

Read Me Before Installing or Updating Programming Environment

HP 9000 Series 300



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Read Me Before Installing or Updating PE

Please Start Here

This document applies to the product you purchased (for example, installing SE update, updating AXE, updating PE) for the 7.0 release of the HP-UX operating system. The document has the following purposes:

- Introduce your product.
- Identify things you must accommodate before you begin an installation or update.
- Provide information related to an installation or update that helps you use the *Installing HP-UX* manual or the chapter on updating HP-UX that appears in the *HP-UX System Administration Tasks* manual.
- Identify things you should accommodate after an installation or update to ensure the proper operation of your product.
- Discuss miscellaneous items you may need to consider, depending on your situation.

The following sections reflect these purposes.

Contents of Your Product

This box contains the software and documentation for the 7.0 release of your HP-UX Programming Environment product (PE). Please take time to verify the contents against the package contents list. If you do not have the correct product, contact your HP representative before you attempt an installation or update.

Do These Things Before You Update PE

This section describes things you should do or account for before you begin an installation or update.

Install or Update AXE First

You must have installed or updated the 7.0 release of the HP-UX AXE product before you attempt to install or update this 7.0 release of the PE product.

Backup Any Existing System

If you have an existing release 6.5 of HP-UX, backup any files you cannot afford to lose before you begin an installation or update. For example, backup directories for users, applications, environments, tools, utilities, and languages that you suspect may not be on your install or update media. An installation destroys all existing files on a disk, and while an update attempts to preserve special and customized files, you should backup your system to ensure not losing files.

Do These Things During the Update of PE

To update the PE product, use the following procedure, noting that you may need to read other files or documents:

1. Read this entire document, and any other READMEs you may have, before you begin the update.
2. When you have performed all prerequisite tasks (according to your system and situation), update PE as follows. In particular, prerequisite tasks include testing all hardware and making sure you have sufficient disk space to hold the PE product.
 - a. Log in as the root user and get the system into the single-user state (run `/etc/shutdown 0`).
 - b. Work through the chapter named "Updating HP-UX" in the *HP-UX System Administration Tasks* manual to update the filesets for PE.
3. Once your system has been updated, perform any necessary tasks to get the system running as required. The *HP-UX System Administration Tasks Manual* and the *HP-UX System Administration Concepts Manual* have information about this. You may also need to use documentation for networking, system security, windowing, and so on. The *Finding HP-UX Information* manual has information about the entire HP-UX documentation set.

Do These Things After You Install PE

Read the Release Notes File

The 7.0 release has a directory named `/etc/newconfig`. This directory contains a file named `ReleaseNotes`, which discusses new features, changes from the 6.5 release, and other user information. With the 7.0 release, the `ReleaseNotes` file replaces the files that were previously contained in the `/etc/newconfig/Update_info` directory.

You should read this file after you do an installation or update and before you use the 7.0 release.

The Following Items May Relate to Your Situation

The X11 Window System

If you have an HP 98720 monitor and run X11 windows, set up the `Xn.devices` file to tell XWindows what device file to use.

The following items discuss things you may need to accommodate.

Running X11 Windows on a Standalone System

Page 3-6 of the *Installing and Configuring the X Window System* manual (part# 98794-90004) incorrectly states that stand-alone systems do not need any customization. In fact, to run X11 windows, stand-alone systems *must* have a proper host name and either a host address or the loopback address (127.0.000.1) entered in the `/etc/hosts` file.

The format for `/etc/hosts` entries is:

```
address hostname[s]
```

For example, to specify the loopback address in `/etc/hosts`, enter

```
127.0.000.1 hostname1 hostname2
```

To learn how to assign a hostname, see page 2-10 of the *Installing and Configuring the X Window System* manual.

Correcting the Two-dimensional Appearance of X11 Windows

A minor problem in the file `sys.Xdefaults` causes the X11 Window System to come up with only a two-dimensional appearance. To correct this problem, perform the following procedure after you have installed or updated to the HP-UX 7.0 system release.

1. Log on as superuser. Your system administrator will have to perform this procedure if you do not have this capability.
2. Change your current directory to `/usr/lib/X11`.

```
cd /usr/lib/X11
```

3. Make a copy of the file `sys.Xdefaults`.

```
cp sys.Xdefaults old.Xdefaults
```

4. Read Me Before Installing or Updating PE

4. Invoke whichever editor you like to use and change lines 43-45 of `sys.Xdefaults` from

```
*Foreground:          black
*Background:         wheat
*BorderColor:        navy
```

to

```
!*Foreground:        black
!*Background:       wheat
!*BorderColor:       navy
```

5. Save the changes in `sys.Xdefaults`.

6. Exit from superuser status.

xwcreate/gwind

In X11 for HP-UX 6.5, the `gwind` daemon can manage multiple windows on multiple screens. This capability is broken in HP-UX 7.0 X11 because an enhancement was added to ensure that each `xwcreate` window displays the same type of arrow as appears for a Starbase program running on the ITE.

The 7.0 `gwind` daemon creates an arrow only for the first window generated by a call to `xwcreate`. Then `gwind` attempts to share with all subsequently created windows. On windows that reside on the same display combination as the first window, this condition generates a non-fatal X protocol error when `gwind` attempts to register the arrow for windows on other screens. The condition has other non-fatal consequences, and in any case, the workaround is to use the `-wmdir` option in `xwcreate` to force a new `gwind` for each unique combination of displays.

libX11

X11 clients that reference the Xlib procedure named `XGetMotionEvents()`, need the following lines as part of the C source code.

```
#include <X11/Xmd.h>

int cvtINT16ToInt(val)
    int val;
{
    return(cvtINT16toInt(val)) ;
}
```

Using X11 and X10 Windows on a System

If your system has the X11 and X10 window systems, you should control the paths you use so the correct window system starts up. The `hpterm` for X10 is in `/usr/bin` and the `hpterm` for X11 is in `/usr/bin/X11`. Therefore, work as follows:

- If you want X11, make `/usr/bin/X11` a value in your `PATH` variable in your local login script and place this value ahead of `/usr/bin`.
- If you want X10, make `/usr/bin` a value in your `PATH` variable in your local login script and place this value ahead of `/usr/bin/X11` (if you include this value).
- If you start X11 or X10 remotely, you can avoid problems by using an absolute pathname (for example, `/usr/bin/X11/hpterm` to get an X11 window).

The System Administration Manager

The 7.0 release contains a System Administration Manager (SAM). HP recommends using SAM for system administration whenever possible and working manually when SAM does not perform a task. The capability of `/usr/bin/sam` exceeds the capability of `/etc/reconfig`, which existed on releases prior to 7.0. Therefore, HP-UX no longer contains `/etc/reconfig`. A file named `/etc/newconfig/Update_info/reconfig_sam` explains the differences.

The New ELM Mailer

A new ELM Mailer has a screen-oriented interface that conforms to RFC-822 electronic mail header protocol.

Conformance to Standards

The 7.0 release conforms to POSIX IEEE 1003.1 and X/Open branding. Examine any information about this in the release notes. Also, read the *HP-UX POSIX Conformance Document*.

The default job control facilities in 7.0 conform to POSIX 10003.1.

Integration of Series 300 and Series 800 Computers

HP has made a significant effort to integrate Series 300 and Series 800 systems. For example, a Series 300 computer can be a client in an HP-UX heterogeneous cluster.

Some documents such as the *HP-UX System Administration Concepts Manual* apply to both series, and some documents such as the *HP-UX System Administration Tasks Manual* apply to a specific series. For example, if you have a Series 300 computer, you need the *HP-UX System Administration Tasks* manual for HP 9000, Series 300.

Compatibility Between the 6.5 and 7.0 Releases

The `/etc/utmp`, `/etc/wtmp`, and `/etc/btmp` files have a different format in the 7.0 release than they had in previous releases. They may not be compatible with certain software (for example, the 6.5 release and the X11 window system).

If this condition affects any of your programs, you must recompile the existing programs against the 7.0 header file named `/usr/include/utmp.h`. Private data files that conform to the 6.5 format need to be converted to the new `utmp` format as defined in the header.

Job Control

The job control features can induce conditions that make HP-UX unstable if you use the Korn or C shells. To avoid this, the root user (the superuser) should use the Bourne shell (`/bin/sh`). Also, you should shut down the system from a Bourne shell.

The `ReleaseNotes` file in `/etc/newconfig` has more information.

Note This When You Run `/etc/shutdown`

Running `/etc/shutdown` may display this message:

```
Cannot find HOME variable
```

The `/etc/init` command does not initialize this shell environment variable. Getting the messages does not adversely affect the shutdown process.



Saving Space on Standalone Systems

The AXE part of your product contains several preconfigured kernels. After an installation or update, if you have a standalone configuration (no networking and no relationships to HP-UX clusters) and you want to free up some disk space, you can safely remove files from the `/etc/conf` directory as follows:

- If you have a multi-user license (16- or 32-user AXE), removing the following files saves about 4 Mbytes.

```
cnode.hp-ux.m  
cnode.nfs.m  
cnode.cdnfs.m  
cnode.cdfs.m
```

- If you have a 2-user license, removing the following files saves about 4 Mbytes.

```
cnode.hp-ux.2  
cnode.nfs.2
```

```
cnode.cdnfs.2
cnode.cdfs.2
```

X11 Windows: server

The HP-UX 7.0 X11 server does *not* support `SaveUnders` even though `DoesSaveUnders()` and `XDoesSaveUnders()` both indicate that it does.

Ksh Interaction with Background Jobs

If you alias a ksh builtin command to a function that uses command substitution with a non-builtin command, there is interaction with background jobs. Here is an example of an alias that causes this situation to occur:

```
$ alias cd=newcd
# alias cd (a builtin) to function
$ function newcd
{
    \cd /tmp
    x='/bin/echo foo'
# command substitution of non-builtin
}
```

Here, the function `newcd` substitutes a non-builtin command (`/bin/echo`). If you put a job in the background, and then immediately issue the `cd` command, `cd` hangs until the background job finishes. Here is an example of when this situation occurs:

```
$ sleep 120 [1] 8377
$ cd
```

The prompt will not return until the `sleep` command finishes, since it is waiting for the background job to complete as well as waiting for the expected `/bin/echo` to complete. This only occurs if there are no intervening non-builtin commands issued between putting a job in the background and issuing the alias. For example:

```
$ sleep 120 [1] 9876
$ pwd # execute a ksh builtin
/users/pbm
$ cd # cd hangs
```

If, however, you enter an intervening non-builtin command, `cd` completes normally.

```
$ sleep 120 [1] 9876
$ /bin/true # execute a non-builtin
$ cd # cd completes normally
```

Workaround

Make sure that functions you alias to ksh builtin commands (e.g.: `kill`, `cd`, `echo`, `umask`, ...) do not contain command substitution (nor do functions called by the function aliased to the builtin).

If you do have this situation, then make sure that you do not issue that function *immediately* after putting a job in the background. If there is an intervening non-builtin command, the problem will not occur.

Native Language Support default LANG value

The default LANG variable in 7.0 HP-UX has changed from “n-computer” to “C”. If you wish to use the default computer language of “C,” make sure the LANG variable is *not* set in the applicable login scripts, such as `.profile` or `.cshrc`.

If the LANG environment variable is set to an invalid value, all NS logging entries will say UNKNOWN MESSAGES.

Enabling Auditing in HP-UX Clusters

The following discussion applies only if you enable auditing on an HP-UX cluster.

If you enable auditing on an HP-UX cluster, you should be aware that the program `/etc/tsconvert`, normally executed by `sam(1M)`, has a flaw that will affect both heterogeneous and homogeneous clusters.

The flaw is exhibited when `at` and `cron` jobs are executed. For all clients of the cluster, none of these jobs are executed, and users are informed (via mail) that their `at` or `cron` job did not run, because their job did not have a valid audit ID.

The `/etc/tsconvert` program does the following:

- Creates a new file, `/.secure/etc/passwd`. The line entries in this file have the following form:

```
user:password:aid:flag
```

The contents of the fields `user` and `password` are taken from the `/etc/passwd` file, and an `aid` (audit ID) is automatically assigned to the user. The `audit flag` is set to 1 by default.

- Removes passwords from `/etc/passwd`, replacing them with asterisks.
- Creates two new directories, `.ataids` and `.cronaids` in `/usr/spool/cron`
- For each `at` and `cron` job, creates a file having the same name as the job; the contents of the file are the submitters' audit IDs.

The `/usr/spool/cron` directory is a CDF, but `tsconvert` does not recognize this fact. Thus, only the server's `at` and `cron` jobs get properly converted (not the clients). As mentioned above, this results in the jobs being ignored and mail being sent to the submitters saying their jobs were not run.

Here is a workaround:

After you have converted to a trusted system from `sam(1M)`, run `tsconvert` using the `-p` option. For each client on the cluster, as root, run `tsconvert` by entering:

```
/etc/tsconvert -p
```

The `/etc/tsconvert` program will not run to completion if you have not first converted to a trusted system.) The `-p` option specifies that `tsconvert` is to not convert the password file (as this has already been done).

Quietjet Plus Printer Configuration

You need to configure the Quietjet Plus Printer to return the correct ID byte. The printer manual for the Quietjet Plus erroneously indicates that switches B2 and B3 should be configured B2 Up and B3 Down. They should both be configured down.

Using the m4 Command

The m4 command has moved from /bin to /usr/bin. The /bin/as command has an m option that pre-processes input assembler files with m4 before assembling. The /bin/as command, however, still looks for m4 in /bin instead of /usr/bin. Therefore, if you use the m option to /bin/as, either:

1. link /usr/bin/m4 to /bin/m4; or
2. move /usr/bin/m4 to /bin/m4.

Using SAM to Configure NS Services

On a system that has no net directory, use the following menu items to configure NS Services, starting from the Main Menu of SAM:

1. Networks/Communications->
2. NS (Network Services) Configuration->
3. Add Connectivity to a Remote System

If you try to add a remote system such as abcdef, you get the following message:

```
SAM System Error: No such file or directory (2).  
Please call your Hewlett Packard representative.
```

When you press the space bar, the form remains as it was with the name abcdef as you entered it in the Name of remote system field. The /net directory is created, but its mode is unpredictable. The unpredictable mode can prevent non-root users from using the *netunam*(1) command with network special files created in /net. In addition, the network special file for abcdef exists under /net, but it is empty. Consequently, it will not work for a *netunam*(1) command by root or non-root users.

When Can This Defect Occur?

System	Can appear on both 300s and 800s.
Condition	Occurs only when the /net does not exist.
Frequency	Occurs only once. After you create /net, the defect does not recur.

Workaround

In SAM, while you are on the same form, press **Perform Task** a second time once the error message goes away. The network special file is created properly. To allow non-root users to access the network special files that are created under /net exit SAM (or use the **Shell** softkey), and run the following command:

```
chmod 755 /net
```

As an alternative, you can create `/net` as the root user prior to using SAM and everything will work correctly.

```
mkdir /net
chmod 755 /net
```

Change in the `xmfonts.c` Program

You must edit a change in the `xmfonts.c` program because of a change in the structure of the X11 font directories. Proceed as follows:

1. Copy the file named `xmfonts.c` from `/usr/contrib/Xm` to your home directory.
2. Edit the file, looking for the line:

```
#define FONT_DIR_NAME "/usr/lib/X11/fonts"
```

Change the line to read:

```
#define FONT_DIR_NAME "/usr/lib/X11/fonts/misc"
```

3. Compile the edited program in accordance with the directions in Chapter 1 of the *HP/OSF Motif Programmer's Guide*.

Errata

Correction to `setuid(2)` man-page

On the man-page of `setuid(2)`, the following description for `setgid` is incorrect:

If the `euid` is not zero, but the `rgid` or `sgid` is equal to `gid`, and the calling process is a member of a group that has `PRIV_SETRUGID` privilege (see `privgrp(4)`), `setgid` sets the `egid` to `gid`; the `rgid` and `sgid` remain unchanged.

If the `euid` is not zero, but the `gid` is equal to the `egid`, `setgid` sets the `rgid` to `gid`; the `egid` and `sgid` remain unchanged.

The corrected version of this section is:

If the `euid` is not zero, but the argument `gid` is equal to the `rgid` or the `sgid`, `setgid` sets the `egid` to `gid`; the `rgid` and `sgid` remain unchanged.

If the `euid` is not zero, but the argument `gid` is equal to the `egid`, and the calling process is a member of a group that has the `PRIV_SETRUGID` privilege (see `privgrp(4)`), `setgid` sets the `rgid` to `gid`; the `egid` and `sgid` remain unchanged.

Correction to signal(5) man-page

In the *signal(5)* man-page, in the DESCRIPTION section under H for SIG_DFL, the following paragraph is incorrect:

When a process whose parent is the initialization process (see *init(1M)*) stops as the result of receiving the SIGTSTP, SIGTTIN, or SIGTTOU signal, the process terminates because the SIGKILL signal is sent to the stopped process.

Here is the corrected version:

When a process that is in an orphaned process group (see *glossary(9)*) receives the SIGTSTP, SIGTTIN, or SIGTTOU signal, the process is not stopped, because a process in an orphaned process group is not allowed to stop. Instead a SIGHUP signal is sent to the process. The SIGTSTP, SIGTTIN, or SIGTTOU is discarded.

X11 Manuals

The *Starbase Programming with X11* manual (98592-90000), which came out with the 6.5 release, was not updated for the 7.0 release. Instead, the information in this manual was integrated into the other 7.0 manuals, including the *Starbase Device Driver's Library* manual and *Starbase Graphics Techniques*. If you find any differences between the information in *Starbase Programming with X11* and the 7.0 release or newer manuals, assume the newest version is the most correct.

Correcting OSF/Motif Man-pages

If you try to access many of the HP OSF/Motif man-pages on-line, a message stating "... cannot open file defs" appears, and the information presented is incomplete.

These files (which are listed below) have been fixed and are available. Please call your Hewlett-Packard Support Contact for information on obtaining the corrected files. You can also refer to the *HP/OSF Motif Programmer's Reference* (HP part number 98794-90006) for detailed and complete information.

Here is a list of the incomplete man-pages.

Application	Composite
Contstraint	Core
Object	OverrideShe
RectObj	Shell
TopLevelShe	TransientSh
VendorShell	WMShell
XmBulletinB	XmArrowButton (XmArrowButA)
XmCommand	XmArrowButtonGadget (XmArrowButB)
XmDialogShe	XmCascadeButton (XmCascadeBA)

XmDrawingAr	XmCascadeButtonGadget (XmCascadeBB)
XmDrawnButt	XmFileSelectionBox (XmFileSeleA)
XmForm	XmFrame
XmGadget	XmInstallIm
XmLabel	XmLabelGadg
XmList	XmMainWindow (XmMainWindA)
XmManager	XmMenuShell
XmPanedWind	XmMessageBox (XmMessageBA)
XmPrimitive	XmPushButton (XmPushButtA)
XmRowColumn	XmPushButtonGadget (XmPushButtB)
XmScale	XmScrollBar (XmScrollBaA)
XmText	XmScrolledWindow (XmScrolledA)
XmUninstall	XmSelectionBox (XmSelectioA)
XmUpdateDis	XmSeparator (XmSeparatoA)
XmSeparatorGadget (XmSeparatoB)	XmToggleButton (XmToggleBuA)
XmToggleButtonGadget (XmToggleBuB)	

Error Message Reported from catman

Ignore the following message if *catman*(1M) reports:

```
stdin: not in compressed format
```

This message is caused by non-compressed format files.

Fileset Sizes and Dependencies for 7.0

The following table shows the filesets, sizes, and dependencies for the 7.0 release of HP-UX. **Size** means number of 512-byte blocks. The three columns on the right (Name, Size, and Partition) show the dependent filesets for the fileset shown on the left (Fileset). The table continues for several pages.

Fileset	Size	Partition	Dependencies		
			Name	Size	Partition
ACCOUNTNG	1520	OS_ADMIN	KERN_SUPL	7264	OS_CMDS
ALLBASE1	10720	DATABASE	N_COMPUTE	640	NLS
ARPA	4544	NETWORKING	LANLINK	5456	NETWORKING
CE_UTIL	1344	DIAGS	AGP_DGL	3840	GRAPHICS
			AGRM	100	WINDOWS
			C_MIN	1936	PROG_LAN
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
C_MIN	1936	PROG_LANG	STAR_MIN	5884	GRAPHICS
			PROG_MIN	1248	PROG_LANG
C_SUPL	2912	PROG_LANG	PROG_MIN	1248	PROG_LANG
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
DGL_SKEL	1392	GRAPHICS	C_MIN	1936	PROG_LANG
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG



DIAGNOSTC	6512	DIAGS	AGRM	100	WINDOWS
			FAFM_MIN	480	GRAPHICS
			STAR_MIN	5884	GRAPHICS
DISKLESS	624	OS_KERNEL	ARPA	4544	NETWORKING
			LANLINK	5456	NETWORKING
FAFM_MIN	480	GRAPHICS	AGRM	100	WINDOWS
			STAR_MIN	5884	GRAPHICS
FORTRAN	3072	PROG_LANG	FTN_LIBS	576	PROG_LANG
HPGKS	1568	GRAPHICS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
KERN_BLD	9472	OS_KERNEL	O2_USER	7344	OS_KERNEL
			MULT_USER	8416	OS_KERNEL
NFS_RUN	6784	NETWORKING	LANLINK	5456	NETWORKING
			TEXT_READ	144	OS_DOC
NJWSERV	2000	NLIO	AGRM	100	WINDOWS
			FAFM_MIN	480	GRAPHICS
			KFA_FM	1056	NLIO
			NLIO_JPN	3008	NLIO
			NLIO_MIN	1104	NLIO
			STAR_MIN	5884	GRAPHICS
			WIN_RUN	2640	WINDOWS
NLIO_CHS	496	NLIO	NLIO_MIN	1104	NLIO

NLIO_CHT	1344	NLIO	NLIO_MIN	1104	NLIO
NLIO_JPN	3008	NLIO	NLIO_MIN	1104	NLIO
NLIO_KOR	256	NLIO	NLIO_MIN	1104	NLIO
NLX10_CHS	1952	NLIO	NLIO_CHS	496	NLIO
			NLIO_MIN	1104	NLIO
			NLX10_SUB	34	NLIO
NLX10_CHT	3872	NLIO	NLIO_CHT	1344	NLIO
			NLIO_MIN	1104	NLIO
			NLX10_SUB	34	NLIO
NLX10_JPN	1776	NLIO	NLIO_JPN	3008	NLIO
			NLIO_MIN	1104	NLIO
			NLX10_SUB	34	NLIO
NLX10_KOR	2176	NLIO	NLIO_KOR	256	NLIO
			NLIO_MIN	1104	NLIO
			NLX10_SUB	34	NLIO
NLX11_CHS	3088	NLIO	NLIO_CHS	496	NLIO
			NLIO_MIN	1104	NLIO
			NLX11_SUB	122	NLIO
NLX11_CHT	6192	NLIO	NLIO_CHT	1344	NLIO
			NLIO_MIN	1104	NLIO
			NLX11_SUB	122	NLIO
NLX11_JPN	5152	NLIO	NLIO_JPN	3008	NLIO
			NLIO_MIN	1104	NLIO
			NLX11_SUB	122	NLIO
NLX11_KOR	3344	NLIO	NLIO_KOR	256	NLIO
			NLIO_MIN	1104	NLIO
			NLX11_SUB	122	NLIO

NS_SERV	896	NETWORKING	LANLINK	5456	NETWORKING
PASCAL	1104	PROG_LANG	C_MIN	1936	PROG_LANG
			TEXT_READ	144	OS_DOC
			TEXT_SUPL	1696	OS_DOC
			KERN_SUPL	7264	OS_CMDS
			TEXT_FMT	1120	OS_DOC
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			LANG_MIN	32	PROG_LANG
			PAS_LIBS	688	PROG_LANG
PROG_SUPL	5360	OS_CMDS	KERN_SUPL	7264	OS_CMDS
SBDL_BLD	464	GRAPHICS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
			STAR_BLD	6192	GRAPHICS
SBDL_DEMO	960	GRAPHICS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
			STAR_BLD	6192	GRAPHICS
			SBDL_BLD	464	GRAPHICS

STAR_BLD	6192	GRAPHICS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
STAR_DEMO	2336	GRAPHICS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
			STAR_BLD	6192	GRAPHICS
STAR_MIN	5984	GRAPHICS	AGRM	100	WINDOWS
			FAFM_MIN	480	GRAPHICS
TEXT_READ	144	OS_DOC	TEXT_FMT	1120	OS_DOC
TEXT_SUPL	1696	OS_DOC	TEXT_FMT	1120	OS_DOC
			TEXT_READ	144	OS_DOC
UX_CORE	18800	OS_KERNEL	TEXT_FMT	1120	OS_DOC
			TEXT_READ	144	OS_DOC
			TOOL	1968	OS_CMDS

WIN_BLD	256	WINDOWS	AGRM	100	WINDOWS
			FAFM_MIN	480	GRAPHICS
			STAR_MIN	5884	GRAPHICS
			WIN_RUN	2640	WINDOWS
WIN_DEMO	816	WINDOWS	AGRM	100	WINDOWS
			C_MIN	1936	PROG_LANG
			C_SUPL	2912	PROG_LANG
			FAFM_MIN	480	GRAPHICS
			FAFM_SUPL	7264	OS_CMDS
			KERN_SUPL	7264	OS_CMDS
			PROG_MIN	1248	PROG_LANG
			PROG_SUPL	5360	OS_CMDS
			STAR_MIN	5884	GRAPHICS
			STAR_BLD	6192	GRAPHIC
			TEXT_READ	144	OS_DOC
			TEXT_SUPL	1696	OS_DOC
			TEXT_FMT	1120	OS_DOC
			WIN_RUN	2640	WINDOWS
			WIN_BLD	256	WINDOWS
WIN_MAN	640	WINDOWS	KERN_SUPL	7264	OS_CMDS
WIN_RUN	2640	WINDOWS	AGRM	100	WINDOWS
			FAFM_MIN	480	GRAPHICS
			STAR_MIN	5884	GRAPHICS
X11_RUN	8544	WINDOWS	X11_MIN	3072	WINDOWS
X11_SERV	3040	WINDOWS	AGRM	100	WINDOWS
			X11_MIN	3072	WINDOWS
X25_COM	2384	NETWORKING	LAN_MAN	640	NETWORKING
			NS_MAN	74	NETWORKING

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Customer Order Number

NONE

Product of USA

** For HP Internal Reference Only **

Manufacturing Part Number

98597-90659

