COMPAQ
The Lead Systems Partner for Windows® 95

Designed for Microsoft® Windows®95

WINDOWS® 95

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Compaq Computer Corporation

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Plug and Play is the PC industry term for the technology that allows the PC to understand the user's intentions to install options and to automatically configure options while resolving conflicts with other options.

Plug and Play White Paper

Compaq is leading PC manufacturers in solving the last hurdle of difficulty for PC owners — feeling comfortable about, and successfully modifying their system's hardware.

This White Paper includes new information about Compaq's current status in Plug and Play development and implementation, plus an overview of what is in store for the future of Compaq Plug and Play-ready products.

Plug and Play-ready Personal Computers rely generally on three parts; the PC's BIOS (Basic Input/Output Services), Plug and Play-ready peripheral options, and the Microsoft® Windows® 95 operating system. Windows 95 and the Plug and Play BIOS will be able to identify newly added peripheral options and network connections, allocate resources, and automatically re-configure the system set up.

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BACKGROUND — THE NEED FOR PLUG AND PLAY

PC owners from time to time encounter problems installing new options for their PCs. New users may perceive PCs as being challenging to set-up and modify, and opt not to purchase a PC altogether. Retailers see add-in option cards returned by customers who can't make them work. The solution to these dilemmas is coming from the Plug and Play initiative formed by Compaq, Intel, Microsoft, and Phoenix Technologies.

Plug and Play is the industry term for the technology that allows the PC to understand the user's intentions to install option cards, for example a sound card, into the PC and automatically configure it. Users can install new options that work the first time without disrupting anything else in the PC.

Plug and Play firmware automatically configures the system's bus and sets key technology parameters for Plug and Play-ready add-in cards. Until now, users had to set these parameters manually, a complex and problematic exercise that could confuse and frustrate. When combined with features included in Microsoft's forthcoming "Windows 95" operating system, Plug and Play will greatly simplify the process of setting up personal computer systems.

What has happened recently?

Steady Leadership.

Compaq's steady accomplishments have decisively secured its position as the PC leader in Plug and Play technology. This achievement arose by being the first to ship Plug and Play-ready products compatible with Microsoft's upcoming Windows 95 operating system and Plug and Play-ready peripheral options.

Compaq was the first PC maker to ship products with a Plug and Play BIOS. By continuing to work closely with Microsoft, Compaq ensures its Plug and Play-ready PCs to be fully compatible with the Windows 95 operating system. Compaq also established extensive compatibility testing support to Independent Hardware Vendors (IHVs) in major Plug and Play interoperability workshops, such as the Plug and Play Association's PlugFest. These activities add to Compaq's solid Plug and Play background and build upon its earlier influence in establishing the Plug and Play Specification.

Making its public debut at the Microsoft WinHEC show in February 1994, the Compaq LTE Elite notebook PC was used by Microsoft to demonstrate another Plug and Play feature and a PC-industry first - "warm-docking" using the Windows 95 operating system. Warm docking is a Plug and Play feature referring to the notebook automatically docking or seating into a docking station while the notebook PC is in the standby power conservation state.

The Plug and Play BIOS is compatible with several bus architectures including ISA, PCMCIA, and PCI. EISA-based products already operate in a Plug and Play manner and do not need a Plug and Play BIOS. Compaq contributed significant technology and industry standardization to the EISA standard, and is now building on its industry leadership by bringing this Plug and Play-type technology in an updated form into the Plug and Play Specification.

During the development of Microsoft Windows 95, Compaq fine-tuned the Plug and Play BIOS. Previous BIOS editions included versions .98 and 1.0. Since 1994 Compaq has been shipping products with the 1.0a BIOS, which is fully forward compatible with any new Windows 95 iteration. Compaq committed to bring this technology to market as quickly as possible, and is prepared to provide this forward compatibility to customers.

What will happen next?

All shipping Compaq products incorporate the 1.0a Plug and Play BIOS. Compaq and Microsoft continue to work closely together with all major independent hardware vendors to ensure that their upcoming peripheral options will be fully compatible with Compaq PCs running Windows 95.

QUESTIONS AND ANSWERS

1. Is there a way to have Plug and Play with Windows 3.1?

Compaq developed an exclusive Plug and Play solution for Windows 3.1 by providing Computer Setup for Windows (CSW) 2.0. Intended to provide users Plug and Play features before availability of Windows 95, CSW 2.0 supports the auto-configuring and conflict resolution of Plug and Play ISA boards. In combination with the Plug and Play BIOS, CSW 2.0 provides the highest level of Plug and Play support available under Windows 3.1.

2. Can products without the Plug and Play BIOS be Windows 95-ready?

Yes. Even PCs that do not support Plug and Play can run Windows 95. Any PC that is compatible with Windows 3.1 will be compatible with Windows 95. However, PCs that do not have a Plug and Play BIOS cannot take advantage of all the Plug and Play features in Windows 95.

3. Are all Compaq products currently Plug and Play-ready?

All currently shipping Compaq PCs are Plug and Play-ready**.**

In order to utilize Windows 95 Plug and Play features, a PC must have a BIOS that meets the revision 1.0a of the Plug and Play specification. Compaq products currently shipping with the 1.0a BIOS include the Compaq ProLinea, Deskpro, Deskpro XL, Presario 500, 700, and 900 series, LTE Elite, Contura Aero, and Contura 400 series notebook PCs.

In addition, a more recent BIOS upgrade has been made available for Compaq Aero and Compaq Contura 400 series portable products. This latest update is also 1.0a revision, but includes fine-tuning changes identified during testing with the latest beta versions of Windows 95 and changes made to capitalize on Windows 95 features..

4. What about older Compaq products?

There were some products which were shipped during 1994 with earlier versions of the Plug and Play BIOS that users may need to upgrade to version 1.0a. An upgrade of the Plug and Play BIOS to 1.0a is available to take full advantage of Windows 95 Plug and Play features. Compaq has provided BIOS upgrades to customers through the usual channels, such as through Service fulfillment or Resellers.

Some Compaq products were designed and developed long before they were able to incorporate the Plug and Play Specification and therefore were never intended to be Plug and Play-ready. There will be no Plug and Play BIOS upgrade plan for those products.

5. Do any Compaq products REQUIRE an upgrade to be Plug and Play ready?

The Pentium-based Compaq Deskpro XE products shipped with a standard ROM, without Plug and Play support. The Compaq Deskpro XE 486-based products contain the Plug and Play BIOS version 1.0. These products were announced November 1, 1993, months before the Plug and Play BIOS specification was finalized at revision 1.0a. Because of Compaq's heavy involvement and leadership in the Plug and Play Association, Compaq was able to incorporate the BIOS in these products early on. These 486- and Pentium-based Deskpro XE products can be upgraded to the 1.0a BIOS via Flash ROM.

The enhanced Compaq ProLinea desktops that were announced in April 1994, and the Compaq Presario 600 series desktops contain a socketed Plug and Play BIOS ROM version 1.0. The 1.0a version was finalized May 6, 1994 after these products were designed and announced. Windows 95 upgrade will contain the ROM upgrades and automatically support their Plug and Play capabilities. There is no need for the user to upgrade to version 1.0a.

6. How do I get these BIOS upgrades?

The programs vary based on whether the products have a Flash ROM or Fixed ROM. Please see the chart on the next page for details.

The column titled "Flash ROM Required" in the chart indicates that a ROM upgrade is required and is available as files on a floppy diskette that will upgrade the ROM. The Flash ROM upgrade is available through the Compaq Service ROMPaq program. In this case, users are able to do the upgrade themselves or request Service to do it for them.

As mentioned above, for Compaq products that had 1.0 level BIOS and Fixed or socketed Plug and Play BIOS ROMs, Windows 95 product itself will contain Compaq-specific enhancements to automatically bring Compaq products with 1.0 level BIOS to the 1.0a level of functionality. The column "Windows 95 ROM Fixes" indicates if this applies to the products listed.

COMPAQ PRODUCT BIOS UPGRADE REQUIREMENTS

MODEL:	*PLUG AND PLAY BIOS VERSION SHIPPED*	*FLASH ROM UPGRADE REQUIRED?*	*WINDOWS 95 INCLUDES ROM UPGRADE?*
PRESARIO 600 SERIES ***(SHIPPED AFTER APRIL 18 '94)***	**1.0**	**NO**	**YES**
PRESARIO 500/700/900 SERIES	**1.0A**	**NO**	**NOT NECESSARY**
PROLINEA 4/33S, 4/50S, 4/50, 4/66, 4/100 ***(SHIPPED AFTER APRIL 18 '94)***	**1.0**	**NO**	**YES**
PROLINEA ***(CURRENTLY SHIPPING)***	**1.0A**	**NO**	**NOT NECESSARY**
DESKPRO XE ***(486-BASED)***	**.98, OR 1.0**	**YES (1.0A)**	**NOT NECESSARY**
DESKPRO XE ***(PENTIUM-BASED)***	**NONE**	**YES (1.0A)**	**NOT NECESSARY**
DESKPRO ***(CURRENTLY SHIPPING)***	**1.0A**	**NO**	**NOT NECESSARY**
DESKPRO XL	**N/A - EISA**	**NO**	**NOT NECESSARY**
LTE ELITE	**1.0**	**YES (1.0A)**	**NOT NECESSARY**
CONTURA AERO	**1.0**	**YES ***	**NOT NECESSARY**
CONTURA 400 SERIES	**1.0A**	**YES ***	**NOT NECESSARY**

* The most recent ROM upgrade is suggested for Contura Aero and Contura 400 series portable products. This upgrade includes changes made during final Windows 95 testing. This Flash ROM Upgrade will be included with the Compaq Windows 95 Supplemental diskettes and Compaq Windows 95 Upgrade option kits.