Hewlett Packard/Apollo Owners Guide
Version 1.0

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December 18, 1991

Chapter 1

Introduction

1.1 Objectives

This Guide is intended for CERN users of Hewlett Packard and HP/Apollo workstations and servers.[1] The various chapters contain information to assist in the configuring, purchasing, installation, upgrading and maintenance of HP/Apollo systems. Details are also provided about various meetings of relevence to users of these systems. Suggestions for missing information should be addressed to the author, Alan Silverman, e-mail alan@cernapo.

Note that this is NOT a User Guide for HP/Apollo systems. Such a Guide does exist and copies can be obtained at the User Consultancy Office in Building 513 although a major revision is currently underway. The User Guide contains information on how to use an Apollo workstation in the CERN environment.

1.2 Confidentiality

This Guide includes details of the commercial contracts between CERN and Hewlett Packard. Information regarding these contracts should not be disclosed to third-parties outside CERN and should not be quoted in publications or public presentations.

[1] See Section 1.5 for the naming convention used regarding HP's workstations.

1.3 Contact People

HP Service Manager	Alan Silverman	Tel 4955	31-1-030	alan@cernapo
Software Support	Rainer Többicke Domain System HP-UX System	Tel 4911, +5563	31-1-024	rtb@cernapo apollosp@cernapo hpsp@cernapo
Hardware Support	Sören Olofsson Mario Vergari	Tel 7114, +5564 Tel 4979 +5602	513-R-009 513-R-009	soren@cernapo vnv@cernapo
Finance Div contact	Anders Unnervik	Tel 3245	73-3-017	unner@cernvm
HP Customer Support	HP Switzerland	Tel 780 41 11 Beeps 5624, 5625	31-R-016	
HP Sales Support	Claude Lecoultre	Tel 780 44 48	HP Suisse	

Claude_Lecoultre@hp8700.hp.com

1.4 HP and User Coordination

The commercial interface to the manufacturer is via the HP/Apollo Service Manager although users are always free to contact the salesman directly to arrange visits, discussions, offers,[2] etc. In addition, both the hardware and software personnel of the central CERN support team have direct contact with their counterparts in Hewlett Packard. Details on how and when to contact members of the CERN Support Team are given in later Chapters of this document.

Various CERN groups and experiments are involved in collaborations with HP to test or develop new products, services and ways of using their workstations at CERN. However, the whole CERN community should be able to benefit from these experiences. One available method is to publicise such collaborations and their results via informal presentations to the community of HP/Apollo users at CERN (see Chapter 6).

We also use several electronic methods to communicate with the user community. For example we maintain an electronic mailing list for important announcements. We therefore recommend all users to register their electronic mail addresses with the HP/Apollo Service Manager. Another communication channel which we have established is News. We have created news groups called cern.apollo and cern.hp. These are available on CERNVM via XNEWS, on VXCERN via NEWS and on Apollo and HP workstations via the normal UNIX news readers (nn or rn for example); note that on CERNVM and VXCERN, the

[2] All commercial or legal contracts with manufacturers must be agreed and signed by a representative of Finance Division. Therefore, all formal offers must be addressed to Finance Division; see Section 2.3 - "Commercial Details".

news groups are called simply apollo and hp respectively. HP/Apollo users are encouraged to subscribe to the appropriate group(s).

Finally, from time to time we publish articles in the various CERN Computer Newsletters (CNL, CSENL and MMCNL) to publicise the latest information about our services and how to use HP/Apollo workstation.

1.5 Workstation Naming Conventions

In order to explain the names used by HP for the different workstation families and their associated system software, we need to present a short history.

Originally, the first Apollo workstations at CERN were made by Apollo Computers and ran the Domain operating system. These included the DN series systems based on the Motorola 680x0 chip. Apart from a very few exceptions, these now use either the 68030 or the 68040 chip and include the DN2500, DN3000, DN3500, DN4000, DN4500 and the DN5500 models. A few years ago, Apollo also produced its own RISC system called the DN10000 using their own PRISM chip. This also ran Domain. Today Domain systems offer a number of user environments, including UNIX System V and UNIX BSD; for compatibility with the first operating systems for the original DN series, it also offers the Aegis environment which is loosely based on UNIX.

In 1989, Hewlett Packard purchased Apollo and made Apollo a division of HP. This was later renamed to the Workstations Division. In 1990, HP announced the HP/Apollo Series 9000/400 workstations and offered them running either Domain or HP's own HP-UX system. HP-UX is a UNIX based on System V. Almost all Series 400 systems at CERN run under Domain.

In 1991, HP announced the HP/Apollo Series 700 workstations (note again the inclusion of the Apollo name). However, these only run under HP-UX today and are not supported by Domain.

In this Guide, we refer to all these systems collectively as HP/Apollo and only when a section refers to one or another do we make a distinction.

Chapter 2

Ordering a System

2.1 Configuration Planning

We have established a single point in CN Division where information is available about which configurations are supported and/or recommended. This is under the responsibility of the HP/Apollo Service Manager; currently this is Alan Silverman. If required, users can request help in choosing systems and options and in getting advice in planning their installations. While all purchasing information, such as obtaining current prices and formal offers for equipment, must be discussed with the Hewlett Packard salesman, the HP/Apollo Service Manager in CN Division has been assigned to be the commercial interface with HP and this person should know who to call in for help with a particular special requirement (such as Exabyte support or a particular network connection or special software packages).

From time to time, we may suggest certain standard configurations as an aid to new users. These are typically based on so-called "bundles" offered by HP. Such systems will have a minimum memory (at least 16MBytes) and disc space (at least 200MBytes), a monochrome, greyscale or colour screen with a mouse and keyboard (US ASCII keyboard by default), unless it is a server which is delivered without screen, keyboard or mouse.

To help people who wish to purchase or simply obtain price information about one of the more common standard configurations (Series 400 or Series 700), HP now issues regular extracts from their price book for such configurations and users can contact the HP salesman or the HP/Apollo Service Manager to consult a copy.

2.2 Software Options

2.2.1 Apollo/Domain

For all current HP/Apollo offerings running the Domain operating system (see Section 1.5), the support team should have available all the most common software kits. These include the basic operating system, the most common compilers (FORTRAN, C, C++ and PAS-

CAL) and some additional products such as Dialogue, GMR2D and so on. For a full list see Section 4.2 or contact Alan Silverman. Many of these products are covered by a site licence maintained and currently paid by CN Division. Therefore, in most cases, software options do not have to be ordered except perhaps for any documentation which is required.

Users who require products not on this list must purchase both a licence and perhaps a distribution kit and will also be encouraged to take up a maintainence contract for such software. If several groups are interested in acquiring a particular product, the support team may be able to coordinate the purchase in order that CERN benefits from any price reduction via multiple node licences. (HP sells licences for certain products for multiple nodes at a discounted price from that offered for a single node licence.)

For users interested in a software product not on the standard list, the salesman may be able to arrange a demonstration before purchase, or perhaps lend a kit for a temporary installation for testing.

2.2.2 Series 700/HP-UX

The situation for HP-UX systems (Series 9000/700 systems and perhaps Series 9000/400) is less well developed. Similar to the Domain situation above, the basic system softare is maintained under the terms of a central contract with HP but for the layered products CN Division is currently negotiating with HP. For more up-to-date information, contact Alan Silverman.

For all Series 700 workstations, the offer from HP will contain an option called "Instant Ignition". This option, which is relatively inexpensive, ensures that when a Series 700 is ordered with at least one disc - the usual case - then the system software HP-UX comes pre-installed on disc and the subsequent software installation (see Section 3.4) will be rather easy. We strongly all users to purchase this option.

2.3 Commercial Details

Orders from Hewlett Packard are covered by a blanket order (B952) which has been agreed between CERN and HP. Under this agreement, there is a fixed scale of discount for particular families of workstation and fixed terms and conditions. Full details are available from Finance Division (Anders Unnervik), the HP/Apollo Service Manager (Alan Silverman) or the HP salesman (Claude Lecoultre).

One condition of the contract is that approximately every three months there is a so-called "bulk" order period during which all CERN orders are gathered together by Finance Division and released in a single batch at the end of the period. In return for this grouping, HP grant an extra 10% discount for such orders once a minimum total value is reached CERN-wide.

Before ordering equipment, products or services users should obtain an official offer from the salesman which includes all necessary peripherals, software, etc. It should also

stipulate the delivery delay, warranty period and any relevent maintenance charges for the equipment. When requesting an offer, be aware that offers should be officially addressed to Finance Division but the salesman should be reminded to send a copy to the end-user.

Orders are submitted via an Internal Purchase Requisition addressed to Finance Division (Anders Unnervik) who will place the actual order. Purchasers with access to CERNVM (the central IBM system at CERN), should use the Electronic Forms Processing (EFP) scheme implemented there. On CERNVM, call EFP and then fill in the appropriate entries in the forms presented. Help on EFP can be obtained by typing FIND EFP on CERNVM or by obtaining the description of EFP written by Laure Esteveney of AS Division. More information on EFP can be obtained on CERNVM by typing the command

DOCPRINT MIS EFP EFP4_0 (PRINTER 'name-of-printer'.

Completed forms should be sent to the divisional secretariat or the Divisional Purchasing Officer. Finance Division later return to the purchaser confirmation of the order in the form of a green copy of the external order form. On this confirmation, please note the order number. It has the form B952.xxx/yyy where xxx is a three digit number and yyy is the divisional code. This is the number by which the order is known by both CERN and HP and this number should be quoted on any query about the order.

Note that a justification is NOT required even though Hewlett Packard is a non-member state supplier. This is a result of the blanket order mentioned above.

2.4 Third Party Peripherals

There are several companies who supply peripherals, and software packages for HP systems. These include memory boards, discs, Exabyte cartridges, STK tapes and so on. Information about such products is available in the computer trade press, in Internet news items and so on. From time to time, Finance Division make recommendations on specific suppliers for certain products. Alan Silverman maintains a small catalogue of such information which users may consult. However, users must accept such purchases at their own risk; no formal approval will be provided by the support team although we may be able to offer advice in given situations.

2.5 Documentation

2.5.1 HP/Apollo Documentation

HP/Apollo manuals must be purchased directly from HP. A list is maintained by the HP/Apollo Service Manager and reference copies are held by support staff. We have also established a lending library of certain Apollo manuals within CN/SW group where we have additional spare copies. Contact the HP/Apollo Service Manager for details.

2.5.2 Online Documentation

For Series 700/HP-UX users, the system documentation is available online. Contact Rainer Többicke or see the HP-UX Installation Guide - described in Section 2.5.3.

2.5.3 CERN Documentation

For people installing a Series 700 workstation, we have produced an HP-UX Installation Guide. It is available via anonymous ftp from hp-osf1:

ftp hp-osf1
userid: anonymous
password: your e-mail address
get hpux.ps
quit

The file can be (has to be) printed on any PostScript printer, e.g. 513-lps.

As mentioned earlier, there is also an Apollo User Guide, copies from the UCO Self Service, which is currently being revised and brought up to date.

Chapter 3

Installation

3.1 Delivery

The delivery delay is normally given on the offer from HP. To confirm the actual delivery date, purchasers may call HP for details (Tel. 780 41 11 and ask for the Sales Administration Secretary). Please quote the CERN order code (the B952.xxx number described in Section 2.3) in any queries.

Each month, HP makes available to CERN a delivery status bulletin with the latest news on outstanding orders. Users wishing information about systems not yet delivered can contact Alan Silverman to consult the latest list.

3.2 Hardware Installation

Normally, the purchase price of new systems and add-on peripherals includes an installation fee. (Users who wish to install equipment themselves may request this but we do not advise it. The situation regarding guarantees and future maintenance becomes unclear for self-installed equipment.)

When new equipment arrives, *do not open the box* but call the Hewlett Packard engineering support team instead (see Section 1.3) and request an engineer to come and install the material. Alternatively, call the local system administrator or call the CN HP/Apollo hardware support responsible to help arrange this.

3.3 Apollo/Domain Software Installation

Sometimes new Apollo workstations will arrive with system software already installed on the disc or alternatively the HP engineer may install system software during the hardware installation, normally to help him check out the hardware configuration. However, we

recommend that the system software is installed or re-installed according to the preferences of the local experiment or group or the current CERN recommendations. This ensures that all systems in a group or experiment are running the same version of the system, have the same basic environment and are generally compatible.

There exists a document with some recommendations for new users on which options to select as regards UNIX flavour, shell, file system layout and so on. This document is CN/AS/140 and copies are available from the UCO Self Service. However, this document is only a series of recommendations. Users are perfectly free to select a different setup with any choice of UNIX environment, shell, etc which is supported under Domain, the Apollo system software. In many cases, experiments have established their own environments. One point to note here is that we currently do NOT recommend establishing a native X windows environment as performance is generally poor with such configurations; instead, we recommend running X windows under control of the DM window manager by starting an X server at system boot time.

When the hardware has been installed and checked, users should contact either their local system administrator or a member of the CN HP/Apollo software support team to arrange for the appropriate software installation. Along with the system software, users may select which layered products they wish to install at this point or later. As stated above, most common language and graphics products are covered by a CERN license and may be freely installed. For more details, contact Alan Silverman.

When installing software, the user has the choice of making local copies of particular products or making links to copies on a central or local server. The trade-off is some small loss of performance because of link traffic plus a reliance on the server against the effort required by someone (the user or the local system administrator) to keep up to date this local copy of the software in question. There is no recommendation in such cases as the choice depends on personal styles of computing and the individual's use of the product (frequency of use, maximum acceptable response time, etc).

3.4 HP-UX Software Installation

Before installing a Series 700 workstation with the HP-UX system software, new users should first obtain a copy of the latest version of the CERN HP-UX Installation Guide; see Section 2.5.3 on how to get a copy.

Series 700 systems are normally purchased with the so-called "Instant Ignition" option (see Section 2.2.2). Instant Ignition is simply the latest version of HP-UX pre-installed on the disc. The user needs to follow a documented procedure to tailor this system. In addition, users may purchase a C development Instant Ignition option to add more features to the basic system. All this is fully described in the HP-UX Installation Guide by Rainer Többicke; see Section 2.5.3.

Chapter 4

Maintenance

4.1 Hardware Maintenance Contract

Owners of HP/Apollo workstations and servers have the option to subscribe to an HP hardware maintenance contract. If a system is covered by such a contract, the conditions are set out below. If a system is not covered by such a contract, then the next section can be skipped. It is still possible to call in HP to repair a non-maintained system if required but the owner will require to negotiate the terms of such a repair at that moment. Further, under normal CERN rules, Hewlett Packard are entitled to wait until the user requests a maintenance intervention under the terms of a specific CERN order via the usual internal Demande D'Achat form and Finance Division subsequently issue a normal CERN External Order to HP. Bearing in the mind the delay involved in this sequence, it may take several weeks until HP are legally bound to repair a system; users may negotiate individually to reduce this delay but they should be aware of the possible consequences of not taking a contract for hardware maintenance for their systems.

4.1.1 Maintenance Dossiers

HP/Apollo systems on site are covered by a general Maintenance Contract - X 027/GEN. Owners of individual systems have the option to request maintenance cover under the terms of this contract for their workstations, which are then assigned to a so-called "Extension Number" by HP as described below.

Within the contract there are a number of options corresponding to the level of hardware maintenance required for a given installation. This can range from a guaranteed four hour response time to no maintenance cover at all. The basic contract is for an eight hour response time during normal CERN working hours and there are discounts for various levels of reduced cover and a premium for the four hour response option plus the possibility of purchasing extra cover for night and/or weekend cover (very little used).

For reasons of efficiency, both for CERN and for Hewlett Packard, all the HP/Apollo systems on site are grouped into "dossiers" where a dossier is a logical grouping of systems

such as an experiment, a group or a division. Within each dossier, systems are further divided into "extensions" where the systems in a single extension are all paid under a single budget code.

Each dossier is associated with a dossier manager who is responsible for checking the systems in the dossier, ensuring that they correspond to the systems currently installed in that experiment or group; that the configurations listed are correct; that the systems have the correct level of maintenance assigned; and so on.

The extensions are circulated periodically, typically annually, for checking and updating. The dossier managers should ensure that the information, especially the system list, configuration, budget code and maintenance level are correct and return the form to Finance Division. Dossier managers should NOT sign the extension form as only Finance Division have the legal power to sign contracts. Instead, dossier managers should correct any errors, sign the CERN internal "Circulation Minute" form which should accompany the form and return the package to Finance Division (to Anders Unnervik).

Questions on this form and the maintenance agreement in general should be addressed to Anders Unnervik or Alan Silverman.

4.1.2 Reporting a Hardware Problem

If the experiment or group has a local system administrator, then normally all problems should be reported to this person who should be able to judge in many cases if the problem concerns HP or non-HP equipment. If the former, he or she will then call HP via the Customer Support Service Dispatch Centre and request that an engineer comes to repair the problem. If there is no local administrator, users may either call HP directly or call Sören Olofsson or Mario Vergari and request them to examine the problem and/or call for an HP engineer; see Section 1.3 for a list of contact people.

For systems under a valid maintenance contract, HP undertakes to provide a given maximum response time which varies according to the type of cover requested by each group. If the given response time for a call is not respected, then the user has the right to escalate the problem either by calling the HP Swiss Romande Customer Service manager, currently Yves Kammacher (tel 780 41 11) or by requesting help from Alan Silverman who will try to escalate the problem.

To call for an HP engineer, there are several methods: first call the Swiss Romande HP office (780 41 11) and ask for Customer Support; secondly, the engineers assigned to CERN are equipped with CERN bleepers, numbers 5624 and 5625. We recommend that an initial call is made to the dispatch centre rather than to the beeps. This enables HP to record the call details properly, ensuring a better chance of a correct follow-up, and also allows them to allocate the call to a free engineer as soon as one is available.

A close watch is kept on the performance of HP support and all problems (late arrival of engineers, inability to fix a hardware problem in 24 hours, frequent recurrence of the same problem, missing or non-working spare parts, etc) should be signalled as soon as possible to Alan Silverman. In addition, in order to maintain some statistics on the performance of

the support contract, we would appreciate it if users who call HP directly for engineering interventions could inform us of this, including time of response and time to repair the fault.

4.2 Apollo/Domain Software Maintenance and Updates

Apollo Domain and all the common layered products are covered by a CERN-wide maintenance contract. This contract is currently paid by CN Division. The following is a list of Domain products covered under the contract and running on the DN series and Series 400 systems listed in Section 1.5. In the list below, some products are licensed CERN-wide and some by individual node. Before installing a new product on a node, users should contact Alan Silverman to determine the appropriate licensing conditions.

Domain for both Motorola and PRISM systems
FORTRAN for both Motorola and PRISM systems
C for both Motorola and PRISM systems
C++ for both Motorola and PRISM systems
NIDL (Network Interface Definition Language) for both Motorola and PRISM systems
NFS (Network File System) for both Motorola and PRISM systems
Dialogue for both Motorola and PRISM systems
PASCAL for both Motorola and PRISM systems
GMR3D development system for Motorola systems
GMR3D runtime system for both Motorola and PRISM systems
X.25 communications package for Motorola systems
GPIO for both Motorola and PRISM systems
MOTIF for both Motorola and PRISM systems
X11/MOTIF development kit for both Motorola and PRISM systems
OMNIBACK for both Motorola and PRISM systems
HP/VUE for both Motorola and PRISM systems

Users desiring maintenance contracts for products from HP outside this list must contact HP directly.

The software contract provides a one copy of the distribution kits for new versions plus one set of new documentation, both delivered to the CN support team. Users of Apollo systems at CERN may copy from that source those kits they require. Users who require documentation sets or updates to documentation sets, must purchase these directly from HP. Contact Alan Silverman for details. HP also offer an option to obtain private copies of all new software kits but this is rather expensive.

4.3 HP-UX Software Maintenance and Updates

CN Division maintains a central support contract for HP-UX on Series 700 as well as for C, FORTRAN and OMNIBACK under HP-UX. As for Domain, this provides for the latest software releases to be delivered to the CERN support team as well as the latest

documentation on CD-ROM. Details on how to access this are given in the CERN HP-UX Installation Guide described in Section 2.5.3.

4.4 Reporting a Software Problem

The software contract also provides for the possibility of calling HP to investigate software problems. However, under the terms of the contract, only major user groups - currently CN (for both Domain and HP-UX) and L3, OPAL and SL Controls (for Domain only) - may use this facility. Individual users must address themselves to the appropriate person. Within L3, OPAL and SL Controls, this person is the local administrator; other users should contact Rainer Többicke.

After some preliminary checking by the CERN software contact (to eliminate elementary and/or user errors), problems are reported to HP via a number of methods including telephone or an online problem reporting scheme to the European support centre. Unlike the hardware contract, the software contract has no written response time or escalation procedure but the regular monthly HP/Apollo Users Meeting (see Section 6.1) reviews all outstanding points with a view to obtaining satisfactory and speedy responses to problems.

Chapter 5

CERN-provided General Support

5.1 Hardware Support

Problems related to hardware support may be addressed to the local administrator. Within the CN support team, there are currently two members of CN Consultancy and Operations (CO) group who concentrate upon workstation hardware support and they can also be contacted for hardware questions. They are Sören Olofsson and Mario Vergari. See Section 1.3 on how to contact them.

If we are called in, we normally try to isolate the problem and if it requires the intervention of an HP engineer we arrange this.

Since we are responsible for the smooth running of the support contract, we would appreciate it if all users could inform us of occasions when they call for HP support together with the result (time taken for an HP engineer to respond on site, time to repair, other comments). This is especially true if there are problems or delays in repairing hardware incidents. Such information allows us to build up more meaningful statistics on the operation of the contract.

5.2 System Software Support

Software systems support is provided by members of CN's Software (SW) group Workstation Support (WS) section in conjunction with CN/CO group and HP. This includes the installation and testing of software updates and new products or new versions of existing products. Users with specific system software questions may address them directly to these people (see Section 1.3) rather than pass them through the User Consultancy Office (UCO). Depending on the nature of the problem, we may try to fix it ourselves or pass it to the author of the code (if CERN code) or to HP (if system code). Where possible we will try to provide a work-around until a permanent fix can be found.

5.3 CERN Program Library

HP/Apollo workstations running under either the Domain or HP-UX operating systems are among the UNIX platforms supported by the CERN Program Library. Full details on how to get access to the Program Library can be found in the issue 201 of the CERN Computer Newsletter, available from the User Consultancy Office Self Service.

5.4 Other CERN-provided Utilities

As well as the Program Library, a certain number of CERN-written and public domain utilities are offered to HP/Apollo users. These include tools to send jobs to the CERNVM system, optional editors, language compilers, and so on. These are stored on a central system in the directory structure /usr/local. End-user Apollo/Domain systems are typically set up with their /usr/local directory pointing via a link to this central store. We recommend users not to alter this. HP-UX users should consult the HP-UX Installation Guide described in Section 2.5.3.

5.5 User Support

5.5.1 User Consultancy Office - UCO

As for the other centrally-supported systems at CERN, HP and Apollo users are able to take their questions to the User Consultancy Office in Building 513 (or send mail to UCO or to UCO@CERNVM).

It should be noted that, just as for the other systems, the person on duty in the UCO at any given moment may not be able to answer specialised questions and the user may be referred to another person more expert in the particular area of the question.

Detailed questions on the use of specific applications should normally be addressed to a local expert in that application and only passed to the UCO if no reply is available locally.

5.5.2 CERN UNIX Guide

There currently exists a CERN Apollo User Guide and users are encouraged to obtain a copy. This is available at the UCO. An effort is currently underway to update this Guide. All suggestions for changes, especially additions, are very welcome and should be addressed to Judy Richards (judy@cernvm).

For users interested in learning about UNIX in general, as opposed to the specifics of the implementation on HP or Apollo, there is a UNIX textbook selected and recommended for

CERN users. Copies are obtainable from the Computer Documentation Office, Building 513, room 1-022 using a CERN Stores Card.

5.5.3 User Training

UNIX training courses are offered by the CERN Training Service. Contact them for the up-to-date timetable of courses and other details. A range of courses is offered although the more advanced ones are run less frequently than the basic introductory ones. For courses specific to HP or Apollo, HP offer a series of courses, both in Geneva and elsewhere. Alan Silverman maintains a catalogue of these including course descriptions and timetables for certain centres. Note however, that these courses are much more expensive than the internal CERN courses. We also have available some self-paced UNIX instruction courses although at present we only have the version running on a SUN SPARCstation; contact Alan Silverman for details.

5.6 Central Services

We have installed a number of central servers to act as network gateways, file servers, boot hosts, etc. These systems are maintained by the support team. They have well-defined functions and the most important services are backed up so that if a node is down for a lengthy period, a backup node can assume its function with minimum disruption for users. For this reason, we recommend to use logical names when referring to links to these central servers rather than physical node names; for example cernapo for incoming mail.

5.7 File Backup

It is the responsibility of the support team to ensure that the file systems of the central servers are correctly backed up. The backup of users' files is currently left to the users for locally-stored files. This is partly because there is no obvious easy solution today because of the high network bandwidth which would be required to back up all user discs on a single central system plus the lack of available central operational support to perform the backup of the very large amount of data involved. However, this area is currently under study.

A useful utility to consider for file backup in the HP/Apollo environment is the OMNI-BACK product from HP. This is available for both Apollo/Domain and Series 700 nodes. It is use in several areas in CERN.

5.7.1 Series 700 File Backup

As owners of these new systems will know, the current version of the system software, HP-UX version 8.0.5, does not support Exabyte devices because the appropriate software

driver is broken. Although there is no public commitment from the vendor, we have reason to believe that this will be repaired in a future release of the software. In the meantime, many users are unsure of the best method to backup their discs. We can suggest three solutions.

- We have information from a US company, R Squared, that they have implemented an Exabyte interface, software and hardware, for the Series 700. Noone at CERN has yet installed this but anyone interested in it should contact Alan Silverman who can supply the coordinates of the company.
- Another option is to purchase a DAT unit, from HP or a third-party, and use that instead of Exabytes.
- The third method is use the standard HP product, OMNIBACK, to backup files across the network to an HP/Apollo running OMNIBACK and equipped with an Exabyte. We have tested this setup and it seems to work successfully. Given the current uncertain state, we are prepared to offer a limited service to Series 700 users to backup their user files (only).

  Anyone wishing to take up this offer will need to purchase a client OMNIBACK licence from HP; this will cost around 235 SFr and we will arrange a bulk order of these. Once installed, we will arrange to perform incremental backups on user files. We will monitor the traffic which this produces and we may be forced to adapt the frequency depending on overall throughput. File recovery will be possible (we have checked) but it is not a service which will be available to quickly recover files deleted by accident; it is intended as a temporary service to protect against disc faults and it is offered on a best-efforts only and only until HP or some third-party can provide a reliable alternative. Users with their own Apollo/Omniback configuration can of course use these and we are available to help supply advice on setup.

  Any Series 700 owner interested in this OMNIBACK solution is invited to contact Alan Silverman.

Chapter 6

HP/Apollo Meetings

For the benefit of HP/Apollo users, a number of meetings are arranged on a more or less frequent basis depending on the meeting type. In general, because of the large number of HP/Apollo end-users at CERN, these meetings are aimed more at local administrators rather than at end-users. However, anyone is welcome to put forward suggested topics for discussion either to their local administrator, or to Alan Silverman. Where appropriate, end-users may indeed be invited to attend particular meetings when topics of direct interest to them will be discussed. Please contact Alan Silverman for more details.

6.1 Monthly User Meetings

Each month, on the first Tuesday of the month usually, there is a regular meeting for all local administrators. It takes place in conference room 1 of CN Building 600 (room R-017) at 16:00. An agenda for the meeting is mailed some days in advance and minutes are published. Any HP/Apollo user is welcome to request to be placed on the mailing list for these minutes but attendance is limited by the size of the room to about 20 people. Hewlett Packard sales and support staff normally attend this meeting.

At each meeting there is a review of current outstanding and any new problem areas, both software and hardware. HP sales staff use this meeting to present new products as they are announced and also to present any significant price changes and announcements. We also from time to time discuss matters arising from specific work going in with CERN which might have interest to other user groups.

6.2 Joint Collaboration Reviews

CERN undertakes a number of Joint Collaboration projects with Hewlett Packard and every 6 to 9 months we arrange a half-day meeting where these are reviewed. The meeting takes the format of a series of presentations by members of CERN and/or HP staff working on the project followed by a short discussion on each project. The meeting usually takes

place in one of the Hewlett Packard offices in Meyrin.

Invited to attend such meetings are CERN staff and visitors and HP staff working on the project; senior CERN management associated with the projects; and representatives of HP Marketing and Research and Development groups. We also try to involve collaborations between HP and other High Energy Physics institutes elsewhere in Europe.

Once again there is an agenda for such meetings plus a distribution to attendees of all overheads presented. There is also a summary produced afterwards which is distributed to the attendees and anyone else requesting it.

6.3 Management Review Boards

Lastly, there is a 6 monthly CERN/HP Management Review Board. This is a meeting between the CERN Director responsible for Computing, those Division Leaders representing the major user groups and the senior management of Hewlett Packard Switzerland and Hewlett Packard Europe. The agenda and minutes for these meetings are not made public but all HP/Apollo users are welcome to make suggestions for discussion topics. Such suggestions should be addressed to Alan Silverman who is the secretary of this meeting.

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