577A)	Optional	Not Available

* Alpha means return credits other than SPU return are available.

SPU Return Credit

Description	Product #	Option #	Credit
Model 310 SPU	98562A*	0H0	\$ -1600

To receive return credit for the Model 310 SPU, specify 98562A* Opt. 0H0 when ordering the Model 330 SPU. The return credit is 33 to 45% of the current list prices of various Model 310 SPUs. The returned SPU must contain a processor board, a power supply, a back plane and case and must function properly.

NOTE: If the Model 310 processor board has a built-in display interface and your customer wishes to re-use the 12" mono-chrome monitor, separate purchase of the HP 98542A display interface is required.

Memory Return Credit

Product Returned	Upgrade Product #	Upgrade Credit
98257A 1 Mbyte RAM card	98257N	\$ -300

Specify product number 98257N to receive return credit for a returned 98257A 1 Mbyte RAM card. Because the Model 330 SPU contains 4 Mbytes RAM, up to three 98257Ns are allowed per Model 310 SPU upgrade. If the order specifies a 98258A 4 Mbyte RAM Controller (to configure a total of 8 Mbytes in the Model 330), up to seven 98257Ns are allowed for credit. This return credit must be ordered with the 98562A* Opt. 0H0 SPU return credit product.

Interface and Accessory Return Credit

Almost all interface cards and accessories available for the Model 310 can be re-used on the Model 330. Some of these cards are, however, built into the Model 330 SPU. To receive return credit for these cards, specify the following when ordering the 98562A* Opt. 0H0 SPU upgrade:

Product Returned	Upgrade Product #	Upgrade Credit
98620A/B Two-Channel DMA Controller	98620N	\$ -100
98625A/B High-speed HP-IB Disc Interface for Models 310 and 320	98625N	\$ -130
98635A Floating Point Math Card	98635N	\$ -200
98643A LAN/300 Link	98643N	\$ -265

Bus Expanders

Expander Re-Use on Model 330

HP 9888A
Bus Expander Requires DIO adapter (98562A* Opt 006/98242A/B or Connection to 98568A/98568A Opt 132/98570A expander

HP 98568A Requires 98562A* Opt. 006 and cannot be used with 98577A VMEbus Expander or 98248A FPA; if a 98570A expander is added, the 98568A can be re-used as a second expander and a 98248A FPA can be added.

Graphics Subsystems

All graphics subsystems currently supported on the Model 310 are also supported on Model 330. If your customer wishes to use a graphics subsystem other than the one which was used on the Model 310 system, separate purchase of a stand-alone graphics subsystem is required.

NOTES:

- 1) The 98627A RGB interface is not supported on the Model 330 HP-UX systems.
- 2) The 98287A interface for the 98700A requires a DIO slot. This requires purchase of 98562A* Opt. 006 DIO Adapter

Software

Operating System

All operating systems are common among the Series 300. A customer with the Software Materials Subscription service will get the latest revision of the operating system which can run on the Model 330. A customer not on SMS may need to purchase the latest revision of the operating system.

Subsystem Software

The Series 300 supports several software subsystems. Verification that the subsystem and revision number used on the Model 310 is also supported on the Model 330 is required. If the current revision of the subsystem is not supported on the Model 330, purchase of the latest version is required. If the specific revision number is not supported on the Model 330 and the customer requires use of that revision, upgrade to Model 330 is not possible.

Please refer to the current Peripheral, Interface and Accessory Support Matrix for further details on operating system and subsystem software.

Sample Orders

A. From a Model 310 with a built-in display interface, 98257A and 98624A:

Product #	Option #	Description	Price
98562A*		HP 9000 Series 330	\$10845
	006	DIO adapter	\$ 390
	0H0	Credit for 310	\$-1600
98542A		Display Interface	\$ 825
98257N		Credit for 1 MByte RAM card	\$ -300
Adjusted list price			\$10160
End User "B" discount (17%)			\$-1727
Net Price			\$ 8433

30% savings to the customer before trade discount!

Note: Re-Use 98624A

B. From Model 310 with any display interface board, three 98257As and one 98622A:

Product #	Option #	Description	Price
98562A*		HP 9000 Series 330	\$10845
	006	DIO Adapter	\$ 390
	0H0	Credit for 310	\$-1600
98257N (x3)		Credit for 1 MByte RAM card	\$- 900
Adjusted list price			\$ 8735
OEM "A" discount (34%)			\$-2970
Net Price			\$ 5765

47% savings to the customer before trade discount!

Note: Re-Use 98622A.

C. From Model 310 with any display interface board, three 98257As, and one each 98620B, 98625B, 98635A, 98643A, 98622A, 98624A and 98568A.

Product #	Option #	Description	Price
98562A*		HP 9000 Series 330	\$ 10845
	006	DIO adapter	\$ 390
	010	98262A High Speed HP-IB disk interface	\$ 960
	0H0	Credit for 310	\$ -1600
98257N (x3)		Credit for 1 MByte RAM card	\$ -900
98620N		Credit for 2-Channel DMA Controller	\$ -100
98625N		Credit for High-speed HP-IB Disc Interface	\$ -130
98635N		Credit for Floating Point Math Card	\$ -200
98643N		Credit for LAN/300 Link	\$ -265
			Adjusted list price \$ 9000
			End User "B" discount (17%) \$ -1530
			Net Price \$ 7470

39% savings to the customer before trade discount!

Note: Re-Use 98622A, 98624A, 98568A

Upgrade Worksheet

Upgrade from _____ To _____

New System Investment				Monthly service costs		
Hardware	New List	Return Credit	Net Price	New	Maintenance Old	Difference
CPU _____	_____	_____	_____	_____	_____	_____
Memory _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
I/O _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Peripherals _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Net Hardware Price	_____	_____	_____	_____	_____	_____
Less _____% Trade Discount	_____	_____	_____	_____	_____	_____
Net Hardware Investment	_____	_____	_____	_____	_____	_____
Software	New List	Old List	Net Price	New	Support Old	Difference
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Net Software Price	_____	_____	_____	_____	_____	_____
Less _____% Trade Discount	_____	_____	_____	_____	_____	_____
Net Software Investment	_____	_____	_____	_____	_____	_____

Net Monthly Service Cost _____ Net Difference _____

Total Upgrade Purchase _____

Total Upgrade Lease * _____/Month

* Subject to credit approval

Total Monthly Investment _____

Upgrade Issues and Answers

As in any upgrade program, we expect some customers will feel their situations are not properly addressed by the program. While every effort was made to create a program which addressed all of our customers' needs, we are continuing the search for answers to a few remaining issues described here.

Since the Model 320 to Model 350 upgrade was placed on CPL, a standard structure for future Technical Systems Sector upgrades has been put into effect. This program offers 20% of current list price as a return credit for the Series 300 RAM, interfaces and accessories, in order to avoid financial risk on future trade-in programs because return credits for the Series 300 RAM, interfaces and accessories will be applied to future trade-in programs related to Models 310 and 320.

These 20% return credits allow HP flexibility regarding SPU return credit. In fact, we can offer 33% to 45% of current list price as a return credit for a returned Model 310 SPU when a replacement Model 330 SPU is purchased. This large SPU return credit should satisfy the needs of most of your customers, not just a few "corner cases". It's a simple case of economics; more credit offered for RAM, interfaces and accessories means less credit for the SPU.

On the other hand, we now offer the Model 320 to Model 350 upgrade (see below) with more attractive return credits for RAM, interfaces and accessories. The price of this upgrade will be reviewed with regard to demand, profitability and re-marketing opportunities in the near future.

For the customer who wants to upgrade the 98568A expander to the 98568A Opt. 132 or 98570A expander: The 98568A can be re-used on the Model 330 if the customer orders an 98562A* Opt. 006 DIO adapter and does not use a 98577A VME or 98248A FPA. If the 98570A expander is added, you can re-use a 98568A as a second expander and add a 98248A FPA.

Purchase Agreement Discounts on a list price adjusted by the return credit are available. The discount schedule will be the same as the Model 330B SPU.

Model 330 to Model 350 Introduction

This upgrade program will strengthen the competitive position of the Model 330 as well as increase its value to the end user. With the upgrade, the Model 330 has twice its original CPU power and twice the RAM capacity (expandable up to 48 Mbytes) at a low incremental cost.

The Model 330 is one of the few workstation products available that is upgradeable to a 4 MIPS workstation. With this upgrade, customers will perceive that they are definitely not 'dead-ended' on the Model 330, but are in fact buying into the entry-level of a very scalable product. The customer can select and purchase the Model 330 with confidence in the expandability and upgradeability of the system.

The Model 330-to-Model 350 Upgrade Program also solves the problem that Model 330 users encounter with some application software programs. The Model 330 is currently limited to a maximum of 8 Mbytes RAM. When adding RAM beyond 4 Mbytes, performance may decrease for some applications. For a reasonable incremental cost, applications which have grown beyond the power of the Model 330 can be run on a machine which offers twice the CPU power and has a RAM size limit of 48 Mbytes. And because the Model 350 is object-code compatible, no recompilation of the Model 330 is necessary.

Because the Models 330 and 350 are new this year and are sold as the primary models in the Series 300 product line, there is currently no time restriction on this upgrade program.

The upgrade is customer installable so that the customer becomes responsible for proper installation. The installation manual shows the customer how to remove the Model 330 CPU board and how to install each board included in the upgrade product.

In addition, in North America, the customer must return the Model 330 CPU board in working condition at his own expense to HP within 30 days after the factory shipment of the upgrade product. A letter describing this process will be sent to each customer and the responsible SR after an order is placed. This information will also be included in the installation manual. In areas other than North America, you should contact the appropriate marketing center.

The Process

The standard Model 330 upgraded by this field upgrade kit will be the same as the standard Model 350. The Model 330 CPU board must be returned to HP.

Product #	Option	Description	Price
98244A		HP 9000 Model 330 CPU Field Upgrade to Model 350 consisting of: Model 350 Processor Board 98258A 4 Mb RAM/Controller Board 98258B 4 Mb RAM Add-on Board 98262A High-speed Disc Interface 2-high System Bus Model 330 CPU board must be returned to HP	\$14900
	001	Deletes 98258A and 98258B. Allows conversion to ECC RAM or re-use of 4Mb/controller board. Requires ECC RAM, 98258B (4Mb add-on), or 98258C (12Mb add-on). (Model 350 requires minimum of 8Mb RAM.)	\$-7000
	002	Delete 98262A Disc Interface. Allows re-use of 98262A disc interface in Model 330. (Model 350 requires disc interface.)	\$ -475
	003	Substitute 3-high for 2-high System Bus. Allows re-use of 98248A FPA in Model 330.	N/C
	116	Add 8Mb Parity-checking RAM. Adds 8Mb RAM for a total of 16Mb.	\$ 8160
	570	Add 98570A Bus Expander	\$ 2355

Configuration Information



Before ordering this upgrade, check to be sure whether or not the customer needs the bus expander. Many Model 330 customers who are upgrading will need the expander because the Model 330 CPU board with 4 Mbytes on-board RAM occupied one DIO-II slot in the SPU, while the Model 350 with 4 to 16 Mbytes RAM requires two DIO-II slots.

Most of the Model 330s have an additional DIO-II slot which is not available on the Model 350. Approximately half of the installed Model 330s have a two-slot DIO adapter in this slot. An expander will be needed for these customers to continue to use a two-slot DIO adapter in their upgraded Model 330.

There is an option to the upgrade to add the 98570A expander, which is the most commonly used expander on the Model 350. If your customer wants to use other expanders (98568A Opt 132; 98570A Opt 004) they must be purchased separately.

The customer who already has a 98258A RAM board and wants to upgrade his Model 330 to the Model 350 with 8 Mbytes parity-checking RAM has the following alternatives:

1. He can re-use the 98258A on the upgraded system. In this case, if he has purchased a 98244A without Opt 001, his upgraded system will have a total of 12 Mbytes parity-checking RAM. He will also need to add an expander to his system.
2. He can order the 98244A with Opt 001 and the 98258B (or 98258C) separately and re-use the 98258A. In this case, his upgraded system will contain 8 (or 16) Mbytes total RAM.

Customers who want to upgrade to ECC RAM can order 98244A Opt 001 and the ECC RAM separately.

Although it seems possible to configure the upgraded Model 350 with only 4 Mbytes RAM and no disc interface by specifying Options 001 and 002, this configuration is not supported? The upgraded system must contain a minimum of 8 Mbytes RAM and the disc interface. Option 001 is provided to allow the purchase of ECC RAM or to re-use the 98258A RAM on

the Model 330. Option 002 is provided to allow re-use of the 98262A disc interface on the Model 330. These options are provided so the customer who has already invested in the disc interface and add-on RAM is not penalized.

Benefits

Features	Benefits
The incremental cost of the Model 330 initial purchase with subsequent upgrade purchase is only \$1,600 on the most popular 2D color systems	Very small risk to purchase the Model 330 initially and this upgrade later. Small incremental cost is more than justified by the depreciation
Model 330 RAM limitation is overcome	Provides growth path
Expandability to 2X CPU performance and 2X RAM capacity	Investment protection Growth path
Object code compatibility	Smooth migration path

Price Comparison

The following table compares the prices of Model 330 workstations with upgrades to the original price of a comparable Model 350.

Incremental Cost of 330 -> 350 Upgrade

Model 350	Model 330	Delta	Upgrade Cost	Incremental Cost
C/CH w/16" monitor \$30550	C/CH w/16" monitor \$17250	\$13300	\$14900	\$1600
M/MH \$25100	M/MH \$12950	\$12150	\$14900	\$2750
SPU \$22350	SPU \$10700	\$11650	\$14900	\$3250

Competition

Sun

Sun offers no upgrade from their low-end products, such as the 3/50, 3/60, 3/110, or 3/140. They do offer upgrades from the 3/160 to 3/260 and 4/260, and from the 3/260 to the 4/260.

These products have common packaging consisting of 12 Sun VME slots. They offer the upgrade only by exchanging boards. The upgrade products are:

System	List Price	CPU Upgrade	Delta	Total Cost (upgraded from 3/120C)
3/160C w/4Mb RAM	\$27900	N/A	N/A	N/A
3/260C w/8Mb ECC	\$36900	\$13900	\$ 9000	\$41800
3/260C w/16Mb ECC	\$48900	\$21900	\$21000	\$70800

The price of a Model 330C/CH with Option 782, plus the upgrade to a Model 350 is \$35,150. This means that even if the customer purchased a Model 330 and then upgraded to a Model 350, he would still pay less than he would for a comparable Sun system.

Apollo

Apollo also has no upgrade product from the 1.2 MIPS class to the 3-4 MIPS class. Apollo's only offering was the upgrade from DN570/580 2 MIPS workstation to the DN570/580 TURBO 3.5 MIPS workstation. But Apollo has repositioned their product line with the introduction of the DN590 TURBO and the DN4000. There is currently no positioning for the DN570/580. They are now marketing their DN570/580 TURBO rather than the DN570/580.

Prospects

DEC

DEC has no upgrade product from their VAXstation/2000 or VAXstationII/GPX to their 2-3 MIPS class VAX8250 or VAX8350. DEC introduced the VAXstation 3200/3500, which can perform at 3 MIPS, at DECWorld '87. But the upgrade paths from the older products to these new products have not been addressed.

OEM

OEM customers can show their end users who intend to purchase or are investigating the purchase of Model 330-based systems the expandability and migration path provided through this upgrade. In addition, they can recommend this upgrade to their current Model 330 customers who need more power than the Model 330 currently provides.

ME CAD

There are two kinds of customers in the ME CAD marketplace who want to upgrade their SPUs to more powerful systems:

- The customer who wants to upgrade the Model 330-based ME 10 system to a Model 350-based ME 30 system.
- The customer who wants to upgrade the Model 330-based ME 10 system to a Model 350-based ME 30 system. In this case, most customers will purchase the SRX graphics subsystem concurrently.

Other Model 330 Customers

In addition to the previously mentioned cases where performance decreases are experienced when customers add more than 4 Mbytes RAM to the Model 330, there are several other types of potential upgrade customers. A customer who previously purchased the Model 330 due to budget considerations may now be in a better financial position to upgrade to a 4 MIPS workstation.

Sample Orders

Customers who have added new, more demanding applications, or those solving larger problems (such as large designs) will also benefit from the increased CPU power and RAM capacity of the Model 350.

In addition, customers running applications that frequently use virtual memory may be interested in upgrading to the Model 350. These applications can experience a performance increase because the greater memory capacity of the Model 350 can reduce the amount of memory swapping.

A. Upgrade standard Model 330 to standard Model 350.

Product #	Option #	Description	Price
98244A		Model 330 CPU Field Upgrade to M350	\$14900
		Total List	\$14900
		Less End-User "B" Discount (17%)	\$ 2533
		Net Price	\$12367

B. Upgrade Model 330 with 98258A to standard Model 350.

Product #	Option #	Description	Price
98244A		Model 330 CPU Field Upgrade to Model 350	\$14900
	001	Deletes 98258A	\$-7000
98258B		4 MByte Parity Checking RAM Add-on	\$ 5115
		Total List	\$13015
		Less End-user "B" Discount (17%)	\$-2213
		Net Price	\$10802

**Upgrade Model 330 with Disc I/F and 2-slot DIO
to Model 350 with 2-slot DIO**

Product #	Option #	Description	Price
98244a		Model 330 CPU Field Upgrade to Model 350	\$14900
	002	Deletes 98262 Disc Interface	\$ -475
	570	Add 98570A Bus Expander	\$ 2355
		Total List	\$16780
		Less End-User "B" Discount (17%)	\$ -2853
		Net Price	\$13927

Upgrade Worksheet

Upgrade from _____ To _____

New System Investment				Monthly service costs		
Hardware	New List	Return Credit	Net Price	Maintenance		
				New	Old	Difference
CPU _____	_____	_____	_____	_____	_____	_____
Memory _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
I/O _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Peripherals _____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Net Hardware Price	_____	_____	_____	_____	_____	_____
Less _____% Trade Discount	_____	_____	_____	_____	_____	_____
Net Hardware Investment	_____	_____	_____	_____	_____	_____
Software	New List	Old List	Net Price	New	Support Old	Difference
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Net Software Price	_____	_____	_____	_____	_____	_____
Less _____% Trade Discount	_____	_____	_____	_____	_____	_____
Net Software Investment	_____	_____	_____	_____	_____	_____

Net Monthly Service Cost _____ Net Difference _____

Total Upgrade Purchase _____

Total Upgrade Lease * _____/Month

* Subject to credit approval

Total Monthly Investment _____







