
**HP 9000 Series 700
Product Summary**

May 1994

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1.0 The HP 9000 Series 700 Product Family

1.1 Introduction

HP does it again!!

On May 16, 1994, HP extended its leadership position in the workstation market with:

- The fastest 2D workstations
- The best price/performance
- The best 3D entry-level workstations
- The fastest mid-range 3D graphics workstations
- New ruggedized and single-board VME workstations

These new products reinforce HP's leadership position in the technical market as well as offer additional choices for the emerging commercial market.

HP announced:

- Model 715 workstations based on the PA-7100LC chip. These high performing workstations will be available in 64, 80, and 100MHz versions.
- Availability later this year of a Model 725 workstation based on the 100MHz version of the PA-7100LC chip
- A restatement of the commitment to provide the latest PA-7150 technology in the Model 755 package for availability later this year
- Model 743i/748i/743rt workstations
- A comprehensive suite of board-level upgrades
- Industry leading 2D/3D graphics accelerators
- PEX 5.1 runtime in every system

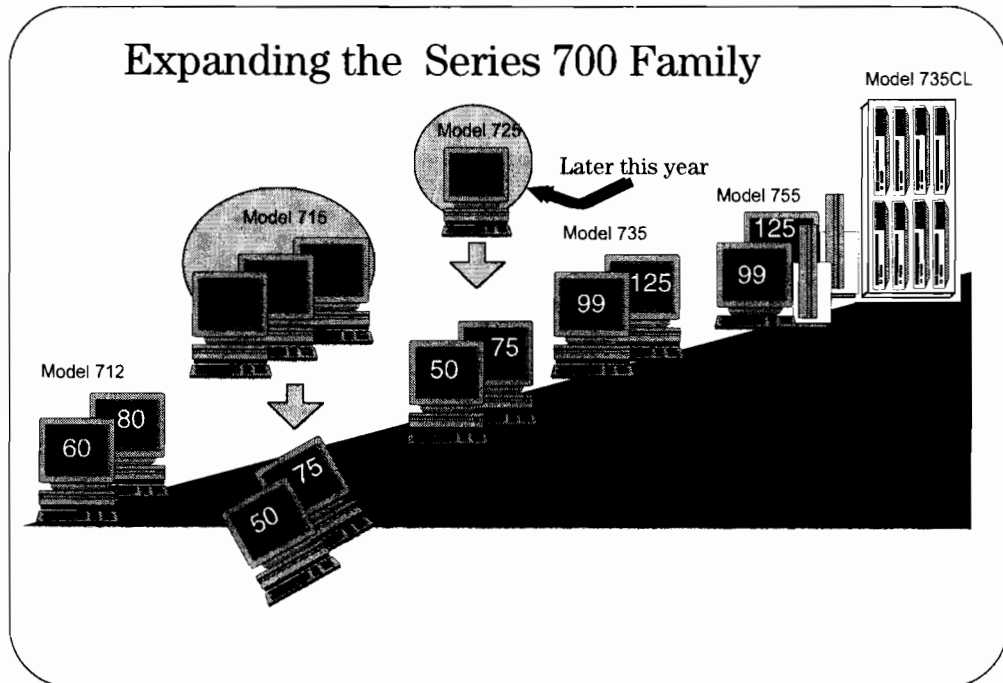
These new products reinforce the Series 700 family and make it the most competitive workstation line in the industry; featuring strong entry-level systems with the Model 712s, powerful mid-range with the new Model 715s and the fastest desktop workstation with the Model 735/125.

The new workstations offer:

- Excellent CPU, graphics and application performance
- Leading price/performance
- Competitive price points
- Outstanding investment protection through a comprehensive suite of upgrades.

1.2 New Series 700 Workstations

HP introduced new entry-level and mid-range Model 715 workstations based on 64, 80 and 100MHz implementations of the PA-7100LC processor. The new systems effectively replace the current 50 and 75MHz based products. To protect your customers' investment and to offer a growth path to the latest HP technology HP is offering a series of upgrades and no-penalty upgrades.



1.3 Model 725/100

Along with the announcement of the Model 715/100 product, HP is today making a commitment to provide a PA-7100LC based Model 725/100 and a NO-PENALTY board-level upgrade to this product later this year. Customers who require the expandability of the Model 725 and the performance of the 100MHz chip can buy into new levels of performance in a highly expandable system today by purchasing current Model 725 technology and taking advantage of the NO-PENALTY upgrade at a later time. For more information please consult the Model 725/100 Backgrounder in your May Announcement Materials kit.

1.4 Model 755/125

When HP announced the Model 735/125 in March, we stated our intent to provide the PA-7150 technology in the Model 755 package. Today we are restating this commitment. The Model 755/125, based on the PA-7150 chip, will be available later this year. For more information please consult the Model 755/125 Backgrounder in your May Announcement Materials kit.

1.5 New 2D and 3D Graphics

The new systems introduced come standard with the new Integrated Color Graphics subsystem, including the patented HP Color Recovery technology. This functionality allows the simultaneous display of approximately 8 million colors on an eight plane system, an HP advantage that no other competitor can match!

Optionally, a new family of graphics accelerators, the HCRX graphics family, is available for these new systems. These new graphics subsystems provide a 50-60% performance increase for 2D and 3D applications.

1.6 Ruggedized and Single-Board Workstations

The new 64 and 100MHz PA-7100LC processors are also available as single board computers and are being incorporated into the Series 700*i/rt* ruggedized workstations.

Ruggedized Workstations	Single Board Computers
748i/64	743rt/64
748i/100	743rt/100
	743i/64
	743i/100

These new additions to the Series 700 *i/rt* product family give HP the leading edge in performance and functionality for sensory-based data acquisition and display solutions.

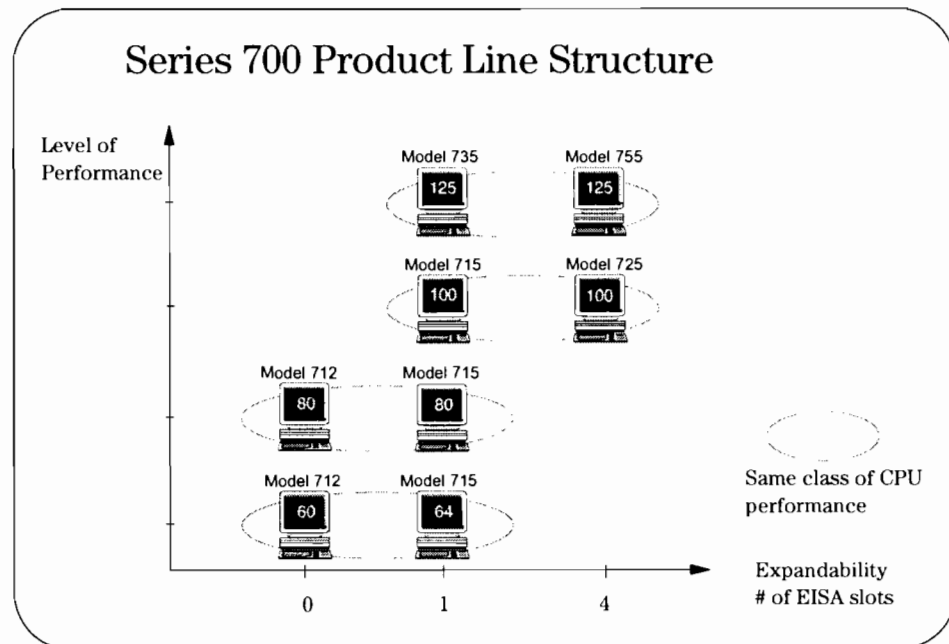
2.0 Product Family Positioning

2.1 The New Systems in the Series 700 Family

The new Model 715 and Model 725 workstations effectively replace the current 50 and 75MHz versions. They are the new expandable entry-level and mid-range of the Series 700 product line, and are complemented by the Models 712 at the low-end and the Models 735/755 at the high-end.

As you can see from the chart below, the Series 700 family is structured according to 2 criteria:

- Level of performance
- Expandability of package



Structuring the Series 700 family such that one performance point is available in several packages gives you the flexibility to offer the right system with the right functionality at the right price to meet your customers' requirements.

2.2 How to Choose the Right Series 700 System

The following series of tables is intended to help you offer the right Series 700 system. The tables highlight the key differentiating features between the Series 700 systems. The pricing difference is based on comparing list prices of 20" color, 32MB, 1GB configurations.

	712/60	715/64	712/60 Delivers	715/64 Delivers
Pricing			+12% less cost	
Performance SPECint/SPECfp	58.1/79	66.6/96.5		+14%/+20% more performance
Memory Max	128MB	256MB		+128MB more memory
Total Internal/ Total Disk Capacity	1GB/14GB	4GB/84GB		+70GB more total disk
EISA Slots	0	1		more expandable
Graphics	Standard	Accelerated		enhanced performance options
Cache	64KB shared	256KB shared		application performance

	715/64	712/80	715/64 Delivers	712/80 Delivers
Pricing			+12% less cost	
Performance SPECint/SPECfp	66.6/96.5	84/122.3		+27%/+29% more performance
Memory Max	256MB	128MB	128MB more memory	
Total Internal/ Total Disk Capacity	4GB/84GB	1GB/14GB	+70GB more total disk	
EISA Slots	1	0	more expandable	
Graphics	Accelerated	Standard	enhanced performance options	
Cache	256KB shared	256KB shared		

	712/80	715/80	712/80 Delivers	715/80 Delivers
Pricing			+13% less cost	
Performance SPECint/SPECfp	84/122.3	84/120.9	-	-
Memory Max	128MB	256 MB		+128MB more memory
Total Internal/ To- tal Disk Capacity	1GB/14GB	4GB/84GB		+70GB more disk
EISA Slots	0	1		more expandable
Graphics	Standard	Accelerated		enhanced per- formance options
Cache	256KB shared	256KB shared	-	-

	715/80	715/100	715/80 Delivers	715/100 Delivers
Pricing			+13% less cost	
Performance SPECint/SPECfp	84/120.9	101/137		+20%/+11% more performance
Memory Max	256 MB	256MB	-	-
Total Internal/ To- tal Disk Capacity	4GB/84GB	4GB/84GB	-	-
EISA Slots	1	1	-	-
Graphics	Accelerated	Accelerated	-	-
Cache	256KB shared	256KB shared	-	-



	715/100	735/99	715/100 Delivers	735/99 Delivers
Pricing			+13% less cost	
Performance SPECint/SPECfp	101/137	109.1/167.9		+9%/+24% more performance
Memory Max	256MB	400MB		+144MB more memory
Total Internal/ To- tal Disk Capacity	4GB/84GB	2GB/126GB		+42GB more total disk
EISA Slots	1	1	-	-
Graphics	Accelerated	Accelerated*	HCRX graphics	-
Cache	256KB shared	256KB/256KB	-	-

	735/99	735/125	735/99 Delivers	735/125 Delivers
Pricing			+13% less cost	
Performance SPECint/SPECfp	109.1/167.9	137/201		+20%/+11% more performance
Memory Max	256MB	400MB		144MB more memory
Total Internal/ To- tal Disk Capacity	2GB/126GB	2GB/126GB	-	-
EISA Slots	1	1	-	-
Graphics	Accelerated*	Accelerated*	-	-
Cache	256KB/256KB	256KB/256KB	-	-

* refers to the CRX style of accelerated graphics.

The following chart represents a look at some basic differences by product family. It will help you to understand which packages support which functionality. It is important that you understand that in some cases where equivalent functionality is available across multiple systems, the cost for the functionality may not be the same. You should take this into account when pricing configurations for your customers. The shaded areas in the following chart will help you to identify these areas.

Feature	Model 712	Model 715	Model 725 (50, 75)	Model 735	Model 755
Bi-Endian	I	I	-	-	-
MPEG	I	I	-	-	-
New Integrated Color Graphics	I	I	-	-	-
Color Recovery	I	I			
Teleshare	O	-	-	-	-
Additional Networking					
X.25	O	O	O	O	O
Token Ring	O	O	O	O	O
Ethernet	O	O	O	O	O
ISDN	O	O	O	O	O
FDDI	-	-	-	O	O
Accelerated Graphics					
CRX-24	-	-	O	O	I
CRX-24Z	-	-	O	O	I
CRX-48Z	-	O*	O	O	I
HCRX-8	-	O	-	-	-
HCRX-8Z	-	O	-	-	-
HCRX-24	-	O	-	-	-
HCRX-24Z	-	O	-	-	-
HIL	-	I	I	I	I

I = included in base price of system

O = optional at extra cost

- = not available

areas shaded differently are same functionality but different price

* available on 715/100 only

2.3 Positioning the Series 700 per Target Market

Because of the Series 700 broad application support, HP can deliver solutions to a wide range of target markets. In market segments such as MCAD, ECAD, AEC or scientific markets for example, HP has established a long-standing leadership position.

The introduction of the enterprise desktop concept has given HP tremendous momentum in the emerging commercial markets such as financial trading, customer service or brand and category management.

The new Model 715 and 725 systems are excellent solutions across all markets.

With the strong graphics offerings, the new systems are excellent entry-level workstations for 2D and 3D design. They also deliver the graphics capabilities and performance required for solids modeling or finite element analysis.

Even though a Model 712 based solution will be appropriate for most commercial users, the new Model 715 based systems are an excellent solution if the customer requires EISA expandability or a high-performance computational engine serving several X stations or Model 712 workstations.

For detailed positioning information per target market, please check the workstations group hotline SUBJECT: 700POS or PowerTools. Additional information can be found in the newly updated Enterprise Desktop Sales Guide, LDC Part Number 5091-9944E, as well as the Empowered Engineering Sales Guide, LDC Part Number 5091-9779E.

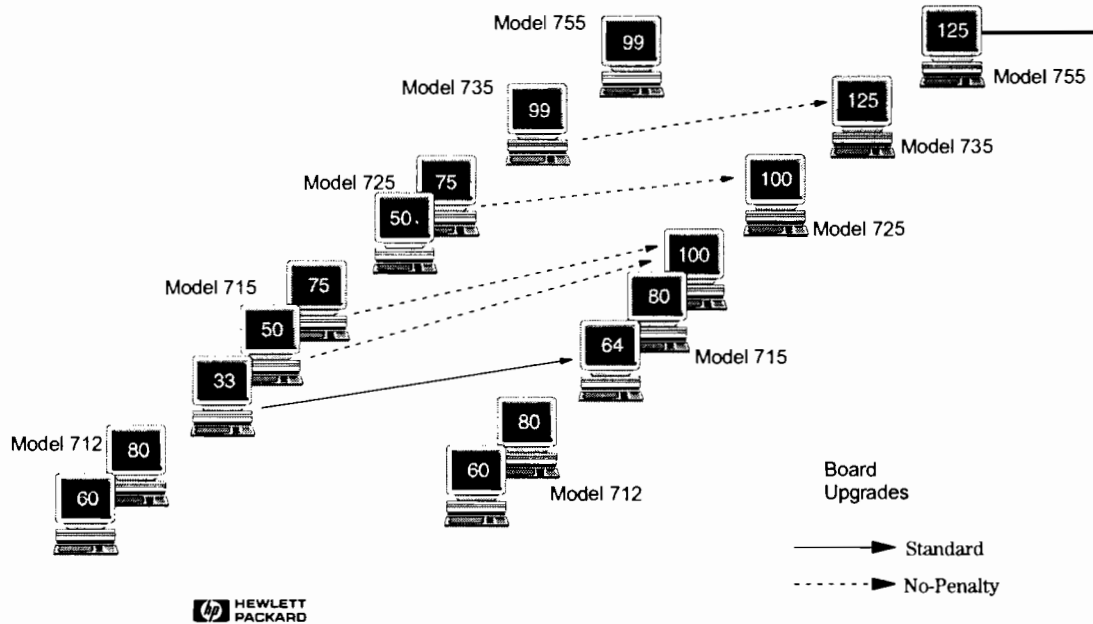
3.0 Investment Protection

HP continues to offer its customers investment protection and multiple paths to the latest technology. An extensive series of board-level upgrades will allow your customers to:

- Double their current performance as well as take advantage of the latest technologies
- Color Recovery
- MPEG video
- HCRX graphics

For customers with Models 715/50 and 715/75, HP is providing NO-PENALTY upgrades to the 100MHz versions! HP will also offer a NO-PENALTY upgrade to the Model 725/100. The following chart will help you identify the upgrades that HP is offering.

Series 700 Investment Protection



The upgrades are not customer installable. Please consult with your local Field Engineer in order to better understand your customers' requirements. For more information please refer to the Series 700 Self Study guide, LDC Part number SR12035B.

4.0 Product Specifications for New Series 700 Systems

The following summarizes the product specifications of the new systems.

- 64, 80, 100MHz PA-7100LC processor with bi-endian architecture and built-in MPEG decompression

- All three performance points available in Model 715 package, (1 EISA slot); the 100MHz point will be available in the Model 725 package (4 EISA slots) later this year
- New integrated graphics including HP Color Recovery technology, which allows the simultaneous display of approximately 8 million colors on an 8 plane system without additional hardware
- Support of the new HCRX family of graphics accelerators
- Choice of 17" or 20" color monitors
- Choice of HP-HIL or PS/2 style keyboards
- Board upgrades from current Model 715 and Model 725 systems
- HP-UX 9.05 or later

4.1 Product Detail At-a-Glance

Feature	715/64	715/80	715/100
Price/Performance	<ul style="list-style-type: none"> 64MHz PA-RISC PA-7100LC SPECint92 of 66.6 SPECfp92 of 96.5 SPECrate_int92 1497.82 SPECrate_fp92 2281.39 Xmark 93 6.6 	<ul style="list-style-type: none"> 80 MHz PA-RISC PA-7100LC SPECint92 of 83.5 SPECfp92 of 120.9 SPECrate_int92 1866.06 SPECrate_fp92 2864.56 Xmark 93 7.5 	<ul style="list-style-type: none"> 100MHz PA-RISC PA7100LC SPECint92 of 100.1 SPECfp92 of 137 SPECrate_int92 2237.3 SPECrate_fp92 3225.85 Xmark 93 8.6
Graphics	HCRX-8, HCRX-24, HCRX-8Z, HCRX-24Z		
			CRX-48Z
Memory Capacity	32-256MB		
Internal Disk Capacity	4GB		
Total Disk Capacity	68GB		
Mass Storage	525MB hard disk 1GB hard disk 2GB hard disk		
Removable Media	3.5" floppy, CD-ROM, 2GB DDS, 4-8GB DDS		
I/O	2 RS232 ports, audio in/out ports, 1 asynchronous port, 1 HIL/PS/2 port, Centronics parallel port		

The Model 715 systems are available immediately. The Models 725/100 and 755/125 are expected in the fall of 1994. For more information, please review the Model 725 and Model 755 back-grounders in your May Announcement Launch Materials kit.

5.0 Graphics

Included in the introduction of the Models 715 are new graphics subsystems which deliver leadership price and performance points. The new Model 715 and 725 systems are equipped with the same standard integrated color graphics as the Models 712 which were introduced in January. Optionally, the graphics capabilities can be increased substantially by adding one of the new HCRX family of graphics subsystems. The new line up looks like this:

		NEW!	NEW!	NEW!	NEW!	
	Integrated Color Graphics	HCRX-8	HCRX-24	HCRX-8Z	HCRX-24Z	CRX-48Z
715/64	✓	✓	✓	✓	✓	
715/80	✓	✓	✓	✓	✓	
715/100	✓	✓	✓	✓	✓	✓

5.1 Integrated Color Graphics

First introduced with the Models 712 and included on every new Model 715, Integrated Color Graphics delivers excellent vector and accelerated X-Window/GUI performance.

Integrated graphics also delivers the HP Color Recovery technology, enabling the new Model 715s to display virtually true color images – approximately 8 million simultaneous colors – on 8 plane systems. This results in the lowest-cost true color graphics available. Since competitors must rely on additional hardware at extra cost to provide this capability, this new HP technology is a true advantage for HP.

For more detail information on HP Color Recovery technology please see the White Paper:

Artist, Next Generation Entry Color Graphics (LDC pub # 5962-6199E)

5.2 HCRX Graphics Family

HP has introduced a new set of industry leading graphics accelerators. The HCRX series, available in both 8 and 24 plane versions, with and without Z buffers, sets new standards in graphics price/performance. And remember, like the older graphics subsystems, the performance on all these new graphics offerings will scale up with CPU performance! So, the faster the system performance, the faster the graphics performance.

5.3 HCRX-8 and HCRX-24

The HCRX-8 delivers leadership X Windows performance to satisfy the most demanding 2D graphics user. It delivers Xmark performance 40% faster than the Integrated Color Graphics, and draws X11 lines twice as fast. It is has fastest 2D/3D vector performance in this price range or, for that matter, on the desktop!

The HCRX-8 supports double buffered 8 plane graphics, 8 overlay planes, and HP Color Recovery technology. The HCRX-8 is an excellent solution for 2D CAD, 3D wireframe and cost sensitive applications which demand high visual quality (displaying up to 8 million colors simultaneously).

The HCRX-24, which supports 24-bit plane graphics and 8 overlay planes, is ideally suited for applications where full 24-bit visual imaging quality (displaying up to 16.7 million colors simultaneously) is required. Example targets would be EDA, imaging and MCAD.

5.4 HCRX-8Z and HCRX-24Z



The HCRX-8Z and HCRX-24Z are 3D hardware accelerators. They provide 2.5 to 3 times the vector and triangle performance of the older CRX generation graphics. Since these graphics products use the same base design as the HCRX-8 and HCRX-24, you also get the same industry leading X Window/GUI and vector performance of those products.

To render 3D solids, PowerShade comes standard on both HCRX-8Z and HCRX-24Z.

HCRX-8Z is targeted for cost-sensitive customers who desire high-performance 3D design and modeling subsystems with high image quality. If you couple the performance of the HCRX-8Z with built in color recovery, you have a low-cost, superior 3D design and modeling solution for customers who do not require a full 16.7 million colors.

The HCRX-8Z is a superior entry solution for MCAD applications. Offering excellent performance and high visual quality at a very low price point makes this product a winner.

The HCRX-24Z is for more demanding users who require the highest in visual quality with a full palette of 16.7 million colors. The HCRX-24Z is ideally suited for 3D component design, 3D graphics application development, plant design and layout, and 3D visualization.

NOTE:

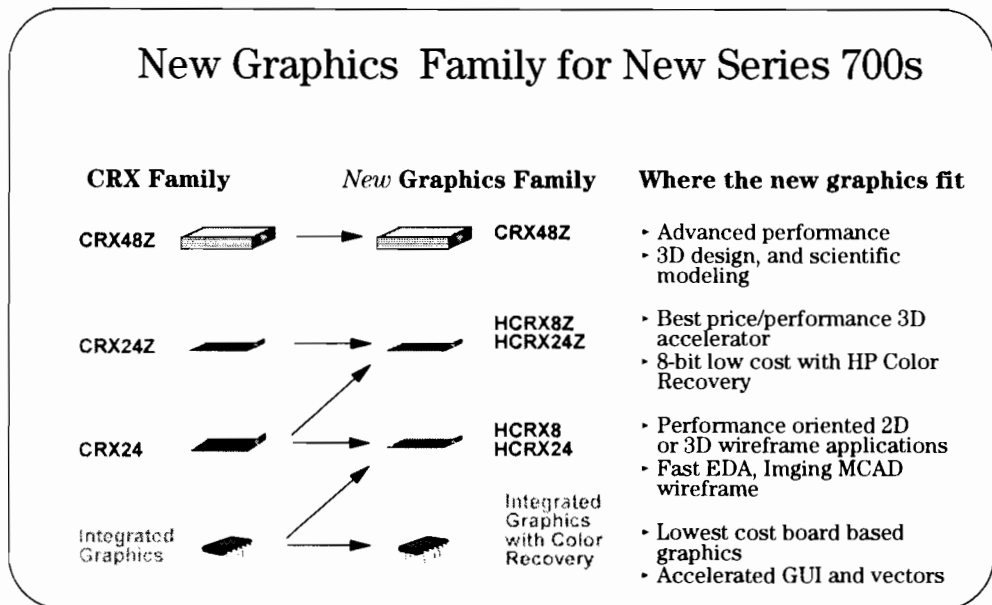
The HCRX-8 and HCRX-8Z graphics accelerators provide new levels of graphics capabilities and performance. ISVs are very excited about the performance and visual quality of their applications when running on these new graphics devices. They are actively qualifying all of their applications. While numerous applications have already been qualified, when your sales situation calls for a specific application as part of the bid, please contact the ISV to ensure that the application qualification has been completed.

5.5 CRX-48Z

The CRX-48Z is the top of the line, advanced performance 3D graphics for design and scientific modeling. It supports double buffered 24-bit plane graphics.

For more detail information on CRX-48Z graphics see LDC pub number 5091-5717E, "Graphics for the 90s".

5.6 Graphics Family Chart



5.7 Choosing the Right Graphics Subsystem

You now have a suite of low-cost, high performance graphics products that will meet any customer need. The following summarizes the new graphics offerings and will help you understand which graphic solution is best for your customer.

Product	General Market Focus	Comments
Integrated Color Graphics (bundled with the systems)	Low-cost, high-performance GUI and vector acceleration.	First introduced with the Model 712s, Integrated Graphics delivers excellent vector performance and accelerates GUI and digital video. HP Color Recovery technology for virtually true color visualization.
HCRX-8 HCRX-24	Performance-oriented 2D applications: GUI, CAD and Imaging. HCRX-8 is for fast EDA and GIS.	The fastest 3D wireframe & 2D/GUI graphics accelerators in the industry at any price. 2.5 - 3 times faster vector and GUI performance than CRX. HP Color Recovery technology included in base configuration.
HCRX-8Z HCRX-24Z	Cost-sensitive 3D design. HCRX-8Z provides the lowest cost 3D solids accelerator for MCAD.	Best price/performance 3D in the industry. 2.5 - 3 times the vector and triangle performance of the older CRX graphics. Application performance should also improve noticeable as indicated by GPC PLBwire and PLBsurf. HP Color Recovery technology included in base configuration.
CRX-48Z	Advanced performance 3D Design and Scientific Modeling	Leading-edge, scaleable, advanced performance in the volume 3D market.

5.8 Graphics Performance At-a-Glance

	Model 715/64 C	Model 715/64 HCRX	Model 715/64 HCRX-Z
Xmark93	6.55	9.15	9.15
X11 Vec/s	1.2M	2.2M	2.2M
PLBwire93	43	45	46
PLBsurf93	16	21	49

3D Vec/s	1.4M	1.5M	1.5M
Tri/s	26K	26K	270K
LS Quad/s	15K	15K	56K

	Model 715/80 C	Model 715/80 HCRX	Model 715/80 HCRX-Z
Xmark93	7.9	10.72	10.72
X11 Vec/s	1.4M	2.5M	2.5M
PLBwire93	52	57	58
PLBsurf93	20	26	59
3D Vec/s	1.8M	1.9M	1.9M
Tri/s	32K	32K	340K
LS Quad/s	18K	18K	71K

	Model 715/100 C	Model 715/100 HCRX	Model 715/100 HCRX-Z	Model 715/100 CRX-48Z
Xmark93	8.63	12.25	12.25	8.89
X11 Vec/s	1.2M	2.6M	2.6M	1.2M
PLBwire93	61	62	68	68
PLBsurf93	23	29	68	89
3D Vec/s	1.6M	2.3M	2.3M	2.2M
Tri/s	40K	40K	410K	600K
LS Quad/s	23K	23K	86K	140K

5.9 Graphics Summary

With this announcement, HP has introduced a new level of graphics price/performance. This new lineup of graphics products is going to put the pressure on the competition. A few hard-hitting points to remember are:

- HP is the only company that has engineered virtual true color into a 8 plane system and can provide this level of visual quality at our price points!
- HP is the only company to provide an 8/8, double buffered, 8 overlay planes product, the HCRX-8Z!

- The HCRX-8 and 8Z have faster 3D vectors (2.3 million vectors per second) than units costing 2.5 times as much!
- With the Integrated Color Graphics subsystem, standard on all the new systems, HP provides the lowest cost virtual true color workstation!

6.0 Operating System

The new Models 715 require HP-UX 9.05. HP-UX 9.05 is object code compatible with HP-UX 9.03 and has additional drivers for the new hardware. HP-UX 9.05 is a Hardware Technology Release (HTR) which means that the only functional changes in this revision is the additional support for the new hardware products. We have also simplified product structuring by adding the PEX 5.1 runtime as a bundled product (it is now included in the base OS at no extra charge).

6.1 PEX 5.1

PEX 5.1 is the standard 3D graphics API (application programming interface). PEX is used by application developers to create, display and manipulate 3D images. PEX is HP's strategic 3D API and has been adopted by COSE, and now the OSF, as the standard UNIX 3D graphics API. This means that users can run PEX without having to add HP PEX Runtime (B3177A) as a separate order. If users are looking to use PEX as a development environment, the HP PEX 5.1 3D development environment (B3176A) is still required and ordered separately.

PEX operates in a client/server environment, just like X Windows. In fact, PEX is the 3D extension to X. PEX allows 3D images to be displayed and manipulated across the network. PEX takes advantage of the 3D graphics capabilities of the remote displaying system with minimal network traffic. In addition, PEX runs on standalone workstations, directly accessing the hardware. Users pay no performance penalty for using PEX over proprietary API's like Starbase.

7.0 Series 700i/rt Ruggedized and Single Board Workstations

The Series 700i ruggedized and single-board VME based workstations are part of the HP 9000 Series 700 family. They are designed and built to be rugged, durable, flexible, and rack-mountable. They withstand heat, shock, vibrations and

altitude environments. The combination of EISA and VME slots maximize your customers ability to customize I/O. Combined with the power of PA7-100LC processor, these systems are excellent systems for sensory-based data acquisition and display solutions. Also, as members of the PA-7100LC processor-based family of workstations, they enjoy the same rich performance and feature set that comes with this family.

7.1 Model 743i/rt

The Model 743 is the second generation of VMEbus single board workstations from HP. The Model 743*i* is the CPU module for the Model 748 VMEbus ruggedized workstations. The Model 743*i* runs HP-UX 9.05 while the Model 743*rt* runs HP-RT, HP's standards based real-time operating system.

7.2 Model 748i

The Model 748*i* is the second generation of VMEbus ruggedized workstations from HP. These systems are designed to meet the needs of system integrators, OEMs and distributors who supply solutions to the aerospace/defense, manufacturing, telecommunications, and lab/medical industries.

The Model 748*i* uses the Model 743*i* as its CPU module. Although Model 743 is supported by both HP-UX and HP-RT operating systems, the Model 748*i* will only support HP-UX.

The Model 748*i* has two systems based on the PA7100LC: the Model 748*i*/64 and the Model 748*i*/100.

Please consult the Series 700 Self-Study Guide (LDC Part Number SR12035B) for more detail information.

The information contained in this document is subject to change without notice.