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Symbols

NETWORK LICENSE SERVER (NLS)

Allows registered users to run Z–Mail from any machine on the network.

An activation key locks the license server to a machine on the network. (We lock to an IP address.) Another activation key locks zmail to the license server. You can now run zmail on any machine on the network as long as it is physically connected to the machine running the NLS. If the NLS goes down, you can have backup servers—the backup servers won't run if the primary server is running. Specific users (logins) still have to be registered, but they are not locked to any particular machine.

Price – 10% of purchase price

DOCUMENTATION

Z–Mail includes a 115–page user's guide.

TECHNICAL SUPPORT

Standard support contracts are available for both single–user and multi–user licenses. Single–user contracts are $75. Multi–user contracts are 15% of list price. (both are annual contracts.) Support includes 9am–5pm pst telephone support, unlimited FAX and e–mail correspondence. Support also includes free maintenance releases (bug fixes) and 50% off on new versions.

Premium support is only available for multi–user licenses and is 25% of list price annually. This includes all the provisions for standard support, but also includes all new versions/upgrades free of charge, including documentation and other related materials.

Z–Mail and other information is available from:

Z–Code Software
4340 Redwood Hwy Suite B–50
San Rafael, CA 94903

Phone: 415–499–8649
Fax: 415–479–0448
E–Mail: info@z–code.com

sheet file, Z–Mail can be configured to automatically launch the associated application and load the the attachment automatically and transparently to the user. Z–Mail understands MIME–format documents and is also compatible with Sun's multimedia Mailtool as well as AT&T's new multi–document formats.

Using Z–Mail's filters, you can sort your mail automatically by applying various "rules" that scan messages as they are received. For example, you can immediately discard junk mail, mark and sort important mail into categories, automatically or interactively forward messages to other users, automatically resend bounced mail, and track threads of discussion.

Z–Mail gives you extensive configuration variables so you can make Z–Mail help you to be more productive. Z–Mail's open architecture and scripting capabilities make it an ideal backbone for your office automation strategies.

ADDITIONAL Z–MAIL FEATURES

- Define form templates for sending standard messages
- Sort messages using nested sort keys.
- Dynamically configure colors, fonts and GUI labels.
- Create dialogs, buttons and other user interface elements that execute Z–Script functions.

PRICING

The following table shows the price per use:

		Per Use
Single–Use	$ 295	295
5–Pak	$1,395	279
10–Pak	$2,495	249
11–24		245
25–49		210
50–99		175
100–249		150
250–499		135
500+		125

Appendix I
Z–mail

NOTICE: Users will choose to run Sun's mailtool and remote the display back to the HP–UX to continue to use the mailtool to which they have become accustomed or to take advantage of the features of mailtool. An commercial product to elm or mailtool is Z–Mail described below.

Z–Mail PRODUCT SUMMARY
Z–Code Software Corp.

Z–Mail, a UNIX World Magazine "Product of the Year" winner for 1991, is a complete electronic mail system for workstations. Z–Mail supports the Motif and Open Look in the graphical user interfaces (GUI), as well as two character modes.

Z–Mail has been ported to virtually every system that runs UNIX including:

Sun3, Sparc	Silicon Graphics
SCO UNIX	All 88000–based systems (Motorola, DG, etc)
SVR4	HP 300 and 700 series
Sequent	Pyramid
Apollo	DEC
IBM RS/6000	All 80x86–based unix platforms

Z–Mail works with all standard UNIX mail transport agents including sendmail, binmail, smail, MMDF and X.400 gateways. Z–Mail can replace or coexist with standard mail user agent on the system, including BSD Mail, AT&T mailx, Sun Mail Tool, Elm or Mush. It is backwards compatible with these existing e–mail utilities, so users don't have to learn anything new to use Z–Mail. Most anyone can use Z–Mail "off the shelf" and immediately benefit from its simple interface and advanced features.

Z–Mail also includes a powerful scripting language called Z–Script, which enables users to customize and extend Z–Mail's capabilities, regardless of the interface being used. With Z–Script, users can:

- create rule–based filters that automatically manage mail in the foreground or background (asynchronously).
- create shell functions
- redefine existing mail functions and capabilities
- create GUI buttons, dialog boxes and other interactive facilities independent of the user interface.
- build intelligent mail processing applications that direct requests and forms automatically.

Z–Mail's multi–media capabilities allow easy integration with best–of class products including spreadsheets, desk–top publishing, graphics, fax, voice, and video. For example, when users receive a spread-

```
echo ”\nFor NIS domain $DOM:\n”
for MAP in $MAPS; do
   case $MAP in

       group)         build $DIR/group group.bygid group.byname;;

       hosts)         build $DIR/hosts hosts.byaddr hosts.byname;;

       netgroup)      build $DIR/netgroup netgroup netgroup.byhost netgroup.byuser;;

       networks)      build $DIR/networks networks.byaddr networks.byname;;

       passwd)        build $PWFILE passwd.byname passwd.byuid;;

       protocols)     build $DIR/protocols protocols.byname protocols.bynumber;;

       rpc)           build $DIR/rpc rpc.bynumber rpc.byname;;

       services)      build $DIR/services services.byname servi.bynp;;

       vhe_list)      build $DIR/vhe_list vhe_list;;

   esac
done

finis
```

```
        DIR=${DIR:-/etc}
        PWFILE=${PWFILE:-$DIR/passwd}
        MAPS=${MAPS:-'passwd group hosts networks rpc services protocols netgroup
        vhe_list'}
        NIS_DIR=/usr/etc/yp
        MAKEDBM=$NIS_DIR/makedbm
        MAPDIR=$NIS_DIR/$DOM

        #==========
        #  If the domain directory does not exist or is not writable, stop.
        #==========

if [ ! -d $MAPDIR -o ! -w $MAPDIR ]; then
          echo "\n/ERROR (ypmake):  \"$MAPDIR\"," >& 2
          echo "        the domain directory, does not exist or is not writable." >& 2
          echo "        Aborting ypmake." >& 2
          EXIT_CODE=3
          finis
fi

#==========
#  When /usr/etc/yp is in a file system which permits file names longer than 14
#  characters, the LONG_FILENAMES variable is set to TRUE.  This causes the
#  standard NIS maps to be built with their full names, not abbreviated names.
#==========

        if `$NIS_DIR/longfiles`; then
                LONG_FILENAMES=TRUE
        else
                LONG_FILENAMES=FALSE
        fi

        #==========
        #  For each of the maps to be made, do the appropriate work.
        #
        #  If you create a new, custom NIS map and want it to be distributed to the
        #  slave NIS servers, add a pattern to this case statement.  Use a similar
        #  construct as is found here.
        #==========
```

```
                vhe_list)
                          if [ ‘expr ”$MAPS” : ”.* vhe_list.*”‘ –eq 0 ]; then
                                  MAPS=”$MAPS vhe_list”
                          fi;;

                *)        echo ”\n/ERROR (ypmake):  unknown mapname \”$ARG\”” >& 2
                          BADARG=TRUE;;

           esac
        done

        #==========
        #  If any bad arguments were encountered, do not continue.
        #==========

if [ $BADARG ]; then
       echo ”\nUsage:  ypmake [DIR=source_dir] [DOM=domain_name] [NOPUSH=1] \\” >& 2
       echo ”               [PWFILE=passwd_file] [map ...]” >& 2
       EXIT_CODE=1
       finis
fi

        #==========
        #  Set DOM to its default, if it has not been specified.  It it’s null,
        #  the NIS domain name is not set; it must be, before ypmake can continue.
        #==========

        DOM=${DOM:–‘domainname‘}
        if [ –z ”$DOM” ]; then
                 echo ”\n/ERROR (ypmake):  the NIS domain name is not set on this ma-
        chine.” >& 2
                 echo ”                 Aborting ypmake.” >& 2
                 EXIT_CODE=2
                 finis
        fi

        #==========
        #  Set DIR and PWFILE to their defaults, if they have not been specified.
        #  If no maps were specified, check (and possibly build) them all.
        #
        #  NIS_DIR:         The directory which contains the directories whose names
        #                   are domains; each, in turn, contains maps for the domain.
        #                   NIS_DIR also contains the makedbm, revnetgroup, stdhosts
        #                   and yppush commands.
        #  MAKEDBM:         The full pathname of the makedbm utility.
        #  MAPDIR:          The directory for the domain of interest.
        #==========
```

```
for ARG in $*; do
   case "$ARG" in

         DIR=* | DOM=* | NOPUSH=* | PWFILE=*)
                  eval $ARG;;

         *=*)     echo "\n/ERROR (ypmake):  unknown option \"$ARG\"" >& 2
                  BADARG=TRUE;;

         group | group.bygid | group.byname)
                  if [ `expr "$MAPS" : ".* group.*"` -eq 0 ]; then
                        MAPS="$MAPS group"
                  fi;;

         hosts | hosts.byaddr | hosts.byname)
                  if [ `expr "$MAPS" : ".* hosts.*"` -eq 0 ]; then
                        MAPS="$MAPS hosts"
                  fi;;

         netgroup | netgroup.byhost | netgroup.byuser)
                  if [ `expr "$MAPS" : ".* netgroup.*"` -eq 0 ]; then
                        MAPS="$MAPS netgroup"
                  fi;;

         networks | networks.byaddr | networks.byname)
                  if [ `expr "$MAPS" : ".* networks.*"` -eq 0 ]; then
                        MAPS="$MAPS networks"
                  fi;;

         passwd | passwd.byname | passwd.byuid)
                  if [ `expr "$MAPS" : ".* passwd.*"` -eq 0 ]; then
                        MAPS="$MAPS passwd"
                  fi;;

         protocols | protocols.byname | protocols.bynumber)
                  if [ `expr "$MAPS" : ".* protocols.*"` -eq 0 ]; then
                        MAPS="$MAPS protocols"
                  fi;;

         rpc | rpc.bynumber | rpc.byname)
                  if [ `expr "$MAPS" : ".* rpc.*"` -eq 0 ]; then
                        MAPS="$MAPS rpc"
                  fi;;

         services | services.byname)
                  if [ `expr "$MAPS" : ".* services.*"` -eq 0 ]; then
                        MAPS="$MAPS services"
                  fi;;
```

```
    services() {
             if [ "$LONG_FILENAMES" = "TRUE" ]; then
                       MAPNAME1=services.byname
                       MAPNAME2=servi.bynp
             else
                       MAPNAME1=servi.byna
                       MAPNAME2=servi.bynp
             fi
             awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $2, $0 }' $1 | \
                       $MAKEDBM - $MAPDIR/$MAPNAME1
             if [ $? -ne 0 ]; then return 1; fi
             awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { split($2, xxx, "/"); print$1 "/"
    xxx[2], $0 }' $1 | \
                       $MAKEDBM - $MAPDIR/$MAPNAME2
    }

    vhe_list() {
             grep -v "^[        ]*#" $1 | grep -v "^[      ]*$" | \
                       awk 'BEGIN { OFS="\t"; } { print NR, $0 }' | \
                       $MAKEDBM - $MAPDIR/vhe_list
    }


#==========
#  Check each of the arguments passed in for validity.  The patterns of the
#  case statement are:
#
#     DIR=*)        The directory which contains the ASCII files from which the
#                   maps are to be constructed.  If not specified as an argument,
#                   DIR=/etc.
#     DOM=*)        The NIS domain for which the maps are to be built.  If not
#                   specified as an argument, DOM=`domainname`.
#     NOPUSH=*)     It is normally null.  If not null, the newly-built NIS maps
#                   are not pushed to the slave NIS servers.
#     PWFILE=*)     This specifies the full pathname of the ASCII source file
#                   from which the passwd maps are to be built.  If not
#                   specified as an argument, PWFILE=$DIR/passwd.  Note that
#                   "passwd" must also be an argument for PWFILE to be meaningful.
#     *=*)          An option was probably misspelled.
#     x | y...)     The case lines of this form list the names by which given
#                   NIS maps are known.  The first name listed in each of the
#                   lines is the map's common name (generally, the name of the
#                   ASCII file from which the map is created, e.g., as "group"
#                   is to /etc/group).  The common name is also referred to as
#                   the map nickname, by some commands.  Multiple requests to
#                   build the same map are distilled to a single request.
#     *)            A mapname was probably misspelled.
#
#  If you create a new, custom NIS map and want it to be distributed to the
#  slave NIS servers, add a pattern to this case statement, so it will be added
#  to the list of MAPS.  Use a similar construct as is found here.
#==========
```

```
passwd() {
        if [ "$LONG_FILENAMES" = "TRUE" ]; then
                MAPNAME1=passwd.byname
                MAPNAME2=passwd.byuid
        else
                MAPNAME1=passw.byna
                MAPNAME2=passw.byui
        fi
                awk 'BEGIN { FS=":"; OFS="\t"; } /^[a-zA-Z0-9_]/ \
                { print $1, $0 }' $1 | $MAKEDBM - $MAPDIR/$MAPNAME1
        if [ $? -ne 0 ]; then return 1; fi
                awk 'BEGIN { FS=":"; OFS="\t"; } /^[a-zA-Z0-9_]/ \
                { print $3, $0 }' $1 | $MAKEDBM - $MAPDIR/$MAPNAME2
}

protocols() {
        if [ "$LONG_FILENAMES" = "TRUE" ]; then
                MAPNAME1=protocols.byname
                MAPNAME2=protocols.bynumber
        else
                MAPNAME1=proto.byna
                MAPNAME2=proto.bynu
        fi
        sed -e "/^#/d" -e s/#.*$// $1 | awk \
                '{ print $1,$0; for (i = 3; i <= NF; i++) print $i, $0 }' | \
                $MAKEDBM - $MAPDIR/$MAPNAME1
        if [ $? -ne 0 ]; then return 1; fi
        awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $2, $0 }' $1 | \
                $MAKEDBM - $MAPDIR/$MAPNAME2
}

rpc() {
        if [ "$LONG_FILENAMES" = "TRUE" ]; then
                MAPNAME1=rpc.bynumber
                MAPNAME2=rpc.byna
        else
                MAPNAME1=rpc.bynu
                MAPNAME2=rpc.byna
        fi
        awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $2, $0 }' $1 | \
                $MAKEDBM - $MAPDIR/$MAPNAME1
        if [ $? -ne 0 ]; then return 1; fi
        awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $1, $0 }' $1 | \
                $MAKEDBM - $MAPDIR/$MAPNAME2
}
```

```
netgroup() {
        if [ "$LONG_FILENAMES" = "TRUE" ]; then
                MAPNAME1=netgroup.byhost
                MAPNAME2=netgroup.byuser
        else
                MAPNAME1=netgr.byho
                MAPNAME2=netgr.byus
        fi
        grep -v "^[        ]*#" $1 | grep -v "^[      ]*$" | \
                $MAKEDBM - $MAPDIR/netgroup
        if [ $? -ne 0 ]; then return 1; fi
        grep -v "^[        ]*#" $1 | grep -v "^[      ]*$" | \
                $NIS_DIR/revnetgroup -h | \
                $MAKEDBM - $MAPDIR/$MAPNAME1
        if [ $? -ne 0 ]; then return 1; fi
        grep -v "^[        ]*#" $1 | grep -v "^[      ]*$" | \
                $NIS_DIR/revnetgroup -u | \
                $MAKEDBM - $MAPDIR/$MAPNAME2
}

networks() {
        if [ "$LONG_FILENAMES" = "TRUE" ]; then
                MAPNAME1=networks.byaddr
                MAPNAME2=networks.byname
        else
                MAPNAME1=netwk.byad
                MAPNAME2=netwk.byna
        fi
        awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $2, $0 }' $1 | \
                $MAKEDBM - $MAPDIR/$MAPNAME1
        if [ $? -ne 0 ]; then return 1; fi
        sed -e "/^#/d" -e s/#.*$// $1 | awk \
                '{ print $1, $0; for (i = 3; i <= NF; i++) print $i,$0 }' | \
                $MAKEDBM - $MAPDIR/$MAPNAME2
}
```

```
#==========
#  The following functions, whose names match the common names of the NIS map,
#  perform the map–specific build processes.  The argument ($1) to each
#  function is the full pathname of the ASCII file to build the map(s) from.
#  A non–zero return is done if an error is detected.  Note that errors which
#  occur in the first components of a pipe are not detected.
#
#  If you create a new, custom NIS map and want it to be distributed to the
#  slave NIS servers, you should add a function in this area to build it.  Use
#  a similar construct as is found here.
#==========

group() {
         if [ "$LONG_FILENAMES" = "TRUE" ]; then
                   MAPNAME1=group.bygid
                   MAPNAME2=group.byname
         else
                   MAPNAME1=group.bygi
                   MAPNAME2=group.byna
         fi
         awk 'BEGIN { FS=":"; OFS="\t"; } { print $3, $0 }' $1 | \
                   $MAKEDBM – $MAPDIR/$MAPNAME1
         if [ $? –ne 0 ]; then return 1; fi
         awk 'BEGIN { FS=":"; OFS="\t"; } { print $1, $0 }' $1 | \
                   $MAKEDBM – $MAPDIR/$MAPNAME2
}

hosts() {
         if [ "$LONG_FILENAMES" = "TRUE" ]; then
                   MAPNAME1=hosts.byaddr
                   MAPNAME2=hosts.byname
         else
                   MAPNAME1=hosts.byad
                   MAPNAME2=hosts.byna
         fi
         $NIS_DIR/stdhosts $1 | \
                   awk 'BEGIN { OFS="\t"; } $1 !~ /^#/ { print $1, $0 }' | \
                   $MAKEDBM – $MAPDIR/$MAPNAME1
         if [ $? –ne 0 ]; then return 1; fi
         sed –e "/^#/d" –e s/#.*$// $1 | $NIS_DIR/stdhosts | \
                   awk '{ for (i = 2; i <= NF; i++) print $i, $0 }' | \
                   $MAKEDBM – $MAPDIR/$MAPNAME2
}
```

```
        #==========
        #  The build function coordinates the building and pushing of a map; it
        #  calls the map-specific building function whose name is $MAP.
        #
        #  The arguments to build are:
        #        1:        The name of the ASCII file to build the map from.
        #        2-n:      The names of the maps to be pushed to slave NIS servers.
        #==========

build() {
   ASCII_FILE=$1; shift; MAPNAMES="$*"
   if [ -r $ASCII_FILE ]; then
      if [ -z "'find $MAPDIR/$MAP.time -newer $ASCII_FILE -print 2>/dev/null'" ]; then
         echo "Building the $MAP map(s)... \c"
         $MAP $ASCII_FILE
         if [ $? -ne 0 ]; then
            echo "/ERROR (ypmake):  in $MAP build."
            EXIT_CODE=4
         else
            touch $MAPDIR/$MAP.time
            echo "$MAP build complete."
            if [ -z "$NOPUSH" ]; then
               echo "   Pushing the $MAP map(s):\c"
               for MAPNAME in $MAPNAMES; do
                  echo "  $MAPNAME\c"
                  $NIS_DIR/yppush -d $DOM $MAPNAME -m 1 -t 80
               done
               echo ""
            fi
         fi
      else
         echo "The $MAP map(s) are up-to-date."
      fi
   else
      echo "\n/ERROR (ypmake):  $ASCII_FILE doesn't exist or is not readable." >& 2
      echo "                 The $MAP map(s) cannot be built." >& 2
      EXIT_CODE=5
   fi
}
```

```
#==========
#  The finis function is used as an exit function, stating the condition
#  of execution and setting the exit code.
#==========

finis() {
        echo "\nypmake complete:  \c"
        if [ -z "$EXIT_CODE" ]; then
                echo "no \c"
        fi
        echo "errors encountered.\n"
        exit ${EXIT_CODE:-0}
}
```

Appendix H
ypmake script

If the HP–UX machine is to be used as the NIS server and you are using the automounter, you will need to modify the ypmake script to handle autmounter maps. This is an example of a map not found by default on the HP–UX system. A sample ypmake script that handles automounter maps can be found in an Appendix of this document. Also see Section 9 NFS and the Automounter.

```
#!/bin/sh

#       @(#)ypmake:       $Revision: 1.3 $  $Date: 94/03/16 15:15:50 $

#============================================================================
#                                                                           |
#       (c) Copyright 1987, 1988 Hewlett–Packard Co.                        |
#       (c) Copyright 1986, Sun Microsystems. Inc.                          |
#                                                                           |
#  This is the ypmake shell script.  It is used to create the Network       |
#  Information Service                                                      |
#  (NIS) maps (databases) on a master server from their ASCII file          |
#  counterparts.  See the following reference pages for more information:   |
#                                                                           |
#       domainname(1), ypcat(1), ypmatch(1), yppasswd(1), ypwhich(1),       |
#       makedbm(1M), vhe_mounter(1M), ypinit(1M), ypmake(1M),               |
#       yppasswdd(1M), yppoll(1M), yppush(1M), ypset(1M), ypxfr(1M),        |
#       vhe_list(4), ypfiles(4).                                            |
#                                                                           |
#  The exit values from this script are:                                    |
#                                                                           |
#       0:        Normal termination; no problems.                          |
#       1:        One or more unrecognized arguments were passed.           |
#       2:        The NIS domain name is not set on this machine.           |
#       3:        The domain subdirectory does not exist or is not writable.|
#       4:        An error was encountered building at least one of the maps|
#       5:        One or more maps' ASCII files don't exist or are          |
#                       unreadable                                          |
#                                                                           |
#============================================================================
```

```
-r--r--r--   1 root     sys       208953 Oct 11  1992 xmps.1.01.tar.Z
-r--r--r--   1 root     sys        19682 Jun 16  1992 xneko.hp700.bin.Z
-r--r--r--   1 root     sys      1062664 Feb 25  1993 xntp3.1.tar.Z
-r--r--r--   1 root     sys        74243 May 11  1992 xperf.tar.Z
-r--r--r--   1 root     sys       179658 Sep 11  1992 xpilot.tar.Z
-r--r--r--   1 root     sys       357865 Oct 11  1992 xrn-6.17.tar.Z
-r--r--r--   1 root     sys        77453 Nov  9  1992 xstones.tar.Z
-r--r--r--   1 root     sys        39714 Sep 21  1992 xswarm.2.3.tar.Z
-r--r--r--   1 root     sys        56846 Nov  9  1992 xtalk.tar.Z
-r--r--r--   1 root     sys        36939 May 10  1993 xtetris.tar.Z
-r--r--r--   1 root     sys      4064178 Aug 30  1993 xv-3.00a.tar.Z
-r--r--r--   1 root     sys        80833 May  5  1992 xwebster_motif_tar.Z
-r--r--r--   1 root     sys        56317 May 10  1993 xyahtzee.tar.Z
-r--r--r--   1 root     sys        31007 Feb 26  1993 yamm2.4.tar.Z
-r--r--r--   1 root     sys        33380 Sep 21  1992 ytalk.tar.Z
-r--r--r--   1 root     sys        81579 Jun  4  1993 zmodem.tar.Z
-r--r--r--   1 root     sys         8431 Apr 10  1992 zutils.tar.Z
```

NOTICE: x8.0s700.tar.Z contains the X11R5 components not shipped by HP. For example, the Athena widgets and imake (including xmkmf).

HP Support Line: E–Mail Support Service

To obtain a copy of the HP SupportLine mail service user's guide, send the following in the TEXT PORTION OF THE MESSAGE to support@support.mayfield.hp.com

send guide

Sun Public Domain Software Availability

Sun ships much of their Public Domain offering with their own software. See Appendix b for information concerning ftp sites where patches and archives are available.

```
-r--r--r--   1 root     sys       253103 May 10  1993 rogue.tar.Z
-r--r--r--   1 root     sys       164032 Mar 18  1993 sc.6.1.tar.Z
-r--r--r--   1 root     sys        11770 Jan 22  1993 scp.tar.Z
-rw-rw-r--   1 root     sys      1077515 Jan 25 16:23 sendmail.tar.Z
-r--r--r--   1 root     sys       177838 Sep 11  1992 spider.tar.Z
-r--r--r--   1 root     sys        34498 May  5  1992 spy.tar.Z
-r--r--r--   1 root     sys        13588 Nov  9  1992 ssh-1.3.tar.Z
-r--r--r--   1 root     sys        69513 May 10  1993 suma.tar.Z
-r--r--r--   1 root     sys        15301 May 10  1993 symdaemon.tar.Z
-r--r--r--   1 root     sys       139714 May 10  1993 taskbroker.simu.tar.Z
-r--r--r--   1 root     sys       545729 Sep 11  1992 tcl6.2.tar.Z
-r--r--r--   1 root     sys       128965 Jul 12  1993 tcpdump.tar.Z
-r--r--r--   1 root     sys       774801 Nov  9  1992 tcsh-6.02.tar.Z
-r--r--r--   1 root     sys       114403 Sep 22  1992 timed.tar.Z
-r--r--r--   1 root     sys       653844 Sep 11  1992 tk1.4.tar.Z
-r--r--r--   1 root     sys       409001 Jun  1  1992 tn3270.hpux.tar.Z
-r--r--r--   1 root     sys       249851 Aug 30  1993 top-3.2.tar.Z
-r--r--r--   1 root     sys        32182 Oct 13  1992 traceroute_1.17.tar.Z
-r--r--r--   1 root     sys       568713 Sep 11  1992 transfig.tar.Z
-r--r--r--   1 root     sys        15142 Jan 19  1993 uncluster_5.5.tar.Z
-r--r--r--   1 root     sys        48853 Aug 30  1993 unrm.tar.Z
-r--r--r--   1 root     sys       109985 Jul 13  1992 unzip4.1.tar.Z
-r--r--r--   1 root     sys      2469994 Apr 15  1992 urt-3.0_tar.Z
-r--r--r--   1 root     sys      1851392 Apr 15  1992 urt-img.tar
-r--r--r--   1 root     sys       127027 Jan 19  1993 utchem.tar.Z
-r--r--r--   1 root     sys       139653 Jun 16  1992 x3270-1.2.tar.Z
-r--r--r--   1 root     sys      9518721 Sep 11  1992 x8.0s300.tar.Z
-r--r--r--   1 root     sys     12356454 Sep 11  1992 x8.0s700.tar.Z
-r--r--r--   1 root     sys     11358550 Sep 11  1992 x8.0s800.tar.Z
-r--r--r--   1 root     sys       273314 Feb 12  1993 xbiff++.tar.Z
-r--r--r--   1 root     sys       132000 May 10  1993 xboard.tar.Z
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-r--r--r--   1 root     sys       186902 Jul 12  1993 xcd.tar.Z
-r--r--r--   1 root     sys        46400 May 11  1993 xchwindow.tar.Z
-r--r--r--   1 root     sys        33461 Oct 11  1992 xdaliclock.tar.Z
-r--r--r--   1 root     sys         9609 Jun 16  1992 xdiff.tar.Z
-r--r--r--   1 root     sys        40323 Jun 16  1992 xdtree.tar.Z
-r--r--r--   1 root     sys       167194 Sep 21  1992 xdvi-2.15.tar.Z
-r--r--r--   1 root     sys       988465 Nov  9  1992 xfig-2.1.tar.Z
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-r--r--r--   1 root     sys       220817 May 10  1993 xgammon.tar.Z
-r--r--r--   1 root     sys      1045507 Nov  9  1992 xgo.tar.Z
-r--r--r--   1 root     sys       188671 Jun  4  1993 xgraph.tar.Z
-r--r--r--   1 root     sys        61385 Jun 16  1992 xmahjon.hp.tar.Z
-r--r--r--   1 root     sys       140077 Sep 11  1992 xmc.tar.Z
-r--r--r--   1 root     sys       129341 Mar 19  1993 xmodem3.9.tar.Z
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-r--r--r--   1 root     sys       578333 Feb 26  1993 ispell.words.tar.Z
-r--r--r--   1 root     sys       434617 Feb 12  1993 jovebin.tar.Z
-r--r--r--   1 root     sys       466189 Feb 12  1993 jovesrc.tar.Z
-r--r--r--   1 root     sys        25481 Jun 30  1992 lc.tar.Z
-r--r--r--   1 root     sys       165961 Mar 13  1992 less177magic.tar.Z
-r--r--r--   1 root     sys        75707 Jul 13  1992 lharc102a.tar.Z
-r--r--r--   1 root     sys        21152 Jun  4  1993 linkem.tar.Z
-r--r--r--   1 root     sys        19920 Oct  6 21:04 logitech.tar.Z
-r--r--r--   1 root     sys        40968 Jul 13  1992 lsof.tar.Z
-r--r--r--   1 root     sys        13336 Jan 19  1993 mails.tar.Z
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-r--r--r--   1 root     sys       118841 Feb 12  1993 minesM.tar.Z
-r--r--r--   1 root     sys       111139 Apr  7  1992 mkid2.tar.Z
-r--r--r--   1 root     sys        16803 Apr  7  1992 mkptypes.tar.Z
-r--r--r--   1 root     sys        36043 Jun 30  1992 mmv.tar.Z
-r--r--r--   1 root     sys       122099 Jul 12  1993 monitor.tar.Z
-r--r--r--   1 root     sys        54598 Aug  9  1992 monitor_8.0x-s300.tar.Z
-r--r--r--   1 root     sys        74555 Apr 26  1992 monitor_8.0x-s700.tar.Z
-r--r--r--   1 root     sys       103911 Aug 31  1993 motif_sample_code.tar.Z
-r--r--r--   1 root     sys        25681 May 10  1993 msgs.tar.Z
-r--r--r--   1 root     sys      1177231 Nov 30 17:54 named.4.9.930517.tar.Z
-r--r--r--   1 root     sys        72269 Feb 25  1993 ncftp.1.0.2.tar.Z
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-r--r--r--   1 root     sys         6677 Feb 26  1993 nn.unofficial.patch.Z
-r--r--r--   1 root     sys       573709 Feb 26  1993 nn6.4.18.tar.Z
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-rw-rw-r--   1 root     sys        97915 Jan 21 18:43 npasswd.tar.Z
-r--r--r--   1 root     sys        42152 Sep 22  1992 ntalk.tar.Z
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-r--r--r--   1 root     sys        74049 Sep 11  1992 pang.tar.Z
-r--r--r--   1 root     sys       112671 Sep 21  1992 patch-2.0.12u7.tar.Z
-r--r--r--   1 root     sys      3023333 Apr 15  1992 pbmplus10dec91_tar.Z
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-r--r--r--   1 root     sys      2596635 Sep 21  1992 perl-4.035-HP700-8.05.tar.Z
-r--r--r--   1 root     sys      3102139 Aug  9  1992 pine3.03.tar.Z
-r--r--r--   1 root     sys       479055 Jun  1  1992 plp.hp.tar.Z
-r--r--r--   1 root     sys        20243 Jan 19  1993 pmgr.tar.Z
-r--r--r--   1 root     sys        74193 Jun  4  1993 pop-1.831fix1.tar.Z
-r--r--r--   1 root     sys       479921 Dec  9  1992 prog_dev_tools.tar.Z
-r--r--r--   1 root     sys      1504044 Apr 15  1992 ray4.6_tar.Z
-r--r--r--   1 root     sys         1956 Jun 30  1992 renice.tar.Z
-r--r--r--   1 root     sys        12585 Aug 10  1992 resize-hp.c
-r--r--r--   1 root     sys       215935 May 10  1993 resource-guide.txt.tar.Z
-r--r--r--   1 root     sys       264815 May 10  1993 reve.tar.Z
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-r--r--r--   1 root     sys        89775 Feb 12  1993 batch.tar.Z
-r--r--r--   1 root     sys       605967 Feb 26  1993 bind.tar.Z
-r--r--r--   1 root     sys        91373 Jun 16  1992 bzonec.hp.tar.Z
-r--r--r--   1 root     sys        52252 Jul 13  1992 calls.tar.Z
-r--r--r--   1 root     sys        25898 Jul 13  1992 capslock.Z
-r--r--r--   1 root     sys         8736 Jan 19  1993 cbar_vi.tar.Z
-rw-rw-r--   1 root     sys        15805 Dec 13 15:20 cdrutil.ksh
-r--r--r--   1 root     sys        23841 May 10  1993 centipede.tar.Z
-r--r--r--   1 root     sys        39780 Feb 12  1993 checkpasswd.tar.Z
-r--r--r--   1 root     sys       206535 Jul 12  1993 cmu+muSNMP.tar.Z
-r--r--r--   1 root     sys         7158 May 10  1993 cpmod.tar.Z
-r--r--r--   1 root     sys        37852 Apr  7  1992 cproto.tar.Z
-r--r--r--   1 root     sys      1682110 Jun  4  1993 crisp2.2e.tar.Z
-r--r--r--   1 root     sys        33215 Nov 18 16:01 cutview.tar.Z
-r--r--r--   1 root     sys       181151 Jan 21 18:43 cv.tar.Z
-r--r--r--   1 root     sys         6295 Jun  4  1993 cvtfp.c
-r--r--r--   1 root     sys       144256 Nov 18 16:01 dig-2.0.tar.Z
-r--r--r--   1 root     sys        98193 Aug 30  1993 discplay_hp700.tar.Z
-r--r--r--   1 root     sys        57327 Nov 30 17:51 dotfiles.tar.Z
-r--r--r--   1 root     sys       342135 Mar 27  1992 dtrek.tar.Z
-r--r--r--   1 root     sys       293655 Sep 17 11:23 ec_mbx_src.tar.Z
-r--r--r--   1 root     sys        88979 Nov 18 16:01 ee.tar.Z
-r--r--r--   1 root     sys      7108023 Sep 17 11:22 epoch.4.2.tar.Z
-r--r--r--   1 root     sys       197225 Sep 11  1992 expect3.tar.Z
-r--r--r--   1 root     sys        16208 May 10  1993 filesystem-full.paper.Z
-r--r--r--   1 root     sys         4417 Jul 12  1993 find_bad_filenames.tar.Z
-r--r--r--   1 root     sys       367653 Aug  9  1992 flex-2.3.7.tar.Z
-r--r--r--   1 root     sys       345259 Feb 26  1993 fortune_cookie.tar.Z
-r--r--r--   1 root     sys       122813 Apr 14  1992 ftpd.tar.Z
-r--r--r--   1 root     sys     14010135 Aug  9  1992 gcc-2.2.2.tar.Z
-r--r--r--   1 root     sys      3141289 Jun  1  1992 ghostscript-2.4+fonts.hp.tar.Z
-r--r--r--   1 root     sys        79163 Aug  9  1992 ghostview-1.3-hp300bin.tar.Z
-r--r--r--   1 root     sys       132385 Aug  9  1992 ghostview-1.3-hp700bin.tar.Z
-r--r--r--   1 root     sys       172103 Aug  9  1992 ghostview.tar.Z
-r--r--r--   1 root     sys      3572591 May 10  1993 glance.trial.tar.Z
-r--r--r--   1 root     sys       799047 May  7  1992 gnuplot.tar.Z
-r--r--r--   1 root     sys      1359297 Mar 18  1993 groff-1.07.tar.Z
-r--r--r--   1 root     sys      2120977 Mar 18  1993 groff.1.07.s300.tar.Z
-r--r--r--   1 root     sys      3031328 May 10  1993 groff.1.07.s700.tar.Z
-r--r--r--   1 root     sys         2723 Mar 18  1993 groff.README
-r--r--r--   1 root     sys        25149 May 10  1993 hbiff.tar.Z
-r--r--r--   1 root     sys        16288 Dec  9  1992 hd.tar.Z
-r--r--r--   1 root     sys       111313 May 10  1993 hman.tar.Z
-rw-rw-r--   1 root     sys        25395 Jan 21 18:43 hp.tricks
-r--r--r--   1 root     sys        79715 Jan 19  1993 info_server.tar.Z
-r--r--r--   1 root     sys        12444 Sep 11  1992 io.benchmark.tar.Z
-r--r--r--   1 root     sys      2301565 Feb 26  1993 ispell-eeadfa-p0+9.tar.Z
```

GDB 4.12.u1	– Last update 02/06/94
HPGDB 4.12.u1	– Last update 02/06/94
GAS 2.2.u4	– Last update 02/01/94
GCC 2.5.8.u5	– Last update 02/01/94
LIBG++ 2.5.3.u3	– Last update 02/01/94

HP–UX users group Interworks library

Interworks, the HP–UX users group, also maintains an archive of public domain software available via anonymous ftp from the site iworks.ecn.uiowa.edu [128.255.18.10]. The library at the Interworks site also spins binary versions of the Liverpool archive.

The README file in /pub/comp.hp has information concerning the archive.

The packages below are available at the anonymous FTP site iworks.ecn.uiowa.edu [128.255.18.10] :

```
-r--r--r--   1 root     sys       810479 Sep 11  1992 C-News.tar.Z
-r--r--r--   1 root     sys        34491 May 11  1993 EMACS.tutorial
-r--r--r--   1 root     sys       643301 Sep 11  1992 Elm2.3.tar.Z
-r--r--r--   1 root     sys        63598 Aug  6  1993 FAQ
-r--r--r--   1 root     sys     19857449 Mar 10  1993 GNUEmacs-18.59.tar.Z
-r--r--r--   1 root     sys       736543 Dec  9  1992 GNUmake-3.62.tar.Z
-r--r--r--   1 root     sys       236715 Nov  9  1992 GNUtar-1.10.tar.Z
dr--r--r-x   2 root     sys         1024 Sep  9  1993 GUI_classic
-r--r--r--   1 root     sys       305354 Feb 12  1993 GenTerm.tar.Z
-r--r--r--   1 root     sys       982443 Jun 30  1992 ImageMagick.tar.Z
dr--r--r-x   2 root     sys         1024 Aug 30  1993 Khoros
-r--r--r--   1 root     sys     12618621 Feb 22  1993 LAPACK.hpux.tar.Z
-r--r--r--   1 root     sys      2508135 Sep 11  1992 MH.tar.Z
-r--r--r--   1 root     sys        45738 Jun  4  1993 MultiInput.tar.Z
-r--r--r--   1 root     sys       226233 Sep 11  1992 NNTP.tar.Z
-r--r--r--   1 root     sys        47405 May 10  1993 POSIX.1_Pascal.tar.Z
-r--r--r--   1 root     sys        32174 Jan 28  16:21 README
-r--r--r--   1 root     sys        34048 May 11  1993 README.CD
-r--r--r--   1 root     sys       117115 Sep 11  1992 SOS.tar.Z
-r--r--r--   1 root     sys     12387119 Jul 13  1992 TeX3.14.tar.Z
-r--r--r--   1 root     sys     27043840 Jul 13  1992 TeXSRC.tar
-r--r--r--   1 root     sys        73649 Feb 26  1993 TeXtools.tar.Z
-r--r--r--   1 root     sys      2471860 Mar  9  1993 X11R4.tar.Z
-r--r--r--   1 root     sys       522468 Feb 12  1993 XControl.tar.Z
-r--r--r--   1 root     sys       258885 Jul 13  1992 acm.2.4.tar.Z
-r--r--r--   1 root     sys       148704 May 10  1993 adventure.tar.Z
-r--r--r--   1 root     sys       139096 May 10  1993 advise.tar.Z
-r--r--r--   1 root     sys       282312 Oct 11  1992 amd-5.2.tar.Z
-r--r--r--   1 root     sys       508089 Oct 11  1992 amd5.3-beta1.tar.Z
-r--r--r--   1 root     sys       108515 Jul  7  1992 arc521e.tar.Z
-r--r--r--   1 root     sys       143567 Feb 26  1993 archie.tar.Z
-r--r--r--   1 root     sys        13270 Jan 19  1993 auto_respond.tar.Z
-r--r--r--   1 root     sys        44405 Nov 30 17:50 autoadmin.tar.Z
```

Directory /hpux9/X11R5/Networking:

chimera–1.38	Another World Wide Web browser
freeWAIS–0.202	Free Wide Area Information Server
llnlxftp–1.0	Another Motif–based FTP program
mftp–1.1	This is a Motif front end for ftp
mosaic–2.1	A Motif–based World Wide Web (WWW) browser
mosaic–2.2	A Motif–based World Wide Web (WWW) browser
tkWWW–0.10	WWW browser written using Tcl/Tk
tkmail–1.6beta8	TkMail is an X interface to the mail command
tknews–1.2b	Tknews is a Tk based newsreader for X Windows
viola–2.1.2	A World Wide Web browser for X
wais–8b5.1	Wide Area Information Server
x3270–3.0.1.3	Telnet–style IBM mainframe access, including cut and paste
xarchie–2.0.9	Xarchie – an X11 interface to the Archie databases
xbrowser–1.00	X windows interface for LUCS HP–UX archive
xgopher–1.3.2	X interface to the Gopher distributed information service
xnetload–1.05	Displays the load averages of machines on a local network
xrn–6.17	An X–based Usenet news reader

Directory /hpux9/X11R5/Toolkits:

ComboBox–1.10a	Motif ComboBox widget popular in Windows environment
ComboBox–1.20b	Motif ComboBox widget popular in Windows environment
Xaw3d–0.6b	3D widget set based on R5 Athena Widgets
Xew–1.4	A set of data representation widgets
XgPlot–4.2	Collection of graph, image display and 3d routines
Xm++–0.53	User interface development system
XmGraph–1.0	An OSF/Motif compatible graph widget
blt–1.3	Extension to Tk toolkit
blt–1.5	Extension to Tk toolkit
fwf–3.57	The Free Widget Foundation Widgets
fwf–3.6	The Free Widget Foundation Widgets
ileaf_widgets–1.0	Interleaf's widgets contributed to to COSE CDE
inset–0.2	Provides "inset" facilities based on the X toolkit
plotter–6.0pl7	This is the AthenaTools Plotter Widget Set
tk–3.6	X11 toolkit with a Motif look–and–feel written in Tcl
tk–3.6.1	X11 toolkit with a Motif look–and–feel written in Tcl
wafe–0.96a	Widget Athena Front End
xf–2.2pl11	Interactive interface builder for Tcl/Tk
xf–2.3pl0	Interactive interface builder for Tcl/Tk
xtpanel–3.01	Build an interface from the command line or a script

Additional software for PA GNU language tools is available on jaguar.cs.utah.edu (155.99.212.101) in the "dist" directory.

xmpeg–2.0	Motif mpeg player
xpaint–2.1.0	X11 colour image editing program
xpaint–2.1.1	X11 colour image editing program
xpgs–1.8	Program to generate autostereograms
xpm–3.3	Package for manipulating X pixmaps
xviewgl–1.1	This is an X11–based viewer for GRASP libraries
ygl–2.3	GL library for X windows
ygl–2.4	GL library for X windows

Directory /hpux9/X11R5/Misc:

cutview–1.31	Allows the user to maintain multiple cut and paste buffers
hbiff–5.10	Mailbox flagger for X windows
hman–1.00	Motif–based Hypertext–like manual page browser
tkman–1.5	Tk based manual page reader with hypertext features
unclutter–1.06	Removes idle cursor image from the screen
xalarm–3.05	A powerful, interactive alarm clock for X windows
xcal–4.1	Calendar, alarm and notebook for X Windows
xcalc–1.15	Scientific calculator for X
xcb–2.1	Shows and allows use of the X server cut and paste buffers
xchwindow–1.0	A program for dynamically changing window attributes
xdiff–1.4	X Windows diff for viewing the difference between two files
xdtm–2.5.1	X11 DeskTop Manager graphical shell
xdtree–2.0	Displays directory tree structures using Motif
xdtree–2.2	Displays directory tree structures using Motif
xephem–2.5	Motif–based interactive astronomical ephemeris
xfig–2.1.8	Facility for Interactive Generation of figures
xfilemanager–0.4.1	X11–based file manager with Drag and Drop abilities
xgas–1.0	Animated simulation of an ideal gas
xhpgl–2.0	An X–Window display program for displaying HPGL files
xkeycaps–2.07	Graphically displays and edits the keyboard mapping
xlatex–3.3	Program to facilitate the use of TeX processing commands
xless–1.4.1	File browsing program for X
xmailtool–2.1.1d	X front–end for the mailx program
xmfm–1.8beta	Motif file manager providing an icon–driven environment
xmultibiff–2.0	X–based multiple mailbox and newsgroup watcher
xnotify–1.0	Pop up a message on one or multiple displays
xpalette–1.0	Display the contents of RGB text files in an X window
xpick–1.1	Allows user to pick arguments to a command via an X window
xpostit–3.3.1	Post–it(r) notes for X
xprompt–1.4	Displays a window and prompts for a response
xrolodex–1.1	Rolodex(tm) Motif–based application
xrt–1.01	Display one or more text files in the root window
xspread–2.3	A public domain X windows spreadsheet
xtrs–1.00	TRS–80 Model I Emulator in an X–Window
xvt–2.0pl2	VT100 emulator for the X window system

xsnow–1.28	Animated background snow, santa, sleigh and reindeers
xteddy–1.0	Display a teddy bear on the screen and drag it around

Directory /hpux9/X11R5/Graphics:

AIcons–1.4	Anthony's X Icon Library
ImageMagick–2.3.6	A suite of programs for manipulating and animating pictures
aero–1.30	Tool to simulate and visualise rigid–body systems
axis–1.0	A simple two dimensional plotter
backdraw–1.1	Simple, command driven drawing package
dltogl–1.00	Simple graphics conversion program
fbm–1.2	Fuzzy pixmap manipulation
hdf–3.32	Hierarchical Data Format
irit–4.0	IRIT is a solid modeler
jpeg–4A	Image de/compression package using the JPEG standard
lug–1.0.1	Graphics utilities library
morphine–1.0	A simple morphing program
mpeg–2.0	MPEG viewer for X–windows
pdraw–1.4	Pdraw is a program for drawing 3D plots in an X window
pixmap–2.1	Motif–based X PixMap editor using the Xpm library
plotmtv–1.32	Fast multi–purpose plotting program for X
popi–3.1	Perform interactive digital image transformations
povray–2.1	Persistence of Vision Raytracer
rayshade–4.06	Program for creating ray–traced images
sipp–3.0	A 3D graphics library for simple polygon processing
sketchpad–1.0	Tool for operative sketching in a networked environment
tgif–2.14.9	2D hierarchical based drawing package
tiff–3.2beta	Graphics library for the manipulation of TIFF image files
toybox–1.3	An icon manager that uses colour pixmaps
urt–3.1	The Utah Raster Toolkit
vista–2.0	A toolkit for image processing
x3d–2.2	3D object viewer
xanim–2.60	This is an animation viewer that supports multiple formats
xanim–2.64	This is an animation viewer that supports multiple formats
xbmbrowser–3.1	View and manage X11 bitmap or Xpm pixmap files
xfaces–2.3	Displays images representing mail waiting to be read
xflick–1.00	FLI animation viewer
xgrabsc–2.3	Grab and save rectangular screen images from an X11 display
xgraph–1.1	Draw a graph in an X window
xli–1.15	Displays bitmap images in a window or on the background
xlips–1.0b7	X11 Library of Image Processing Software
xloadimage–4.0	Display bitmap images in a window or on the background
xloadimage–4.1	Display bitmap images in a window or on the background
xlyap–1.0	Display an array of Lyapunov exponents graphically
xmdag–1.0	Motif program to draw directed graphs
xmgf–2.0.Alpha	Motif–based 3D interactive gf object viewer
xmgf–2.0.Beta	Motif–based 3D interactive gf object viewer
xmgr–3.00a	A data/function plotting tool for X–Windows

xdvi–1.17	Previews DVI files, such as those produced by TeX
xtexcad–1.2	Drawing package for TeX documents

Directory /hpux9/Users:

elm–2.4.23	An interactive mail system using the curses environment
less–178	Dual direction pager program, similar to more
pcal–4.3	Sophisticated Postscript calendar generator
pine–3.89	Another interactive mail system using curses
remind–3.0.11	A sophisticated reminder and alarm service
remind–3.0.12	A sophisticated reminder and alarm service
sc–6.21	Spreadsheet calculator using the curses interface
tcsh–6.04	C shell with filename completion and command line editing
zsh–2.3.1	Shell combining the best of ksh and csh into one

Directory /hpux9/X11R5/Core:

XR5built–5.25	MIT X11R5 core distribution (patch level 25) ready built
XR5hp–5.01	HP supplied X11R5 server code
XR5include–5.25	MIT X11R5 include files (patch level 25)
XR5lib–5.25	MIT X11R5 libraries (patch level 25)
XR5src–5.25.part01	MIT X11R5 core distribution (patch level 25) source code
XR5src–5.25.part02	MIT X11R5 core distribution (patch level 25) source code
XR5src–5.25.part03	MIT X11R5 core distribution (patch level 25) source code
Xaw–5.00	Xaw (Athena Widgets for X11R5) and Xmu include files
bdftosnf–4.00	BDF to SNF format font compiler
imake–5.01	Used to convert machine–independent Imakefiles to Makefiles
twm–5.00	Tab Window Manager for X11R5
xlsclients–1.6	List X applications running on a display
xmag–5.00	Magnifies a portion of a screen into a window
xstdcmap–1.6	X standard colourmap utility

Directory /hpux9/X11R5/Demos:

faderoot–1.00	Continuously vary the colour of the root window in X
plasma–1.0	Implements plasma clouds in an X window
swisswatch–0.06	An analogue Swiss watch for X windows
vpuzzle–1.0	Shuffles your display like a sliding puzzle
xancur–1.4	X11 root cursor animation program
xaniroc–1.02	Yet another animated root cursor
xdaliclock–1.05	A melting digital clock for X11
xearth–0.6	Show a shaded image of the Earth in the root window
xengine–1.0	Displays an animated reciprocating engine
xfishtank–2.1	Displays an aquarium of fish in the background
xfrac–1.00	Yet another Mandelbrot/Julia set generator
xfractint–2.03	A fractal generation program
xglobe–1.0	XGlobe displays a spinning world globe
xroach–1.1vue	Animates cockroaches on the root window of the X display
xscreensaver–1.21	Runs user–specified graphics demos when user is idle in X
xsnow–1.25	Animated background snow, santa, sleigh and reindeers

nntp–1.5.11t5	NNTP is a protocol to transfer UseNet News
nntplink–3.2p1	NNTPlink is a news transmission client
nov–1.0	UseNet news indexing package
nqs–2.5	NQS is a queueing system for batch and device requests
pidentd–2.2	Identification Server (as per RFC1413)
resparse–1.0	Routines to assist programming using the DNS resolver
talk–3.0.2	Multi–user talk clients (talk+ytalk) and daemon (ntalkd)
tin–1.22	Threaded Netnews reader, usually run via an NNTP connection
vrfy–92.10.21	Verify electronic mail addresses
wuftpd–2.1c	A new version of the Washington (”wuarchive”) FTP daemon
xntp–3.1	Network Time Protocol (version 3) suite

Directory /hpux9/NeuralNets:

atree–2.0	Atree adaptive logic network simulation software
lvq_pak–2.1	The learning vector quantization package
snns–3.1	Stuttgart Neural Network Simulator
som_pak–1.2	Package for application of Self–Organising Map algorithms

Directory /hpux9/Physics:

embed–1.1	Program to do the Broomhead–King SVD embedding procedure
fd3–0.3	fd3 is a program that estimates fractal dimension
mutinfo–1.21b	Andy Fraser’s algorithm

Directory /hpux9/Sysadmin:

expect–5.2.0	Allows programmed dialogue with interactive programs
expect–5.3.4	Allows programmed dialogue with interactive programs
forward–1.1	Remote management of mail forwarding and vacation replies
lsof–2.21	List files, sockets, etc opened by processes
patch–2.1	Applies diffs to files to reproduce new versions
rpasd–2.0	System for maintaining /etc/passwd across multiple hosts
tcl–7.3	Tool command language containing a language and a library
top–3.3beta	Displays and updates info about the top CPU processes
undump–1.0	Creates preloaded executables
xfsm–1.65	X–Windows graphical monitor of NFS disk usage
xmps–1.2	Motif–based process browser
yamm–2.4	Yet Another Micro Monitor using the curses environment

Directory /hpux9/Text:

bibview–2.0	X11 graphical interface for BibTeX database manipulation
dvips–5.523	The dvips program converts a TeX dvi file into PostScript
dvips–5.526	The dvips program converts a TeX dvi file into PostScript
ispell–3.1.02	International interactive spelling checker
lacheck–1.15	Consistency checker for LaTeX documents
lgrind–Oct91	Format source code in a nice style using LaTeX
mp–3.0.1	PostScript pretty printer (written in C++) for text files
nenscript–1.13++	Converts text files to PostScript format for printing
transfig–2.1.8	Translates output from xfig into several other formats

Directory /hpux9/Languages:

akcl–1.619	Austin Kyoto Common Lisp (AKCL)
bwbasic–2.10	Bywater BASIC interpreter and shell
f2c–93.04.28	Fortran 77 to C (or C++) converter
kcl–0.1	The Kyoto Common Lisp (kcl) distribution of June 1987
kcl_licence–0.1	IMPORTANT – licence form for Kyoto Common Lisp (kcl)
perl–4.036	Practical Extraction and Report Language
sgmls–1.1	A validating SGML parser
swi–1.8.6	This is a Prolog implementation in the Edinburgh tradition
ucblogo–3.0.1	Berkeley Logo interpreter

Directory /hpux9/Maths/Misc:

complex.arith–1.1	Library for complex run–time support
ffts_in_C–1.0	fft routines written in C
macaulay–3.0	Algebraic geometry and commutative algebra

Directory /hpux9/Misc:

arc–5.21e	Archive utility compatible with IBM PC and Atari ST Arc
calls–3.3	C programming aid for analysing the flow of a C program
cbar_vi–1.0	Adds change bars when updating documents
eep–1.9	Easy Editor Program for newsrc files
lincks–2.1	Object–centred multi–user database system
pcomm–2.0.1	A unix look alike of the popular ProComm MSDOS program
pvm–3.2	A system to simplify parallel programming on a network
rplay–3.1.1beta	Play sampled sounds on either local or remote machines
screen–3.5.2	Terminal screen multiplexer with VT100/ANSI emulation
shapeTools–1.4	Software configuration management tools
sox–6.11	Converts sound samples between various sound formats
usat–1.0	A satellite tracking package
zip–2.0	Archiver and compressor popular on MS–DOS systems
zoo–2.1	Archiver compatible with microcomputer versions of zoo

Directory /hpux9/Networking:

IPmult–1.0	IP protocol extensions to enable multicast addressing
NCSAhttpd–1.0	NCSAs HTTP server for WWW documents
NCSAhttpd–1.1	NCSAs HTTP server for WWW documents
aub–2.05	Assemble Usenet Binaries
c_news–20.Feb.93	This is the 20th Feb 1993 'Performance Release' of C News
cap–60p182	Appletalk protocol library suite
dnswalk–1.7	dnswalk is a DNS debugger
dtm–2.36	The Data Transfer Mechanism
fsp–2.71	File Service Protocol
gcs–1.7	Generic Chat System
gopher–2.010	A gopher distributed document delivery server
icmpinfo–1.4	Icmpinfo is a tool for looking at ICMP messages
ircII–2.29	Internet relay chat client
lynx–2.11	Curses WWW hypertext browser
mm–2.6	Implementation of Multipurpose Internet Mail Extension

xgammon–2.0.7	Plays a game of backgammon against the computer
xinvaders–2.0	Space Invaders for X–Windows
xjewel–1.6	Colour–matching tetris–type game (but better !) for X11
xlife–3.0	Conway's Game of Life for X Windows
xmapedit–1.00	A map editor for the excellent xpilot game
xmris–4.00	An X Windows implementation of the Mr Do video arcade game
xmris–4.01	An X Windows implementation of the Mr Do video arcade game
xpilot–3.0.7	A multi–player X Windows implementation of the Thrust game
xpipeman–1.5	An X Windows implementation of the Pipe Mania game
xpool–1.3	An X windows implementation of the game of pool
xrisk–2.15	X version of Risk(R) boardgame
xshogi–1.2.02	X11 interface to the gnushogi Japanese chess program
xsokoban–3.2	Game involving pushing objects around a map
xtet42–2.01	One or two player game of tetris for X11
xtetris–2.5.2	A block dropping game for X11R5 only

Directory /hpux9/Gnu:

bash–1.13.5	GNU Bourne–Again SHell compatible with the Bourne Shell
bison–1.22	A GNU parser generator upwardly compatible with yacc
bulletin–06.93	The June 1993 edition of the GNU Bulletin
diffutils–2.6	GNU's diff, which shows the difference between 2 files
find–3.8	Search for files in a directory hierarchy
flex–2.4.6	A fast lexical analyser generator – the GNU version of lex
gawk–2.15.3	Pattern scanning and processing language (GNU awk)
gawk–2.15.4	Pattern scanning and processing language (GNU awk)
gcc–2.4.5	Gnu Project 'C' compiler source distribution
gcc_built–2.4.5	Pre–compiled GNU Project C and C++ compilers
ghostview–1.5	PostScript previewer for X11
gnuplot–3.5	A command–driven interactive function plotting program
grep–2.0	Print lines matching a generalised regular expression
groff–1.08	GNU document formatting system written in C++
gs–2.6.1p4	Interpret and display the PostScript graphic language
gs_fonts–2.6.1	Additional fonts for ghostscript
gzip–1.2.4	Compress or decompress files using the Lempel–Ziv algorithm
hp2xx–3.1.4	Converts HPGL into other vector and raster formats
indent–1.9.1	Inserts or deletes whitespace in a C program
indent–1.9	Inserts or deletes whitespace in a C program
libg++–2.3.1	Source code distribution of "libg++"
libg++–2.4	Source code distribution of "libg++"
make–3.70	GNU make utility to maintain groups of programs
oleo–1.5	X Windows or curses based spreadsheet program
readline–1.1	A command line editing and history recall library
tar–1.11.2	GNU version of tar, a tape file archiver
texinfo–3.1	Texinfo is the GNU documentation format

Directory /hpux8/X11R5:

XR5built–5.23	MIT X11R5 core distribution (patch level 23) ready built
XR5hp–5.01	HP supplied X11R5 server code
XR5include–5.23	Xaw (Athena widgets) and Xmu (misc utilities) include files
XR5lib–5.23	MIT X11R5 libraries built from original source distribution
XR5src–5.23.part01	MIT X11R5 core distribution (patch level 23) source code
XR5src–5.23.part02	MIT X11R5 core distribution (patch level 23) source code
XR5src–5.23.part03	MIT X11R5 core distribution (patch level 23) source code

Directory /hpux9/Editors:

aXe–6.0	An X11R5 text editor with its own menu system
aXe–6.1	An X11R5 text editor with its own menu system
asedit–1.2	An X editor built around the Motif text widget
emacs–19.19	Gnu project Emacs
epoch–4.2	Epoch is a version of GNU Emacs for X Windows
fm–2.02	A curses–based hex file editor/modifier
jetedit–1.23	A Motif–based X11 C programmer's point and click editor
jovesrc–4.14	A small, portable, Emacs–like editor
mxedit–2.12	A TCL–based, mouse–oriented editor for X
nedit–2.0	Robust GUI style plain text editor with Motif
point–1.63	Point is a text editor for X windows
ted–2.00	Easy–to–use Motif text editor
xcoral–1.72	Multi–windowed text editor and C browser for X11

Directory /hpux9/Games:

3Dtetris–1.00	Two 3–D Tetris games – one cubic and one spherical
acm–4.2	X colour–only aerial combat simulator for multiple players
cbzone–2.0c	A version of the Battle Zone arcade game for X Windows
gnuchess–4.0.67	A strong public domain (GNU) chess program
gnuchess–4.0.68	A strong public domain (GNU) chess program
gnushogi–1.1.02	Plays a game of shogi (Japanese chess) against the computer
multiverse–1.02	Multiplayer game in virtual world
netmaze–0.71	Multi–player X–based 3–D maze combat game
netmaze–0.71a	Multi–player X–based 3–D maze combat game
reve–1.4.0	An Othello (aka reversi) board game
spider–1.1	Solitaire type card game using two packs of cards
tetris–3.1.0	Generic tetris for X11 – another in the long tetris series
tetris–3.1.1	Generic tetris for X11 – another in the long tetris series
tksol–0.9	TkSol is a version of the card game solitaire
tkxpilots–1.0	Interface to xpilot server
xaster–1.10	A faithful implementation of the arcade game Asteroids
xblackjack–2.1	Game of blackjack for X Windows, with Motif interface
xblast–0.96	X11 version of the arcade game Bomberman (Dynablaster)
xblast–1.00	X11 version of the arcade game Bomberman (Dynablaster)
xboard–3.0.9	An X–Windows interface for gnuchess 4 or later
xboing–1.8	Bat, ball and bricks colour–only game for X11
xdemineur–1.1	X11 minesweeper game

moog–0.0	Motif interface to gopher information servers
viola–2.1.2	A World Wide Web browser for X
wais–8b4	Wide Area Information Server
x3270–1.4.1	Telnet–style IBM mainframe access, including cut and paste
xforecast–1.3	Program to report weather conditions in USA
xftp–1.1	An X Windows version of FTP (file transfer program)
xhchat–1.1	Simple talk program between two X windows users
xnetload–1.04	Displays the load averages of machines on a local network
xrn–6.17	An X–based Usenet news reader

Directory /hpux8/X11R4/Toolkits:

Wcl–2.5	Widget Creation Library for X11R4
Xaw3d–0.4	3D widget set based on R5 Athena Widgets
Xew–1.4	A set of data representation widgets
Xw–1.01	The Xw widgets set as used in Doug Young's X Windows book
Xwdoc–1.01	The documentation that accompanies the Xw widget set
andrew–5.1.part01	Source for the Andrew multi–media system (several parts)
andrew–5.1.part02	Source for the Andrew multi–media system (several parts)
andrew–5.1.part03	Source for the Andrew multi–media system (several parts)
andrew–5.1.part04	Source for the Andrew multi–media system (several parts)
andrew–5.1.part05	Source for the Andrew multi–media system (several parts)
andrew_bin–5.1	Binary only distribution of the Andrew multi–media system
eXene–0.4	EXene is a multi–threaded X window system toolkit for SML
iv–3.0	InterViews – a C++–based toolkit for X11
ivbin–3.0	Example client Series 700 binaries for InterViews
mucha–1.0	Many Using and Creating Hypermedia with Andrew
wafe–0.94	Widget Athena Front End
xf–2.2	Interactive interface builder for Tcl/Tk

Directory /hpux8/X11R4/XView3:

apex–1.1	Advanced Programming Environment for X Window Systems
ftptool–4.6b3	A windowed interface to FTP using the XView3 interface
olvwm–3.0p2	Open Look Virtual Window Manager
slingshot–2.0	Extensions to the XView3 toolkit
sweeper–1.1	A game where you must find the hidden mines in a minefield
workman–1.1	Play audio CDs on a CD ROM drive using the XView3 interface
workman–1.2	Play audio CDs on a CD ROM drive using the XView3 interface
xrolo–2.06	Tool to manage notes like a Rolodex
xvgr–2.09	A data/function plotting tool for X–Windows
xview–3.part1	Mandatory support dirs for xview3 user–interface toolkit
xview–3.part2	Clients for the xview3 user–interface toolkit
xview–3.part3	The source code for the xview3 libraries
xview3_fix1192–1.00	The first LUCS patch for xview3
xviewtool–1.0	XView3 periodic table to show objects in XView toolkit
xvtdl–4.0b	A To Do List Manager using the XView3 toolkit

Directory /hpux8/X11R4/Misc:

andrew–5.1	Source for the Andrew multi–media system (several parts)
bricons_motif–3.0	A quick start up Motif utility for applications
contour–3.00	Draws contour plots in an X–window or in PostScript form
editres–1.0	A dynamic resource editor for X Toolkit applications
hexcalc–1.11	A multi–radix programmer's calculator for X
hman–1.00	Motif–based Hypertext–like manual page browser
unclutter–1.06	Removes idle cursor image from the screen
x11perf–1.3	X11 server performance test program
xalarm–3.05	A powerful, interactive alarm clock for X windows
xautolock–1.08	Runs a specified program after some X–Windows inactivity
xbaff–2.00	Displays window details of user's mailbox
xbiff++–1.10	Mailbox flagger for X Windows
xcalc–1.00	Scientific calculator for X
xcalendar–3.1	Calendar with a notebook for X11
xcb–2.1	Shows and allows use of the X server cut and paste buffers
xcursor–4.1	Set the cursor bitmap for a X window
xdbr–1.0	A directory browsing program (requires Xw widget set)
xdiary–1.0	Interactive diary and calendar for X
xfbrows–2.1	X11 font browser with a simple Mac–style user interface
xgobi–4.00	X11 dynamic graphics program for data visualisation
xhpgl–2.0	An X–Window display program for displaying HPGL files
xless–1.4.1	File browsing program for X
xmfm–1.8beta	Motif file manager providing an icon–driven environment
xmon–1.0	An interactive X protocol monitor
xmx–1.0	An X protocol multiplexor
xod–1.01	X–based octal (or hex/decimal/ASCII) dump program
xp–1.1	Display a file in an X window
xpic–1.11	An X–windows drawing package
xpick–1.0	Allows user to pick arguments to a command via an X window
xpostit–3.3.1	Post–it(r) notes for X
xprop–1.00	Displays the window or font properties of an X session
xpt–1.01	Chemical periodic table for X11
xrolodex–1.1	Rolodex(tm) Motif–based application
xse–2.1	Send arbitrary X Events to an X11 window
xsky–2.01	View the sky and create customised star charts
xspread–2.3	A public domain X windows spreadsheet
xtrs–1.00	TRS–80 Model I Emulator in an X–Window
xvertext–5.0	Library of functions for rotating text in an X window
xzap–1.0	X Process Zapper
young_motif–1.0	Motif examples from book by Douglas Young

Directory /hpux8/X11R4/Networking:

adcmail–0.9	An X Windows based mail reader
collage–1.0b	Collage is a collaborative data analysis tool
getwxmap–2.3.2	Retrieve weather map GIFs and display them in X11
mftp–1.1	This is a Motif front end for ftp

swisswatch–0.06	An analogue Swiss watch for X windows
xball–3.0	Bounce coloured balls inside a Motif window
xballs–1.00	A root window bouncing balls demo for X11
xdaliclock–1.05	A melting digital clock for X11
xdebt–1.01	Shows US National Debt and ”your share”!
xfishtank–2.1	Displays an aquarium of fish in the background
xflip–1.00	Two programs to mirror–image or melt your display
xlock–2.3	Locks the local X display until a password is entered
xmandel–2.00	Mandelbrot and Julia set generator
xodometer–1.1	Track the total pointer and cursor travel distance in X11
xphoon–2.0	Displays the current phase of the moon on the root window
xroach–1.1vue	Animates cockroaches on the root window of the X display
xscdemo–2.2	A 3–D spinning cube demonstration program for X Windows
xsplinefun–1.0	Displays colourful moving splines in the root window
xspringies–1.1	A mass and spring simulation system for X windows
xswarm–2.3	An X windows animated wasp and bee swarm demo
xtartan–2.0	Draw various tartans as window backgrounds
xticktalk–4.3	Tell the time in one of 22 languages in an X window

Directory /hpux8/X11R4/Graphics:

ImageMagick–2.3.2	A suite of programs for manipulating and animating pictures
hdf–3.2	Hierarchical Data Format
mpeg–2.0	MPEG viewer for X–windows
pbmplus–10.dec.91	PBMPLUS – a toolkit for image conversion
pdraw–1.4	Pdraw is a program for drawing 3D plots in an X window
pixmap–2.1	Motif–based X PixMap editor using the Xpm library
pixmon–0.3	A simple pixel monitor for X11
plotmtv–1.31	Fast multi–purpose plotting program for X
rayshade–4.06	Program for creating ray–traced images
tiff–3.2beta	Graphics library for the manipulation of TIFF image files
toybox–pre1.3	An icon manager that uses colour pixmaps
urt–3.1	The Utah Raster Toolkit
wscrawl–2.01	Motif–based multiple–display painting package
xbmbrowser–2.0	View and manage X11 bitmap files
xdataslice–2.2	XDataSlice is a colour imaging and data analysis tool
xdump–1.1	X Windows screen grabber and printer (needs Xw widget set)
xfaces–1.0	Display images representing mail waiting to be read
xflick–1.00	FLI animation viewer
xgrabsc–2.3	Grab and save rectangular screen images from an X11 display
ximage–1.21	XImage is a 2D interactive data analysis tool
xli–1.14a	Displays bitmap images in a window or on the background
xlips–1.0b7	X11 Library of Image Processing Software
xmdag–1.0	Motif program to draw directed graphs
xmgr–2.10	A data/function plotting tool for X–Windows
xscribble–a6	8–bit paint package
xv–2.21	A multi–format image displayer for X Windows
xviewgl–1.1	This is an X11–based viewer for GRASP libraries

Directory /hpux8/Sysadmin:

BIGdict–1.00	An extremely comprehensive and large dictionary
ULRdict–1.00	Plain text dictionary for the Crack password cracker
crack–4.1	A highly sophisticated password cracker
iorate–1.4	A tool to measure I/O rates for HP–UX disc files
ktstat–1.1	Shows if some kernel tables are of a reasonable size
patch–2.1	Applies diffs to files to reproduce new versions
pltools–2.0.2	A large database of HPUX 7, 8 and 9 patch descriptions
renice–1.00	Alter the nice value of running processes
rpasd–2.0	System for maintaining /etc/passwd across multiple hosts
xmps–1.2	Motif–based process browser
yamm–2.4	Yet Another Micro Monitor using the curses environment

Directory /hpux8/Text:

LaTeXfonts–3.14	Three font files for TeX
TeX–3,14	A document preparation system
Xspell–1.00	An X Windows Motif–based front–end to ispell
cmfonts–3.14	Another set of mf, gf and pk font files for TeX
dvidevs–1.00	A DVI to Laserjet translator
tr2latex–2.2a	This converts a document typeset in troff to LaTeX format
utilityfonts–3.14	A further set of mf, gf and pk font files for LaTeX
xdvi–1.17	Previews DVI files, such as those produced by TeX
xtroff–4.10	Device–independent troff previewer

Directory /hpux8/Users:

calc–1.00	A BASIC–style expression evaluator
es–0.84	An extensible shell
less–178	Dual direction pager program, similar to more
pcal–4.3	Sophisticated Postscript calendar generator
postgres–4.01	An object–oriented DBMS
sc–6.21	Spreadsheet calculator using the curses interface
woman–3.0	A superior (compared to man) manual pager
xmodem–3.9	Transfer files between Unix systems and microcomputers
zsh–2.3.1	Shell combining the best of ksh and csh into one

Directory /hpux8/X11R4/Core:

MITlib–4.00	MIT X11R4 libraries built from original source distribution
Xaw–4.00	Xaw (Athena Widgets for X11) and Xmu include files
appres–1.5	List an X application resource database
imake–4.00	Used to convert machine–independent Imakefiles to Makefiles
xdpyinfo–1.17	Display information utility for X
xlsclients–1.5	List X applications running on a display
xlswins–1.12	Lists the titles of the windows in the current X session
xmag–1.29	Magnifies a portion of a screen into a window

Directory /hpux8/X11R4/Demos:

RClock–1.00	Version of the X clock widget that runs anti–clockwise!
oneko–1.1b	Animated cat which chases after the cursor

unzip–5.0.1	List, test or extract from a ZIP archive file
zoo–2.1	Archiver compatible with microcomputer versions of zoo

Directory /hpux8/Networking:

AufsTools–1.00	For manipulating Macintosh files on the UNIX host
Messages–2.2	Programs for sending messages between Mac and UNIX users
Timelord–1.2	Time server daemon for Mac clients
archie–1.4.1	A client to query the archie databases
aub–2.05	Assemble Usenet Binaries
cmu_snmp–1.1b	The CMU SNMP system
dig–2.0	DNS (Domain Name Server) Internet Groper
doc–2.0	Domain Obscenity Checker
idlookup–1.0	Used with an ID server to identify user of a TCP connection
libauth–4.0p2	Remote authentication library
mit_snmp–1.1	MIT SNMP Development Kit
nestor–1.0p3	Analyse NNTP news statistics
netperf–1.7.1	Netperf is a benchmark for measuring networking performance
rdist–6.0.0	A remote file distribution system
tftpd–1.0	Berkeley Trivial File Transfer Protocol server
traceroute–1.1	Trace route IP packets follow to reach a particular host
tricklet–1.4	Simple SNMP commands, suitable for use in shell scripts
xmib–1.0b	X based MIB display tool
xntp+hp–1.30	Network Time Protocol suite
xntp–3.1	Network Time Protocol (version 3) suite

Directory /hpux8/NeuralNets:

GAucsd–1.4	A genetic algorithm package
NeurDS–3.1	Neural Design and Simulation System
am–6.0	The Aspirin/MIGRAINES neural network simulation environment
atree–2.0	Atree adaptive logic network simulation software
lvq_pak–2.1	The learning vector quantization package
planet–5.7	A tool for constructing, running and examining PDP networks
roxanne–2.4	Read Only X Window Artificial Neural Network Emulator
som_pak–1.2	Package for application of Self–Organising Map algorithms
xerion–3.0	Neural net simulator developed at the University of Toronto

Directory /hpux8/Physics:

asa–2.15	Adaptive Simulated Annealing is written in C
asa–2.9	Adaptive Simulated Annealing is written in C
embed–1.1	Program to do the Broomhead–King SVD embedding procedure
embedding–26.May.93	Program for chaotic time series analysis
fd3–0.3	fd3 is a program that estimates fractal dimension
ff–1.9	FF is a package to evaluate one–loop Feynman diagrams
fudgit–2.33	FUDGIT is a double–precision multi–purpose fitting program
fudgit–2.34	FUDGIT is a double–precision multi–purpose fitting program
grass–1.3	Fast Grassberger–Proccacia correlation integral algorithm
mutinfo–1.21b	Andy Fraser’s algorithm

rlap–1.0.2	Library contains the LAPACK in C generated with f2c
rlap–1.1	Library contains the LAPACK in C generated with f2c
rnlib–1.1	The RANLIB library in C generated with f2c
rnlib–1.1a	The RANLIB library in C generated with f2c

Directory /hpux8/Maths/Misc:

arith–1.0	Library of C functions for global fields
blas–13.May.93	Netlib: blas (level 1, 2 and 3) and machine constants
cdflib.f–1.4	Statlib: Library for Cumulative Distribution, Inverses
complex.arith–1.1	Library for complex run–time support
eigen–1.01a	Library for calculating eigenvalues
ffts_in_C–1.0	fft routines written in C
gmp–1.3.2	GMP arithmetic library using fast algorithms
kaleido–3.10	Computation and 3D Display of Uniform Polyhedra
macaulay–3.0	Algebraic geometry and commutative algebra
morph–4.0	Tool for image analysis and enhancement
ranlib.c–22.Jun.93	Statlib: Library of C routines for Random Number Generation
ranlib.f–22.Jun93	Statlib: Library of F routines for Random Number Generation
rjenkins–1.0	Computation of the HOMFLY polynomial
sabre–19.May.93	A linear/nonlinear simulation system
stplan–4.0	STPLAN performs calculations needed to plan studies
gap–README–3.3	Description about GAP
gap.all–3.3	GAP is a system for computational discrete algebra
gap.doc–3.3	Printed manual and online documentation for GAP
gap.emacs–3.2	Editing GAP files and running GAP in Emacs buffers
gap.etc–3.3	Utilities for GAP
gap.grp–3.3	A library for GAP
gap.lib–3.3	Library need to run the GAP kernel (src–files)
gap.src–3.3	A system for computational discrete algebra
gap.tbl–3.3	Library of *character tables* including all of the ATLAS
gap.thr–3.3	A library of *3–groups* for GAP
gap.tom–3.3	A library of *table of marks* of various groups
gap.two–3.3	A library of *2–group* for GAP

Directory /hpux8/Misc:

agrep–2.04	Searches text for strings or approximations thereof
arc–5.21e	Archive utility compatible with IBM PC and Atari ST Arc
btoa–5.2	Encodes binary data as printable ASCII characters
cextract–1.7	C prototype/documentation extractor
csound–2.00b	Digital audio processing and sound synthesis system
debug_malloc–1.0p1	Debugging malloc library
gaps–5.11	Get And Put System (GAPS) for managing program versions
j2–2.1	This is a program to generate juggling patterns
jug–1.0	A program to display juggling patterns
lha–1.00	Archiver utility upwards compatible with LHarc (lzh format)
lyap–1.0	Program to calculate maps of Lyapunov space

xjewel–1.6	Colour–matching tetris–type game (but better !) for X11
xlife–3.0	Conway's Game of Life for X Windows
xmake5–1.1	5–in–a–row board game with a curses or X Windows interface
xmc–1.00	An X Windows implementation of the Missile Command game
xmines–1.02	A simple "cross the minefield" game for X Windows
xminesweep–2.1	Another version of the minesweep game for X11
xpool–1.3	An X windows implementation of the game of pool
xstratego–1.00	X–based stratego game for two human players
xtetris–2.4	A block dropping game for X Windows
xtmines–1.2.1	Yet another X11 minefield game
xvier–1.0	An X Windows implementation of the popular Connect 4 game
xyahtzee–1.01	A Motif implementation of the Yahtzee dice game

Directory /hpux8/Languages:

clisp–1.00	This is an implementation of Common Lisp
cml–0.9.8	Concurrent ML (CML) is a language for concurrent programming
f2c–93.04.28	Fortran 77 to C (or C++) converter
gofer–2.28b	Gofer is a functional programming environment
icon–8.0	A programming language used for non–numerical computation
kcl_licence–0.1	IMPORTANT – licence form for Kyoto Common Lisp (kcl)
p2c–1.20	Pascal to C translator
pcl–4b.00	Portable Common Loops (PCL)
perl–4.036	Practical Extraction and Report Language
scheme–7.1.3	This is an implementation of standard Scheme
sml_nj–0.93	Standard ML of New Jersey, version 0

Directory /hpux8/Maths/LinAlgebra:

crep–4.Nov.93	CREP – Finite dimensional algebra
lapack–1.0a.part01	Main directory from the split version of LAPACK
lapack–1.0a.part02	Directory 'BLAS' from the split version of LAPACK
lapack–1.0a.part03	Directory 'SRC' from the split version of LAPACK
lapack–1.0a.part04	Directory 'TESTING' from the split version of LAPACK
lapack–1.0a.part05	Directory 'TIMING' from the split version of LAPACK
lapack–1.0a.part06	Directory 'MANPAGES' from the split version of LAPACK
lapack–1.0a.part07	Directory 'LAWNS' from the split version of LAPACK
lapack.all–1.0a	LAPACK are libraries of numerical linear algebra
lapack.all–1.1	LAPACK are libraries of numerical linear algebra
lapack.blas–1.1	Directory 'BLAS' from the split version of LAPACK
lapack.install–1.1	Directory 'INSTALL' from the split version of LAPACK
lapack.man–1.1	Directory 'MANPAGES' from the split version of LAPACK
lapack.src–1.1	Directory 'SRC' from the split version of LAPACK
lapack.testing–1.1	Directory 'TESTING' from the split version of LAPACK
rblas–1.0	The BLAS library in C generated with f2c
rblas–1.1	The BLAS library in C generated with f2c
rfft–1.1	The FFT library in C generated with f2c
rlab–0.97d	Interpreter for the RLaB Programming Language/Environment
rlab.all–0.97d	Interpreter includes libraries for numerical computations

Appendix G
Public Domain Software Availability and HP Support Line

HP Public Domain Software Availability

All Software Available On The Software Porting And Archive Centre

——————— [Generated on Tue 15 Feb 1994] ———————

The packages below are available at the UK anonymous FTP site ftp.csc.liv.ac.uk (138.253.42.172), the German mirror hpux.ask.uni–karlsruhe.de (129.13.200.57), the US mirror ftp.cae.wisc.edu (144.92.4.15) or the French mirror hpux.cict.fr (192.70.79.53) and are gzip'ed archives with a .tar.gz suffix. Date & size information on the files can be obtained by transferring and gunzip'ing the file /ls–lR.gz from the same FTP sites.

Queries about the software should be e–mailed to ftp@csc.liv.ac.uk (UK), ftp@hpux.ask.uni–karlsruhe.de (Germany), ftp@cae.wisc.edu (US) or ftp@cict.fr (France). This file is available for transfer from the FTP sites as the gzip'ed file /TextDoc/Summary.all.txt.gz.

The software below has been tested on Series 700 machines running either HP–UX 8.07 (/hpux8 tree) or 9.01 (/hpux9 tree), but most of it should also work on Series 300/400/800 machines running the same release of HP–UX.

Directory /hpux8/Games:

blockade–1.00	A sliding block game
bsx–1.0	X windows graphical client for a multi–player MUD
capture–1.00	Implementation of the Capture The Flag game for X Windows
engarde–1.0	Two–player board game, with Motif interface
jetpack–1.00	Game for X, jetting around a large maze
multiverse–1.02	Multiplayer game in virtual world
pang–2.0	X Windows video game based on Buster Brothers
reve–1.4.0	An Othello (aka reversi) board game
scrabble–1.30	A computer implementation of the Scrabble(tm) board game
tankhunt–0.0.4	Multiple player tank maze game for X11
xaster–1.10	A faithful implementation of the arcade game Asteroids
xbattle–4.0	Multi–user battle strategy game for X windows
xbl–0.2	3–D Tetris game played in a cubic grid
xblackjack–2.1	Game of blackjack for X Windows, with Motif interface
xblockbuster–1.03	A simple bat, ball and bricks game for X11
xics–2.2	X Windows interface to the Internet Chess Server (ICS)
xinvaders–2.0	Space Invaders for X–Windows

/var/adm/cron	/usr/lib/cron	
/var/adm/wtmp	/etc/wtmp	/var/adm/wtmp
/var/log	/usr/adm	/var/log
/var/preserve	/usr/preserve	/var/preserve
/var/spool	/usr/spool	/var/spool
/var/spool/mail	/usr/mail	/var/spool/mail
/var/tmp	/usr/tmp	/var/tmp
/var/yp	/usr/etc/yp	/var/yp
/vmunix	/hp–ux	/kernel/unix

System Configuration File Mappings

SunOS 4.1.3	HPUX 9.X	Solaris 2.3
/etc/defaultrouter	/etc/route add default (in /etc/netlinkrc)	/etc/defaultrouter
/etc/defaultdomain	NISDOMAIN=defaultname (in /etc/netnisrc)	/etc/defaultdomain
/etc/exports	/etc/exports	/ets/dfs/dfstab
/etc/format.dat	/etc/disktab	/etc/format.dat
/etc/fstab	/etc/checklist	/etc/vfstab
/etc/group	/etc/group, /etc/logingroup	/etc/group
/etc/hostname.le0	/etc/src.sh	/etc/hostname.le0
/etc/hosts	/etc/hosts	/etc/hosts
/etc/hosts.equiv	/etc/hosts.equiv	/etc/hosts.equiv
/etc/hosts.lpd	/etc/hosts.lpd	see lpadmin(1M)
/etc/ttytab	/etc/inittab	/etc/inittab
/etc/inetd.conf	/etc/inetd.conf	/etc/inetd.conf
/etc/mtab	/etc/mnttab	/etc/mnttab
/etc/passwd	/etc/passwd	/etc/passwd, /etc/shadow
/etc/printcap	see sam(1M), or lpadmin(1M), /usr/spool/model	see lpadmin(1M)
/etc/rc	/etc/rc	/etc/rc<run_level>.d
/etc/rc.boot	/etc/brc, /etc/bcheckrc	/ufsboot
/etc/rc.local	/etc/netbsdsrc,/etc/netlinkrc, /etc/netnfsrc, /etc/netnfsrc2	
/etc/resolv.conf	/etc/resolv.conf	/etc/resolv.conf
/etc/services	/etc/services	/etc/services
/etc/xtab	/etc/xtab	/etc/xtab

Directory Mappings

SunOS 4.1.3	HP–UX 9.X	Solaris 2.3
/home	/users	/home
/tftpboot	/hp–ux+	
/usr/5bin	/usr/bin	/usr/bin
/usr/5include	/usr/include	/usr/include
/usr/5lib	/usr/lib	/usr/lib
/usr/ccs	/usr/bin, /bin	
/usr/etc	/bin, /etc	/usr/sbin
/usr/contrib	/usr/contrib	/usr/contrib
/usr/lib/acct	/usr/lib/acct	/usr/lib/acct
/usr/local	/usr/local	usr/local
/usr/share/man	/usr/man	/usr/share/man
/usr/ucb	/usr/bin	
/var/adm	/usr/adm	/var/adm
/var/adm/acct	/usr/adm/acct	/var/adm/acct

Appendix F
User Environment Mappings

SunOS 4.1.3 to HP–UX 9.X Environment/File/Directory Mappings

SunOS 4.1.3	HPUX 9.X	Solaris 2.3
$PATH = /bin: /usr/bin: /usr/ucb: /usr/openwin/bin: /etc /usr/etc /sbin	$PATH = /bin: /usr/bin: /usr/bin/X11: /usr/vue/bin: /etc: etc	$PATH = /bin: /usr/ucb: /usr/bin: /usr/5bin: /usr/openwin/bin: /etc/: /usr/etc: /sbin
If NOT running HP Vue:		
$HOME/.login	/etc/csh.login, $HOME/.login	/etc/skel/local.login –> $HOME/.login
$HOME/.profile	/etc/profile, $HOME/.profile	/etc/skel/local.cshrc –> $HOME/.profile
$HOME/.x11start	$HOME/.x11start	$HOME/.x11start
$HOME/.X11defaults	$HOME/.X11defaults	$HOME/.x11defaults
$HOME/.mwmrc	$HOME/.mwmrc	HOME/.mwmrc
		/etc/skel/local.cshrc –> $HOME/.cshrc
If running HP Vue:		
$HOME/.login	/etc/csh.login, $HOME/.vueprofile	
$HOME/.profile	/etc/profile, $HOME/.vueprofile	
$HOME/.x11start	$HOME/.vue/sessions/[current|home]/vue.session	
$HOME/.X11defaults	$HOME/.vue/sessions/[current|home]/vue.resources	
$HOME/.openwin–menu	$HOME/.vue/vuewmrc	
$HOME/.mwmrc	$HOME/.vue/vuewmrc	

unlink(8)	unlink	unlink(1M)
update(8)	syncer	fsflush(1)
uucheck(8)	uucheck	uucheck(1M)
uucico(8)	uucico	uucico(1M)
uuclean(8)	uuclean	
uucleanup(8)	uucleanup	uucleanup(1M)
uucpd(8)	see uucp(1), uuxqt(1M)	uucp(1C)
uusched(8)	uusched	uusched(1M)
uuxqt(8)	uuxqt	uuxqt(1M)
vipw(8)	vipw	vipw(1B)
vmstat(8)	vmstat	vmstat(1M)
wtmpfix(8)	wtmpfix	wtmpfix(1M)
ypbind(8)	ypbind	ypbind(1M)
ypinit(8)	ypinit	ypinit(1M)
ypmake(8)	ypmake	ypmake(1M)
yppasswdd(8)	yppasswdd	yppasswd(1)
yppoll(8)	yppoll	yppoll(1M)
yppush(8)	yppush	yppush
ypserv(8)	ypserv	ypserv
ypset(8)	ypset	ypset(1M)
ypupdated(8)	Not Available NIS server update daemon	ypupdated
ypxfr(8)	ypxfr	ypxfr(1M)
ypxfrd(8)	Not Available transfers NIS maps in efficient manner	ypxfrd
zdump(8)	date	zdump(1M)
zic(8)	date	zic(1M)

NOTICE: HP–UX does support Remote File Sharing (RFS) software. Commands affected are: adv, dname, dorfs, fumount, fusage, hostrfs, idload, listen, nlsadmin, nsquery, rfadmin, rfpasswd, rfstart, rfstop, rfuadmin, rfudaemon, rmntstat, unadv.

rpcinfo(8)	rpcinfo	rpcinfo(1M)
rquotad(8)	rquotad	rquotad(1M)
rrestore(8)	rrestore	ufsrestore(1M)
rshd(8)	remshd	rshd(1M)
rstatd(8)	rstatd	rstatd(1M)
runacct(8)	runacct	runacct(1M)
rusage(8)	time	time(1)
rusersd(8)	rusersd	rusersd(1M)
rwalld(8)	rwalld	rwall
rwhod(8)	rwhod	rwhod(1M)
sa(8)	acct, sa1, sa2, sadc	Not Available
savecore(8)	savecore	savecore(1M)
sendmail(8)	sendmail	sendmail(1M)
setsid(8)	exec, setsid(2)	Not Available
showfh(8)	Not Available print full pathname of NFS file	showfh
showfhd(8)	Not Available daemon for showfh	showfhd
showmount(8)	showmount	showmount(1M)
showrev(8)	uname –a, what <file>	showrev(1M)
shutacct(8)	shutacct	shutacct(1M)
shutdown(8)	shutdown	shutdown(1M)
spray(8)	spray	spray(1M)
sprayd(8)	sprayd	sprayd
startup(8)	startup	startup(1M)
statd(8)	statd	statd(1M)
sticky(8)	chmod +s	
sundiag(8)	xstm, cstm, sysdiag	sundiag(1M)
suninstall(8)	updatesuninstall	
swapon(8)	swapon	swap(1M)
sys–unconfig(8)	config, /etc/dfile.full	sys–unconfig(1M)
syslogd(8)	syslogd	syslogd(1M)
talkd(8)	ntalkd(pb: iworks)	talkd(1M)
telnetd(8)	telnetd	telnetd(1M)
tfsd(8)	mountd	tfsd
tftpd(8)	tftpd	tftpd(1M)
tic(8)	tic	tic(1M)
tnamed(8)	named	tnamed(1M)
trpt(8)	rstatd	trpt
ttysoftcar(8)	Not Available enable/disable carrier detect	Not Available
tunefs(8)	tunefs	tunefs(1M)
turnacct(8)	turnacct	turnacct(1M)
umount(8)	umount	umount(1M)
umount_tfs(8)	umount	umount(1M)

portmap(8)	portmap	rpcbind(1M)
praudit(8)	audisp	Not Available
prctmp(8)	prctmp	prctmp(1M)
prdaily(8)	prdaily	prdaily(1M)
prtacct(8)	prtacct	prtacct(1M)
pstat(8)	swapinfo, top, /usr/contrib/bin/monitor	sar(1M)
pwck(8)	pwck	pwck(1M)
pwdauthd(8)	Not AvailableNot Available RPC server for authenticating passwords	
quot(8)	quot	quot(1M)
quotacheck(8)	quotacheck	quotacheck(1M)
quotaoff(8)	quotaoff	quotaoff(1M)
quotaon(8)	quotaon	quotson(1M)
rarpd(8)	rarpd(pd: OMP)	rarpd(1M)
rdate(8)	rtime(pd: OMP), xntp version 3(pd: iworks)	tdate(1M)
rdump(8)	rdump	ufsdump(1M)
reboot(8)	reboot, shutdown	reboot(1M)
renice(8)	renice	prionctl(1)
repquota(8)	repquota	requots(1M)
restore(8)	restore	ufsretore(1M)
rexd(8)	rexd	in.rexd
rexecd(8)	rexecd	in.rexcd
rlogind(8)	rlogind	in.rlogind(1M)
rm_client(8)	SAM: cluster config	Not Available
rmail(8)	uucp, sendmail	rmail(1)
rmt(8)	rmt	rmt(1M)
route(8)	route	route(1M)
routed(8)	gated, /etc/gated.conf	in.routed
rpc.etherd(8)	Not Available daemon to examine ether packets	Not Available
rpc.lockd(8)	rpc.lockd	lockd(1M)
rpc.mountd(8)	rpc.mountd	mountd(1M)
rpc.rexd(8)	rpc.rexd	rpc.rexd(1M)
rpc.rquotad(8)	rpc.rquotad	rpc.rquotad
rpc.rstatd(8)	rpc.rstatd	rpc.rstatd(1M)
rpc.rusersd(8)	rpc.rusersd	rpc.rusersd(1M)
rpc.rwalld(8)	rpc.rwalld	rpc.rwalld(1M)
rpc.sprayd(8)	rpc.sprayd	rpc.sprayd(1M)
rpc.statd(8)	rpc.statd	rpc.statd
rpc.yppasswdd(8)	rpc.yppasswdd	rpc.yppasswdd
rpc.ypupdated(8)	Not Available NIS server update daemon	rpc.ypupdated

kgmon(8)	Not Available dump of the OS system's profile buffers	kgmon
lastlogin(8)	lastlogin	lastlogin(1M)
ldconfig(8)	Not Available configure a performance– enhancing cache	Not Available
link(8)	link	link(1M
list_files(8)	update	pkgadd(1M)
lockd(8)	lockd	lockd(1M)
lpc(8)	sam: Printers, lpadmin, lpsched	lpadmin(1M)
lpd(8)	sam: Printers, rlpdaemon, lpadmin	lpadmin(1M)
mailstats(8)	mailstats	mailstats(1)
makedbm(8)	makedbm	makedbm(1M)
makedev(8)	SAM: Peripheral Devices	makedev(3C)
makekey(8)	makekey	makekey(1)
mconnect(8)	telnet <host> 25 (break= ^})	mconnect(1)
mkfile(8)	swapon(1M)	mkfile(1M)
mkfs(8)	mkfs	mkfs(1M)
mknod(8)	mknod	mknod(1M)
mkproto(8)	newfs	newfs(1M)
modload(8)	sam(1M): kernel config	modload(1M)
modstat(8)	lsdev, sam(1M): kernel config	modinfo(1M)
modunload(8)	sam(1M): kernel config	modunload(1M)
monacct(8)	monacct	monacct(1M)
monitor(8)	isl (L1–A = esc)	monitor(1M)
mount(8)	mount	mount(1M)
mount_tfs(8)	mount	mount(1M)
mountd(8)	mountd	mountd(1M
named(8)	named	named(1M)
ncheck(8)	ncheck	ncheck(1M)
netstat(8)	netstat	netstat(1M)
newaliases(8)	newaliases	newaliases(1)
newfs(8)	newfs	newfs(1M)
newkey(8)	Not Available create a new key in the publickey database	newkey(1M)
nfsd(8)	nfsd	nfsd(1M)
nfsstat(8)	nfsstat	nfsstat(1M)
nslookup(8)	nslookup	nslookup(1M)
nulladm(8)	nulladm	nulladm(1M)
openboot(8)	isl, boot	
pac(8)	lpana, lpstat	Not Available
ping(8)	ping	ping(1M)

exportfs(8)	exportfs	share(1M)
extract_files(8)	update	pkgadd(1M)
extract_patch(8)	update	pkgadd(1M)
extract_unbundled(8)	update	pkgadd(1M)
fastboot(8)	reboot, shutdown	boot(1M)
fasthalt(8)	reboot –q, shutdown	init 0
fingerd(8)	fingerd	fingerd(1M)
format(8)	not required, can use Software Disk Striping	format(1M)
fparel(8)	xstm, cstm, sysdiag	Not Available
fpurel(8)	xstm, cstm, sysdiag	Not Available
fsck(8)	fsck	fsck(1M)
fsirand(8)	fsirand	fsirand(1M)
ftpd(8)	ftpd	ftpd(1M)
fuser(8)	fuser	fuser(1M)
fwtmp(8)	fwtmp	fwtmp(1M)
gencat(8)	gencat	gencat(1)
gettable(8)	Not Available get DARPA Internet format hosttable from a host	gettable(1M)
getty(8)	getty	getty(1M)
gpconfig(8)	Not Available reinit graphics device	Not Available
grpck(8)	grpck	grpck(1M)
gxtest(8)	xstm, cstm, sysdiag	Not Available
halt(8)	reboot –h, shutdown –h	halt(1M)
hostconfig(8)	Not Available configure a system's host parameters	hostconfig(1M)
htable(8)	Not Available convert DoD Internet format host table	htable(1M)
icheck(8)	fsck	icheck(1M)
ifconfig(8)	ifconfig	ifconfig(1M)
imemtest(8)	xstm, cstm, sysdiag	Not Available
inetd(8)	inetd	inetd(1M)
infocmp(8)	captoinfo, tic, untic	infocmp(1M)
init(8)	init	init(1M
installboot(8)	mkboot	installboot(1M)
installtxt(8)	gencat	msgfmt(1M)
intr(8)	Not Available	Not Available
iostat(8)	iostat	iostat(1M)
kadb(8)	adb	kadb(1M)
keyenvoy(8)	vuelogin(1X): keyFile	Not Available
keyserv(8)	vuelogin(1X): keyFile	keyserv(1M)

audit(8)	audevent, audisp, audsys, audusr	Not Available
audit_warn(8)	audomon –w file	Not Available
auditd(8)	audomon	Not Available
automount(8)	automount	automount(1M)
biod(8)	biod	Not Available
boot(8)	hpux_700, isl	boot(1M)
bootparamd(8)	SAM: cluster config	bootparamd(1M)
c2conv(8)	acl	Not Available
c2unconv(8)	acl	Not Available
captoinfo(8)	captoinfo	captoinfo(1M)
catman(8)	catman	catman(1M)
chargefee(8)	chargefee	chargefee(1M)
chown(8)	chown	chown(1)
chroot(8)	chroot	chroot(1M)
chrtbl(8)	buildlang	chrtbl(1M)
ckpacct(8)	ckpacct	ckpacct(1M)
clri(8)	clri, fsck	clri(1M)
colldef(8)	buildlang	colltbl(1M)
comsat(8)	see vuewm(1X), env $MAILCHECK variable	in.comsat(1M)
config(8)	SAM: Kernel Configuration, config(1M), master(4)	config
crash(8)	/usr/contrib/bin/analyze, adb, savecore, scancore(s800 only)	crash(1M)
cron(8)	cron	cron(1M)
dcheck(8)	fsck	fsck(1M) and ncheck(1M)
devinfo(8)	ioscan, lsdev	devinfo(1M)
devnm(8)	devnm	devnm(1M
diskusg(8)	diskusg	diskusg
dkctl(8)	scsictl, mediainit	Not Available
dkinfo(8)	diskinfo, swapinfo	prtvtoc(1M)
dmesg(8)	dmesg	dmesg(1M)
dodisk(8)	dodisk	dodisk(1M)
dump(8)	dump, fbackup	ufsdump(1M)
dumpfs(8)	dumpfs	fstyp(1M)
edquota(8)	edquota	edquota(1M)
eeprom(8)	Not Available, isl read boot eeprom	eeprom(1M)
etherd(8) (rpc.etherd)	Not Available daemon to examine ether packets	snoop(1M)
etherfind(8)	OpenView, xtr(pd: OMP) X11 interface to Sun’s etherd	snoop(1M)

Appendix E
System Administrator Commands

SunOS 4.1.3 to HP–UX 9.X to Solaris 2.3 Command Cross Reference

NOTICE: This is a cross reference of SunOS man8 command set to equivalent HP–UX 9.X commands and solaris 2.3 commands.

NOTICE: Many of the commands which exist on SunOS 4.1.3, HP–UX 9.X and Solaris 2.3 reside in different directories on the systems.

SunOS 4.1.3	HP–UX 9.X	Solaris 2.3
C2conv(8)	acl(5)	Not Available
C2unconv(8)	acl(5)	Not Available
MAKEDEV(8)	SAM: Peripheral Devices	makedev(3C)
ac(8)	accton	sar(1)
acctcms(8)	acctcms	acctcms(1M)
acctcon(8)	acctcon	acctcon(1M)
acctcon1(8)	acctcon1	acctcon1(1M)
acctcon2(8)	acctcon2	acctcon2(1M)
acctdisk(8)	acctdisk	acctdisk(1M)
acctdusg(8)	acctdusg	acctdusk(1M)
acctmerg(8)	acctmerg	acctmerg(1M)
accton(8)	accton	accton(1M)
acctprc(8)	acctprc	acctprc(1M)
acctprc1(8)	acctprc1	acctprc1(1M)
acctprc2(8)	acctprc2	acctprc2(1M)
acctsh(8)	acctsh	acctsh(1M)
acctwtmp(8)	acctwtmp	acctwtmp(1M)
add_client(8)	SAM: cluster config	Not Available
add_services(8)	fpkg	pkgadd(1M)
add_user(8)	SAM: add user	useradd(1M)
analyze(8)	/usr/contrib/bin/analyze, adb, savecore, scancore(s800 only)	abd(1)
arp(8)	arp	arp(1M)

wall(1)	wall	wall(1)
wc(1)	wc	wc(1)
what(1)	what	what(1)
whatis(1)	man –k	whatis(1)
which(1)	which	which(1)
who(1)	who	who(1)
whoami(1)	whoami, who, id	id
whois(1)	finger, nslookup	whois(1)
write(1)	write	write(1)
xargs(1)	xargs	xargs(1V)
xget(1)	Not available	Not available
xsend(1)	Not available	Not available
xstr(1)	xstr	xstr(1)
yacc(1)	yacc	yacc(1)
yes(1)	yes	yes(1)
ypcat(1)	ypcat	ypcat(1)
ypmatch(1)	ypmatch	ypmatch(1)
yppasswd(1)	yppasswd	yppasswd(1)
ypwhich(1)	ypwhich	ypwhich(1)
zcat(1)	zcat	zcat(1)
zdump(8)	date	zdump(8)
zic(8)	date	zic(8)

NOTICE: HP–UX does support bibliograph database software. Commands affected are: addbib(1), indxbib(1), lookbib(1), refer(1), roffbib(1), and sortbib(1).

NOTICE: From the Z–Mail PRODUCT SUMMARY, Z–Code Software Corp. See the mail section for further details.

traffic(1)	OpenView, xtr(pd: OMP) X11 interface to Sun's etherd	Not available
troff(1)	troff (third party)	troff(1)
true(1)	true	true(1)
tset(1)	tset	Not available
tsort(1)	tsort	tsort(1)
tty(1)	tty	tty(1)
ul(1)	ul	ul(1)
umask(1)	umask	umask(1)
uname(1)	uname	uname(1)
uncompress(1)	uncompress	uncompress(1)
unexpand(1)	unexpand	unexpand(1)
unget(1)	unget	unget(1)
unifdef(1)	unifdef	unifdef(1)
uniq(1)	uniq	uniq(1)
units(1)	units	units(1)
unix2dos(1)	ux2dos	unix2dos(1)
unpack(1)	unpack	unpack(1V)
unwhiteout(1)	Not available TFS unwhiteout entries	unwhiteout(1)
uptime(1)	uptime, who	uptime(1)
users(1)	users, who	who
ustar(1)	tar	tar
uucp(1)	uucp	uucp(1C)
uudecode(1)	uudecode	uudecode(1C)
uuencode(1)	uuencode	uuencode(1C)
uulog(1)	uulog	uulog(1C)
uuname(1)	uuname	uunmae(1C)
uupick(1)	uupick	uupick(1C)
uusend(1)	uucp	Not available
uustat(1)	uustat	uustat(1C)
uuto(1)	uuto	uuto(1C)
uux(1)	uux	uux(1C)
vacation(1)	vacation	vacation(1)
val(1)	val	val(1)
vedit(1)	vedit	vedit(1)
vfontinfo(1)	/usr/contrib/bin/X11/xfd	Not available
vgrind(1)	cb	vgrind(1)
vi(1)	vi	vi(1)
view(1)	view	view(1)
vswap(1)	bdftosnf	Not available
vtroff(1)	troff (third party)	Not available
vwidth(1)	troff (third party)	Not available
w(1)	who, ps –ef | grep <name>	w(1)
wait(1)	wait	wait(1)

scrolldefaults(1)	HP Vue, Instant Ignition: Scrollbar	Openwindows property window
sdiff(1)	sdiff	sdif(1V)
sed(1)	sed	sed(1V)
set_alarm(1)	datebook, leave	Not available
sh(1)	sh, ksh, csh	sh(1)
shelltool(1)	hpterm, xterm	OpenWindows Shell Tool
size(1)	size	size(1)
sleep(1)	sleep	sleep(1)
soelim(1)	soelim	soelim(1)
sort(1)	sort	sort(1V)
spell(1)	spell	spell(1)
spellin(1)	spellin	spellin(1)
spline(1)	spline_curve2d(3G)	spline(1G)
split(1)	split	split(1)
strings(1)	strings	strings(1)
strip(1)	strip	strip(1)
stty(1)	stty	stty(1V)
su(1)	su	su(1V)
sum(1)	sum	sum(1)
suntools(1)	HP Vue	
sunview(1)	HP Vue	OpenWindows
sv_acquire(1)	chmod	Not available
sv_release(1)	chmod	Not available
swin(1)	HP Vue: Style Manager	Not available
symorder(1)	Not available	symorder(1)
sync(1)	sync	sync(1)
tabs(1)	tabs	tabs(1V)
tail(1)	tail	tail(1)
talk(1)	talk(pd: iworks)	talk(1)
tar(1)	tar	tar(1)
tbl(1)	tbl	tbl(1)
tcopy(1)	dd, mt	tcopy(1)
tee(1)	tee	tee(1)
telnet(1)	telnet	telnet(1C)
test(1)	test	test(1V)
tftp(1)	tftp	tftp(1C)
time(1)	time	time(1V)
tip(1)	cu	tip(1C)
toolplaces(1)	HP Vue: window move, vuewm	Not available
touch(1)	touch	touch(1V)
tput(1)	tput	tput(1V)
tr(1)	tr	tr(1V)
trace(1)	Link with “–lcl” and call U_STACK_TRACE()	truss

page(1)	page	page(1)
pagesize(1)	sysconf(PAGE_SIZE)	Not available
passwd(1)	passwd	passwd(1)
paste(1)	paste	paste(1V)
pax(1)	pax, cpio	cpio(1V)
paxcpio(1)	paxcpio, cpio	cpio(1V)
pcat(1)	pcat	pcat(1V)
perfmeter(1)	x11perf(pd: liv), top, swapinfo,remsh	Openwindows Performance Meter tool
pg(1)	pg	pg(1V)
pr(1)	pr	pr(1V)
printenv(1)	printenv, env	env(1)
prof(1)	prof	prof(1)
prs(1)	prs	prs(1)
prt(1)	delta	prt(1)
ps –ax	ps –ef	ps –ef
ptx(1)	ptx	ptx(1)
pwd(1)	pwd	pwd(1)
quota(1)	quota	quota(1)
ranlib(1)	not needed, see ar(1)	ranlib(1)
rasfilter8to1(1)	xpr –gray, xgedit(pd: OMP)	Not available
rastrepl(1)	whiteboard	Not available
rcp(1)	rcp	rcp(1)
rdist(1)	rdist(pd: liv), updist, update	rdist(1)
red(1)	red	red(1)
reset(1)	reset	reset(1)
rev(1)	rev	Not available
ring_alarm(1)	datebook	Not available
rlogin(1)	rlogin	rlogin(1C)
rm(1)	rm	rm(1)
rmdel(1)	rmdel	rmdel(1)
rmdir(1)	rmdir	rmdir(1)
rpcgen(1)	rpcgen	rpcgen(1)
rsh(1)	remsh	rsh(1)
rup(1)	rup	rup(1)
ruptime(1)	ruptime	ruptime(1C)
rusers(1)	rusers	rusers(1C)
rwall(1)	rwall	rwall(1C)
rwho(1)	rwho	rwho(1C)
sact(1)	sact	sact(1)
sccsdiff(1)	sccsdiff	sccsdiff(1)
screenblank(1)	HP Vue: Style Manager xset –s 600	OpenWindows
screendump(1)	xwd, xwud	Not available
screenload(1)	xwd, xwud	Not available
script(1)	script	script(1)

logger(1)	logger	Not available
login(1)	login	login(1)
logname(1)	logname	logname(1)
look(1)	grep, sort	look(1)
lorder(1)	lorder	lorder(1)
lp(1)	lp	lp(1)
lpq(1)	lpstat	lpstat(1)
lpr(1)	lp	lp(1)
lprm(1)	cancel	cancel(1)
lpstat(1)	lpstat	lpstat(1)
lptest(1)	Not available send a test pattern to a printer	Not available
ls(1)	ls	ls(1V)
lsw(1)	Not available list TFS whiteout entries	Not available
m4(1)	m4	m4(1V)
mach(1)	model, uname –m	uname –b
machid(1)	machid	Not available
mail(1)	mail	mail(1)
mailrc_to_defaults(1)	see elm(1)	OpenWindows property window
mailtool(1)	elm (see note – z–mail)	Openwindows Mail Tool
make(1)	make, GNUmake(pd: iworks), imake(pd: liv)	make(1)
man(1)	man	man(1)
mesg(1)	mesg	mesg(1)
mkdir(1)	mkdir	mkdir(1)
mkstr(1)	mkstr	Not available
more(1)	more	more(1)
mps(1)	ps	ps(1)
mpstat(1)	monitor	
mt(1)	mt	mt(1)
mv(1)	mv	mv(1)
nawk(1)	awk	nawk(1)
neqn(1)	neqn	neqn(1)
newgrp(1)	newgrp	newgrp(1)
nice(1)	nice	nice(1)
nl(1)	nl	nl(1V)
nm(1)	nm	nm(1)
nohup(1)	nohup	nohup(1V)
nroff(1)	nroff	nroff(1)
od(1)	od	od(1V)
on(1)	on	on(1C)
pack(1)	pack	pack(1V)

gcore(1)	adb /dev/kmem /hp–ux	gcore(1)
get(1)	get	get(1)
get_alarm(1)	datebook, leave	Not available
get_selection(1)	datebook	xv_get_sel
getopt(1)	getopt	getopt(1V)
getoptcvt(1)	getopts	getoptcvt(1)
getopts(1)	getopts	getopts(1)
gfxtool(1)	Not applicable	Not available
	run graphics program in window	
gprof(1)	gprof, gprof++	gprof(1)
graph(1)	Not available	graph(1G)
grep(1)	grep	grep(1V)
groups(1)	groups	Not available
hashcheck(1)	hashcheck	hashcheck(1)
hashmake(1)	hashmake	hashmake(1)
head(1)	head	head(1)
help(1)	help	help(1)
hostid(1)	name –i	sysdef –h
hostname(1)	hostname	uname –n
iconedit(1)	whiteboard,	OpenWindows
	/usr/contrib/bin/X11/bitmap	Icon Edit Tool
id(1)	id	id(1)
indent(1)	cb	Not available
inline(1)	cc –Wc,–YE	inline(1)
input_from_defaults(1)	HP Vue: restart HOME session	Not available
install(1)	install(1M)	install(1)
ipcrm(1)	ipcrm	ipcrm(1)
ipcs(1)	ipcs	ipcs(1)
join(1)	join	join(1)
keylogin(1)	vuelogin(1X): keyFile	keylogin(1)
keylogout(1)	vuelogin(1X): keyFile	keylogout(1)
kill(1)	kill	kill(1)
last(1)	last, lastb	last(1)
lastcomm(1)	lastcomm, acctcom	lastcomm(1)
ld(1)	ld	ld
ldd(1)	odump	ldd(1)
leave(1)	leave, at, cron	cron
lex(1)	lex	lex(1)
line(1)	line	line(1)
lint(1)	lint	Not available
ln(1)	ln	ln(1V)
load(1)	update	pkgadd(1M)
loadc(1)	update	pkgadd(1M)
loadkeys(1)	xmodmap –pk, keymap_ed	loadkeys(1)
lockscreen(1)	HP Vue: screen lock	xlock(1)
lockscreen_default(1)	HP Vue: Style Manager	

dbxtool(1)	xdb, dde(layered product)	SPARCworks
dc(1)	dc	dc(1)
dd(1)	dd	dd(1)
delta(1)	delta	delta(1C)
deroff(1)	deroff	deroff(1)
des(1)	crypt	des(1)
desktop(1)	HP Vue	OpenWindows
df(1)	bdf(1M), df(1M)	df(1V)
diff(1)	diff	diff(1)
diff3(1)	diff3	diff3(1V)
diffmk(1)	diffmk	diffmk(1)
dircmp(1)	dircmp	dircmp(1V)
dirname(1)	dirname	dirname(1V)
disablenumlock(1)	xmodmap	Not available
domainname(1)	domainname	domainname(1)
dos2unix(1)	dos2ux	dos2unix(1)
du(1)	du	du(1V)
dumpkeys(1)	xmodmap –pk, keymap_ed	dumpkeys(1)
e(1)	ex	ex(1)
echo(1)	echo	echo(1V)
ed(1)	ed	ed(1)
edit(1)	edit	edit(1)
egrep(1)	egrep	egrep(1V)
eject(1)	tcio –r	eject(1)
enablenumlock(1)	xmodmap	Not available
enroll(1)	Not available <— secret mail	Not available
env(1)	env	env(1)
eqn(1)	neqn	eqn(1)
error(1)	Not available merge cc errors into source file	error(1)
ex(1)	ex	ex(1)
expand(1)	expand	expand(1)
expr(1)	expr	expr(1V)
false(1)	false	false(1)
fdformat(1)	mediainit	fdformat(1)
fgrep(1)	fgrep	fgrep(1V)
file(1)	file	file(1)
find(1)	find	find(1)
finger(1)	finger	finger(1)
fold(1)	fold	fold(1)
fontedit(1)	Not available <— font editor	Not available
foption(1)	not needed, all S700 have floating point	Not available
from(1)	from	Not available
ftp(1)	ftp	ftp(1C)

cat(1)	cat	cat(1V)
cb(1)	cb	cb(1)
cc(1)	cc	cc(1V)
cd(1)	cd	cd(1)
cdc(1)	cdc	cdc(1)
cflow(1)	cflow	cflow(1V)
checkeq(1)	Not available reports missing or unbalanced delimiters	checkeq(1)
checknr(1)	checknr	checknr(1)
chfn(1)	chfn	Not available
chgrp(1)	chgrp	chgrp(1)
chkey(1)	vuelogin(1X): keyFile	chkey(1)
chmod(1)	chmod	chmod(1V)
chsh(1)	chsh	Not available
clear(1)	clear	clear(1)
clear_colormap(1)	Not needed, xinitcolormap	Not available
clear_functions(1)	Not available clear function keys	clear_functions(1)
click(1)	HP Vue: Style Manager, xset c [0–100]	click(1)
clock(1)	xclock	Openwindows /usr/demo/clock
cmdtool(1)	hpterm, xterm	OpenWindows Command Tool
cmp(1)	cmp	cmp(1)
col(1)	col	col(1)
colcrt(1)	not needed	Not available
colrm(1)	col	Not available
comb(1)	comb	comb(1)
comm(1)	comm	comm(1)
compress(1)	compress	compress(1)
cp(1)	cp	cp(1)
cpio(1)	cpio	cpio(1)
cpp(1)	cpp	cpp(1)
crontab(1)	crontab	crontab(1)
crypt(1)	crypt	crypt(1)
csh(1)	csh	csh(1)
csplit(1)	csplit	csplit(1V)
ctags(1)	ctags	ctags(1)
ctrace(1)	cc –d, xdb	ctrace(1)
cu(1)	cu	cu(1C)
cut(1)	cut	cut(1V)
cxref(1)	cxref	cxref(1V)
date(1)	date	date(1V)
dbx(1)	xdb, dde(layered product)	SPARCworks

Appendix D
User Level 1 Commands

SunOS 4.1.3 to HP–UX 9.X to Solaris 2.3 Command Cross Reference

NOTICE: This is a cross reference of SunOS man1 command set to equivalent HP–UX 9.X and Solaris 2.3 commands.

NOTICE: Many of the commands which exist on SunOS 4.1.3, HP–UX 9.X and Solaris 2.3 reside in different directories on the systems.

Reference: Solaris 2.3 Transition Guide

SunOS 4.1.3	HP–UX 9.X	Solaris 2.3
acctcom(1)	acctcom(1M)	acctcom(1)
adb(1)	adb(1)	adb(1)
adjacentscreens(1)	X11: /usr/lib/X11/X0screens, /usr/lib/X11/X0devices	OpenWindows
admin(1)	admin	admin(1)
apropos(1)	man –k	apropos(1)
ar(1)	ar	ar(1V)
arch(1)	model, uname –m	uname
as(1)	as	as(1)
at(1)	at	at(1)
atq(1)	at –l	at –l
atrm(1)	at –r	at –r
awk(1)	awk	awk(1)
banner(1)	banner	banner(1V)
bar(1)	tar	tar, cpio
basename(1)	basename	basename(1)
batch(1)	batch	batch(1)
bc(1)	bc	bc(1)
biff(1)	vuewm(1X), env $MAILCHECK variable, xbiff(pd: iworks)	chmod(1) chmod o+x /dev/tty chmod o–x /dev/tty
cal(1)	cal	cal(1)
calendar(1)	calendar	calendar(1)
cancel(1)	cancel	cancel(1)

```
        For tips on handling problems that may arise during installation,
        see the “Sun AnswerBook Product Notes.”

Installation complete.
Sun System Software AnswerBook 1.4 Installation Complete
1.4_AnswerBook : **** Installation Completed ****

AnswerBook can be run locally or remotely, depending on how you want
to access it:

(1) If AnswerBook was installed locally,

    # /tools/AnswerBook/SysSoft1_4/bin/answerbook

(2) If AnswerBook is installed on another system, you can NFS mount
    or automount the AnswerBook software and run it.

    # mount <system>:/tools /tools
    # /tools/AnswerBook/SysSoft1_4/bin/answerbook

    or

    # /net/<system>/tools/AnswerBook/SysSoft1_4/bin/answerbook
```

```
Installation of “Help Files”
            in “/tools/AnswerBook/SysSoft1_4/lib/help” successful

Installation of “AnswerBook1_4” is complete; it is ready to use

Do you want to know on which file systems items were installed [y|n]:
Item “AnswerBook Home Directory ($ABHOME)” was installed on “/dev/sd3g”
        /tools/AnswerBook/SysSoft1_4/bookinfo
Item “Search Indexes/Book Databases” was installed on “/dev/sd3g”
        /tools/AnswerBook/SysSoft1_4/4ASSY.dir
        /tools/AnswerBook/SysSoft1_4/ABGTOUR.dir
        ...
        /tools/AnswerBook/SysSoft1_4/TTPG.pag
        /tools/AnswerBook/SysSoft1_4/TTSAG.pag
        /tools/AnswerBook/SysSoft1_4/sr_index
Item “PostScript Files” was installed on “/dev/sd3g”
        /tools/AnswerBook/SysSoft1_4/SUNWab_1_4
        /tools/AnswerBook/SysSoft1_4/ABGTOUR
        ...
        /tools/AnswerBook/SysSoft1_4/REFMAN4
        /tools/AnswerBook/SysSoft1_4/REFMAN8
Item “AnswerBook Binaries” was installed on “/dev/sd3g”
        /tools/AnswerBook/SysSoft1_4/bin/answerbook
        /tools/AnswerBook/SysSoft1_4/bin/navigator
        ...
        /tools/AnswerBook/SysSoft1_4/bin/ftserver
        /tools/AnswerBook/SysSoft1_4/bin/.navigator.ow2
Item “Help Files” was installed on “/dev/sd3g”
        /tools/AnswerBook/SysSoft1_4/lib/help/navigator.info
        /tools/AnswerBook/SysSoft1_4/lib/help/synopses.2.info
        ...
        /tools/AnswerBook/SysSoft1_4/lib/help/viewer.info
        /tools/AnswerBook/SysSoft1_4/lib/help/manpage_synopsis_help_index

Hit the Return key to continue:

       Starting the AnswerBook Application
       ===================================

       Now that you have installed the System Software AnswerBook,
       you can use the product by entering the command:

          /tools/AnswerBook/SysSoft1_4/bin/answerbook

Please Note – the System Software AnswerBook CD–ROM includes a single–user
Right to Use License.  Before accessing the product over the network, be
sure that other machines are properly licensed to use the product.
Additional single–user and site licenses are available.  Please contact
your Sun sales representative or authorized dealer for more information.
```

```
Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to “/tools/AnswerBook/SysSoft1_4”

No problems detected with the current installation configuration.

Customization Menu
==================
   1  Proceed With Installation
   2  Show Destinations (Full Path Names)
   3  Modify Installation Destinations
   4  QUIT Installation

                  Select Desired Action [1 – 4]:

Specify Mount Point for $ABHOME (AnswerBook Home Directory)
===========================================================

        If users will mount (access) the $ABHOME partition by a different
        path name than the one used during installation, you must change the
        $ABHOME mount point here so that it matches what users will see
        what AnswerBook users will see.

        [] Use the value for “$ABHOME Mount Point For Users” from your
           Installation Planning Worksheet.

The $ABHOME mount point is currently set to “/tools/AnswerBook/SysSoft1_4”
Enter new $ABHOME mount point, or hit Return to use current value.

        $ABHOME mount point:
Installation of “AnswerBook Home Directory ($ABHOME)”
             in “/tools/AnswerBook/SysSoft1_4” successful

“Search Indexes/Book Databases” installation underway... Please Wait
.....................................................
Installation of “Search Indexes/Book Databases”
             in “/tools/AnswerBook/SysSoft1_4” successful

“PostScript Files” installation underway ... Please Wait
.....................................................
Installation of “PostScript Files”
             in “/tools/AnswerBook/SysSoft1_4” successful

Installation of “AnswerBook Binaries”
             in “/tools/AnswerBook/SysSoft1_4/bin” successful
```

```
##   Installation Location                              Free Space
--   ---------------------                              ----------
 1 : $OPENWINHOME/lib/help                               XX   1358 Kbytes
 2 : $ABHOME/lib/help                                       745566 Kbytes
 3 : /usr/lib/help                                       **   1358 Kbytes DNE

        -- $OPENWINHOME is currently set to "/usr/openwin"
        -- $ABHOME is currently set to "/tools/AnswerBook/SysSoft1_4"
        ** NNNNNN DNE       Indicates directory does not exist
        XX NNNNNN           Indicates NOT ENOUGH SPACE

Select new location
        or 0 to return to Installation Components Menu [0 – 3]:

Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to "/tools/AnswerBook/SysSoft1_4"

No problems detected with the current installation configuration.

                        Installation Components Menu
                        ============================

    Description                         Kbytes  Install Location
    -----------                         ------  ----------------
 0  Return to Customization Menu
 1  AnswerBook Home Directory ($ABHOME)      5  /tools/AnswerBook/SysSoft1_4
 2  Search Indexes/Book Databases        36446  $ABHOME
 3  PostScript Files                    250949  $ABHOME
 4  AnswerBook Binaries                   3084  $ABHOME/bin
 5  Help Files                            1688  $ABHOME/lib/help
 6  QUIT Installation

Select an item to change the destination
        or 6 to QUIT Installation
        or 0 to Return to Customization Menu [0 – 6]:

                        Installation Configuration
                        ==========================
    Description                         Kbytes  Install Location
    -----------                         ------  ----------------
    AnswerBook Home Directory ($ABHOME)      5  /tools/AnswerBook/SysSoft1_4
    Search Indexes/Book Databases        36446  $ABHOME
    PostScript Files                    250949  $ABHOME
    AnswerBook Binaries                   3084  $ABHOME/bin
    Help Files                            1688  $ABHOME/lib/help
```

```
** For the item “Help Files”
         the file “$OPENWINHOME/lib/help/viewer.info” will be overwritten

XX NOT enough space on $OPENWINHOME/lib/help for
         Help Files

                          Installation Components Menu
                          ============================

    Description                           Kbytes  Install Location
    -----------                           ------  ----------------
 0  Return to Customization Menu
 1  AnswerBook Home Directory ($ABHOME)        5  /tools/AnswerBook/SysSoft1_4
 2  Search Indexes/Book Databases          36446  $ABHOME
 3  PostScript Files                      250949  $ABHOME
 4  AnswerBook Binaries                     3084  $ABHOME/bin
 5  Help Files                              1688  $OPENWINHOME/lib/help
 6  QUIT Installation

Select an item to change the destination
         or 6 to QUIT Installation
         or 0 to Return to Customization Menu [0 – 6]:

Specify Help Files Directory
============================

This directory will contain the Help files – files containing spot help
messages for the AnswerBook application, as well as files to support
Help–On–Text.

If possible, install the Help Files in the standard OpenWindows help
directory: $OPENWINHOME/lib/help.  Otherwise, users may need to add this
directory to their $HELPPATH in order for spot help to work.

This directory should be on a disk partition with 50 or more Kbytes free
space.

[] Use the value for “Help Files” from your Installation
   Planning Worksheet.

Current Location = $OPENWINHOME/lib/help

Possible Locations for                          Required Space
Help Files                                                1688 Kbytes
```

```
Specify AnswerBook Binaries Directory
=====================================

This directory will contain the AnswerBook binaries – software to view,
search, and browse the AnswerBook, plus related utilities.

The best place to install the AnswerBook binaries is in a directory that is
already part of users' search paths.  Otherwise, users will need to add the
AnswerBook binaries directory to their search paths to use certain features
(such as the "viewman" man page viewer).

This directory should be on a disk partition with at least 5 Mbytes free
space.

[] Use the value for "AnswerBook binaries" from your Installation Planning
   Worksheet.

Current Location = $OPENWINHOME/bin/xview

Possible Locations for                          Required Space
AnswerBook Binaries                                  3084 Kbytes

##   Installation Location                          Free Space
--   ---------------------                          -----------
 1 : $OPENWINHOME/bin/xview                          XX   1358 Kbytes
 2 : /usr/bin                                        XX   1358 Kbytes
 3 : /usr/local/bin                                  **   1358 Kbytes DNE
 4 : $ABHOME/bin                                        745566 Kbytes
 5 : User Defined

         -- $OPENWINHOME is currently set to "/usr/openwin"
         -- $ABHOME is currently set to "/tools/AnswerBook/SysSoft1_4"
         ** NNNNNN DNE       Indicates directory does not exist
         XX NNNNNN           Indicates NOT ENOUGH SPACE

Select new location
         or 0 to return to Installation Components Menu [0 – 5]:

Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to "/tools/AnswerBook/SysSoft1_4"
-- $OPENWINHOME is currently set to "/usr/openwin"
```

```
Current Location = /usr/AnswerBook/SysSoft1_4

Possible Locations for                                    Required Space
AnswerBook Home Directory ($ABHOME)                          5 Kbytes

##   Installation Location                               Free Space
--   ---------------------                               ----------
 1 : /usr/AnswerBook/SysSoft1_4                             1358 Kbytes
 2 : User Defined

Select new location
         or 0 to return to Installation Components Menu [0 – 2]:
Enter new location for:
         AnswerBook Home Directory ($ABHOME)
 [Return with no value to Cancel]:

Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to “/tools/AnswerBook/SysSoft1_4”
-- $OPENWINHOME is currently set to “/usr/openwin”

** For the item “Help Files”
         the file “$OPENWINHOME/lib/help/viewer.info” will be overwritten

XX NOT enough space on $OPENWINHOME/bin/xview for
         AnswerBook Binaries
XX NOT enough space on $OPENWINHOME/lib/help for
         Help Files

                          Installation Components Menu
                          ============================

    Description                          Kbytes  Install Location
    -----------                          ------  ----------------
 0  Return to Customization Menu
 1  AnswerBook Home Directory ($ABHOME)       5  /tools/AnswerBook/SysSoft1_4
 2  Search Indexes/Book Databases         36446  $ABHOME
 3  PostScript Files                     250949  $ABHOME
 4  AnswerBook Binaries                    3084  $OPENWINHOME/bin/xview
 5  Help Files                             1688  $OPENWINHOME/lib/help
 6  QUIT Installation

Select an item to change the destination
         or 6 to QUIT Installation
         or 0 to Return to Customization Menu [0 – 6]:
```

```
-- $ABHOME is currently set to "/usr/AnswerBook/SysSoft1_4"
-- $OPENWINHOME is currently set to "/usr/openwin"

** For the item "Help Files"
         the file "$OPENWINHOME/lib/help/viewer.info" will be overwritten
** Limited space (less than 10% will remain) on /usr/AnswerBook/SysSoft1_4
         for AnswerBook Home Directory ($ABHOME)

XX NOT enough space on $ABHOME for
         Search Indexes/Book Databases
XX NOT enough space on $ABHOME for
         PostScript Files
XX NOT enough space on $OPENWINHOME/bin/xview for
         AnswerBook Binaries
XX NOT enough space on $OPENWINHOME/lib/help for
         Help Files

                          Installation Components Menu
                          ============================

    Description                          Kbytes  Install Location
    -----------                          ------  ----------------
 0  Return to Customization Menu
 1  AnswerBook Home Directory ($ABHOME)       5  /usr/AnswerBook/SysSoft1_4
 2  Search Indexes/Book Databases         36446  $ABHOME
 3  PostScript Files                     250949  $ABHOME
 4  AnswerBook Binaries                    3084  $OPENWINHOME/bin/xview
 5  Help Files                             1688  $OPENWINHOME/lib/help
 6  QUIT Installation

Select an item to change the destination
         or 6 to QUIT Installation
         or 0 to Return to Customization Menu [0 – 6]:

Specify AnswerBook Home Directory (ab_home)
===========================================

This directory will contain the AnswerBook configuration
file ("bookinfo") and some or all of the other product components,
depending on the installation configurations you have selected.  In
particular, if you chose Disk Configuration option 2 (CD/Hard Disk),
the Search Index and Book Database files will be installed in this directory.
If you chose option 3 (Hard Disk), the Search Index, Book Database files,
and PostScript files will be installed in this directory.

This directory should be on a disk partition with enough free disk space
to hold all the components you intend to install here.

[] Use the value for "AnswerBook Home Directory" from
   your Installation Planning Worksheet.
```

```
                          Installation Components Menu
                          ============================

    Description                           Kbytes  Install Location
    -----------                           ------  ----------------
 0  Return to Customization Menu
 1  AnswerBook Home Directory ($ABHOME)        5  /usr/AnswerBook/SysSoft1_4
 2  Search Indexes/Book Databases          36446  $ABHOME
 3  PostScript Files                      250949  $ABHOME
 4  AnswerBook Binaries                     3084  $OPENWINHOME/bin/xview
 5  Help Files                              1688  $OPENWINHOME/lib/help
 6  QUIT Installation

Select an item to change the destination
         or 6 to QUIT Installation
         or 0 to Return to Customization Menu [0 – 6]:

Specify AnswerBook Home Directory (ab_home)
===========================================

This directory will contain the AnswerBook configuration
file (”bookinfo”) and some or all of the other product components,
depending on the installation configurations you have selected.  In
particular, if you chose Disk Configuration option 2 (CD/Hard Disk),
the Search Index and Book Database files will be installed in this directory.
If you chose option 3 (Hard Disk), the Search Index, Book Database files,
and PostScript files will be installed in this directory.

This directory should be on a disk partition with enough free disk space
to hold all the components you intend to install here.

[] Use the value for “AnswerBook Home Directory” from
   your Installation Planning Worksheet.

Current Location = /usr/AnswerBook/SysSoft1_4

Possible Locations for                                  Required Space
AnswerBook Home Directory ($ABHOME)                        5 Kbytes

##   Installation Location                            Free Space
--   ---------------------                            ----------
 1 : /usr/AnswerBook/SysSoft1_4                            1358 Kbytes
 2 : User Defined

Select new location
         or 0 to return to Installation Components Menu [0 – 2]:
Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems
```

```
                          Installation Configuration
                          ==========================

    Description                          Kbytes  Install Location
    -----------                          ------  ----------------
    AnswerBook Home Directory ($ABHOME)       5  /usr/AnswerBook/SysSoft1_4
    Search Indexes/Book Databases         36446  $ABHOME
    PostScript Files                     250949  $ABHOME
    AnswerBook Binaries                    3084  $OPENWINHOME/bin/xview
    Help Files                             1688  $OPENWINHOME/lib/help

Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to "/usr/AnswerBook/SysSoft1_4"
-- $OPENWINHOME is currently set to "/usr/openwin"

** For the item "Help Files"
         the file "$OPENWINHOME/lib/help/viewer.info" will be overwritten
** Limited space (less than 10% will remain) on /usr/AnswerBook/SysSoft1_4
         for AnswerBook Home Directory ($ABHOME)

XX NOT enough space on $ABHOME for
         Search Indexes/Book Databases
XX NOT enough space on $ABHOME for
         PostScript Files
XX NOT enough space on $OPENWINHOME/bin/xview for
         AnswerBook Binaries
XX NOT enough space on $OPENWINHOME/lib/help for
         Help Files

Customization Menu
==================
   1  Proceed With Installation
   2  Show Destinations (Full Path Names)
   3  Modify Installation Destinations
   4  QUIT Installation

                  Select Desired Action [1 - 4]:
```

```
Notes, Warnings and Problems
============================
--       indicates notes
**       indicates warnings
XX       indicates problems

-- $ABHOME is currently set to "/usr/AnswerBook/SysSoft1_4"
-- $OPENWINHOME is currently set to "/usr/openwin"

** For the item "Help Files"
         the file "$OPENWINHOME/lib/help/viewer.info" will be overwritten
** Limited space (less than 10% will remain) on /usr/AnswerBook/SysSoft1_4
         for AnswerBook Home Directory ($ABHOME)

XX NOT enough space on $ABHOME for
         Search Indexes/Book Databases
XX NOT enough space on $ABHOME for
         PostScript Files
XX NOT enough space on $OPENWINHOME/bin/xview for
         AnswerBook Binaries
XX NOT enough space on $OPENWINHOME/lib/help for
         Help Files

Install/Customize Menu
======================
   1  Perform Installation
   2  Customize Configuration
   3  QUIT Installation

Select desired action [1 – 3]:

                  Custom Installation of AnswerBook1_4
                  ====================================

Customization allows you to specify installation locations for this
AnswerBook, component–by–component, using the menu.  All components
have default destinations based on the Hard Disk configuration
you selected.  You can alter the destinations to customize your
environment.  Warnings are issued for insufficient disk space conditions
and protection problems.

When selecting installation locations, consider accessibility with
regard to standard search paths and in relation to the network configuration.

Hit the Return key to continue:
```

```
                        Select Disk Configuration
                        =========================

      You can install this AnswerBook in one of three possible config–
      urations, and you can customize each configuration.

      The following describes the configurations and their tradeoffs.

      1) CD–ROM Based – This configuration stores only a few small data files
                  and the AnswerBook binaries on a hard disk.  The larger
                  files are retained on the CD, which must be mounted to run
                  the System Software AnswerBook.  Performance will be
                  limited, but adequate for occasional use on a single
                  system.

      2) CD–ROM/Hard Disk – This configuration stores all files in
                  configuration
                  1, plus a set of Search Indexes and Book Databases on a
                  hard disk.  The largest files are retained on the CD,
                  which must be mounted to run the AnswerBook.  Performance
                  will be adequate for light use by several systems, or
                  medium use on one system.

      3) Hard Disk – This configuration installs all files on a hard disk.
                  The CD does not have to be mounted to use the product.
                  This is the recommended configuration if this copy of the
                  AnswerBook will be shared by multiple systems.

          Configuration   Performance   Estimated Size   Installation Time
          -------------   -----------   --------------   -----------------
      1   CD–ROM Based        Slowest         4 Mbytes    1 to  2 Minutes
      2   CD–ROM/Hard Disk     Faster        42 Mbytes   15 to 30 Minutes
      3   Hard Disk           Fastest       292 Mbytes   45 to 75 Minutes

          [] Use the value for "Disk Configuration" from
             your Installation Planning Worksheet.

Select desired configuration (or 4 to Quit) [1 – 4]:

Verifying "Hard Disk" configuration – Please wait...  Done

                        Installation Configuration
                        ==========================

    Description                          Kbytes  Install Location
    -----------                          ------  ----------------
    AnswerBook Home Directory ($ABHOME)       5  /usr/AnswerBook/SysSoft1_4
    Search Indexes/Book Databases         36446  $ABHOME
    PostScript Files                     250949  $ABHOME
    AnswerBook Binaries                    3084  $OPENWINHOME/bin/xview
    Help Files                             1688  $OPENWINHOME/lib/help
```

3. Install the AnswerBook software.

```
# /cdrom/cdm
```

What follows is the log from the installation.

```
1.4_AnswerBook : Begin Installation of

To install this AnswerBook, you must have:

         – Sun–4(TM) or SPARCstation(TM) workstation or server running
           SunOS 4.1 or later

         – A CD–ROM drive

         – 4, 42, or 292 Mbytes of available disk space, depending on
           the installation configuration you choose

To use the System Software AnswerBook, you must have:

         – Sun–4(TM) or SPARCstation(TM) workstation or server running
           SunOS 4.1 or later

         – OpenWindows 3.0 (only)

         – A laser printer with Palatino(TM) fonts resident, if printing
           of on–screen documentation is desired (e.g., Sun LaserWriter
II(TM)
           or Sun SPARCprinter(TM))

         – GX graphics accelerator (optional – improves performance)

         – At least 12 Mbytes of system memory (recommended)

Please Note – the AnswerBook CD–ROM includes a single–user Right to Use
License.  Before accessing the product over the network, be
sure that other machines are properly licensed to use the product.
Additional single–user and site licenses are available.  Please contact
your Sun sales representative or authorized dealer for more information.

Do you want to continue [y|n]? y
         Before proceeding with this installation procedure, you should
         read ”Installing Sun AnswerBooks”.  This booklet, included
         as the insert in the CD–ROM case, provides a step–by–step guide
         to developing an installation plan, and contains an Install–
         ation Planning Worksheet which will simplify the installation
         process.

Hit the Return key to continue:
```

Install LaserROM.

/etc/update

(Follow the instructions in step #3 above.)

Run LaserROM.

lrom &

If you want to conserve disk space, you may share LaserROM executables. The automounter can be used to mount the cd–ROM from the remote system. You will need to edit the script /usr/bin/lrom to point to here the executables reside (accessed via nfs). the app–defaults file may be shared by setting the environment variable XAPPLESDIR to point to a shared directory.

Solaris 1.1 (aka SunOS 4.1.3) AnswerBook Installation and Configuration

Reference: Solaris 1.1 AnswerBook installation guide in AnswerBook CD case (804–1167–10)

In order to install and run AnswerBook, you will need:

- OpenWindows Version 3
- If you want to use AnswerBook as a CD–ROM based application, you'll need a system with a dedicated CD–ROM drive, and a minimum of 4 Mbytes disk space. This option allows for limited performance which may be adequate for a single system.

  Or

- If you want to use AnswerBook as a CD–ROM/hard disk based application, you'll need a system with a dedicated CD–ROM drive, and a minimum of 42 Mbytes disk space. This option allows for light usage by several systems.

  Or

- If you want to use AnswerBook as a hard disk based application, you'll need a CD–ROM drive and a minimum of 292 Mbytes disk space. This option gives you the fastest configuration, and is recommended for usage by multiple systems.

In the example below, we chose the hard disk based configuration and installed the software on a SPARCstation 10.

1. Connect the CD–ROM drive to the workstation. Insert the AnswerBook CD.

2. Create a mount point for the CD–ROM and mount the AnswerBook CD.

mkdir /cdrom
mount –r /dev/sr0 /cdrom

Select “Change Source or Destination –>”.
Select “From Tape Device to Local System ...”.

Tab to the “Source” field and enter the path to the update file.
For this example: /cdrom/UXINSTAL/LROM800.8

Press “Done”.

Select “Select All Filesets on the Source Media –>“.
Select “Start Loading Now...”.

Enter “y” to “Start loading filesets now?”.

Check /tmp/update.log for errors when the installation is finished.

The LaserROM can be run locally or remotely, depending on how you want to access it:

1. If the LaserROM CD is mounted locally,

```
# lrom &
```

2. If the LaserROM CD is connected to another system, you can remotely run and display LaserROM.

On your system, allow remote display from the system with LaserROM.

```
# xhost + <lrom_system>
```

Login to the other system and run LaserROM with the display set to your system.

```
# rlogin <lrom_system>
# lrom –display mysystem:0.0 &
```

3. If the LaserROM CD is connected to another system, you can install LaserROM and then NFS mount the LaserROM CD.

Mount the LaserROM CD to install the software.

```
# /etc/mount <lrom_system>:/cdrom /cdrom
```

Appendix C
AnswerBook and LaserROM Configuration

Installation and configuration of the respective vendor's on–line documentation applications is described in this appendix.

HP–UX 9.X LaserROM/UX Installation and Configuration

Reference: HP LaserROM/UX Software Installation Guide (B1671–90012)

In order to install and run LaserROM/UX, you will need:

- Minimum 9 Mbytes disk space
- Minimum 8 Mbytes memory
- A system with a dedicated CD–ROM drive for mounting the LaserROM CD (other systems can NFS mount the CD)
- X11 release 4 or 5
- Motif window manager or HP VUE window manager

1. Connect the CD–ROM drive to the workstation. Insert the LaserROM CD.

2. Create a mount point for the CD–ROM and mount the LaserROM CD.

```
# mkdir /cdrom
# chmod 777 /cdrom
# /etc/mount /dev/dsk/c201d1s0 /cdrom
```

3. Install the LaserROM software using update(1m).

```
# /etc/update
```

archie.rutgers.edu 128.6.18.15 (Rutgers University)
archie.unl.edu 129.93.1.14 (University of Nebraska in Lincoln)
archie.sura.net 128.167.254.179 (SURAnet archie server)
archie.ans.net 147.225.1.2 (ANS archie server)
archie.au 139.130.4.6 (Australian server)
archie.funet.fi 128.214.6.100 (European server in Finland)
archie.doc.ic.ac.uk 146.169.11.3 (UK/England server)
archie.cs.huji.ac.il 132.65.6.15 (Israel server)
archie.wide.ad.jp 133.4.3.6 (Japanese server)
archie.th–darmstadt.de 130.83.128.111 (German server)

B.2.1 SUN PATCHES

Sun patches are available at the internet site sunsite.unc.edu and at the Sun service sunsolve1.sun.com.

>From the internet faq archive:

B.2.2 GETTING SUNOS PATCHES

Where can one get SunOS patches? Where can I get patch 100xxx–xx?

Many anonymous ftp sites have partial collections of patches.
These sites include the following:

ftp.uu.net:/systems/sun/sun–dist/
sasun1.epfl.ch:/pub/sun–patches/
ftp.ucs.ubc.ca:/pub/ubc/sun–patches/
thor.ece.uc.edu:/pub/sun–faq/SunOS4.1.x.Patches
thor.ece.uc.edu:/pub/sun–faq/Solaris2.1–patches
thor.ece.uc.edu:/pub/sun–faq/Solaris2.2–patches
sunsite.unc.edu:/pub/sun–info/sun–fixes

Note: You should always attempt to find a local site before using the above.

ftp.uu.net is the ”official” distribution point for SunOS security patches.

Also, you should use ”archie” to look for specific patches.

Finally, the Sun User Group (SUG) CD ROM has a collection of Sun patches.

B.3 OTHER SUPPORT TOOLS

B.3.1 WHAT IS ”archie”?

Archie is a database of what is on several thousand anonymous ftp sites.

To use archie get one of the three archie clients which are as follows:

xarchie – For use under X11
c–archie – Curses version of Archie
archie – Perl Version of Archie

Theses are available from archie.ans.net in the directory /pub/archie.

List of other publicly available archie servers:

mailing_list_name	Description
hpux_all_patch	weekly digest of all new hp–ux patches
hpux_300_patch	weekly digest of all new hp–ux s300_400 patches
hpux_700_patch	weekly digest of all new hp–ux s700 patches
hpux_800_patch	weekly digest of all new hp–ux s800 patches
dom_all_patch	weekly digest of all new domain patches
dom_m68k_patch	weekly digest of all new domain m68k patches
dom_a88k_patch	weekly digest of all new domain a88k patches
technical_tips	weekly digest of new HP Technical Tips
existing_news	monthly digest of new Existing Product News
general_news	monthly digest of new HP General News
new_products	monthly digest of new HP Product Information

o To subscribe to an HP SupportLine mail service mailing list, send the following in the TEXT PORTION OF THE MESSAGE to support@support.mayfield.hp.com (no Subject is required):

subscribe mailing_list_name (i.e. subscribe hpux_all_patch)

On a weekly or monthly basis, the HP SupportLine mail service will create and distribute the requested mailing_list_name digest directly to your mailbox.

B.1.6 MOSAIC FOR PATCH RETRIEVAL

For sites using Mosaic, the HP Mayfield site has set up an HTTP server that allows browsing and retrieval of patches. The URL is,

http://support.mayfield.hp.com/

B.2 SUNOS 4.1.3 VERSION A

Put Supplement CD into CDROM drive.

/usr/etc/extract_patch

NOTE: extract_patch only wants the suffix of the patch name.
For example, it expects ”sup” for patch_sup.

Using the HP SupportLine mail service, you can:

- Resolve software problems by searching up–to–date support and problem–solving information;
- Identify and download available HP–UX or DOMAIN software patches; and
- Subscribe to automatically receive the latest Hewlett–Packard support and/or patch information.

```
*******************************************************************************
*              Who can use the HP SupportLine mail service?              *
*******************************************************************************
```

The HP SupportLine mail service is available to anyone who can send electronic mail via the Internet.

If you have access to the Internet or can send electronic mail via an Internet mail forwarder, you can use the HP SupportLine mail service.

```
*******************************************************************************
*              How do I access the HP SupportLine mail service?          *
*******************************************************************************
```

o To obtain a copy of the HP SupportLine mail service user's guide, send the following in the TEXT PORTION OF THE MESSAGE to
support@support.mayfield.hp.com (no Subject is required):

send guide

Note: The HP SupportLine mail service user's guide is formatted using nroff. If you would like an ASCII version of the user's guide or if you are utilizing a non–UNIX mail reader, replace "send guide" with

"send guide.txt".

o Once your request is received, the HP SupportLine mail service will send you a copy of the user's guide.

o If you encounter any problems using the HP SupportLine mail service, report them to
support–feedback@support.mayfield.hp.com

```
*******************************************************************************
*                What mailing lists are available?                    *
*******************************************************************************
```

The following is a list of all mailing lists available via the HP SupportLine mail service:

PHNE_4563 nslookup use of NS Switch, and documentation

The second solution is more limited; rather than configuring all clients for Name Service fallback, the NIS server can be configured to try DNS after it does not find an answer in its own NIS hosts map. This solution is only an NIS to DNS solution, and it does not allow any other ordering, change of conditions, or the inclusion of /etc/hosts. This solution was originally introduced by Sun in ONC 4.2. Generally, the NIS server solution is required in environments where there is already an existing usage of this solution, and where there are client systems (e.g. some PC networking packages) that do not provide any mechanism for using multiple naming services.

[NOTE: To retrieve the NIS server solution, find the following patch:

PHNE_4097 is for both 700 and 800 Series on any 9.X OS]

B.1.4 LONG WINDOW DISPLAY TIME

When you display an hpterm or xterm onto a Sun, it sometimes takes 15–20 minutes before the window will appear.

”remsh hpnode /usr/bin/X11/hpterm –display mysun:0.0”

Patch: The problem displaying xterm/hpterm windows on a Sun is a OpenWindows bug. A patch is available from Sun; reference Sun bug number 1076332. We believe the patch number is 100444–40.

The problem does not appear on SunOS 4.1.1.11, but have seen it on newer releases, for instance SunOS 4.1.2.2.

Workaround: Add the following line to your ~/.Xdefaults file:

*useColorObj: False

...and restart openwin.

B.1.5 HP SUPPORTLINE MAIL SERVICE

The following information describes one way to request and receive patches.

** Introducing the HP SupportLine Mail Service **

The HP SupportLine mail service is a simple, yet effective, way for you to retrieve support information from Hewlett–Packard via electronic mail.

o PHSS_4523 :Motif 1.1 Dev. Env.:July 94 Periodic Patch:s800, HP–UX 8.X:
Fset: X11–PRG X11–SHLIBS(8.X) X11R4–SHLIBS(9.X)
OS: 8.00 8.02 8.06 9.00 9.04
Desc: Mega–patch

o PHCO_4012 :sccs:ge17:cm4:admin:delta:get:rmchg:unget:
Fset: SRC–CNTL
OS: 9.00 9.01 9.03 9.04 9.05
Desc: allows multiple users to do get –e on the same SCCS file. This also contains a fix to allow users of the same logingroup to share files.

o PHCO_4583 :sccs:new command:
Fset: SRC–CNTL SRC–CNTL–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: sccs is a new command which is being made available for 9.X. sccs is the BSD derived front–end to the SCCS subsystem. It simplies using SCCS and provides many short cuts.

B.1.3 WHAT ARE AND WHEN SHOULD CLIENT SIDE HOST FALLBACK OR NIS FALLBACK PATCHES BE USED?

With client side configurability, the client determines in which order the name services will be used. A file located on the client contains the list of name services in the order they are to be used. The client could specify that it wants to try NIS, followed by DNS, and finally /etc/hosts. Additionally, the conditions of when to try the next name service can be configured. For example, an administrator can configure the client to use the next name service, if the first one is up and running, but does not contain the requested data. This overrides the default behavior for both 10.0 and earlier releases. This client side solution has the same configuration file syntax as Solaris 2.0's solution.

NOTE: To retrieve the client side solution, find the following patches:

Series 700
==========
PHCO_4370 NS Switch (Name Service) core functionality
PHNE_4487 route and ifconfig use of NS Switch
PHCO_4439 mount use of NS Switch
PHNE_4563 nslookup use of NS Switch, and documentation

Series 800
==========
PHCO_4371 NS Switch (Name Service) core functionality
PHNE_4488 route and ifconfig use of NS Switch
PHCO_4440 mount use of NS Switch

Generate 4–digit years instead of 2–digits.
Reverse–aliasing
Berkeley 8.6.8 roll–ins:
Closing the security hole described by CERT.
NIS alias support enhancement

o PHNE_4563 :ARPA:nslookup:dns:nis:hosts:switch:bind:fallback:
Fset: ARPA–MAN ARPA–RUN LAN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Updated nsswitch supplement patch: nslookup, config and docs.
This patch MUST HAVE the corresponding libc patch installed:
PHCO_4370 (s700) and PHCO_4371 (s800). In addition, the
following patches are recommended since they are commands
built with static libraries and have been rebuilt using a
library that included the nsswitch code:
PHNE_4487 (s700) PHNE_4488 (s800)
/etc/route & /etc/ifconfig
PHCO_4439 (s700) PHCO_4440 (s800)
/etc/mount & /etc/umount
If these recommended patches are not installed, then the
commands they update will not use the nsswitch feature.
If the required libc patch is not installed then no commands
will use the nsswitch feature, and the nslookup command
included in this patch will fail to work.
Since the previous nsswitch supplemental patch, the following
is include in this patch. Some fixes to nslookup. Updated
documentation including switch(4) and /usr/doc/switch.ps.

o PHNE_4579 :NFS:automount:netgroup:hangs:–M:included_map:+:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Multiple automount fixes.

o PHSS_4646 :Motif1.2.4:X11R5:Runtime:
Fset: X11–RUN X11R5–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch

o PHSS_4647 :Motif1.2.4:X11R5:Development:
Fset: X11–RUN X11R5–PRG X11R5–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch

buffers for improved performance.

o PHSS_4444 :hpterm:
Fset: X11–RUN X11–RUN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This fixes all hpterm problems discovered since the release of HP–UX 9.0. Affected areas; Scrollbars, DIN keyboards, and shift–arrow escape sequences.

o PHSS_4449 :July 1994 Font Server Periodic Patch:
Fset: MKFONTDIR X11–FONTSRV X11–RUN
OS: 9.00 9.01 9.03 9.04 9.05

o PHSS_4451 :July 1994 X11–FONTB Periodic Patch:
Files: PHSS_4451.text PHSS_4451.updt
OS: 9.00 9.01 9.03 9.04 9.05

o PHNE_4469 :INETSVCS:tftpd:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of tftpd is for the benefit of sites that have to boot simultaneously many systems/X terminals from one server. After processing the first request coming via inetd, tftpd will stay up for a while, accepting new requests directly.

o PHNE_4470 :ARPA:remshd/rexecd no home directory:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Allow command execution when home directory is absent. When the home directory is missing, remshd and rexecd will execute the commands in /.

o PHNE_4483 :ARPA:mail:elm:
Fset: MAILERS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch for elm: 700_800, 9.X

o PHNE_4533 :ARPA:sendmail:NIS:ESMTP:security:getpwent:
Fset: ARPA–RUN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: latest sendmail patch, including ESMTP, ...

previous fbackup patches.

o PHCO_4348 :tput:capname:parameters:
Fset: CMDS–AUX
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes tput to allow numeric parameters to be passed to capname.
Added support for the –S option to read from stdin:
All capnames which correspond to capabilities specified in
/usr/include/term.h have been implemented, which includes:
nlab, lh, lw, pln, smln, and kf11..kf63.
Performance has improved significantly since a binary search
is used to retrive the capname.

o PHCO_4374 :login:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Corrects –p behaviour when password aging is enabled.
Drops user into ”/” when their home directory is not
available.

o PHSS_4404 :HPVUE3.0:VUE3.0:VUE:9.0::
Fset: X11–RUN X11–RUN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Corrects miscellaneous problems with hpterm, vuefile,
vuelogin, vuepad, and vuewm.

o PHSS_4411 :dld: :
Fset: CORE–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes various defects in /lib/dld.sl.

o PHNE_4420 :NFS:nfs:rpc:rpcgen:inetd:ansi:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Allow rpc servers to be created by rpcgen that can
automatically be inetd–compatible. Behavior is similar to
Sun’s rpcgen. Added support for ANSI C.

o PHNE_4431 :INETSVCS:rcp socket buffer size:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rcp used a 32K socket buffer size for sending and 8K
(TCP default) for receiving. This version uses 32K for both

NIS slaves do not fallback to DNS when the NIS master is configured todo so.
NIS DNS fallback support; NIS portion needed for the hostname fallback.

o PHCO_4130 :bdf:NFS mounts:block size:wrong results:SGI:512 byte blocks:
Fset: CMDS–AUX
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes a problem of bdf giving incorrect usage statistics for SGI or Sun NFS mounts. This happens if the remote file system has a block size of less than 1024 (e.g., 512 bytes).

o PHSS_4166 :May 1994 X11–FONTA Periodic Patch:
Fset: X11–FONTA
OS: 9.00 9.01 9.03 9.04 9.05

o PHSS_4168 :May 1994 X11–FONTC Periodic Patch:
Fset: X11–FONTC
OS: 9.00 9.01 9.03 9.04 9.05

o PHCO_4270 :lp:model:PCL5:paintjetXL300:laserjet4:laserjet4Si:laserjetIIISi:laserjetIII:deskjet1200C:deskjet500:deskjet500C:deskjet550C:
Fset: LP–SPOOL
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch contains model files PCL(1–5), deskjet1200C, deskjet500C, deskjet550C, laserjet4, laserjetIIISi, laserjet4Si, paintjetXL300 and postscript files.

o PHCO_4294 :make:line too long:VPATH:Hash table overflow:conditional macro:–include:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Multiple make fixes.

o PHCO_4309 :exabyte:8mmtapes:supports_specific_devices:support_nosetmarks_formats:fbackup:frecover:incremental_fbackup_hang:
Fset: SYS–ADMIN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: s800 9.04 fixes to fbackup and frecover to support all the specific tape formats for the Exabyte (8MM) tape drives for model #s EXABYTE 8500 and EXABYTE 8505. Fixes occasional checksum mismatch for active files encountered by ”frecover –Nvf ”. Contains fixes from

Desc: Multiple pcnfsd fixes.

o PHNE_3860 :NFS:yppush:YP_LAST_MODIFIED:ypmake:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: YP_LAST_MODIFIED doesn't get updated on Slave NIS Servers

o PHNE_3861 :NFS:rpc.mountd:tcp port:rmtab:logging:export list:device busy:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rpc.mountd will not register the TCP port if started from inetd with the –e option.
rpc.mountd will now merge the rw, root and access lists when building an export list.

o PHCO_4039 :pax:allows:large_filenames(>14):stdin:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes pax command to accept filenames longer than 14 characters from stdin.

o PHNE_4056 :NFS:rpc.lockd:negative:offset:no locks:lock:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Multiple rpc.lockd fixes

o PHSS_4068 :xterm:SIGHUP:kill:signal:LINES:COLUMMNS:
Fset: X11–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This fixes xterm problems discovered since the release of 9.0.

o PHCO_4078 :ls:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Avoid unnecessary stat calls across NFS by /bin/ls; improve ls(1) performance on non–DUX nodes.
Warn: This patch should NOT be installed on clustered systems.

o PHNE_4097 :NFS:ypserv:NFS:NIS:DNS:Fallback:
Fset: NFS–MAN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: YP_INTERDOMAIN key not being transferred to NIS slaves.

OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes multiple rpc.statd problems which result in file/record locks hanging over NFS (including ksh and mailx) /etc/sm file gets corrupted which causes rpc.statd to exit or core dump.
Patch needs to be on lock server AND client systems.

o PHNE_3532 :ARPA:ftp:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of ftp allows the setting of the data socket buffer size via the –B option.

o PHCO_3562 :here document:premature termination of input:sh:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes the premature termination of the ”Here document”. Resize (i.e. setting LINES and COLUMNS) is now being automatically done at shell startup. When resize is done in a xterm window, the next prompt does not come until a <CR> is pressed again.

o PHNE_3733 :ARPA:ftpd:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of ftpd checks for password expiration. It also allows the setting of the data socket buffer size via the –B option.

o PHCO_3746 :quota:cnode:quotactl:
Fset: DQUOTA
OS: 9.00 9.01 9.03 9.04 9.05
Desc: quota(1) is able to work around when quotactl(2) fails. However, quota(1) only works if the file system disk is on the cnode where the quota(1) command is run.

o PHCO_3844 :ksh:pwd:permission denied:corrupted current working dir:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: With a heavy environment setup, ksh builtin command ’pwd’ returns ’permission denied’.

o PHNE_3857 :NFS:PCNFSD:PC_PRINT:pcnfsd:print manager:PC–NFS:aliases:printer:
Fset: NFS–MAN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05

the tape blocksize when the blocksize >= 32 Kbytes.

o PHNE_3378 :NFS:yppasswd:PWFILE:rpc.yppasswdd:yppasswdd PWFILE on separate disc or partition:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: yppasswdd does not update if PWFILE on seperate disc

o PHCO_3387 :vi:ex:tags:pop:tagstack:
Fset: EDITORS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: vi tagstack feature now supported.

o PHNE_3389 :NFS:yppasswd:passwd aging:password:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: When the passwd aging was implemented in NIS, the yppasswd command would allow the user to re–use his old passwd again.

o PHNE_3390 :NFS:ypserv:ypbind:portmap:secure:security hole:securenets:domainname:dump maps:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: NIS security patch; ypserv allows anyone that can guess the domainname to obtain copies of NIS maps. Confederate ypserv processes on a client can contact master. NIS server and obtain copies of NIS maps.

o PHNE_3392 :NFS:rpc.rstatd:rstatd:cpu states:cpu:states:statistics:stats:CPUSTATES:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: The present design of the 700/800 allows up to 9 different cpustates to be reportd while the rpc.rstatd protocol only allows 4 to be returned.

o PHNE_3393 :NFS:portmap registration:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: The portmap process will not allow a program to re–register if that program does not clear out its own registration.

o PHNE_3424 :NFS:nfs:rpc.statd:statd:rpc.lockd:lockd:lock:lock hang:
Fset: NFS–RUN

o PHKL_4547 :functionpointer:ESRCH:HOSTNAMESZ:MMF:SIGSEGV:binaries:DBD_NONE:ptrace:pxdb:NFS:automount:xdb:Missingkd_swtchtrace:pdeunmap:filesystemfull:miss_alphatrace:readdir:nfs:seekdir:virtualfault:read:panic:

Fset: KERN–BLD NFS–INC NFS–RUN
OS: 9.04
Desc: Fixes a problem in NFS for readdir and seekdir library calls.
Binaries not updated across NFS.
Fixes read failure on nfs file when server disk is full.
Increase HOSTNAMESZ to 256 to allow domain names
greater than 32 characters

o PHKL_4589 :unp_externalize:panic:

Fset: KERN–BLD
OS: 9.04
Desc: Fixes panic in unp_externalize().

o PHKL_4623 :Not_Present:magnetooptic:requestsense:multi–host:odd byte address:scsi1:tape:

Fset: KERN–BLD
OS: 9.04
Desc: SCSI device connected to multiple hosts may appear missing
if one host keeps it busy.

o PHNE_4655 :XPORT:cumulative patch:

Fset: BSDIPC–SOCKET KERN–BLD LAN NET NETINET NETIPC TOKEN–8025
OS: 9.04
Desc: LAN Mega–Patch

o PHNE_2857 :NFS:exportfs:setuid:

Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Exportfs not executable by user if setuid bit it set.

o PHNE_2858 :NFS:rpc:rpc include:include protection:protection:multiple include protection:

Fset: NFS–INC
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rpc include files do not have multiple include protection

o PHCO_2983 :dump:restore:blocksize:tape:

Fset: SYS–ADMIN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes a problem where restore cannot determine

Desc: Fixed rpc code which would hang.
Narrowed the acceptance of IP addresses by gethostbyname().
Corrects a problem where using 127.0.0.1 in resolv.conf would han.
Added missing RPC routine clnt_create_vers(3C).
Fixed memory leak in closedir(3C).
Solves a problem of tcp connections being left open after a successful yp_all(3C) call.
Allows gethostbyXXX() routines to be configurable in using name services.
This patch corrects a bug in getnetgrent(3C) where continuation lines in /etc/netgroup were not handled properly.
Lines in the /etc/exportfs file that are longer than 1023 characters will be truncated when read.

o PHCO_4438 :top:device limits:
Fset: CMDS–AUX
OS: 9.04
Desc: Increased the number of devices top supports, device limit, from 4096 to 8192.

o PHCO_4440 :mount:NSSWITCH Fallback:CDROM:mount failure:PHCO_4370 :libc:
Fset: UX–CORE
OS: 9.00 9.04
Desc: Includes the new libc corrections to give mount the hostname fallback enhancements that are provided in PHCO_3704. This has to be provided as a separate patch since mount is linked archived. umount is dynamically linked, so PHCO_3704 must be installed for hostname fallack to work. Corrects the problem of ”mount –a” failing if unable to mount a CDROM drive.

o PHCO_4459 :at:cron:
Fset: CMDS–MIN
OS: 9.00 9.04
Desc: Fixes for cron and at.

o PHNE_4488 :fallback:dns:route:ifconfig:
Fset: NET NETINET
OS: 9.00 9.04
Desc: Relink of ifconfig and route commands w/PHCO_4371 library to provide fallback functionality for DNS resolution.

o PHNE_4181 LAN:DLPI Super patch:source routing:functional addressing:promiscuous fix:unbind fix for TPR:DLPI:STREAMS:raw mode:IP panics:locally administered addresses for TPR:FDDI error notification:LLA panic:MF_BROADCAST:LAN–SUPER–PATCH:SQE:MIB:DLPI performance:connection–oriented DLPI routing:SNAP:ARP:

Fset: LAN STREAMS–DLPI
OS: 9.00 9.04
Desc: This patch supersedes the previous LAN SUPER PATCH.

o PHKL_4289 :quotas:exceed:dqupdate:diskfull:

Fset: KERN–BLD
OS: 9.04
Desc: fix for incorrect quotas for uids > 32767. Quotas enabled, user exceeds quota, file system full causes hang.

o PHKL_4316 :8mm:mt_gstat:INFORMATIQUE:QIC:EOD:tape14:format:density:GMT_8mm_FORMAT:hang:fsrbsrrecords:

Fset: KERN–BLD
OS: 9.04
Desc: Multiple fixes for 8mm tapes and QIC devices.

o PHCO_4327 :s800_tar_patch:multivolume_on_floppy:

Fset: UX–CORE
OS: 9.00 9.04
Desc: Fixed incorrect exit(2) at end of media on a multivolume backup onto a SCSI floppy disk.

o PHCO_4362 :s800_cpio_patch:multivolume_on_floppy:"."_directNory_permissions:

Fset: UX–CORE
OS: 9.00 9.04
Desc: Fixed incorrect exit(2) at end of media on a multivolume backup onto a SCSI floppy disk.

o PHCO_4371 :gethostent(3N):name services:nameserver:resolver:DNS:BIND:host lookup:Multibyte:NLS:Japanese EUC:Codeset 2:Hankaku Katakana:JISX0201:WPI:/etc/mnttab:filesys:HP OmniStorage:getnetgrent(3C):NFS:/etc/netgroup:mount:strftime(3C):convert date/time to string:invalid return value:malloc:free:maxfast:m_keep:mxfast:core dump:exportent:exports file truncated:line too long message:exportfs(1M):exportfs –ua error:getcwd:libc:chmod:pwd:lp:getdate(3C):file descriptor:EMFILE:memory leak:printf:%S:EUC:Japanese:getgrent:YP:NIS:getpwnam:coredump:bus error:SIGBUS:directory(3C):telldir():seekdir():readdir():opendir():closedir():yp_all():tcp:rpc:udp:clnt_create:RPC_PROGNOTREGISTERED:clnt_create_vers:Internet Services:resolv.conf:getservbyname:

Fset: C–MIN CORE–SHLIBS
OS: 9.00 9.04

o PHCO_3692 :ups:ups_mond:ups_conf:
Fset: UPS–TOOLS
OS: 9.04
Desc: Ensure UPS in correct mode; read 1 char at a time.
Add 30 sec. after shutdown timeout to turn–off.

o PHCO_3771 :uucp:uucico:uugetty:uucpd:uuxqt:uucheck:uux:
Fset: UUCP
OS: 9.00 9.04
Desc: Multiple fixes including 2 security holes.

o PHCO_3925 :/etc/update:bus error:NIS:
Fset: TOOL
OS: 9.04
Desc: When the /etc/passwd file contains (as its first entry)
an NIS–excluded entry for root, /etc/update generates a
bus error and core dump.

o PHCO_4011 :fsck:return vlue:hfs:bcheckrc:s800:error code:
Fset: UX–CORE
OS: 9.00 9.04
Desc: Correct problem of fsck returning 8 (filesystem still
corrupted) even though filesystem was fixed.

o PHNE_4059 :MUX:LAN:panic:canonb:domains:system hang:system panic:Data segmentation fault:dereference a null pointer:getty not cycleing through baud rates:vmin:tab3:buffer overrun:garbled data:cross–talk:read select:iocl performance:RTS/CTS:port hang:lpsched hang:read call:select call:
Fset: KERN–BLD
OS: 9.00 9.04
Desc: Multiple RS–232/modem/flow control fixes

o PHCO_4076 :lp:
Fset: LP–SPOOL
OS: 9.00 9.04
Desc: Multiple spool system fixes.

o PHKL_4153 :lockf locklist:
Fset: C–INC KERN–BLD
OS: 9.04
Desc: Fix for ”only 58% of file locks usable” problem.

OS: 9.00 9.01 9.03 9.04 9.05
Desc: Multiple automount fixes

o PHCO_4583 :sccs:new command:
Fset: SRC–CNTL SRC–CNTL–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: sccs is a brand new command which is being made available for 9.X. sccs is the BSD derived front–end to the SCCS subsystem. It simplies using SCCS and provides many short cuts. Read the accompanying man page for details.

B.1.2 HP–UX 9.04 Patches (800 Series Servers)

o PHSS_4520 :Motif 1.1 Run. Time:July 94 Periodic Patch:s800, HP–UX 8.X:
Fset: X11–SHLIBS(8.X) X11R4–SHLIBS(9.X)
OS: 8.00 8.02 8.06 9.00 9.04
Desc: Note: This patch contains shared libraries. These shared libraries (or later versions of them) must be installed on any system which runs applications that have been linked against them.

o PHNE_2944 :FDDI:MTU:maximum transmission unit:
Fset: FDDI
OS: 9.00 9.04
Desc: A command to set the MTU size of FDDI adapters from a large packet size (4352 bytes) to a smaller size (1500 bytes). This will prevent fragmentation of packets from a FDDI subnet to a Ethernet subnet.

o PHKL_3431 :data loss:fsync:
Fset: KERN–BLD
OS: 9.04
Desc: fsync(2) followed by crash showed data loss. Indirect blocks were not being written out to disk.

o PHKL_3658 :kmalloc:memory allocation:allocpfd:vn_rele:
Fset: KERN–BLD
OS: 9.04
Desc: Kernel memory allocations can be denied if the ”NO_WAIT” flag is set in spite of having lot of free pages.

o PHSS_4504 :Motif1.2.4:X11R5:Runtime:
Fset: X11–RUN X11R5–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch

o PHSS_4505 :Motif1.2.4:X11R5:Development:
Fset: X11–RUN X11R5–PRG X11R5–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch

o PHNE_4533 :ARPA:sendmail:NIS:ESMTP:security:getpwent:
Fset: ARPA–RUN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: 9.X mega–patch for sendmail
Desc: MX record configuration fix, ESMTP/MIME support, queue file changes, Logging changes, generate 4–digit years instead of 2–digits in Date: headers, reverse–aliasing, Berkeley 8.6.8 roll–ins, closing security hole, NIS alias support.

o PHNE_4563 :ARPA:nslookup:dns:nis:hosts:switch:bind:fallback:
Fset: ARPA–MAN ARPA–RUN LAN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: updated nsswitch supplement patch: nslookup, config and docs
This patch MUST HAVE the corresponding libc patch installed: PHCO_4370 (s700) and PHCO_4371 (s800). In addition, the following patches are recommended since they are commands built with static libraries and have been rebuilt using a library that included the nsswitch code:

PHNE_4487 (s700) PHNE_4488 (s800)
/etc/route & /etc/ifconfig
PHCO_4439 (s700) PHCO_4440 (s800)
/etc/mount & /etc/umount

If these recommended patches are not installed, then the commands they update will not use the nsswitch feature.
If the required libc patch is not installed then no commands will use the nsswitch feature, and the nslookup command included in this patch will fail to work.
Since the previous nsswitch supplemental patch, the following is include in this patch. Some fixes to nslookup. Updated documentation including switch(4) and /usr/doc/switch.ps.

o PHNE_4579 :NFS:automount:netgroup:hangs:–M:included_map:+:
Fset: NFS–RUN

OS: 9.00 9.01 9.03 9.04 9.05
Desc: So far rcp used a 32K socket buffer size for sending and 8K (TCP default) for receiving. This version uses 32K for both buffers for improved performance.

o PHSS_4444 :hpterm:
Fset: X11–RUN X11–RUN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This fixes all hpterm problems discovered since the release of HP–UX 9.0. – Scrollbars, DIN keyboards, and shift–arrow escape sequences.

o PHSS_4449 :July 1994 Font Server Periodic Patch:
Fset: MKFONTDIR X11–FONTSRV X11–RUN
OS: 9.00 9.01 9.03 9.04 9.05

o PHSS_4451 :July 1994 X11–FONTB Periodic Patch:
Files: PHSS_4451.text PHSS_4451.updt
Fset: X11–FONTB
OS: 9.00 9.01 9.03 9.04 9.05

o PHNE_4469 :INETSVCS:tftpd:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of tftpd is for the benefit of sites that have to boot simultaneously many systems/X terminals from one server. After processing the first request coming via inetd, tftpd will stay up for a while, accepting new requests directly.

o PHNE_4470 :ARPA:remshd/rexecd no home directory:
Files: PHNE_4470.text PHNE_4470.updt
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: When the home directory is missing, remshd and rexecd will execute the commands in /.

o PHNE_4483 :ARPA:mail:elm:
Fset: MAILERS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Mega–patch for elm: 700_800, 9.X

Contains fixes from previous patches.

o PHCO_4348 :tput:capname:parameters:
Fset: CMDS–AUX
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes tput to allow numeric parameters to be passed to capname.
Added support for the –S option to read from stdin.
All capnames which correspond to capabilities specified in /usr/include/term.h have been implemented, which includes: nlab, lh, lw, pln, smln, and kf11..kf63.
Performance has improved significantly since a binary search is used to retrive the capname.

o PHCO_4374 :login:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Corrects –p behaviour when password aging is enabled.
Drops user into "/" when their home directory is not available.

o PHSS_4404 :HPVUE3.0:VUE3.0:VUE:9.0::
Fset: X11–RUN X11–RUN–MAN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Corrects miscellaneous problems with hpterm, vuefile, vuelogin, vuepad, and vuewm.

o PHNE_4420 :NFS:nfs:rpc:rpcgen:inetd:ansi:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fix incorrect syslog messages and use svcfd_create for tcp based rpc programs starting from inetd. Allow rpc servers to be created by rpcgen that can automatically be inetd–compatible. The patch adds options –I (inetd support), –K <num> (how long an inetd–spawned server should stay alive after no more clients), –L (log error messages to syslog) to the command line interface of rpcgen. The behavior is similar to Sun's rpcgen. Also added support for ANSI C, allowing rpcgen generated code to be fully ANSI compliant; specifically, removed labels from #else and #endif.

o PHNE_4431 :INETSVCS:rcp socket buffer size:
Fset: ARPA–RUN

OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixed problem with /bin/(r)mail related to backquotes in /usr/mail/<username>

o PHCO_4130 :bdf:NFS mounts:block size:wrong results:SGI:512 byte blocks:
Fset: CMDS–AUX
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes a problem of bdf giving incorrect usage statistics for SGI or Sun NFS mounts. This happens if the remote file system has a block size of less than 1024 (e.g., 512 bytes).

o PHSS_4166 :May 1994 X11–FONTA Periodic Patch:
Fset: X11–FONTA
OS: 9.00 9.01 9.03 9.04 9.05

o PHSS_4168 :May 1994 X11–FONTC Periodic Patch:
Fset: X11–FONTC
OS: 9.00 9.01 9.03 9.04 9.05

o PHCO_4270 :lp:model:PCL5:paintjetXL300:laserjet4:laserjet4Si:laserjetIIISi:laserjetIII: deskjet1200C:deskjet500:deskjet500C:deskjet550C:
Fset: LP–SPOOL
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch contains model files PCL(1–5), deskjet1200C, deskjet500C, deskjet550C, laserjet4, laserjetIIISi, laserjet4Si, paintjetXL300 and postscript files. Note that these do not depend on h/w arch.

o PHCO_4294 :make:line too long:VPATH:Hash table overflow:conditional macro:–include:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Major fixes and update to ’make’ functionality

o PHCO_4309 :exabyte:8mmtapes:supports_specific_devices:support_nosetmarks_formats: fbfbackup:frecover:incremental_fbackup_hang:
Fset: SYS–ADMIN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: s800 9.04 fixes to fbackup and frecover to support all the specific tape formats for the Exabyte (8MM) tape drives for model #s EXABYTE 8500 and EXABYTE 8505.
fixes occasional checksum mismatch for active files encountered by ”frecover –Nvf ”.

o PHNE_3861 :NFS:rpc.mountd:tcp port:rmtab:logging:export list:device busy:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rpc.mountd will not register the TCP port if started from inetd with the –e option.
rpc.mountd will now merge the rw, root and access lists when building an export list. It will also remove any duplicate entries between these lists. This will help avoid situations where automount issues multiple mount requests for the same filesystem, resulting in device busy errors in syslog.

o PHCO_4039 :pax:allows:large_filenames(>14):stdin:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes pax command to accept filenames longer than 14 characters from stdin.

o PHNE_4056 :NFS:rpc.lockd:negative:offset:no locks:lock:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Multiple fixes to rpc.lockd.

o PHSS_4068 :xterm:SIGHUP:kill:signal:LINES:COLUMMNS:
Fset: X11–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes xterm problems discovered since the release of 9.0.

o PHCO_4077 :lp:
Fset: LP–SPOOL
OS: 9.00 9.01 9.03 9.05
Desc: Fixes multiple lp subsystem problems.

o PHNE_4097 :NFS:ypserv:NFS:NIS:DNS:Fallback:
Fset: NFS–MAN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: YP_INTERDOMAIN key not being transferred to NIS slaves.
Desc: NIS slaves do not fallback to DNS when the NIS master is configured todo so. The YP_INTERDOMAIN key is not being transferred to the NIS slaves when the slave issues a ypxfr of the hosts.by* files. NIS DNS fallback support; NIS portion needed for the hostname fallback

o PHCO_4118 :mail:rmail:backquotes:forwarding:
Fset: CMDS–MIN

Resize (i.e. setting LINES and COLUMNS) is now being automatically done at shell startup.
When resize is done in a xterm window, the next prompt does not come until a <CR> is pressed again.

o PHSS_3598 :dld:
Fset: CORE–SHLIBS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: dld does not properly apply runtime relocation.

o PHNE_3733 :ARPA:ftpd:
Files: PHNE_3733.text PHNE_3733.updt
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of ftpd checks for password expiration.
It also allows the setting of the data socket buffer size via the –B option.

o PHCO_3746 :quota:cnode:quotactl:
Fset: DQUOTA
OS: 9.00 9.01 9.03 9.04 9.05
Desc: quota(1) is able to work around when quotactl(2) fails.
However, quota(1) only works if the file system disk is on the cnode where the quota(1) command is run.

o PHCO_3844 :ksh:pwd:permission denied:corrupted current working dir:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: With a heavy environment setup, ksh builtin command ’pwd’ returns ’permission denied’. The environment PWD contains invalid data.

o PHNE_3857 :NFS:PCNFSD:PC_PRINT:pcnfsd:print manager:PC–NFS:aliases:printer:
Fset: NFS–MAN NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: pcnfsd fixes

o PHNE_3860 :NFS:yppush:YP_LAST_MODIFIED:ypmake:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: YP_LAST_MODIFIED doesn’t get updated on Slave NIS Servers.

o PHNE_3390 :NFS:ypserv:ypbind:portmap:secure:security hole:securenets:domainname:dump maps:

Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: NIS security patch; ypserv allows anyone that can guess the domainname to obtain copies of NIS maps. Confederate ypserv processes on a client can contact master NIS server and obtain copies of NIS maps

o PHNE_3392 :NFS:rpc.rstatd:rstatd:cpu states:cpu:states:statistics:stats:CPUSTATES:

Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rpc.rstatd and CPUSTATES
Desc: The present design of the 700/800 allows up to 9 different cpustates to be reportd while the rpc.rstatd protocol only allows 4 to be returned.

o PHNE_3393 :NFS:portmap registration:

Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: The portmap process will not allow a program to re–register if that program does not clear out its own registration.

o PHNE_3424 :NFS:nfs:rpc.statd:statd:rpc.lockd:lockd:lock:lock hang:

Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Fixes multiple rpc.statd problems which result in file/record locks hanging over NFS (including ksh and mailx); rpc.statd core dump; rpc.statd loses data in monitor queue resulting in inadequate recovery. Patch needs to be on lock server AND client systems

o PHNE_3532 :ARPA:ftp:

Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This version of ftp allows the setting of the data socket buffer size via the –B option.

o PHCO_3562 :here document:premature termination of input:sh:

Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes the premature termination of the ”Here document”.

OS: 9.00 9.01 9.03
Desc: Fix to catman core dump.

o PHCO_2840 :awk:coredump:input record too long:multi–line record:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: awk coredumps with when a large input record is read in.

o PHNE_2857 :NFS:exportfs:setuid:
Fset: NFS–RUN
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Exportfs not executable by user if setuid bit is set.

o PHNE_2858 :NFS:rpc:rpc include:include protection:protection:multiple include protection:
Fset: NFS–INC
OS: 9.00 9.01 9.03 9.04 9.05
Desc: rpc include files do not have multiple include protection

o PHCO_2983 :dump:restore:blocksize:tape:
Fset: SYS–ADMIN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: This patch fixes a problem where restore cannot determine
the tape blocksize when the blocksize >= 32 Kbytes.

o PHNE_3378 :NFS:yppasswd:PWFILE:rpc.yppasswdd:yppasswdd PWFILE on separate disc
or partition:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: yppasswdd does not update if PWFILE on seperate disc

o PHCO_3387 :vi:ex:tags:pop:tagstack:
Fset: EDITORS
OS: 9.00 9.01 9.03 9.04 9.05
Desc: vi tagstack feature now supported.

o PHNE_3389 :NFS:yppasswd:passwd aging:password:
Fset: NFS–RUN
OS: 9.00 9.01 9.03 9.04 9.05
Desc: When the passwd aging was implemented in NIS, the yppasswd
command would allow the user to re–use his old passwd again
when it expired.

Corrects the problem of ”mount –a” failing if
unable to mount a CDROM drive.

o PHCO_4460 :at:cron:
Fset: CMDS–MIN
OS: 9.01 9.03 9.05
Desc: Fixes for cron and at; Crontab has security hole.

o PHSS_4485 :July 1994 Xserver Point Patch:
Fset: X11–RUN X11–RUN–MAN X11–SERV
OS: 9.00 9.01 9.03 9.05

o PHNE_4487 :DNS:fallback:ifconfig:route:gethostbyname:
Fset: NET NETINET
OS: 9.01 9.03 9.05
Desc: Allows new DNS fallback functionality.

o PHNE_4587 :XPORT:cumulative patch:
Fset: BSDIPC–SOCKET KERN–BLD NET NETINET NETIPC
OS: 9.03 9.05
Desc: Networking cumulative patch.

o PHKL_4605 :syncer:functionpointer:EBUSY:MMF:SIGSEGV:HOSTNAMESZ:SDS:
Fset: KERN–BLD NFS–INC NFS–RUN
OS: 9.03 9.05
Desc: Fix for NFS performance problem.
Fixes a memory leak in NFS.
Swap text on local swap device if sticky bit is set.
When debugging an NFS mounted file and another process
modifies the text, the system can panic.
Fixes a problem in NFS for readdir and seekdir library calls.
Memory Mapped File Tuning to improve performance.
Fix syncer performance problems on systems with
huge buffer caches.
PC–NFS client of HP–UX machine sees apparent error trying to
save a writable file or update its timestamp.
Plug a security hole involving symbolic links.
Binaries not updated when written through NFS.
Fixes read failure on nfs file when server disk is full.
Increase HOSTNAMESZ to 256 to allow domain names
greater than 32 characters

o PHCO_2183 :catman:core:dump:9.0:9.01:bus:error:
Fset: TEXT–FMT

9.05 and either MPower or Teleshare.

o PHCO_4370 :gethostent(3N):name services:nameserver:resolver:DNS:BIND:host
Fset: C–MIN CORE–SHLIBS
OS: 9.01 9.03 9.05
Desc: Fixed rpc code hangs.
Corrects a problem where using 127.0.0.1 in resolv.conf would hang.
Corrects a masking problem in inet_makeaddr(), where a network broadcast address would fail.
Added missing RPC routine clnt_create_vers(3C).
Fixed memory leak in closedir(3C).
Fixes a problem where ”program not registered” error was returned.
Solves a problem of tcp connections being left open after a successful yp_all(3C) call.
Fixes the problem closedir() was not closing the directory opened by opendir().
Allows gethostbyXXX() routines to be configurable in using name services.
Bug in getnetgrent(3C) where continuation lines in /etc/netgroup were not handled properly.
free() causes core dump if occuring after malloc’ing all of memore in many blocks, or when MX_FAST value is set.
Lines in the /etc/exportfs file that are longer than 1023 characters will be truncated when read.

o PHSS_4389 :SEAGATE ST11200N:
Fset: CORE–DIAG DTDUTIL–DIAG SAM SCSIDSK2–DIAG UX–CORE
OS: 9.03
Desc: Support for 9.05 disks in 9.03. This patch contain SAM, disktab, and diagnostic support for the new disk drive.
The new drives are: Seagate ST31200N, Seagate ST31200W, Seagate ST12400N, Seagate ST12400W, DEC DSP3107LS, DEC DSP3107LSW, DEC DSP3210S, DEC DSP3210SW, Quantum LPS1080S, Quantum LPS1080WD

o PHCO_4439 :mount:NSSWITCH Fallback:CDROM:mount failure:PHCO_4370 :libc:
Fset: UX–CORE
OS: 9.01 9.03 9.05
Desc: Includes the new libc corrections to give mount the hostname fallback enhancements that are provided in PHCO_3703. This has to be provided as a separate patch since mount is linked archived. umount uses libc.sl so PHCO_3703 is a dependent patch.

OS: 9.03 9.05
Desc: Fix for hilkbd driver completing read even without any input.
Fix for several SCSI defects and a diagnostic/RS232/VME defect.
Fix to allow magnetic tape device file minor number to switch tape density on 7980.
Fix for a cache consistency problem resulting in invalid SCSI sense data being returned to the user. This problem only affects SCSI pass–through requests.
Fix to add support for A32 VME SCSI cards.
Fix to the Audio Driver to minimize ”clicking” which occurs when opens and closes are sent to the audio device.
Fix to restore the audio driver state on beep completion.
Fix to prevent slow mouse movements during bootup from crashing systems with PC–AT keyboards.
Fix to correct keyboard input redirection to ITE when using 46021B keyboard with several HIL devices.
Fix for system panic with ”H_READCONFIG failed” when booting.
Fix for SCSI floppy write protect & media missing.
Fixes for inaccessible devices on SE bus after soft reboot.
Two fixes for SCSI Request Timeouts ocurring on SE bus.

o PHNE_4180 LAN:DLPI Super patch:source routing:functional addressing:promiscuous fix:unbind fix for TPR:DLPI:STREAMS:raw mode:IP panics:locally administered addresses for TPR:FDDI error notification:LLA panic:MF_BROADCAST:LAN–SUPER–PATCH:SQE:MIB:DLPI performance:connection–oriented DLPI routing:SNAP:ARP:
Fset: LAN STREAMS–DLPI
OS: 9.00 9.01 9.03 9.05
Desc: This patch fixes several known problems with the DART 9 version of the DLPI driver.

o PHSS_4341 :libAlib:libAt:Aserver:audio:multimedia:
Fset: AUDIO
OS: 9.01 9.03 9.05
Desc: s700 9.X corrections for base (’non–MPowered’) Audio subsystem
Install this patch on ’non–MPowered’ series 700 machines running 9.01,9.03 or 9.05

o PHSS_4342 :libAlib:libAt:Aserver:audio:multimedia:MPower:asecure:teleshare:
Fset: AUDIO AUDIO–MP–SRV
OS: 9.01 9.03 9.05
Desc: s700 9.X corrections for MPower Audio subsystem
Install this patch on series 700 machines with 9.01, 9.03 or

(2) allow READ ONLY device for NETSTAT iocl access, previously the program had to open the device for READ and WRITE access, and (3) include dlpi fix.

o PHNE_4003 :FDDI:FDDI NETSTAT:EISA:
Fset: FDDI FDDI–COMMON
OS: 9.00 9.01 9.03 9.05
Desc: This patch will allow programmatic access to the NETSTAT ioctl for the 700 series FDDI driver for programs that open the device file with READ ONLY access. Previously the program would need to open the file with READ and WRITE access. This makes the FDDI driver behave as the other lan drivers do.

o PHCO_4035 :fsck:return value:hfs:bcheckrc:fast symlink:s700:error code:
Fset: UX–CORE
OS: 9.01 9.03 9.05
Desc: The first problem was fsck returning 8 (filesystem still corrupted) even though filesystem was fixed. This caused bcheckrc to stop on reboot when it could have continued.
The second problem was that fsck deleted symlinks on a filesystem that has fast symlinks (i.e., ”create_fastlinks 1” in /etc/conf/dfile).
Fsck has problem with files of sizes in the range 32mb+88k+1 bytes through 32mb+96k–1 bytes.

o PHCO_4078 :ls: nfs performance:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.04 9.05
Desc: Avoid unnecessary stat calls across NFS mounts by /bin/ls
Improve ls(1) performance on non–DUX nodes.
Warn: This patch should NOT be installed on DUX clustered systems.

o PHNE_4111 :MUX:system hang:system panic:dereference a null pointer:DTR:modem:getty:RTS:CTS:CREAD:read call:select call:posix:
Fset: KERN–BLD
OS: 9.03 9.05
Desc: This patch fixes multiple RS–232/modem/flow control problems

o PHKL_4174 :audio:hilkbd:write_protect:6250bpi:diagnostics:keyboard:EISA:mediamissing :autorepeat:single–ended:scsi:ITE:magtape:bustimeout:vme:7980S:minornumber:HIL:density:performance:click:cooked:rs232:timeout:panic:mouse:1600bpi:ME30:floppy:
Files: PHKL_4174.text PHKL_4174.updt
Fset: C–INC KERN–BLD

3) uucp unable to copy file from a remote machine to local machine.
4) uucp –c option does not work.
5) uugetty did not allow h/w flow control.
6) forward copy to remote1!remote2!~/file problem.

o PHKL_3076 :select:panic:
Fset: KERN–BLD
OS: 9.03 9.05
Desc: Fix for select(2) panic with no open file descriptors

o PHCO_3533 :cpio:core–dumps:symlinks:owner:group:permissions:Resyncs:shared_executable:
Fset: UX–CORE
OS: 9.00 9.01 9.03 9.05
Desc: This s700 9.x patch along with kernel patch PHKL_3550 or PHKL_3561 will fix the symlinks permissions problem in 9.x on s700. This patch also contains the fix for the core_dump problem when doing ”find . | cpio –o ”

o PHKL_3570 :segmentation:fault:vfork:proc:table:
Fset: KERN–BLD
OS: 9.03 9.05
Desc: Fixes Data segmentation fault when calling vfork() and the proc table is full.

o PHKL_3682 :named pipe:fifo:multiple fifo:buffers:fifo_rdwr:rcp:nfs:panic:
Fset: NFS–RUN
OS: 9.03 9.05
Desc: Fixes the panic caused by doing rcp to a named pipe file across NFS.

o PHKL_3798 :mmap:panic:
Fset: KERN–BLD
OS: 9.03 9.05
Desc: Fixes kernel panic when 3rd/4th quadrant map becomes fragmented.

o PHNE_3955 :FDDI:NETSTAT:panic:dlpi:
Fset: BUILT–IN–FDDI FDDI–COMMON
OS: 9.01 9.03 9.05
Desc: This patch is for S700 Built–In FDDI. It
(1) fixes smtc_parse_smt_header panic that PHNE_3755 failed to cover

OS: 9.00 9.01 9.03 9.05
Desc: su(1) will core dump if NIS is set up on the system but
is not enabled with ypserv(1M) and ypbind(1M).
This version of su was compiled with the PHCO_2278 version of
libc which includes PHCO_1762. The description from PHCO_1762:
A call to getgrent(3C) will core dump if /etc/group or
/etc/logingroup contains an entry of the form: ”+::”
and (NIS or YP) is not enabled.

o PHNE_2654 :ARPA:Security:hole:who::telnetd:ddfa:port id:pty:orphaned device files:who command:ksh:csh:sh:zombie:init:child:mode:permission:
Fset: ARPA–RUN
OS: 9.00 9.01 9.03 9.05
Desc: Security
This fixes 2 problems – a defect in the ”who” display
which only shows the last person logged via a DTC port
ID port, and a security hole which permitted more than
one telnet session to be opened from one DTC port. Also
fixed is the problem of telnet hangup with PC NFS ENV
option.

o PHKL_2755 :dbc_ceiling:buffer::performace:ram:cache:interactive:dbc:swap:
Fset: KERN–BLD
OS: 9.03 9.05
Desc: In 9.03 MR, the dynamic buffer cache was allowed to
take all of RAM; this patch limits the buffer cache to
physmem/2 as a maximum size and will not grow the buffer
cache if ”dbc_cushion” (new variable added with this patch)
pages of memory are not free.

o PHNE_2943 :FDDI:MTU:maximum transmission unit:
Fset: FDDI
OS: 9.01 9.03 9.05
Desc: New command to set MTU size on FDDI.
Customers have requested a command to set the MTU size of
FDDI adapters from a large packet size (4352 bytes) to
a smaller size (1500 bytes). This will prevent fragmentation
of packets from a FDDI subnet to a Ethernet subnet.

o PHCO_3029 :uucp:uucico:uugetty:
Fset: UUCP
OS: 9.00 9.01 9.03 9.05
Desc: This patch contains fixes for:
1) uucico does not release lock files when dialing fails
holding the line from other users.
2) Fix two security holes with uucp and uucico

Appendix B
PATCHES

Patches to install for effective interoperability. Your environment may not need all of the patches in this comprehensive list. Prior to installation:

- review the patch to see if it applies to the HP–UX revision you are running
- see if the patch has been replaced/superceded
- review each patch description to see if it actually applies to HP–UX functionality you are using

NOTE that new patches are added to the patch system periodically. The patch numbers here are valid as of the date indicated. Please confirm whether the patch has been superseded by using the information provided by HP support services described below.

(as of: 7/31/94)

B.1.1 HP–UX 9.03/9.05 Patches (700 Series Workstations)

o PHSS_4519 :Motif 1.1 Run–time:July 94 Periodic Patch:s700:HP–UX 8.X:
Fset: X11–SHLIBS(8.X) X11R4–SHLIBS(9.X)
OS: 8.07 9.00 9.01 9.03 9.05
Desc: Note: This patch contains shared libraries. These shared libraries (or later versions of them) must be installed on any system which runs applications that have been linked against them.

o PHSS_4522 :Motif 1.1 Dev. Env.:July 94 Periodic Patch:s700, HP–UX 8.X:
Fset: X11–PRG X11–SHLIBS(8.X) X11R4–SHLIBS(9.X)
OS: 8.05 8.07 9.01 9.03 9.05
Desc: Note: This patch contains shared libraries. These shared libraries (or later versions of them) must be installed on any system which runs applications that have been linked against them.

o PHCO_2373 :su:coredump:core dump:NIS:shutdown:YP:
Fset: UX–CORE

- Solaris 2.2 includes SunOS 5.2 System Software and ONC Networking Protocols, OpenWindows Version 3.2.
- Solaris 2.2 systems will run in a SunOS 4.1.x NIS environment. Most binaries that are dynamically linked and running in a SunOS 4.1.x environment can run under Solaris 2.2 via the Binary Compatibility Package on SPARC systems.
- Solaris 2.3 includes the operating system SunOS 5.3, ONC, OpenWindows 3.3, ToolTalk, and DeskSet.
- Sun began using the terminology ”application architecture” and ”kernel architecture” at SunOS 4.0.3.
- Application architecture (a–arch) refers to how the system interprets application binary code. Two systems have the same application architecture if they can both run the same application binaries.
- Kernel architecture (k–arch) refers to the hardware–specific portion of a SunOS kernel. Two systems have the same kernel architecture if the same SunOS kernel will run on both.
- Use ”arch” to find out the application architecture of a system. Use ”arch –k” to find out the kernel architecture of a system.

Sun SPARCstation LX

- Sun–4 floating–point controller version 4
- 48 Mbytes memory
- SCSI CCS controller, internal disk (425 MB)
- GDM–1962B 16 inch color monitor
- Solaris 2.3

HP–UX Commands Used To Get System Info

As root, /etc/dmesg and sam
/etc/lsdev, /etc/ioscan
/etc/diskinfo
/etc/lanscan, /usr/bin/landiag, /etc/ifconfig
/bin/xstm
/bin/uname

SunOS Commands Used To Get System Info

/etc/dmesg
/usr/etc/dkinfo
/usr/etc/format
/usr/etc/fpuversion4
/bin/uname

Solaris Commands Used To Get System Info

/usr/bin/dmesg
/etc/prtvtoc /usr/sbin/prtvtoc
/etc/format
/etc/prtconf
/bin/uname

HP–UX Releases

- HP–UX 9.01 is the current release of HP–UX for the Series 700.
- HP–UX 9.03 will be released in the March/April time frame. In general, the Series 700 HP–UX release numbers end in an odd number (e.g., 9.01, 8.07) and the Series 800 HP–UX release numbers end in an even number (e.g., 9.02, 9.0).

SunOS/Solaris Releases

- Solaris 1.0.1 is SunOS 4.1.2 and OpenWindows Version 2.
- Solaris 1.1 is SunOS 4.1.3 and OpenWindows Version 3.
  SunOS 4.1.3 is fully compatible with SunOS 4.1 and SunOS 4.1.x.
  SunOS 4.1.x includes SunOS 4.1.1, SunOS 4.1.1 Rev B, and SunOS 4.1.2

NOTICE: Solaris 1.1 Version C is only for SPARCstation LX and SPARCclassic systems. Solaris 1.1 Version A is for other sun4m platforms like the SPARCstation 10.

Appendix A
Test Network Configuration

HP 9000 Series 700 Model 720

- 64 Mbytes memory
- SCSI Quantum PD210S internal disk (210 MB)
- SCSI C2235 internal disk (400 MB)
- CRX Graphics, A1097C 19 inch color monitor
- HP–UX 9.01
- Layered software:
  - C, Fortran, Cobol, LaserRom

Sun SPARCstation 10 Model 40

- Sun–4 floating–point controller version 0
- 64 Mbytes memory
- SCSI CCS controller, internal disk (1 GB)
- GDM–20D10 20 inch color monitor
- SunOS 4.1.3 Version A
- Layered software:
  - AnswerBook

Sun SPARCstation 2

- Sun–4 floating–point controller version 2
- 32 Mbytes memory
- SCSI CCS controller, external HP C2212A disk (330 MB)
- HM–4119–S–DA–OL 19 inch color monitor
- SunOS 4.1.3 Version A

```
                    echo –n ”Starting SunView (type Control–C to interrupt)”
                    sleep 5
                    # default sunview background looks best with pastels
                    sunview
                    clear           # get rid of annoying cursor rectangle
                    echo –n “Automatically logging out (type Control–C to
                                    interrupt)”
                    sleep 5
                    logout          # logout after leaving windows system
                    breaksw

          endsw
          breaksw

         #
          # Add HP–UX specific windowing information
          #
  case  hp*:
          breaksw
endsw
```

```
#############################################################################
#
# Now we set up terminal/window related environments.
#
#############################################################################

switch ( $TERM )

        #
        # Add SunOS specific windowing information
        #
  case sun*:

        #
        # If possible, start the windows system.  Give user a chance
        # to bail out

        if ( ‘tty‘ != ”/dev/console” || $TERM != ”sun” ) then
                exit    # leave user at regular C shell prompt
        endif

        set mychoice=openwin
        if ( ${?OPENWINHOME} == 0 ) then
                setenv OPENWINHOME /usr/openwin
        endif

        if ( ! –e $OPENWINHOME/bin/openwin ) then
                set mychoice=sunview
        endif

        echo ””
        #click –n  # click –n turns off key click

        echo ””
        switch( $mychoice )
          case openwin:
                unset mychoice
                echo –n “Starting OpenWindows (type Control–C to interrupt)”
                sleep 5
                $OPENWINHOME/bin/openwin
                clear_colormap   # get rid of annoying colourmap bug
                clear            # get rid of annoying cursor rectangle
                echo –n “Automatically logging out (type Control–C to
                                interrupt)”
                sleep 5
                logout           # logout after leaving windows system
                breaksw

          case sunview:
                unset mychoice
```

```
   if ( $status == 0 ) then
      setenv COLUMNS       ‘tput cols‘
      setenv LINES  ‘tput lines‘
   endif

   stty intr \^C kill \^U erase \^H susp \^Z eof \^D
   tabs
   stty –tabs
   unset tmpt
endif
```

```
# @(#)login
#
# Default user .login file (/bin/csh initialization).
#
##############################################################################

##############################################################################
#
# Define default DISPLAY
#
##############################################################################

if ( ! $?DISPLAY ) then
         setenv DISPLAY  'hostname':0
endif

##############################################################################
#
# Fix terminal emulation:
#
# SunOS does not have an hpterm interface.  If system is SunOS and
# term is hpterm, change it to a known terminal type, "hp".  This will
# allow hpterm users on HP-UX to rlogin or telnet on to SunOS and
# use things like "more", and "vi".
#
# HP-UX does not have a sun-cmd interface.  If system is HP-UX and
# term is sun-cmd, change it to a known terminal type, "sun1".  This will
# allow sun-cmd users on SunOS to rlogin or telnet on to HP-UX and
# use things like "more", and "vi".
#
##############################################################################

if ( ! $?VUE ) then
   set tmpt='(tput -T$TERM cols) >& /dev/null'
   if ( $status != 0 ) then

      if ( $SYSTYPE == "SunOS" && $TERM == "hpterm" ) then
           setenv TERM  hp
      endif
      if ( $SYSTYPE == "HP-UX" && $TERM == "sun-cmd" ) then
           setenv TERM  sun1
      endif

   endif

   #
   # Set LINES and COLUMNS
   #
   set tmpt='(tput -T$TERM cols) >& /dev/null'
```

```
###############################################################################
#  System settings
###############################################################################

set noclobber
set autologout=0

###############################################################################
#  Set command prompt
###############################################################################

set prompt="'hostname'{'whoami'}\!% "

###############################################################################
#  Add your aliases here.
###############################################################################

alias ls ls –C
alias ll ls –al
alias lsf           ls –FC
alias lsr           ls –RC
alias rm 'rm –i'                    # forces user to acknowledge file removal
alias h             history         # sets history recall function
alias xresize  'eval 'resize –u''
alias bye           logout
alias help          man
```

```
set  path=( $sys_paths $opt_paths $user_paths $app_paths $danger_paths )

unset sys_paths
unset opt_paths
unset user_paths
unset app_paths
unset danger_paths

# Set HOST if needed

if ( ! $?HOST ) then
         setenv HOST  "'hostname'"
endif

###############################################################################
# Set history related variabled
###############################################################################

set history=100
set savehist=20

###############################################################################
# Setup for HP-UX if running HP-UX
#    Add your HP-UX specific .cshrc commands here!!
###############################################################################

if ( "$SYSTYPE" == "HP-UX" && ! $?VUE ) then

endif

###############################################################################
# Setup for SunOS if running SunOS
#    Add your SunOS specific .cshrc commands here!!
###############################################################################

if ( $?SYSTYPE == "SunOS" ) then
          set filec                 # turn on filename/cmd completion
endif

###############################################################################
# Set default umask for file creation.  By default, files are created with
# permissions 0666.  The umask is binary OR-ed with this value such that a
# umask of 002 will result in a default permission of 0664.
###############################################################################

umask 002                              # Allows write permission within groups
```

Common .cshrc and .login for HP–UX and SunOS

The attached .login and .cshrc files recognize terminal types of hpterm, xterm, and cmd–shell. The function of the .cshrc is to set the appropriate $PATH and $TERM for the given environment.

```
# @(#)cshrc
#
# Default user .cshrc file (/bin/csh initialization).
#
##############################################################################

#
# Initialize some variables we need right away
#

if ( ! $?USER ) then
        setenv USER  "'whoami'"
endif

if ( ! $?LOGNAME ) then                          # Ensure login name is set
        setenv LOGNAME ${user}
endif

##############################################################################
# Determine Operating System
##############################################################################

setenv SYSTYPE  "'uname –s'"

##############################################################################
# Setup default search paths
##############################################################################

switch ( $SYSTYPE )

case "HP–UX":
         set sys_paths="/bin  /usr/bin /usr/bin/X11"
         set opt_paths="/etc"
         set user_paths="/usr/local/bin  /usr/contrib/bin"
         set app_paths="~/bin/$SYSTYPE  ~/bin"
         set danger_paths=.
         breaksw

case "SunOS":
         set sys_paths="/bin /usr/ucb /usr/bin /usr/5bin /usr/openwin/bin"
         set opt_paths="/usr/etc /etc"
         set user_paths="/usr/local/bin  /sbin"
         set app_paths="~/bin/$SYSTYPE  ~/bin"
         set danger_paths=.
         breaksw
endsw
```

```
#
# environment variables common to both VUE and non–VUE
#
set PATH=( $HOME/bin PATH )
       ...
```

Errors in .vueprofile or .profile (.login) may prevent a successful login. If so, log in via the Fail–safe session and correct the error.

HP VUE and for Login Environment

Reference: HP VUE 3.0 User's Guide B1171–90061

If a user logs in using the HP Vue windowing environment, neither their .cshrc, .login, nor .profile are sourced. See the above "Login Process" for the exact login process. Instead, another environment script, named.vueprofile, is sourced. Read $HOME/.vueprofile for how this file can be customized to source your personalized login scripts. Below is an excerpt of that information.

> Personal environment variables can be set in the script file "$HOME/.vueprofile". The files /etc/profile and $HOME/.profile are not read by VUE as they may contain terminal I/O based commands inappropriate for a graphical interface. Users should set up ".vueprofile" with personal environment variables for their VUE session.
>
> VUE will accept either sh, ksh, or csh syntax for the commands in this file. The commands should only be those that set environment variables, not any that perform terminal I/O, ex. "tset" or "stty". If the first line of ".vueprofile" is #!/bin/sh, #!/bin/ksh, or #!/bin/csh, VUE will use the appropriate shell to parse the commands. Otherwise the user's default shell ($SHELL) will be used.
>
> If $HOME/.profile (.login) has been edited as described above, uncomment one of the two following lines, depending on your default shell.
>
> ```
> # VUE=true; export VUE; . $HOME/.profile; unset VUE      # sh, ksh
> # setenv VUE true; source $HOME/.login  ; unsetenv VUE   # csh
> ```
>
> With minor editing, it is possible to adapt $HOME/.profile (.login) for use both with and without HP VUE. Group the statements not allowed for VUE into one section and enclose them with an "if" statement that checks for the setting of the "VUE" environment variable. Then uncomment the appropriate line at the bottom of this script (.vueprofile) and log in again. From then on changes need only be made to $HOME/.profile (.login).
>
> Example for csh:

```
#
#  commands and environment variables used when logging in without VUE
#
if ( ! $?VUE ) then
        stty ...
        tset ...
        setenv DISPLAY    mydisplay:0.0
        setenv MAIL       /usr/mail/$USER
         setenv EDITOR    /bin/vi
              ...
endif
```

Creating terminfo entries

HP–UX References: tic(1M), untic(1M), terminfo(4)
SunOS References: tic(8), infocmp(8), terminfo(5V)

One of the methods to overcome the terminal emulation issues stated above is to create the appropriate terminal emulators for the systems. This can be accomplished by creating “terminfo” entries for the respective systems. This is done by de–compiling the terminfo for the emulators, and recompiling them on the other systems.

To create an ”hpterm” terminfo on SunOS.

You cannot take the hpterm terminfo file from the HP systems and performan untic and then tic on the SunOS to create an hpterm entry for SunOS. The compiled version has a couple problems. One is that the ”clear” command will not work. The mechanism to add hpterm to the SunOS terminal interfaces is a two step process:

1) On SunOS, add ”hpterm” to the /etc/termcap database.

   Change the line :

   h5|hp|hewlett–packard:\

   to add hpterm to:

   h5|hp|hpterm|hewlett–packard:\

2) On SunOS, link the ”hp” terminfo database to the ”hp” terminfo database

   ln /usr/lib/terminfo/h/hp /usr/lib/terminfo/h/hpterm

To create a ”sun–cmd” terminfo for HP–UX

You can just copy the sun–cmd terminfo entry from the SunOS system to the HP system. BUT, this only works for cmdshell windows. This does not work entirely for cmdtool windows. The vi editor, and clear commands work, but curses(4) based programs will not work in the cmdtool. They do work in the cmdshell windows.

Copy the sun–cmd terminfo database from the SunOS system in the directory /usr/lib/terminfo/s and copy it to the corresponding directory on the HP–UX system.

hpterm, xterm and sun–cmd?

Rlogin–ing or telnet–ing between systems can be a trying experience if you do not use a terminal emulator known by the foreign host. For example, HP–UX does not recognize the terminal type "sun–cmd", and SunOS does not recognize the terminal type "hpterm". Here are some pointers:

From OpenWindows/SunView on SunOS to HP–UX: Most likely, you will be using a sun–cmd window in your SunOS environment. Since a sun–cmd terminal emulator does not exist on SunOS, you can do one of a few things; 1) create an xterm and login to the HP–UX system, or 2) have your .cshrc recognize the system to termtype mismatch, and have it set your TERM variable to "sun1" (a termtype recognized by HP–UX). The attached .cshrc recognizes the second case for a user logging into an HP–UX system with a sun–cmd window, and sets the terminal type to sun1 for the user. A third option is to create terminfo entries for the appropriate emulators.

From Xwindows/HPVue on HP–UX to SunOS: Most likely, you will be using an hpterm window in your HP–UX HP Vue environment. Since an hpterm does not exist on SunOS, you can do one of a few things; 1) create an xterm and login to the SunOS system, or 2) have your .cshrc recognize the system to termtype mismatch, and have it set your TERM variable to "hp" (a termtype recognized by SunOS). The attached .cshrc recognizes the second case for a user logging into a SunOS system with an hpterm window, and sets the terminal type to hp for the user. A third option is to create terminfo entries for the appropriate emulators.

```
switch( $SYSTYPE )

          case      HP–UX:
                    if ( $TERM == sun–cmd ) then
                       setenv TERM sun1
                       # reset lines and columns
                       setenv COLUMNS  ‘tput cols‘
                       setenv LINES    ‘tput lines‘
                    endif
                    breaksw

          case      SunOS:
                    if ( $TERM == hpterm ) then
                       setenv TERM hp
                       # reset lines and columns
                       setenv COLUMNS  ‘tput cols‘
                       setenv LINES    ‘tput lines‘
                    endif
                    breaksw
endsw
```

The first thing your .cshrc should define is the SYSTYPE environment variable. This must be done in .cshrc and not .login because .cshrc is sourced prior to .login. The uname(1) command should be used since it is the one command which exists on all UNIX operating systems. In our case, the result of ‘uname‘ will be either ”SunOS” or ”HP–UX”. This gives your login scripts a variable which it can them perform switching based on the system type. An alternative to the ‘uname‘ command is ‘uname –m‘. ‘uname –m‘ gives the same result as the SunOS arch(1) command and the HP–UX model(1) command. On an HP 9000 Series 712, the ‘uname –m‘ command results in the string “9000/712”. A Sun SPARCstation 10 will result in the string “sun4m”. It is recommended against the use of the SunOS arch(1) command because on Solaris 2.x, the arch(1) command is no longer in the users default search path. SunOS .cshrc login scripts which depend on the arch(1) may break as users try to migrate from SunOS to a Solaris 2.x based system.

Defining system dependent Environment Variables

What should $PATH to set to? set path = (??)

The PATH variable will be different based on the system type. Use the SYSTYPE obtained above to perform a switch, and set up the PATH appropriately.

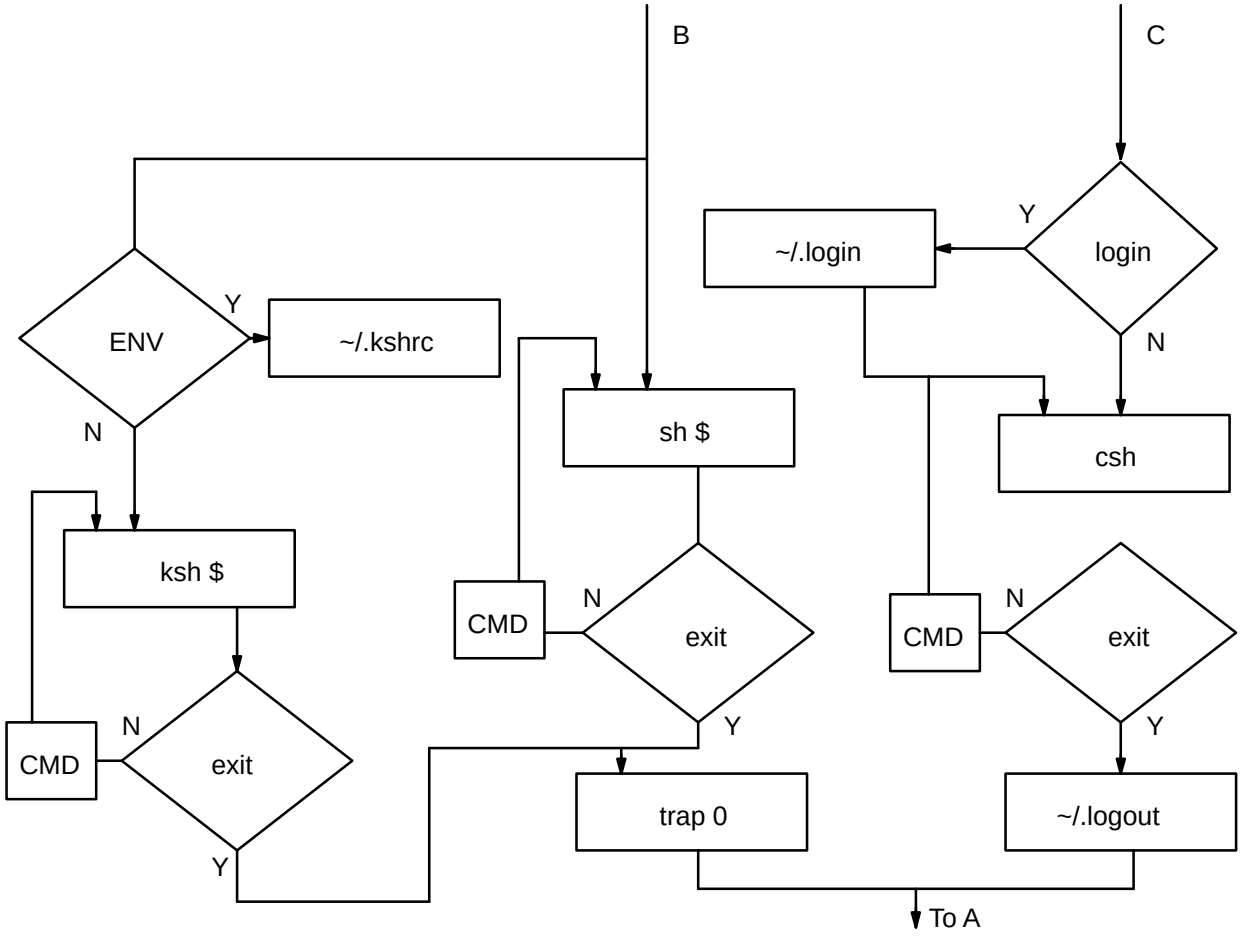
```
switch( $SYSTYPE )

        case  HP–UX:
              set path =  (/bin    /usr/bin /usr/bin/X11      \
                          /usr/local/bin    /usr/contrib/bin  \
                          ~/bin/$SYSTYPE    ~/bin    .  /etc  \
                          )
              breaksw

        case  SunOS:
              set path =  (/bin    /usr/ucb /usr/bin /usr/5bin   \
                          /usr/local/bin    /sbin               \
                          ~/bin/$SYSTYPE    ~/bin    /usr/etc   \
                          )
              breaksw
endsw
```

NOTICE: In the above example, the PATH variable includes “~/bin/$SYSTYPE”. This is needed to separate user executables built for the different architectures. One way personalized programs could be separated is to place executables in “~/bin/$SYSTYPE”, and to place shell scripts which can run on both platforms under “~/bin”. Alternatively, create links from one ~/bin/$SYSTYPE to “the other” to avoid having three or more separate bins.

Setting the appropriate $TERM

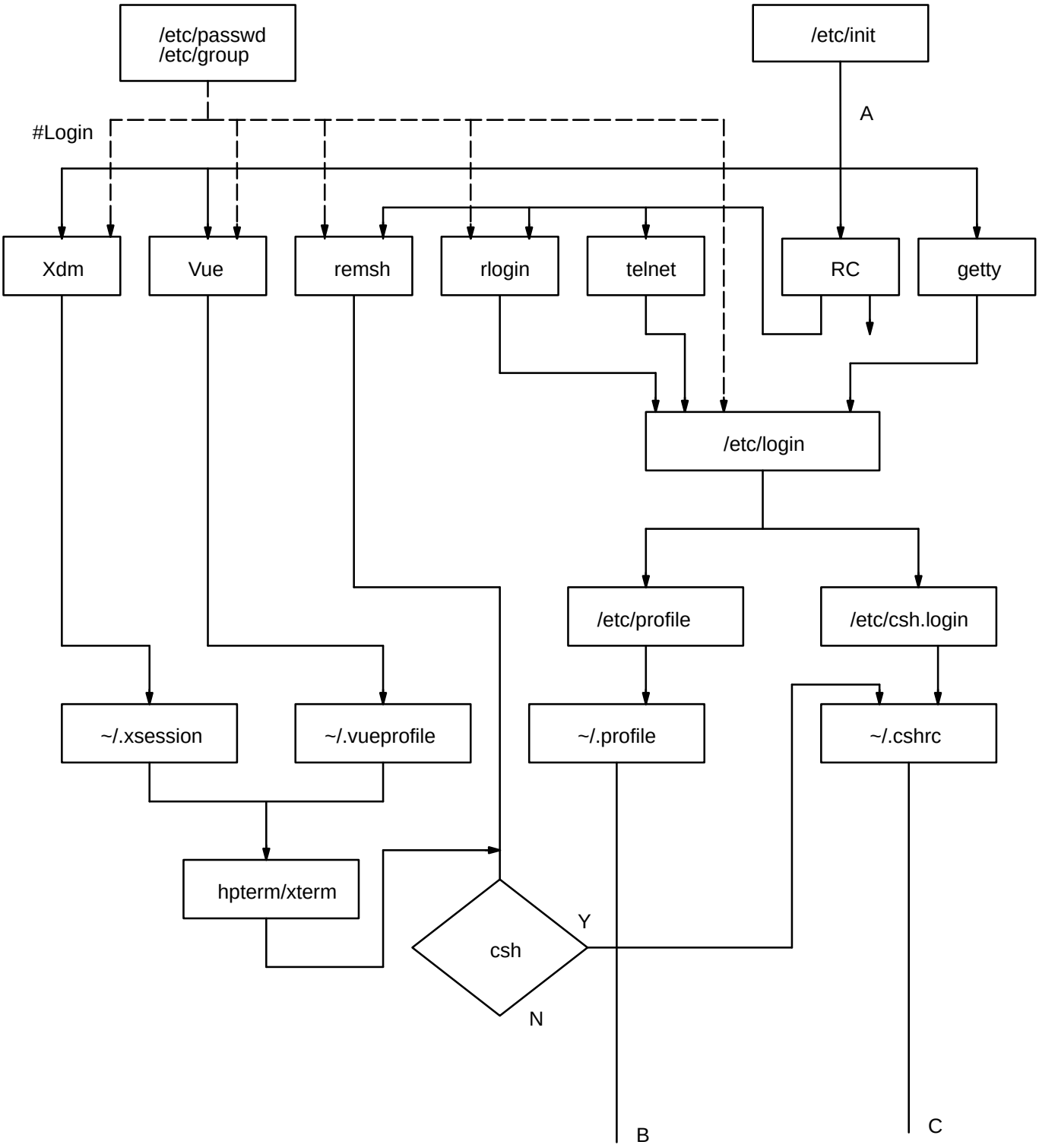


Developing Common Login Scripts

The three major elements to creating a common login environment are identifying the system, defining the command search and man page paths, and setting up the appropriate terminal types. Most other environment settings will be generic across the two platforms.

Identifying the System

```
setenv SYSTYPE ‘uname‘
    (or)
setenv SYSTYPE ‘uname –m‘
```


/etc/passwd
/etc/group
/etc/init
A
#Login
Xdm
Vue
remsh
rlogin
telnet
RC
getty
/etc/login
/etc/profile
/etc/csh.login
~/.xsession
~/.vueprofile
~/.profile
~/.cshrc
hpterm/xterm
csh
Y
N
B
C

Chapter 13
Login Environment for HP–UX and SunOS

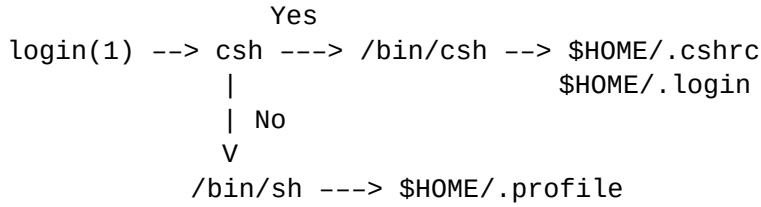
References: HP–UX Shells: User's Guide (B2355–90046)
SunOS User's Guide

This section discusses the issues surrounding the development of a common C shell login environment for HP–UX and SunOS. This discussion will focus on a common C shell environment, but the concepts are easily expanded into a common Korn shell, bourne, or tcsh environment. The key to developing a common environment is understanding that the login shells need to recognize the type of system they are logged on to, and the scripts need the ability to define a working environment specific for that system (e.g. $PATH).

Login Process

In SunOS, when a new user is created via add_user, a default .cshrc and. login are created. These default files come from /usr/lib/Cshrc and /usr/lib/Login respectively. On HP–UX, no default user environment shell scripts are created for the user. Instead, the system runs the default system wide /etc/csh.login. This is always run for C shell logins. Korn shell and Borne shell logins use the system default /etc/profile. This is actually a very simplistic view. In actuality, the login process is very complex. A simplistic view of the SunOS login process is shown below, and a full complex view is shown for HP–UX. Both platforms will allow you to always run $HOME/.cshrc on the creation of all new csh processes, while running $HOME/.login only once on initial login.

SunOS Login Process



HP–UX Login Process

The following diagram represents which HP–UX shell configuration files are used, depending on the "method of entry" into HP–UX. For instance, note that when a user uses 'remsh' to access HP–UX, the neither /etc/profile, not /etc/csh.login, is executed for the user. These files are where administrators traditionally put machine dependent configuration information, like the PATH variable.

/usr/bin/pdfck /system/LP–SPOOL/pdf

This will report on any missing files or incorrect ownerships and permissions.Once pdfck finds no errors, we have completed the cleanup of the spooler. To verify that all is well, use:

/usr/bin/lpstat –t

The output should be something like:

```
/usr/bin/lpstat –t
scheduler is running
no system default destination
```

At this point, we can add the first printer, preferably one that is close by so we can verify operation immediately. Start by testing a directly–connected printer (either serial or parallel). You can use SAM to add the printer or the commands:

```
/usr/lib/lpshut
/usr/lib/lpadmin –p<prn> –v<devfile> –m<model>
/usr/lib/accept <prn>
/usr/bin/enable <prn>
```

where: <prn> is a name for the printer, <devfile> is the device file, and <model> is the model script to be used from the choices in /usr/spool/lp/model.Then, test the printer with:

lp –d<printer–name> /etc/group

which will produce a one page (or so) listing of the group file.

Also, the spoolkick procedure does not affect the bootp services used by JetDirect cards in this system. bootp is independent of the lp spooler

5. lpadmin –x

With the spooler stopped, use lpadmin –x to remove every printer. If you have more than a few, you may wish to create a script to read the names of all the printers and run the lpadmin –x command automatically.

Once every printer has been removed, we need to move to the directory /usr/spool/lp to check on the remaining files and directories. Here is a summary of action steps:

..Remove the files SCHEDLOCK and FIFO.

..Clean the requests with: rm –r /usr/spool/lp/request/*
Be sure to specify the /* at the end so that request will not be deleted.

..The following directories must exist but have *NO* files in them:

cinterface
class
info
interface
member
receive
request
sinterface

..The file: seqfile can be removed or you can edit it to contain an
ASCII number as the starting point for the next print request ID. (As a note, seqfile can be changed at other times but only when the spooler is shutdown and there are no pendind jobs to print)

..The file: default should be zero–length.

..Zero out the status files with:

> pstatus (or you can use: cat /dev/null > pstatus)
> qstatus (or: cat /dev/null > qstatus)
> outputq (or: cat /dev/null > outputq)

Do not remove these files. If they are removed, they must be recreated as zero–length files with the correct permissions and ownerships.

..Finally, we must verify that the existence, links, ownerships and
permissions are correct. With HP–UX 8.0 and higher, there is a very useful command: pdfck. With this command, you can verify the entire lp spooler fileset. Just use:

3. Using SAM to fix the problem

If the spooler still locks up, and you are running HP–UX version 9.0x, you can use SAM to help fix the problem. If you are running 8.0x or earlier, skip this step.

At 9.0x, a copy of the spooler control files is made whenever changes are made to the spooler using SAM. This means that the spooler can be recovered to this state using SAM's Previously Saved State option.

Once this is performed, start the spooler and check if all is well. Again, if problems develop, check the names of the printers that seem to be hanging the spooler to see if the printers are online. If not, use the disable command to take them out of active spooler status.

Also check the log file in /usr/spool/lp/log. There may be some information about the spooler problems logged there. The JetDirect software always logs activities in this file and network activities are typically logged into the file /usr/adm/syslog (but check the printer/plotter selftest page to see if a syslog server has been established.

4. data corruption in the pstatus file

If the spooler locks up again, there is probable data corruption in the pstatus file, perform step 1 again. Now we need to make a list of all the printers currently in the system. Use lpstat –v to get this list, and make a permanent copy by redirecting it into a file as in: lpstat –v > /tmp/lp.list. If you are running 9.0 version hp–ux or have the spooler patch for 7.0 and 8.0, then you'll also have a list of printers that are remote or located on other systems.

The unprinted jobs in the spooler are located in the directory:

/usr/spool/lp/request

where each printer has a directory of print jobs that have not been completed. Each job creates a pair of files: a short control file and the actual data for printing. If none of the print jobs are important, these files can be removed (details in the next step).

Otherwise, the individual data files can be moved to a temporary directory. Since many files may have been printed with special options, you should also move the control files to be used later in reprinting the jobs.

If lpstat did not provide a list of the remote printers with their remote computer hosts, you'll need to manually create a list of these printers.

Also note: if you have made customized models scripts in the directory /usr/spool/lp/interface, make copies of these custom scripts into the directory /usr/spool/lp/model (the template directory). You may wish to rename the scripts in the interface directory since they will have the name of a printer.

Special note for JetDirect–connected printers and plotters: The model scripts for these printers are in a directory one level below the interface directory called: model.orig. Be sure to save any customized scripts found in that directory too.

HP LaserJet JetDirect Software for SunOS

HP LaserJet JetDirect Software is avaiable from HP.

Problem Solving

The SpoolKick Procedure:

Every once in a while, the lp spooler subsystem will appear to lock up or the spooler will consume large amounts of CPU time without printing anything. Most of the lockup problems have been solved with the 9.0 release, but occasionally, a problem may develop. Here are a series of steps that can get your spooler back online (valid for hp–ux 7.0x and higher except as noted):

1. lpshut

Do an lpshut command. This requires root and the command is located in /usr/lib/lpshut. Now check to see if all lp processes have terminated with: ps –ef | grep lp

If you see processes such as lpsched still running, kill these processes with kill –9, using the process ID number. These lpsched's are associated with printers (or scripts) that are having problems, so you may wish to note which printers are affected. The parameters passed to the model scripts will indicate the printer name.

Change directories to /usr/spool/lp and remove the two files at the beginning of the list: SCHEDLOCK and FIFO.

2. Check the printer

Once all lp processes are gone, see that all printers are online and ready to print. If a printer is temporarily offline due to a paper jam or out of paper, use the disable command to stop the spooler from printing to that device.

Now type lpsched to start the spooler again. Check to see that printing is working and that nothing is hung. If all is well, the spooler is now fixed. Check on any printers that were associated with lpsched's that had to be killed manually. You may wish to start lp spooler logging to monitor spooler activity with:

```
/usr/lib/lpsched –v –a
```

This will log printer activities into /usr/spool/lp/log and /usr/spool/lp/lpana.log. /usr/spool/lp/log can be read with just a cat or more command, while reading /usr/spool/lp/lpana.log requires the /usr/lib/lpana command.

generated. As stated above, the simpliest configuration solution is to ensure the default print request is spooled to a PCL printer.

A workaround would be to select the ”Copy to file” option from LaserRom, and then print that file to a Postscript printer (assuming the Postscript printer knows how to convert an ASCII file to Postscript).

Another workaround would to select the ”suppress graphics” option on the print menu, and direct the print request to a printer which knows how to convert PCL to Postscript. There exists a public domain tool called ”lj2ps” which converts PCL to Postscript, but it cannot handle graphics. This is why the user would need to suppress the graphics. ”lj2ps” will core dump if the PCL file contains graphics.

b) HP VUE 3.0 Help

Using any of the HP VUE help menus, excluding the ”Man Page” help, will require printing to a PCL printer. Unlike HP LaserRom, there are no workarounds here because almost all the help pages contain some graphics (which cannot be suppressed).

HP VUE and Printing

Print requests within the HP VUE environment are sent to the default printer as specified by either SAM or the ”lpadmin –d[dest]” command. When adding a new printer via SAM, you are asked if you would like the printer to appear in the HP VUE printer subpanel. If you answer yes, SAM will modify the HP VUE environment for the system by adding a printer specification file in /usr/vue/config/types, and adding that type to the printer panel specified in /usr/vue/config/panels/fp.printers. See Chapter 18 of the HP VUE User’s Guide for detailed information.

ASCII to Postscript Converters

1) Postscript printer model

HP–UX supplies a postscript printer model which can be used to convert ASCII files to postscript. The printer model assumes the default print environment is PCL. If you spool a job to a printer configured with this printer model script, you can have the model automatically convert the file via the lp command ”lp –oascii –opostscript <filename>”.

2) MP (make pretty utility)

mp–3.0.1 is available in the public domain archives. This is a PostScript pretty printer (written in C++) for text files.

Patches

9.0	800	PHCO_4076 (basic s800 spooler fixes) PHCO_4270 (PCL5 scripts)
9.0x	700	PHCO_4077 (basic s700 spooler fixes) PHCO_4270 (PCL5 scripts)

Basic Integration

The print spool environment on HP–UX is SYSV lpadmin based, not BSD printcap based. The two printing environments are able to work together.

Note that Sun has recently recommended SunOS 5.x users not use the SunOS SYSV spooling. This was due to defects in the spooler as shipped, and because SunOS will be using a different spooling mechanism in the future. If the SunOS 5.x systems are using BSD spooling, then treat remote printing between HP–UX and SunOS 5.x systems the same as between HP–UX and SunOS 4.1.x systems.

It should be noted that the default baud rate for all serial printers is 9600. This is set up in the printer models located on your systems in /usr/spool/lp/models. If the printer is to be attached to an HP–UX system, and will be communicating at a different baud rate, you will need to modify the baud rate specified on the ”stty” line of the printer model.

Printer Requirements

1) PCL vs. Postscript (must have PCL)

Many HP–UX applications output printer files in HP PCL (printer control language) format as opposed to postscript. In order to print these files your site will need to have at least one PCL compatible printer. This may not be a big issue. Today, many printers support PCL. For example, all HP LaserJets and most QMS printers support both PCL and postscript.

With the exception of the low end printers, all QMS printers purchased over the past 2–3 years will have PCL support. The QMS printers known not to support PCL are the QMS 1500, PS800, 810, and Colorscript. To determine whether your QMS printer has PCL capabilities, you can contact QMS technical support at 205–633–4500.

If your site does not have a PCL compatible printer, it is recommended that you purchase a printer with PCL support with your first system purchase.

2) Applications requiring PCL

a) HP LaserRom

HP LaserRom is HP–UX’s version of SunOS’s AnswerBook. It has an option to print manual pages to a printer. These pages are formatted for PCL. If sent to a postscript printer, a garbage output will be

4. A printing alternative is to add the printer “lj2” on a Solaris 2.3 system being served by host “sparky” by hand:

```
lpsystem –t bsd sparky          # sparky is a bsd system
lpadmin –p lj2 –s sparky        # creates printer lj2, served by sparky
accept printer                  # allow queueing
enable printer                  # allow printing
lpstat –t                       # check the status
lpadmin –I any –p lj2           # needed if lpstat complains
                                # about ”content types”
```

See the man page for “lpadmin” for information concerning “content types”.

SunOS 5.3: Adding remote BSD printer

1. The scheduler must be running, run “/usr/lib/lpshed”.

2. The Solaris2 workstation is called “Sparky”, the server is called “bertha” and you want the printer name as “tsslj.”

```
lpsystem –t bsd bertha          # bertha is a bsd system
lpadmin –p tsslj –s bertha      # creates printer tsslj
                                # served by bertha
accept tsslj                    # allow queueing
enable tsslj                    # allow printing
lpstat –t                       # check the status
```

3. Finally, to make tsslj the default:

```
lpadmin –d tsslj
```

4. For transparent mode:

```
lpadmin –I any –p tsslj
```

Integrating an HP–UX into an existing printing environment

This section documents how to integrate an HP–UX system into the existing printing environment. It is recognized that each site configures their UNIX mail environments slightly differently. It is a goal that this document be general enough to cover general configurations.

Select “Printers and Plotters”
Select “Printers/Plotters”
From the “Actions” menu, select “Add Remote Printer/Plotter”

```
Printer Name                hpljet
Remote System Name          klunker
Remote Printer Name         hpljet
```

Select “Remote printer is on a BSD system”
Select OK

2. Print a file –

apt1# lp –dhpljet /etc/hosts

Using the HP–UX tool, SAM, for all printer configuration is a great convenience for users. HP–UX uses a SYSV printing model.

Solaris 2.3: Adding local printer

Reference: Solaris 2.3 Setting Up Accounts, Printers, and Mail (801–5281–10)

Assumes printer is attached to serial port A.

1. Run the “admintool” as a member of the group sysadmin or as local root, and invoke the Print Manager.

2. Goto Edit —> Add Printer —> Add Local Printer

```
Printer Name:     lj2
Printer Port:     /dev/term/a       (serial port A)
Printer Type”     HP Printer
File Contents:    ASCII
```

Select “ADD”

3. Select “lj2” printer,
then select Edit —> Modify

Change to Default Printer.

3. Test the remote printer.

ss10# lpr –Premhp <file>

ss10# lp –dremhp <file>

NOTICE: We did not find a way to get the "lp –o" options to work for local or remote printing. it appears that the SunOS lp command does not automatically place the –o options in the the configuration file (/usr/spool/<printer>/cf*). Manual editing of the configuration file works but is not a good solution!

SunOS uses a BSD print model and does not have a tool to help in printer configuration.

HP–UX 9.X: Adding local printer

Reference: System Administration Tasks (B2355–90040)

1. Shutdown and power off apt1. Physically connect the printer to apt1's RS–232 port. Power up the printer and the system.

2. Use SAM to add the printer.

Select "Printers and Plotters"
Select "Printers/Plotters"
From the "Actions" menu, select "Add Local Printer/Plotter",
and then select "Add Serial (RS–232) Printer/Plotter"

```
Printer Name               hpljet
Printer Model/Interface    laserjet
Printer Device File Name   /dev/lp_hpljet
```

Select OK

3. Print a file.

apt1# lp –dhpljet /etc/hosts

HP–UX 9.X: Adding remote printer

Reference: System Administration Tasks (B2355–90040)

1. On the HP system, use SAM to set up a remote printer to the printer on klunker.

apt1# sam

4. Start the line printer daemon.

klunker# /usr/lib/lpd

Or

klunker# lpc

```
lpc> restart all
```

5. Print a file.

klunker# lpr –Phpljet /etc/hosts

SunOS 4.1.3: Adding remote printer

Reference: System and Network Administration (800–3805–10)

1. On the Sun system, ss10, set up /etc/printcap for remote printing. The name of the remote printer will be “remhp”.

ss10# cat /etc/printcap

```
remhp:\
          :lp=:rm=apt1:rp=hpljet:\
          :sd=/var/spool/remhp:lf=/usr/adm/lpd–errs:
```

2. On the Sun system, create a directory in /var/spool for the remote printer. Create lock and status files for the remote printer.

ss10# mkdir /var/spool/remhp
ss10# chmod 770 /var/spool/remhp
ss10# chmod g–s /var/spool/remhp
ss10# chown daemon /var/spool/remhp
ss10# chgrp daemon /var/spool/remhp
ss10# ls –algd /var/spool/remhp

```
drwxrwsr–x  2 daemon   daemon       512 Nov 11 10:17 /var/spool/lpd
```

ss10# cd /var/spool/lpd
ss10# touch lock
ss10# touch status
ss10# chgrp daemon lock status
ss10# chmod 664 status

Chapter 12
Printing

This section covers local and remote printing on both the HP and Sun systems. An explanation on how to physically attach and configure a printer on a local and remote SunOS 4.1.3,HP–UX 9.01 and SunOS 5.3 workstation is included. An HP LaserJet II printer was used in these examples. Instructions apply to HP–UX 9.X.

SunOS 4.1.3: Adding local printer

Reference: System and Network Administration (800–3805–10)

1. Shutdown and power off klunker. Physically connect the printer to klunker's serial port A (klunker has no parallel ports). Power up the printer and the system.

2. Do a simple test to make sure the connection works.

klunker# (stty 9600; cat /etc/printcap) > /dev/ttya

Printer is configured for 9600

3. Set up the /etc/printcap file for the printer. Name the printer "hpljet".

klunker# cat /etc/printcap

```
...

hpljet|lp|ps:\
         :lp=/dev/ttya:sd=/usr/spool/lp1:br#9600:\
         :ms=-parity,onlcr,crtscts:\
         :lf=/usr/adm/lpd-errs:
```

7. Verify permissions on /usr/lib/sendmail, they should be r–sr–xr–t “chmod 5555 /usr/lib/sendmail” to fix.

8. Run /etc/freeze to refreeze config file.

9. If /usr/lib/aliases does not exist, touch /usr/lib/aliases to create stub file.

10. run newaliases. Remember this is /usr/lib/sendmail –bi, and the new sendmail will insert the needed NIS Marker in the hashed aliases.

11. Test that the updated sendmail has put NIS lookup info into the aliases database with praliases – should see the NIS marker entry “YP_LAST_MODIFIED” near the end.

12. Restart sendmail /usr/lib/sendmail –bd –q30m.

13. Test mail aliases with your favorite mailer or sendmail –v alias.

NOTICE: This patch does NOT update the NIS Makefile, /usr/etc/yp/Makefile, nor the scripts in /etc/newconfig

Users on HP–UX who want to use the Sun mailtool may run the tool on a Sun workstation and set their display to remote the user interface to the HP–UX system.

Or

```
apt1# touch /usr/lib/aliases
apt1# newaliases
apt1# cp /etc/newconfig/sendmail.cf /usr/lib/sendmail.cf
apt1# chmod 5555 /usr/lib/sendmail    # Make permissions –r–sr–xr–t
apt1# /etc/freeze
apt1# /usr/lib/sendmail –bd –q30m
```

4. Send test messages between the HP and Sun systems to make sure mail is working.

```
apt1# /usr/lib/sendmail –v user@host

This is a test
.
```

A single line with a dot ends the message input.

Setting Up Sendmail aliases on HP–UX NIS:

Sendmail NIS aliases are implemented in a patch for HP–UX 9.01, and are included in 9.03. They are not available on 8.x. Configure as follows:

1. Install patch if needed (PHNE_3372 s7/800).

** Steps 2–4 apply only if the NIS master is an HP–UX system

2. On the NIS Master, check the new /usr/etc/yp/ypmake script has all the customizations your installation needs. The patch overwrites the existing ypmake/ypinit.

3. On the NIS Master, edit your /usr/lib/aliases file to include all the desired aliases.

4. On the NIS Master, run ypmake aliases. This will rebuild the aliases map and push it out to all the NIS Slaves.

5. Verify that you can see the NIS aliases with: ypcat aliases. If this fails, check to be sure the NIS map was built. Also try ypcat –k aliases.

** Steps 6–7 must be done on all HP–UX 9.X NIS clients

6. If 9.01 and installing from the patch, kill the running sendmail with /usr/lib/sendmail –bd, and copy over the patched /usr/lib/sendmail.

3. If Domain name services are NOT being used, use the default /usr/lib/sendmail executable. Make sure that the major relay host is reachable via NIS. Restart sendmail and send test messages to and from ss10.

From ss10, send a null test message to bill on ss10 –

```
ss10# /usr/lib/sendmail –v < /dev/null bill
```

From another system on the network, send a test message to bill on ss10 –

```
hp# /usr/lib/sendmail –v < /dev/null bill@ss10.fc.hp.com
```

From ss10, send a null test message to someone on another system on the network –

```
ss10# /usr/lib/sendmail –v < /dev/null <user>@fc.hp.com
```

4. If Domain name services are being used, you need to use a different sendmail executable. Save the original sendmail executable and replace it with the /usr/lib/sendmail.mx executable. Restart sendmail and send test messages to and from ss10 as in Step 3.

```
ss10# mv /usr/lib/sendmail /usr/lib/sendmail.orig
ss10# cp /usr/lib/sendmail.mx /usr/lib/sendmail
```

HP–UX 9.X

Reference: Installing and Administering ARPA Services (B1014–90008)

1. If you have not modified the sendmail.cf file, copy the existing template from /etc/newconfig/sendmail.cf. The default sendmail.cf will work for a simple configuration.

2. Sendmail NIS aliases for HP–UX 9.01 and have been incorporated into HP–UX 9.03. See the subsection below “Setting Up Sendmail aliases on HP–UX NIS” before proceeding to step 3.

3. Sendmail can be started manually or by using SAM.

```
apt1# sam
```

Select “Networking/Communications”
Select “Services: Enable/Disable”
Select “Sendmail...”
From the “Actions” menu, select “Enable”

Table 3–1. Subdividing a DNS Domain into NIS Domains

NIS Domain	DNS Domain
boston.sales.polygon.com	sales.polygon.com
philly.sales.polygon.com	sales.polygon.com
rahway.sales.polygon.com	sales.polygon.com
waltham.engin.polygon.com	engin.polygon.com
alameda.engin.polygon.com	engin.polygon.com

Because the NIS domain name contains more than three dot–separated components, sendmail drops the first component and uses the remainder as a DNS domain name. This allows all of the sales offices to be treated as a single administrative unit for mail and hostname management, even though they require distinct NIS domains.

SunOS 4.1.3

Reference: System and Network Administration (800–3805–10)

1. On the mailbox server ss10, export /var/spool/mail.

ss10# cat /etc/exports

```
/althome
/var/spool/mail
```

ss10# /usr/etc/exportfs –au
ss10# /usr/etc/exportfs –av

2. (2) The default /etc/sendmail.cf turns out to be appropriate for a subsidiary mail machine. (The file /usr/lib/sendmail.subsidiary.cf is the supplied template.)

For mail purposes, ss10 is in the fc.hp.com domain. Add a line to /etc/sendmail.cf to set the primary domain name to fc.hp.com. Change the name of the major relay host to what is appropriate for this site.

In ss10's /etc/sendmail.cf, the macros look like this:

```
Dmfc.hp.com
```

major relay host

```
DRfc.hp.com
CRfc.hp.com
```

Chapter 11
Electronic Mail

Sendmail will be used on all of the systems in test network to send and receive mail. The mailbox server is the Sun system ss10, which is the machine that stores mail in /var/spool/mail. The other Sun systems will NFS mount /var/spool/mail from ss10. ss10 will also be a subsidiary mail machine, which means that it distributes mail to recipients in the same domain. ss10 will forward mail bound for a different domain to a mailhost for routing.

SunOS sendmail and domain names

"Managing NFS and NIS" notes the following about SunOS sendmail and how it uses NIS and DNS domain names:

> The SunOS version of sendmail assumes that an NIS domain name with three or more components was derived from a DNS domain name. That is, if your NIS domain name is bos–engin.polygon.com, then sendmail uses .polygon.com as your DNS domain name by default. There may be many NIS domains in this DNS domain; sendmail strips off the leading component to form the DNS domain name. If the NIS domain name contains a leading plus sign, or starts with a dot, then the SunOS sendmail assumes that the NIS domain name is the same as the DNS domain name. This is a useful convention if you have exactly one NIS domain per DNS domain. For example, if DNS domain sales.polygon,com contains just one NIS domain, then it is convenient to tie the NIS domain name to the DNS domain name:
>
> +sales.polygon.com
>
> However, if there are multiple NIS domains within the DNS domain—several sales offices in different cities, for example—then the NIS domain names should reflect the subdivision of the DNS domain, as shown in Table 3–1.

ss10# nslookup hprpap

```
Server:  hpfcmgw.fc.hp.com
Address:  15.2.72.254
Name:    hprpap.fc.hp.com
Address:  15.2.72.80
```

ss10# ping –sv hprpap 64 4

```
PING hprpap.fc.hp.com: 64 data bytes
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=0. time=6. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=1. time=3. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=2. time=3. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=3. time=3. ms

----hprpap.fc.hp.com PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
```

server side host fallback, the NIS server can be configured to attempt to use DNS after a failed lookup using its own hosts map. Generally, this solution is required for backward compatibility in environments already using NIS server hostname fallback and where the client systems (eg. PC networks) do not provide any mechanism for using multiple naming services.

HP recommends the client side which is a similar solution to Sun's Solaris 2.X Name Service Switch. It is only similar since it only implements the "hosts" entry capability. This allows the user to specify in the nsswitch.conf file the order DNS, NIS and/or /etc/hosts should be searched for name resolution. The server side solution is implemented through NIS which is ported from Sun's ONC solution. This allows the server to check NIS, then fallback to DNS or /etc/hosts.

Solaris 2.3

Reference: System and Network Administration (800–3805–10)

To use DNS as a backup:

1. Create the DNS resolver configuration file /etc/resolv.conf, and add entries for one or more name servers. You will have to find out the BIND domainname which you should use.

ss10# cat /etc/resolv.conf

```
domain fc.hp.com
nameserver    15.2.72.254
```

2. Test DNS and hostname fallback from NIS to DNS.

ss10# nslookup ss10

```
Server:  hpfcmgw.fc.hp.com
Address:  15.2.72.254

Name:    ss10.fc.hp.com
Address:  15.2.72.151
```

To test hostname fall–back from NIS to DNS:

["hprpap is NOT in the NIS map, so hostname lookup goes to DNS]

ypcat hosts

```
127.0.0.1       localhost
15.2.72.151     ss10 loghost
15.2.72.152     klunker
15.2.72.153     sparky
15.2.72.151     ss10 loghost
15.2.72.150     apt1
```

To use DNS exclusively:

1. Create the DNS resolver configuration file /etc/resolv.conf, and add entries for one or more name servers.

apt1# cat /etc/resolv.conf

```
domain fc.hp.com
nameserver    15.2.72.254
```

2. Test DNS.

apt1# nslookup ss10

```
Name Server:  hpfcmgw.fc.hp.com
Address:  15.2.72.254

Name:    ss10.fc.hp.com
Address:  15.2.72.151
```

HP has a hard–wired hostname/ip address resolver routine that does not, without a patch, do any fallback. (There is a corner case where HP–UX will fallback without the patch; however, this is rarely encountered).

If you have NOT installed a patch and the machine is configured for DNS (eg. /etc/resolv.conf or /etc/named.boot exists), HP will use DNS only. NIS and /etc/hosts are ignored. The host begins to use DNS when the lan0 interface is brought up. It can be switched to use DNS be creating resolv.conf, and switched to not use DNS by deleting or moving the resolv.conf file.

Again, if you have NOT installed the patch and the machine is not configured for DNS, and it is configured for NIS (eg. it has an NIS domainname, whether or not is bound), HP will use NIS only. the host begins to use NIS when the NIS domainname is set. The NIS domainname is set after the lan0 interface is brought up. By default, an HP NIS clients can make use of a non–HP NIS master server using the –b switch in the hosts map to do DNS lookups and return the information to the NIS client when hostnames are not found in the NIS host maps.

Finally, if you have not installed the patch, /etc/hosts is used. See the Appendix for more information concerning patches.

Hostname Fallback on HP–UX

A patch is currently available to allow a system administrator to configure the hostname lookup algorithm performed by the gethostname(3M) command and other related routines. This is commonly referred to as hostname fallback. HP offers a client side and a server side (NIS) solution; however, HP recommends the use of client side configuration.

In client side host fallback, a file located on the client contains a list of name services in the order they are to be used. Also, the conditions under which to attempt to use the next name service can be configured. In

To test hostname fall–back from NIS to DNS:

[“hprpap is NOT in the NIS map, so hostname lookup goes to DNS]

ss10# nslookup hprpap

```
Server:  hpfcmgw.fc.hp.com
Address:  15.2.72.254

Name:    hprpap.fc.hp.com
Address:  15.2.72.80
```

ss10# ping –sv hprpap 64 4

```
PING hprpap.fc.hp.com: 64 data bytes
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=0. time=6. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=1. time=3. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=2. time=3. ms
72 bytes from hprpap.fc.hp.com (15.2.72.80): icmp_seq=3. time=3. ms

----hprpap.fc.hp.com PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
```

See the section on electronic mail for information on setting up sendmail when DNS is used.

HP–UX 9.X

References: Administering ARPA Services (B1014–90008) Installing and Administering ARPA Services (B1014–90007)

HP–UX implementation of name resolution

The book “DNS and BIND” describes the HP–UX resolvers as follows.

HP’s resolver implementation is basically straight BIND: the HP–UX 8.0 resolver is based on BIND 4.8.3, and supports the standard domain, nameserver, and search directives. The order in which a host consults DNS, NIS and the host table is hard–wired: the host will use DNS, if DNS is configured. If DNS isn’t configured, and NIS is running, the host will use NIS. If neither DNS nor NIS is running, the host will use the host table.

The hard–wired algorithm is less flexible than what other vendors provide, but it’s easy to troubleshoot. When you can consult DNS, NIS, and the host table in any order, diagnosing user problems can be awfully difficult.

NOTICE: You probably will not want to choose to run NIS without host maps.

To use DNS as a backup:

1. Create the DNS resolver configuration file /etc/resolv.conf, and add entries for one or more name servers. You will have to find out the BIND domainname which you should use.

```
ss10# cat /etc/resolv.conf
domain fc.hp.com
nameserver    15.2.72.254
```

2. Change the NIS makefile to use the "–b" flag so that NIS will use DNS for hosts not in the NIS maps. Rebuild the NIS host maps and restart ypserv (or reboot).

```
ss10# cat /var/yp/Makefile

...
# Set the following variable to "–b" to have NIS servers use the domain
# name resolver for hosts not in the current domain.
B=–b
...

ss10# touch /etc/hosts
ss10# cd /var/yp; make

ss10# sync
ss10# sync
ss10# /etc/reboot
```

Test DNS and hostname fallback from NIS to DNS.

```
ss10# nslookup ss10

Server:  hpfcmgw.fc.hp.com
Address:  15.2.72.254

Name:    ss10.fc.hp.com
Address:  15.2.72.151
```

Chapter 10
DNS

This section describes the use of the Domain Name System (DNS), and how NIS and Domain Name System interact on Sun and HP systems. The installation and configuration of DNS name servers and databases is beyond the scope of this document. Only the use of the DNS resolver configuration files will be covered here. In section 9 we will begin with the SunOS 4.1.3 subsection.

The Domain Name System maps hostnames and IP addresses. DNS is used by most all internetworking services such as sendmail and TCP/IP services like telnet and ftp. The most common implementation of DNS is the BIND (Berkeley Internet Name Domain) software, which is incorporated into both SunOS/ Solaris and HP–UX.

SunOS 4.1.3

Reference: System and Network Administration (800–3805–10)

SunOS implementation of name resolution

The book “DNS and BIND” describes the SunOS resolvers as follows.
SunOS 4.1.1 includes BIND 4.8.1, and Solaris 2.0 includes BIND 4.8.3.

Configuring a host running SunOS can be a challenge. The behavior of the Sun resolver is arguably as different from standard BIND as major vendors get—primarily because Sun’s resolver is integrated with Sun’s Network Information Service, or NIS (see Yellow Pages).

NIS, briefly, provides a mechanism for keeping important files synchronized between hosts on a network. This includes not just /etc/hosts, but also /etc/services, /etc/passwd, and others. Sun positions DNS as a backup option to NIS: if the NIS resolver can’t find a host name (or IP address) in the NIS hosts map, you can configure it to query a name server.

Note that the resolver functionality is implemented as part of the ypserv program, which also handles other types of NIS queries. So if ypserv isn’t running, neither is your resolver! One benefit of using ypserv to resolve all queries is that you don’t need to configure the resolvers on NIS clients, only on NIS servers. The NIS clients will query an NIS server for host data, and the NIS server will query DNS, if necessary.

You can follow the party line and configure your resolver to use DNS as a backup to NIS, or you can choose to run NIS without host maps, or you can buck convention and recompile your resolver to use DNS exclusively—or you can pick up free copies of modified resolvers on the Internet. However, we must warn you that, according to our sources, Sun will not support the modified resolver option.

apt1% rlogin sparky

```
Last login: Wed Mar  2 16:46:28 from apt1
Sun Microsystems Inc.   SunOS 5.3       Generic September 1993
```

sparky% mount

```
/ on /dev/dsk/c0t3d0s0 read/write/setuid on Tue Mar  1 17:50:59 1994
/usr on /dev/dsk/c0t3d0s6 read/write/setuid on Tue Mar  1 17:50:59 1994
/proc on /proc read/write/setuid on Tue Mar  1 17:50:59 1994
/dev/fd on fd read/write/setuid on Tue Mar  1 17:50:59 1994
/tmp on swap read/write on Tue Mar  1 17:51:03 1994
/opt on /dev/dsk/c0t3d0s5 setuid/read/write on Tue Mar  1 17:51:04 1994
/home/molly_s on ss10:/althome/molly_s read/write/intr/remote on Wed Mar  2
16:38:15 1994
```

```
NFS_CLIENT=
NFS_SERVER=
```

to:

```
NFS_CLIENT=1
NFS_SERVER=1
```

It is important that these symbols are defined in the correct place in the file. You may now either execute /etc/netnfsrc if you are not making further changes or reboot regardless of further edits to the /etc/netnfsrc to start the NFS daemons. /etc/netnfsrc should be executed only once per boot. These changes take effect on the next reboot, or if /etc/netnfsrc is run.

3. The automounter will start automatically and no edit is required to the file /etc/netnfsrc2.

Solaris 2.3

Reference: System and Network Administration (800–3805–10) Solaris 2.3 Transition Guide (801–5386–10)

1. Solaris 2.3 will automatically start the automounter via the commands in the file /etc/rc2.d/S73autofs. See section 3 for further details concerning startup configuration files.

From the S73autofs file:

```
#
# Start/stop automounter
#
case ”$1” in
’start’)
        /usr/lib/autofs/automountd # start daemon
        /usr/sbin/automount        # do mounts
        ;;
’stop’)
        /sbin/umountall –F autofs  # undo mounts
        killproc automount                 # kill daemon
        ;;
*)
        echo ”Usage: /etc/init.d/autofs { start | stop }”
        ;;
esac
```

2. Verify the automounter is working as expected by logging into sparky with a home directory on ss10.

The automounter is enabled on most systems by default and uses automounter maps (often these are NIS maps) to find file systems and determine mount points. The automounter preempts the directories that it uses as mount points so that only the file systems it mounts on them are accessible. In most cases, the user's home file system has been entered on an automounter map, and the automounter mounts it on the user's /home directory. A problem can arise if you maintain your home file system on a local disk, your home file system is not included on an automounter map, and you mount it on your /home directory. In this case, the automounter does not know about your home file system, cannot mount it on /home, and prevents you from accessing it.

In order to have access to your home file system, you have to give it a mount point that has not been preempted by the automounter. To do this, you can become superuser, create a new directory, and mount your home partition on it, as in the following example:

```
% su
Password:  [enter root password]
# mkdir /usr/<username>
# mount /dev/sd0h /usr/<username>
```

You can also set up an entry in your /etc/fstab file so that your local home file system is automatically mounted whenever your system reboots or you use the mount(8) command to invoke your fstab file. (See fstab(5) for information on setting up an entry in /etc/fstab.)

If you have an entry in fstab that mounts your local home file system on /home, the automounter will not only prevent you from accessing your file system; it will prevent you from unmounting it so that you can remount it elsewhere. In this situation, you need to edit your fstab file so that /home is no longer a mount point for your home file system. You must then reboot your system; the automounter prevents you from unmounting your local file system from /home in any other way.

HP–UX 9.01: apt1 (or more generally 9.X)

References: Installing and Administering NFS Services (B1013–90009)

Enable apt1 as an NFS client and NFS server.

1. Export /users in /etc/exports.

apt1# cat /etc/exports

```
/users
```

apt1# /usr/etc/exportfs –au

apt1# /usr/etc/exportfs –av

2. (2) Enable apt1 as an NFS client and NFS server.

Edit /etc/netnfsrc, and change the following existing line:

ss10# cat /etc/auto.home

```
bill    -rw,intr ss10:/althome/bill
margo   -rw,intr ss10:/althome/margo
mik     -rw,intr ss10:/althome/mik
molly   -rw,intr apt1:/altusers/molly
shannon -rw,intr apt1:/altusers/shannon
```

ss10# cd /var/yp; make # The makefile does a yppush
to update the slave server

4. Since we just created the automounter maps and have them in NIS, we need to start the automounter on all of the systems.

klunker# /usr/etc/automount # Sun system, gets automount maps from NIS

ss10# /usr/etc/automount # Sun system, gets automount maps from NIS

See the next section for details on starting the automounter for HP–UX machines.

NOTICE: If you need to stop the automounter, do not use SIGKILL (kill –9). Instead, use SIGTERM to allow the automounter to exit cleanly.

CAUTION: AUTOMOUNTER & /home
On Sun systems, the automounter is started by /etc/rc.local. By default, it runs with no options. If the Sun system is our NFS server for /home, we could not just start the automounter without explicitly telling it not to automount over /home. The automounter uses the auto.home map which tells it to automount /home. This results in /home/bill becoming a link to /home/bill, thus making the local /home/bill directory inaccessible to anyone on the server. Use the workaround of starting the server's automounter as follows:

/usr/etc/automount /home –null

This problem is explained in "Solaris 1.1 SMCC Version A Open Issues", page 10–4, as follows:

Automounter May Cover
/home on System Mounting
/home from Local Disk
(1086010)

If your system is using the automounter and you mount the home partition of your local disk on /home, the automounter may cover your /home directory and prevent you from accessing it.

Chapter 9
NFS and the Automounter

By default, SunOS 4.1.3 systems run NFS and the automounter. On HP–UX 9.X, NFS and the automounter are not run by default. They can be started via /etc/netnfsrc and /etc/netnfsrc2, or by using SAM.

In our test network, all systems are NFS servers and clients, and they run the automounter. In section 9 we will begin with the SunOS 4.1.3 subsection. Since users' home directories are often automounted in Sun environments, we set up the test network so that the Sun server ss10 houses home directories on a non–root partition. We also export those directories (eg. /disk2 or /althome) to all other machines in the test network so that users' home directories can be automounted on all of the systems. Other file systems are exported and mounted as desired. The example below shows the HP–UX 9.01 system, apt1, exporting /users. These instructions also apply to 9.X.

SunOS 4.1.3: ss10

Reference: System and Network Administration (800–3805–10)

1. SunOS 4.1.3 will automatically start the automounter via the commands in the file /etc/rc.local.

2. Export /althome in /etc/exports. Execute exportfs.

ss10# cat /etc/exports

```
/althome
```

ss10# /usr/etc/exportfs –au # unexport
ss10# /usr/etc/exportfs –av # re–export in verbose mode

3. Create the auto.master and auto.home NIS maps, making sure they get distributed to the NIS slave server.

ss10# cat /etc/auto.master

```
# Directory     Map             NFS Options
/home           auto.home       –rw,intr
/users          auto.home       –rw,intr
```

2. Also during installation, we were asked to enter the default domainname

sparky% cat /etc/defaultdomain

```
hpsun.wsg
```

3. Also, during installation, we chose to enter the server name ss10.

sparky% ypwhich

```
ss10
```

> suninstall

Select custom install.

For ss10, we designated it as an NIS master in the HOST form of the install.

The machine reboots after loading the software and you'll be in single–user mode. At this point, we set up NIS. (If we tried to continue without setting up NIS, ss10 tried to bind to an NIS server and it would hang because it was the first Sun system we brought up in our test network.) The reason the system hangs is because SunOS always tries to start ypbind at boot time.

Mount the /var partition.
mount –a

Build the default NIS maps.
cd /var/yp
/usr/etc/yp/ypinit –m

Bring the system up in multi–user mode.
exit

Setting up a SunOS NIS client, klunker:

1. Edit /etc/defaultdomain and add a line containing the domainname.

cat /etc/defaultdomain

```
hpsun.wsg
```

2. Start ypbind (or reboot) to bind to the NIS server.

3. Use ypwhich to determine ypmaster.

Solaris 2.3

Reference: Solaris 2.3 Basic INstallation Guide (801–5278–10) System and Network Administration (800–3805–10)

1. During the installation, we chose to configure the Solaris 2.3 machine (sparky) as an NIS (NOT NIS+) client. NIS+ is outside the scope of this document.

5. To keep this slave server up to date with the master server, optionally create a cron script which will periodically transfer the NIS maps from the master server. Some example scripts are provided in /usr/etc (ypxfr_1perday, ypxfr_2perday, and ypxfr_1perhour).

Sample file for ypxfr_1perday

```
#   @(#)ypxfr_1perday:   $Revision: 1.8 $   $Date: 94/03/16   15:22:37 $
#
#  (c) Copyright 1987, 1988 Hewlett–Packard Company
#  (c) Copyright 1985 Sun Microsystems, Inc.
#
#  ypxfr_1perday – Do daily Network Information Service map check/updates

/usr/etc/yp/ypxfr group.bygid
/usr/etc/yp/ypxfr group.byname
/usr/etc/yp/ypxfr networks.byaddr
/usr/etc/yp/ypxfr networks.byname
/usr/etc/yp/ypxfr protocols.byname
/usr/etc/yp/ypxfr protocols.bynumber
/usr/etc/yp/ypxfr rpc.bynumber
/usr/etc/yp/ypxfr services.byname
/usr/etc/yp/ypxfr ypservers
/usr/etc/yp/ypxfr vhe_list
```

NOTICE: Note–this is optional. You only need to do this if your master doesn't know about the slave, or if there are frequent changes to the NIS maps besides passwd.

ypmake will automatically push the database to each slave server each time it is run.

If the HP–UX machine is to be used as the NIS server and you are using the automounter, you will need to modify the ypmake script to handle autmounter maps. A sample ypmake script that handles automounter maps can be found in an Appendix of this document. Also see Chapter 9, "NFS Automounter."

SunOS 4.1.3

References: Solaris 1.1 Release and Install (800–7600–10)
System and Network Administration (800–3805–10)

Setting up the SunOS NIS server, ss10:

In our test network, the NIS server, ss10, was configured for NIS during the installation of SunOS 4.1.3.

After powering up the system and booting it from CD–ROM, install the SunOS mini–root. When the system reboots, run the suninstall utility to finish the installation. (See Chapter 5 for more details on the installation.)

4. Set up the HP–UX client as an NIS slave server (Optional)

Edit /etc/netnfsrc, and change the following existing line:

```
NIS_SLAVE_SERVER=
```

to:

```
NIS_SLAVE_SERVER=1
```

This will enable servers at the next boot or as stated above when /etc/netnfsrc is run (once per boot).

Get the NIS maps from the NIS master server, ss10. # /usr/etc/yp/ypinit –s ss10

or more generally:

– /usr/etc/yp/ypinit –s <ip addr of NIS MASTER> DOM="mydomain.com"
Use the IP address of NIS Master. "mydomain.com" is an example NIS domain name.

You will be asked if you want to abort on errors. You will need to correct any errors and rerun ypinit. If the NIS domain already exists, you will be asked if you want to delete the old database files and directory (yes you normally would, unless you have the wrong domain!) The NIS Slave server will download its' copy of the NIS maps from the MASTER SERVER.

To enable NIS SLAVE SERVER before the next reboot:

ypwhich –> bound to an NIS server? If not, then:
domainname "hpsun.wsg"
/etc/ypbind

Then, start up ypserv for your domain:

#/usr/etc/ypserv
/usr/etc/yp/ypset ip.addr.of.slave (bind to yourself)

Check to see if bound:

ypwhich
ypcat passwd

Edit /etc/netnfsrc, and change the following existing line:

```
NIS_CLIENT=
```

to:

```
NIS_CLIENT=1
```

and change the following existing line:

```
NISDOMAIN=
```

to:

```
NISDOMAIN=“hpsun.wsg”
```

Quotes around the domain name are needed to ensure that the shell doesn’t mistakenly try to interpret the “.” It is important that these symbols are defined in the correct place at the beginning of this file.

You may now either execute /etc/netnfsrc if you are not making further changes (eg. NOT setting this machine up as a slave server as described below) or reboot regardless of further edits to the /etc/netnfsrc. /etc/netnfsrc should be executed only once per boot. These changes take effect on the next reboot, or if /etc/netnfsrc is run to bring up NIS.

To enable NIS Client before the next reboot:

```
# domainname “hpsun.wsg”
# /etc/ypbind
```

Check to see if bound:

```
# ypwhich
```

NOTICE: This might take up to a minute to get bound to an NIS server returning “domain mydomain.com not bound”. In that case, retry the ypwhich a few times.

```
# ypcat passwd
```

Chapter 8
NIS

In this section, the HP–UX workstation will be set up as an NIS client and slave server to a Sun NIS master server. The domain name used is “hpsun.wsg”. Note that you cannot configure NIS with SAM.

NOTICE: Domain Name Services are not running at this point. See Section 10 for details on the interaction between NIS and DNS.

HP–UX 9.X

References: Installing and Administering NFS Services (B1013–90009)

1. Customize the local files to include any system–specific information that should be accessed before going to NIS. Use the appropriate escape sequences for the files /etc/passwd and /etc/group.

Add “+” entries to “escape” /etc/passwd and /etc/group to NIS:After the “local” passwords in /etc/passwd, add the following:

+::0:0:::

DO NOT PUT A “*” in the password field!!

(HPUX assumes a “*” represents an invalid passwd file entry and ignores it.) This entry does not pose a security risk. Login has been modified by HP to disallow a login by a userid of “+”. Keep “system” users in the local /etc/passwd file e.g. root, bin...

After the “local” group ID’s in /etc/group, add the following:

+

or +:

Keep “system” group ID’s in the local /etc/group file e.g. bin

2. Make sure the NIS master has the appropriate information entered into its maps for the HP–UX system. Make sure the NIS master provides maps for HP such as hosts, services, passwords, groups, automount home directories, etc.

NOTICE: HP requires that the NIS services map be provided if configured as an NIS client, unlike some other vendors which permit local services files.

3. Set up the system as NIS client.

4. Setting the netmask:
The /etc/netmasks file contains network masks used to implement IP standard subnetting. For each network that is subnetted, a single line should exist in this file with the network number, any number of SPACE or TAB characters, and the net–work mask to use on that network. For example,

```
15.0.0.0  255.255.248.0
```

5. Setting up static routes:
To set a default route to a gateway, place the IP address of that gateway in the file /etc/defaultrouter. Reboot or run this route command:

route –f add default ‘cat /etc/defaultrouter‘ 1

Verify the route with the netstat command.

% netstat –r

```
Routing Table:
   Destination           Gateway           Flags  Ref   Use   Interface
-------------------- -------------------- ----- ----- ------ ---------
localhost            localhost            UH        0      2  lo0
15.2.72.0            sparky               U         3   1550  le0
224.0.0.0            sparky               U         3      0  le0
default              15.2.72.1            UG        0     45
```

5. Setting up static routes:
To set a default route to a gateway, place the IP address of that gateway in the file /etc/defaultrouter. Reboot or run this route command:

route –f add default ‘cat /etc/defaultrouter‘ 1

Verify the route with the netstat command.

% netstat –r

```
Routing tables
Destination                Gateway  Flags    Ref      Use      Interface
localhost                  localhost         UH       0        64       lo0
default             15.2.72.1        UG       0        17735    le0
15.2.72.0                  ss10              U        28       103421   le0
```

Solaris 2.3

Reference: SunOS 5.3 Administering TCP/IP and PPP (801–5296–10)

1. Verify basic network connectivity to the HP–UX system by pinging it.

```
% /usr/sbin/ping –sv 15.2.72.150 64 4
PING 15.2.72.150: 64 data bytes
72 bytes from apt1 (15.2.72.150): icmp_seq=0. time=7. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=1. time=1. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=2. time=1. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=3. time=1. ms

----15.2.72.150 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round–trip (ms)  min/avg/max = 1/2/7
```

2. Add the hostname and IP address for the HP–UX system to the appropriate name service database (/etc/hosts, NIS hosts map, Domain Name System database).

3. Check the state of the network interface with the ifconfig command. By default, the interface lan0 should be up.

% /etc/ifconfig le0

```
le0: flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST> mtu 1500
    inet 15.2.72.153 netmask fffff800 broadcast 15.2.79.255
```

SunOS 4.1.3

References: System and Network Administration (800–3805–10)
Solaris 1.1 Release and Install (800–7600–10)

1. Verify basic network connectivity to the HP–UX system by pinging it.

% ping –sv 15.2.72.150 64 4

```
PING 15.2.72.150: 64 data bytes
72 bytes from apt1 (15.2.72.150): icmp_seq=0. time=1. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=1. time=1. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=2. time=1. ms
72 bytes from apt1 (15.2.72.150): icmp_seq=3. time=2. ms

----15.2.72.150 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round-trip (ms)  min/avg/max = 1/1/2
```

2. Add the hostname and IP address for the HP–UX system to the appropriate name service database (/etc/hosts, NIS hosts map, Domain Name System database).

3. Check the state of the network interface with the ifconfig command. By default, the interface le0 should be up.

% /etc/ifconfig le0

```
le0: flags=63<UP,BROADCAST,NOTRAILERS,RUNNING>
        inet 15.2.72.151 netmask ff000000 broadcast 15.2.72.0
```

4. Setting the netmask:
According to /etc/rc.local and the ifconfig man page, you can set the netmask from the netmasks.byaddr if you are running NIS, or from /etc/netmasks if you are not running NIS. We could build a netmasks map, but NIS wouldn't recognize it. For example, "ypcat netmasks" says "no such map in server's domain". We ended up setting netmask manually /etc/rc.local using:

ifconfig –a netmask 255.255.248.0 broadcast + > /dev/null

The /etc/netmasks file contains network masks used to implement IP standard subnetting. For each network that is subnetted, a single line should exist in this file with the network number, any number of SPACE or TAB characters, and the network mask to use on that network. For example,

15.0.0.0 255.255.248.0

NOTICE: HP–UX NIS ypmake and ypinit do not build the netmask map, nor is it used by HP–UX clients.

At a shell prompt, execute the route command.

```
# /etc/route add default 15.2.72.1 1
```

Verify the route with the netstat command.

```
# netstat –r

Routing tables
Destination      Gateway           Flags     Refs     Use  Interface
localhost        localhost         UH          0     2800  lo0
15.2.72          apt1              U           0       37  lan0
default          15.2.72.1         UG          0      291  lan0
```

5. Verify basic network connectivity to the Sun network by pinging one of the Sun systems.

```
# /etc/ping ss10 64 4

PING ss10: 64 byte packets
64 bytes from 15.2.72.151: icmp_seq=0. time=1. ms
64 bytes from 15.2.72.151: icmp_seq=1. time=1. ms
64 bytes from 15.2.72.151: icmp_seq=2. time=1. ms
64 bytes from 15.2.72.151: icmp_seq=3. time=1. ms

----ss10 PING Statistics----
4 packets transmitted, 4 packets received, 0% packet loss
round–trip (ms)  min/avg/max = 1/1/1
```

NOTICE: You may want to use the System Administration tool (SAM) to configure your system for networking with these entries.

If you change the system name (”hostname”) or IP address, the preferred method is to run ”set_parms hostname”. It’s hostname, spelled out hostname, not the name of the HPUX host. This will change the name of the host in /etc/hosts, and in /etc/src.sh (where it is stored between boots). This will take effect on the next boot. It is best to also check the following if changing the hostname or IP address:

1. Does /etc/hosts have the correct hostname and IP address?
2. If using DNS, does /etc/resolv.conf reflect changed IP addresses, if necessary, for the DNS server? Did you inform the DNS nameserver admin about changed IP address and/or hostname?
3. If a DNS server, either run hosts_to_named or edit the db.* files by hand if needed.
4. If an NIS client and not a server, did you tell the NIS Master server admin or edit the /etc/hosts on the NIS master server, to reflect the new hostname or IP address?
5. If changing IP addresses, did you need to make any changes to /etc/bootptab and also configure any network printers and xterminals that boot with bootp?

device should be reset with landiag is when ifconfig returns a status line without an ”UP” designation for the device.

3. Set the appropriate netmask for the subnet that this system is on. In this case, the netmask is 255.255.248.0.

Edit /etc/netlinkrc.
Change the line

```
*) /etc/ifconfig lan0 inet ‘hostname‘ up
```

to

```
*) /etc/ifconfig lan0 inet ‘hostname‘ netmask 255.255.248.0 up
```

At a shell prompt, execute the new ifconfig command.

```
# /etc/ifconfig lan0 inet ‘hostname‘ netmask 255.255.248.0 up
```

Verify the netmask.

```
# /etc/ifconfig lan0

lan0: flags=63<UP,BROADCAST,NOTRAILERS,RUNNING>
          inet 15.2.72.150 netmask fffff800 broadcast 15.2.79.255
```

4. If there is a designated gateway for the subnet this system is on, you can set up a static route to that gateway.

Edit /etc/netlinkrc.

Change the line

```
*) # add route commands for specific nodes here
```

to

```
*) /etc/route add default 15.2.72.1 1
```

Notations to be aware of:

Table 7–2. Supported Ethernet Controller Devices

Network Designation	Network Type	Platform
lo0	loopback	All
lan0	Ethernet (802.3)	HP–UX 9.X
le0	LANCE Ethernet Board	SunOS 4.1.3*
ie0	Intel Ethernet Board	SunOS 4.1.3*
le0	LANCE Ethernet Board	Solaris 2.3
ie0	Intel Ethernet Board	Solaris 2.3

* From Table 11–4 Sun Supported Ethernet Controller Devices, page 319, Chapter 11 of System and Network Administration (800–3805–10)

HP–UX 9.X

References: Installing and Administering LAN/9000 (98194–60530)
Installing and Administering ARPA Services (B1014–90008)
Using ARPA Services (B1014–90006)

The following sequence of events is performed to place an HP–UX machine into an established network setting up TCP/IP communications.

1. Make sure there is an entry for the HP–UX system's IP address and hostname in /etc/hosts (create the file if it does not exist). (At this point, NIS was not running on the HP–UX system.) Check the system name in /etc/src.sh (/etc/src.csh if root uses csh)

cat /etc/hosts

```
127.0.0.1       localhost       loopback
15.2.72.150     apt1
```

2. Determine the state of the network interface with the ifconfig command. By default, the interface lan0 should be up.

/etc/ifconfig lan0

```
lan0: flags=63<UP,BROADCAST,NOTRAILERS,RUNNING>
         inet 15.2.72.150 netmask ff000000 broadcast 15.255.255.255
```

When an HP workstation is powered up while not connected to a terminated LAN, the lan device /dev/lan0, can not be initialized with ifconfig. When this situation occurs, the device must be reset using /usr/bin/landiag (menu "lan", option "reset") before calling ifconfig. A telltale sign that the

Chapter 7
TCP/IP Communications

ARPA Services is a combination of utilities developed by the University of California at Berkeley (UCB), Cornell University, and Carnegie–Mellon University (CMU). These offerings allow file transfers, remote logins, remote command execution, lookup services, and electronic messages between computer systems.

The suite of services available on these machines are:

Table 7–1. ARPA Services

Service	Description	SunOS 4.1.3	Solaris 2.3	HP–UX 9.X
telnet	remote terminal login	Y	Y	Y
rlogin	remote terminal login	Y	Y	Y
rsh	remote command execution	Y	Y	N
remsh	remote command execution	N	N	Y
rexec	returns stream to command	Y	Y	Y
ftp	file transfer	Y	Y	Y
tftp	trivial file transfer	Y	Y	Y
talk	talk service	Y	Y	N*
biff	mail notification	Y	Y	N*
finger	user identification	Y	Y	Y

* Public domain versions of these programs can be obtained from the Interworks anonymous ftp site (iworks.ecn.uiowa.edu [128.255.18.10]), or one of the HP–UX Software Archive anonymous ftp sites (ftp.cae.wisc.edu [144.92.4.15]).

NOTICE: remsh and rsh are essentially the same command with different names. You may set an alias if you are accustomed to typing one or the other.

5. If you wish, you may run pkginfo to examine the list of available packages, for example:

```
sparky# pkginfo –d /cdrom/solaris_2_2_ab
application SUNWabook       Solaris 2.2 System AnswerBook
```

6. To begin the installation run pkgadd, for example:

```
sparky# pkgadd –d /cdrom/solaris_2_2_ab
```

7. At this point, you will be asked a series of questions and be required to make choices concerning the installation. Follow the instructions in the installation guide.

8. Watch for a message indicating a successful installation.

9. The eject command will eject the CD and unmount the CD–ROM.

4. Once you have the password, you can perform the following to install the passwd:

For the C 2.01 product, license installation is performed by running the Install_License command located in the installation directory, /usr/lang/Install_License.

```
# cd /usr/lang
# Install_License
```

Installing Solaris 2.3

Reference: Solaris layered software products each come with their own software installation guides. There is no general purpose software installation process which is applied across all layered products.

The following procedure documents an installation of Solaris 2.2 System AnswerBook from CD–ROM. This is a layered product which is codeword licensed.

Product Installation

1. Insert the System AnswerBook CD–ROM into the caddy and insert the caddy into the drive. See Section 4, subsection ”Adding a Sun CD–ROM drive” for details on how the CD–ROM is mounted automatically by the Volume Management software.

2. Be sure you are superuser.

3. Determine the space available in the recommended /opt partition using the command:

```
sparky# df –k /opt

Filesystem            kbytes    used   avail capacity  Mounted on
/dev/dsk/c0t3d0s5      75335   39114   28691    58%    /opt
```

4. Verify that the CR–ROM is mounted and verify the name:

```
sparky# ls /cdrom

cdrom0          solaris_2_2_ab
```

```
Enter system type [standalone|server]: standalone

Currently the destination directory is /usr/lang,
Do you want to change the destination directory [y/n]? N

** COMMENT: Our test network system did not have enough disk
            space to load the software in the /usr/lang
            directory, but we created a link to /tools/usr/lang
            on a secondary disk.

Ready to install Sun C – 2.0.01 in /usr/lang,
Do you want to continue [y/n]? Y

         . . . software installation messages . . .

Done analyzing results [y/n]? Y
```

Post Installation Configuration

If the product you loaded contains shared libraries, those libraries should be cached into the system tables for better performance. Add the shared library path to the system tables by adding the line to /etc/rc.local

ldconfig <directory path to shared library>

for example, for C

ldconfig /usr/lang/SC2.0.1

Product licensing

If this is a licensed product, you will need to obtain a software license codeword. For SunSoft products, the process is as follows:

1. Collect the following information

- results from hostname(1)
- results from hostid(1)
- SunSoft Proof of license Certificate

2. Call the distribution Center 1–800–872–4786 (4SUN) You will be asked for the information from step 1, plus the following information:

- Contact name, Address, Phone
- Company
- Serial# and Authorization code from License Certificate

3. A passwd will be either FAXed or emailed to you.

Installing on SunOS 4.1.3

Reference: SunOS layered software products each come with their own software installation guides. There is no general purpose software installation process which is applied across all layered products.

The following procedure documents an installation of SunOS C 2.0.01 onto SunOS 4.1.3 from CD–ROM. This is a layered product which is codeword licensed.

Product Installation

1. mount CD–ROM

```
# mount –r /dev/sr0 /cdrom
```

2. Install the software.

SunOS Software CD–ROMs' installation utilities are packaged on the CD–ROM. The installation utilities are called cdmanager, and cdm. cdmanager is a GUI interface to the install program, while cdm is a typical based install program.

```
# cd /cdrom/Solaris_1.0
# ./cdmanager
```

3. If the CD–ROM contains more than one product, you will be presented with a set of icons in the CDmanager window. Select the icon which represents the product you wish to install. In this case we are installing the C compiler, so we will select the C icon.

Select the icon, with right mouse button, and select "Install". You will be presented with a product information window. Ensure that your "focus" is on that window, and follow the instructions in that window to install the product. Example prompts/questions are:

```
Do you want to continue (installation) [y/n]? > Y

Do you want to install the licensing product [y/n]? > Y

** COMMENT: This is not needed if you already have SoftSoft


            Licensed products.

Do you want to install the AnswerBook [y/n]? > Y

** COMMENT: This is the portion of AnswerBook relating to
            this product, SunOS C 2.0.01.
```

Press ”Done”.

Note, some software products have their own codeword protection scheme which does not require you to enter a codeword during the installation process. If the software on the CD–ROM is codeword protected, it will inform you of the codeword requirement, but still allow you to load the software.

Select ”Select/View Partitions and Filesets ...”

Using the up and down arrow keys, move through the products on the CD–ROM, and for all products you wish to install, change the ”n” to a ”y”, for ”yes, I would like to install this product”.

Select ”Start Loading”, function key 4.

You should receive the following message:

```
*******************************************************************
The update should complete without additional attention.
Will load XX filesets (xxx Kbytes), including N fileset (nnn Kbytes)
directly selected and X fileset (xxx Kbytes) selected only due to
dependencies.
Review the log file, /tmp/update.log, afterward by:
1) typing ”more /tmp/update.log”;
2) finding the correct date and time heading;
3) looking for any messages that begin with ERROR or WARNING.

This is your last chance to change your mind about your selections, exit
the program, or escape to a shell.  Start loading filesets now?  (y or n)
*******************************************************************
```

Enter ”y” to ”Start loading filesets now?”.

4. Unmount the CD–ROM

```
# umount /cdrom
```

5. Check /tmp/update.log for errors when the installation is finished.

Chapter 6
Layered Software Installation

This section covers software installation of layered software products from CD–ROM.

Installing on HP–UX 9.X

Reference: Installing and Updating HP–UX 9.0 (B2355–90039)
HP–UX Reference – Vol 3 Section 1M

The following procedure documents an installation of HP–UX 9.X on a new HP workstation (no EISA card) from CD–ROM. The log file from the installation is /tmp/update.log.

1. Connect the CD–ROM drive to the workstation. Insert the product CD.

2. Create a mount point for the CD–ROM and mount the product CD.

```
# mkdir /cdrom
# chmod 777 /cdrom
# /etc/mount /dev/dsk/c201d1s0 /cdrom
```

3. Install the layered software using update(1m).

```
# /etc/update
```

Select ”Change Source or Destination –>”.

Select ”From CD–ROM (directory) to Local System...”

Tab to the ”Source Directory”, and specify the CD–ROM mount directory. For this example: /cdrom

Tab to the ”Destination Directory”, and if needed change installation location. For this example: /

If this is Codeword Protected software, tab to the ”Codeword” field and enter your codeword.

```
Setting default interface for multicast:  add net 224.0.0.0: gateway sparky
syslog service starting.
Print services started.
volume management starting.
The system is ready.

sparky console login:
```

```
    ( Apply )          ( Cancel )          ( Help... )

              [ Quick Install Configuration ]

System Type:        Standalone
Software Selection: Solaris 2.3, Entire Distribution
File Systems:       File System     Size (MB)  Disk     Space Used
                    /                  22.00   c0t3d0          65%
                    swap               81.00   c0t3d0           0%
                    /opt               78.00   c0t3d0          69%
                    /usr              222.00   c0t3d0          36%

    ( Begin Install )    ( Cancel )          ( Help... )

making filesystem on /dev/rdsk/c0t3d0s0 ...
making filesystem on /dev/rdsk/c0t3d0s5 ...
making filesystem on /dev/rdsk/c0t3d0s6 ...

Initial Installation of: Solaris 2.3

       MBytes Installed:  xxx.xx
       MBytes Remaining:  xxx.xx

           Time Elapsed:  xx:xx:xx
         Time Remaining:  xx:xx:xx

              Installing:  Core Architecture, (Root)

  ###
  |        |        |        |        |        |
  0       20       40       60       80      100
```

What is your root password?

A root password may contain any number of characters, but only the first eight characters in the password are significant. For example, if you enter ’a1b2c3d4e5f6’ as your root password, then’‘a1b2c3d4’ could also be used to gain root access. If you do not want a root password, press RETURN.

You will be asked to type the root password twice. (It will not appear on the screen as you type it.)

If you have questions consult your Install documentation.

Root password:

```
What is your time zone?

        Eastern
        Central
       >Mountain
        Pacific
        Yukon
        East–Indiana
        Arizona
        Michigan
        Samoa
        Aleutian
        Hawaii
        none of these – return to regions menu

What is the current date and time?

Use digits in all fields

        01/19/94  15:56

        Year   (4 digits) : 1994
        Month  (1–12)     : 01
        Day    (1–31)     : 19
        Hour   (0–23)     : 15
        Minute (0–59)     : 56

Is the following information correct?

Time zone:  US/Mountain
Date and time:  01/19/94 15:59

        No, re–enter information
       >Yes, continue
```

4. Start the installation in the [Solaris Installation] menu. I chose to use Quick Install.

```
( Quick Install... )
( Custom Install... )
( Exit Install.. )
( Help... )

        [ Quick Install: Software Configurations ]

[* Entire Distribution.............................. 281.40 MB ]
[  Developer System Support......................... 209.24 MB ]
[  End User System Support.......................... 125.69 MB ]
[  Core System Support.............................  45.55 MB ]
```

```
IP address format is four decimal numbers separated by periods
(example 129.200.9.1).

        Server's hostname: ss10

        Server's IP address: 15.2.72.151

Does this workstation's network have sub–networks?

     No
     >Yes

This is your default netmask value.  You may change it if necessary,
but the format must remain as four numbers separated by periods.

        Netmask: 255.255.248.0

Is the following information correct?

Name service:  NIS (formerly yp) Client
Domain name:  hpsun.wsg
Server location method:  Specify Hostname
Server's hostname:  ss10
Server's IP address:  15.2.72.151
Network is sub–netted:  Yes
Netmask:  255.255.248.0

        No, re–enter information
       >Yes, continue

What is your geographic region?

        Africa
        Western Asia
        Eastern Asia
        Australia / New Zealand
        Canada
        Europe
        Central America
        South America
       >United States
        other – offset from GMT
        other – specify rules file
```

```
The format is four decimal numbers separated by periods
(example 129.200.9.1).  Use the address that was assigned by
local or internet management.

If you have questions consult your Networking documentation.
```

IP address: 15.2.72.153

```
Is the following information correct?

Hostname:  sparky
Connected to network:  Yes
IP address:  15.2.72.153

        No, re–enter information
       >Yes, continue

Do you want to configure this system as a client of a name service?
If so, which name service do you want to use?  If you do not want to
use a name service select 'none' and consult your Install documentation.

        NIS+ Client
       >NIS (formerly yp) Client
        None – use /etc files

What is the name for the (existing) name service domain?

Make sure you enter the name exactly as it is defined, including
capitalization and punctuation.
```

Domain name: hpsun.wsg

```
Do you want your name server to be located automatically?  Or do you
want to specify the server's hostname?  If you choose to have your
name server located automatically, then a server must exist on your
local sub–network.

        Locate server automatically
       >Specify hostname of server

What is the hostname and IP address for your name server?

Hostnames must be at least two characters in length, and may contain
letters, digits, and minus (–) signs.  A hostname may not begin or end
with a minus (–) sign.
```

Installing Solaris 2.3

Reference: Solaris 2.3 Basic Installation Guide (801–5278–10)

The following documents the installation of Solaris 2.3 on a SPARCstation LX from CD–ROM. The system is installed as a networked standalone system. The log file from the installation is /var/sadm/install_data/install_log.

1. Assemble the system. See the "Hardware Owner's Guide" which comes with your system for full details.

2. Power on the system, boot from CD–ROM.

```
SPARCstation LX, Keyboard Present
ROM Rev. 2.9, 48 MB memory installed, Serial #145468
Ethernet address 8:0:20:4:b3:3c2, Host ID: 8002383c.

Rebooting with command: cdrom
Boot device: /iommu/sbus/espdma@4,8400000/esp@4,8800000/sd@6,0
                                                        File and args:
SunOS Release 5.3 Version Generic [UNIX(R) System V Release 4.0]
Copyright (c) 1983–1993, Sun Microsystems, Inc.
WARNING: clock gained 99 days –– CHECK AND RESET THE DATE!
Configuring the /devices directory
Configuring the /dev directory
Starting OpenWindows...
```

<OpenWindows Version 3.3 logo appears, then a Solaris Install window comes up.>

3. Answer the questions for system information.

```
The system is coming up.  Please wait.

What is the hostname for your workstation?

Hostnames must be at least two characters in length, and may contain
letters, digits, and minus (–) signs.  A hostname may not begin or end
with a minus (–) sign.
```

Hostname: sparky

```
Will this system be connected to a network?

        No
       >Yes

What is your Internet Protocol (IP) address?
```

```
PARTITION  START_CYL  BLOCKS  SIZE  MOUNT PT  PRESERVE(Y/N)
=============================================================================
    a      0          33120   16    /              n
    b      46         66240   33
    c      0          828720  423
    d      0          0       0
    e      0          0       0
    f      0          0       0
    g      138        362160  184   /usr           n
    h      641        367200  187   /home          n

**********************************NOTE*****************************************
*                                                                             *
*  For now, just increase the size of /usr to 250 Mbytes.                     *
*                                                                             *
**********************************NOTE*****************************************

MAIN MENU
-----------------------------------------------------------------------------
              Sun Microsystems System Installation Tool

              ( + means the data file(s) exist(s) )

              +     assign host information
              +     assign disk information
              +     assign software information

              X  start the installation

                 exit SunInstall

System Installation Begins:
Label disk(s):
    sd0
Create/check filesystems:
Creating new filesystem for / on sd0a
newfs /dev/rsd0a >> /etc/install/suninstall.log 2>&1

Creating new filesystem for /home sd0h
newfs /dev/rsd0h >> /etc/install/suninstall.log 2>&1

Creating new filesystem for /usr sd0g
newfs /dev/rsd0g >> /etc/install/suninstall.log 2>&1

Setting up server file system for services
Extracting the sunos 4.1.3C sun4m 'root' media file.
Extracting the sunos 4.1.3C sun4m 'usr' media file.
...
```

< reboot messages >

```
     login:
```

```
     ************************* NOTE *****************************
     * Selected the following software:                          *
     *  root                    OpenWindows_demo                *
     *  usr                     Graphics                        *
     *  Kvm                     Manual                          *
     *  Install                 Security                        *
     *  Networking              Shlib_Custom                    *
     *  Debugging               SunView_Programmers             *
     *  RFS                     OpenWindows_Programmers         *
     *  Sys                     Text                            *
     *  System_V                User_Diag                       *
     *  TLI                     uucp                            *
     *  OpenWindows_Users                                         *
     *  OpenWindows_Fonts                                         *
     *  SunView_Users                                             *
     ************************* NOTE *****************************

MAIN MENU
-------------------------------------------------------------------------
              Sun Microsystems System Installation Tool

              ( + means the data file(s) exist(s) )

              +     assign host information
              +     assign disk information
              +     assign software information

                 start the installation

                 exit SunInstall

**********************************NOTE*********************************
*                                                                     *
*  At this point, go back and adjust the size of /usr to add additional *
*  space in that partition.  Use ^B to get back to the DISK FORM.     *
*                                                                     *
**********************************NOTE*********************************

DISK FORM
-------------------------------------------------------------------------
Attached Disk Devices :
  x[sd0]

Disk Label : [default]  [use existing]  [modify existing]  x[data file]
Free Hog Disk Partition : [d]  [e]  [f]  x[h]
Display Unit            : x[Mbytes]  [Kbytes]  [blocks]  [cylinders]
```

```
PARTITION  START_CYL  BLOCKS  SIZE  MOUNT PT  PRESERVE(Y/N)
=============================================================================
    a      0          33120   16    /              n
    b      46         66240   33
    c      0          828720  423
    d      0          0       0
    e      0          0       0
    f      0          0       0
    g      138        92160   47    /usr           n
    h      266        637200  326   /home          n
```

```
**********************************NOTE*********************************
*                                                                       *
*  Change size of /usr to 5 MB per instructions on page 6–26. This      *
*  will allow SunInstall to make /usr as big as needed to hold the      *
*  software you select. You can then later on increase /usr if neces-   *
*  sary.   Partition   b   is   typically   the   swap   partition.      *
*  Partition c addresses the entire disk and can be used if you do      *
*  not wish to have separate partitions for /, /usr, /home, etc., and   *
*  do not want any swap on this device.                                 *
*                                                                       *
**********************************NOTE*********************************
```

```
MAIN MENU
-----------------------------------------------------------------------
              Sun Microsystems System Installation Tool

              ( + means the data file(s) exist(s) )

              +     assign host information
              +     assign disk information
                 X  assign software information

                 exit SunInstall

SOFTWARE FORM
-----------------------------------------------------------------------
Software Architecture Operations :
    x[add new release]  [edit existing release]

Media Information :
    Media Device   :  [st0] [st1] [st2] [st_] [xt0] [mt0] [fd0] x[sr0]
    Media Location : x[local]  [remote]

Choice : [all]  [default]  [required] x [own choice]
    Executables path :  /usr
    Kernel executables path :  /usr/kvm
```

```
------------------------------------------------------------------------

MAIN MENU

              Sun Microsystems System Installation Tool

              ( + means the data file(s) exist(s) )

                 X  assign host information

                 exit SunInstall

HOST FORM
------------------------------------------------------------------------
Workstation Information:
         Name: sparky
         Type: x[standalone]  [server]  [dataless]

Network Information :
    Ethernet Interface : [none]  x[le0]

    Internet Address   : 15.2.72.153
    NIS Type           : x[none]  [master]  [slave]  [client]

Misc Information :
    Reboot after completed : x[y]  [n]

MAIN MENU
------------------------------------------------------------------------
              Sun Microsystems System Installation Tool

              ( + means the data file(s) exist(s) )

              +     assign host information
                X  assign disk information

            exit SunInstall

DISK FORM
------------------------------------------------------------------------
Attached Disk Devices :
  x[sd0]

Disk Label : x[default]  [use existing]  [modify existing]
Free Hog Disk Partition : [d]  [e]  [f]  x[h]
Display Unit            : x[Mbytes]  [Kbytes]  [blocks]  [cylinders]
```

```
What would you like to do?
         1–reboot using the just–installed miniroot
         2– exit into single user shell
Enter a 1 or 2: 1 <cr>

rebooting from /iommu...
syncing file systems...done
rebooting ...
Resetting...

...
```

< more boot messages >

4. Run SunInstall to install the OS.

```
# suninstall

Welcome to SunInstall

Remember: Always back up your disks before beginning an installation. SunIns-
tall provides two installation methods:

1. Quick installation:

This option provides an automatic installation with a choice
of standard installations, and a minimum number of questions asked.

2. Custom installation:

Choose this method if you want more freedom to configure your
system. You must use this option if you are installing your
system as a server.

Your choice (or Q to quit) >> 2 <cr>

Enter the local time zone name (enter ? for help):

>> US/Mountain <cr>

Is this the correct date/time: Tue Dec 21 12:49:59 MST 1993

[y/n] >> y <cr>
```

```
ANALYZE MENU:
         read       – read only test (doesn’t harm SunOS)
         ...
analyze> read <cr>
Ready to analyze (won’t harm SunOS). This takes a long time,
but is interruptible with CTRL–C. Continue ? y <cr>

         pass 0
         ...
         pass 1
         ...

Total of 0 defective blocks repaired.

analyze> quit <cr>

FORMAT MENU:
...
format              –format and analyze the disk
...
format> format <cr>

Ready to format.  Formatting cannot be interrupted
and takes 10 minutes (estimated). Continue? y <cr>
Beginning format. The current time is ...

Formatting...done

Verifying media...
         pass 0–pattern = xxx
...
         pass 1–pattern = xxx
...
Total of 0 defective blocks repaired.
format> label <cr>

Ready to label disk, continue? y <cr>

format> quit <cr>

checking writability of /dev/rsd0b
0+1 records in
1+ records out
Extracting miniroot ...
using cdrom partition number 3

Mini–root installation complete.
```

```
sd0 at esp0 target 3 lun 0
sd0: <SUN0424 cyl 1151 alt 2 hd 9 sec 80>
sr0 at esp0 target 6 lun 0
...
root on rd0a fstype 4.2
swap on ns0b fstype spec size 42864K
dump on ns0b fstype spec size 42852K
```

What would you like to do?

1–install SunOS mini–root

2–exit to single user shell

Enter a 1 or 2: 1 <cr>

```
Beginning system installation–probing for disks. installing miniroot on disk
“sd0” (only disk found).
Do you want to format and/or label disk “sd0”?
        1–yes, run format
        2–no, continue with loading miniroot
        3–no, exit to single user shell
Enter a 1, 2, or 3: 1<cr>

Searching for disks...done
selecting sd0: <SUN0424>
[disk formatted, defect list found]

FORMAT MENU:
    disk           – select a disk
    type           – select (define) a disk type
    partition      – select (define) a partition table
    current        – describe the current disk
    format         – format and analyze the disk
    repair         – repair a defective sector
    show           – translate a disk address
    label          – write label to the disk
    analyze        – surface analysis
    defect         – defect list management
    backup         – search for backup labels
    quit
format> analyze <cr>

quit
format> analyze <cr>
```

```
SPARCstation LX, Keyboard Present
ROM Rev. 2.0, 48 MB memory installed, Serial #139602
Ethernet address 8:0:20:4:9c:52, Host ID: 80022152

Boot device: /iommu/sbus/espdma@4,8400000/esp@4,8800000/sd@3,0
                                                        File and args:

JumpStart 1.0
Copyright (c) 1983–1992, Sun Microsystems, Inc.
WARNING: Cannot open /etc/path_to_inst
WARNING: clock gained 452 days -- CHECK AND RESET THE DATE!
Configuring the /devices directory
fd0: recalibrate failed (70 0 0)
Configuring the /dev/directory
no local boot CD, checking net...

No network boot server.  Unable to install the system.
See installation instructions.

Halted

Program terminated
Type help for more information
ok
```

3. Boot from the CD–ROM, reformat disk, install and boot from SunOS mini–root.

This system will initially be used as a standalone system. Recommendations that are followed from the manual:

- the Quick Install section noted that you should use Custom Install procedures if you want OpenWindows
- the Custom Install section recommends that you reformat the disk if there is no preinstalled software.

```
ok boot cdrom
Boot device: /iommu/sbus/espdma@4,8400000/esp@4,8800000/sd@6,0...
...
root on /iommu@0... fstype 4.2
Boot: vmunix
Size: xxx+xxx+xxx bytes
PAC ENABLED
SunOS RElease 4.1.3C (MUNIX) #3: Tue Jul 13 ... 1993
Copyright (c) 1933–1993, Sun Microsystems, Inc.
cpu = SUNW,SPARCstation–LX
mod0 = TI,TMS390S10 (mod = 0)
mem = 48792K
avail mem = 44142592
Ethernet address = 8:0:20:4:9c:52
...
```

- Update the HP–UX operating system and core product files,
- Install new HP–UX application software (optional products),
- Update existing optional HP–UX application software.

netdistd is the server daemon required on the server for file distribution service. Full instructions can be found in the manual “Installing and Updating HP–UX 9.0 (B2355–90039).

If you have a magnetic tape copy of software, copy the contents of the tape to a local file, and then run update against that file.

To remove the contents from a remote machine’s tape drive:

```
dd if=/dev/tape bs=16k > output_file
```

or if the tape drive is on a remote machine:

```
remsh other_machine_name dd if=/dev/tape bs=16k > output_file
```

and substitute the name of the remote machine’s tape device for “/dev/tape” above.

The “output_file” is the tar file on the local machine that you will tell update to use (via a selection in the update menu) as if it were a tape. There may be times when a different blocksize was used when the tape was made, for instance 4k. Start with 16k, if you get any errors from tar (via update) then you’ve used the wrong blocksize.

Installing SunOS 4.1.3 version C

Reference: Solaris 1.1 Release and Install (800–7600–10)

NOTICE: SunOS 4.1.3 Version C is only for SPARCstation LX and SPARCclassic systems, whereas Version A is for other sun4m platforms like the SPARCstation 10.

WARNING: If you are loading SunOS 4.1.3 on to a SPARCstation LX (and possibly a SPARC-classic), you need to ensure the RAM board placement is in the order of low density to high density (i.e. 8Meg then 16Meg). This is the reverse of standard RAM board placement. Not placing the RAM boards in this order can result in system crashes while accessing a CD–ROM. Originally, the LX was never meant to run SunOS, it was targeted only to run Solaris 2.x. The back port of SunOS to the LX caused this problem.

The following documents the installation of SunOS 4.1.3C on a new SPARCstation LX from CD–ROM. The boot PROM uses “ok” as the prompt. Log files from the installation are found in /etc/install.

1. Assemble the system. See the “Hardware Owner’s Guide” which comes with your system for full details.

2. Power on the system. If there is no preinstalled operating system, the console messages will look something like this:

```
------------------------------------------------------------

Initializing...

         Ensure that the installation media unit has been removed and an
         update media unit is online and prepared for reading.

         --- Press “Return” to continue ---

------------------------------------------------------------

**********************************NOTE*****************************
*                                                                 *
*  At this point, unload the install CD and load the update CD.   *
*                                                                 *
**********************************NOTE*****************************

------------------------------------------------------------------
INSTALL            Main Menu

Highlight an item and then press “Return” or “Select Item”.
To refresh the screen press CTRL–L.

Source: CD–ROM             Destination: Local System
                                      /

         Select All Filesets on the Source Media –>
         Select Filesets for a Minimum System –>
         Select/View Partitions and Filesets –>

         How to Use Install
------------------------------------------------------------------

**********************************NOTE*****************************
*                                                                 *
*  To install everything on the media, choose “Select All Filesets on  *
*  the Source Media”. If you want to selectively  install software,  *
*  choose “Select/View Partitions and Filesets” which will show you  *
*  the available software. In this context, a partition is a named  *
*  collection of filesets. A fileset is a named collection of direc-  *
*  tories and files that divide a partition into manageable units For  *
*  example, the files for the X11 R5 programming environment are in a  *
*  fileset named X11R5–PRG which is in the WINDOWS partition.          *
*                                                                 *
**********************************NOTE*****************************
```

Software will be loaded and when the install is finished, you will either have a console prompt or the HP VUE login screen.

HP–UX has a netdist service supporting the distribution of packages, basically collections of files, from a server system (host) to a client system (host). Currently, update is available as a netdist client. update is used interactively or non–interactively to:

```
------------------------------------------------------------------------

                    Swap space verification

Verify that the root disk swap space is sufficient and change if necessary.

Root Disk Swap space (in 1024 byte blocks): [36987   ]

CTRL-X = Done,  CTRL-U = Undo changes,  ? = Help on current item.

------------------------------------------------------------------------

                    Major   Slot     Bus      Unit
                    Number  Number   Address  Number   Model    Mount Point

   Root Device:     7       0        6        0        QUANTUM  /

Continuing the installation process destroys the contents of the disk listed
above.

Do you wish to continue? [ ]

------------------------------------------------------------------------

         Unpacking tar(1) files
x ./etc/mkboot, 81920 bytes, 160 tape blocks

...

x ./hp-ux, 1900544 bytes, 3712 tape blocks
         Done unpacking files
         Installing boot programs
         Copying /ram/sbtab.tmp
         Copying EISA configuration files
         Creating /etc/checklist
         Creating flag file for update

sync'ing disks (0 buffers to flush):
0 buffers not flushed
0 buffers still dirty

------------------------------------------------------------
```

< more boot messages >

```
------------------------------------------------------------------

                    Root Filesystem Type Selection.

          QUANTUM PD210S at  0       6        0

This screen allows you to choose whether or not you want this filesystem to
allow long filenames (up to 255 characters); or if you want to have the file-
names restricted to 14 characters in length (short filename system). You may
convert from a short filename filesystem to a long filename filesystem at any
future time, but once you have a long filename filesystem you can't go back
to a short filename system.  (See also mkfs(1M) and convertfs(1M)).

Each individual filesystem (disk) on your system can be specified as being
long or short (it is not a system wide parameter).

Do you want the root filesystem to allow long filenames? [y]

------------------------------------------------------------------------

                     HP-UX INSTALLATION UTILITY--MAIN MENU

                    Major   Slot     Bus      Unit
                    Number  Number   Address  Number   Model    Mount Point

          Source:   x       x        x        x        xxxxxxx
    Root Device:    7       0        6        0        QUANTUM  /

If the destination device shown above is correct, and you do not want to
modify filesystem parameters or add any additional non-root filesystems, se-
lect the "CONTINUE" option below.

                  1. Continue Installation Process.
                  2. Change ROOT Destination Device.
                  3. Change ROOT Filesystem Type.
                  4. Change ROOT Filesystem Parameters.
                  5. Add a non-root Disk/Filesystem.
                  6. Modify/Display non-root Disks/Filesystems.
                  7. EXIT the Installation.

                  Enter selection [1]

------------------------------------------------------------------------

**********************************NOTE**********************************
*                                                                      *
*  If you have two disk drives, you may wish to use one for / and one  *
*  for /usr. Select 5 to add the second disk as /usr.                  *
*                                                                      *
**********************************NOTE**********************************
```

```
b)       Boot from specified device
s)       Search for bootable devices
a)       Enter Boot Administration mode
x)       Exit and continue boot sequence
?)       Help

Select from menu: b P2 <cr>
```

You will see boot messages and then the following:

```
------------------------------------------------------------
ISL Revision A.00.18 October 8, 1991
```

(other messages appear here)...

```
Initializing ...

EISA configuration has completed.  Following the completion of a successful
HP–UX installation, please check the "/etc/eisa/config.err" file for any EISA
configuration messages.

Press [Return] to continue.

------------------------------------------------------------
```

3. The install process will now lead you through a series of menus to complete the installation.

```
Welcome to HP–UX install. There are basically 4 steps to installing HP–UX,
which this and another utility will lead you through.

Step 1) Select the root "destination disk" and its characteristics.

Step 2) Optionally modify the file system parameters pre–set for your chosen
destination disk.

Step 3) Optionally choose any other disks to be added to the system. This may
be useful if root disk space is insufficient.

Step 4) Choose the filesets (functional groups of files) which you want
loaded onto the destination disk.

A menu driven interface will guide you through the above steps.

         Press any key when you're ready to proceed to Step 1 >
```

Chapter 5
Operating System Installation

This section covers software installation of the operating system from CD–ROM.

Installing HP–UX 9.X

Reference: Installing and Updating HP–UX 9.0 (B2355–90039)

The following procedure documents an installation of HP–UX 9.X on a new HP workstation (no EISA card) from CD–ROM. The log file from the installation is /tmp/update.log. There are two CDs used in this procedure, an install CD and an update CD.

1. Assemble the system if this is a new workstation.

2. Power on the CD–ROM drive and load the install CD.Power up the rest of the system. You will see a menu from which you will select the CD–ROM as the boot device.

```
(c) Copyright.  Hewlett–Packard Company.  1991.
All rights reserved

PDC ROM rev. 1.2
IODC ROM rev. 1.0
16 MB of memory configured and tested.

Selecting a system to boot.
To stop selection process, press and hold the ESCAPE key.

Selection process stopped.

Searching for Potential Boot Devices.
To terminate search, press and hold the ESCAPE key.

Device Selection    Device Path              Device Type
------------------------------------------------------------------
P0                  scsi.6.0                 QUANTUM PD210S
P1                  scsi.5.0                 QUANTUM PD210S
P2                  scsi.4.0                 TOSHIBA CD–ROM DRIVE:XM
```

The r is a flag that causes the kernel to be reconfigured.

Or, as superuser execute the boot –r command.

After the system boots you will find that the system has created the required device files for the DAT drive. Unfortunately the driver assigned to the HP DAT is the EXABYTE 8200 driver which falls over when space records commands are used (e.g. mt –f /dev/rmt/0mn fsr 10). Apart from that the drive works perfectly OK.

Adding a Sun CD–ROM drive

Reference: Adding and Maintaining Peripherals (801–5289–10)

1. Shutdown and power off the system before changing any SCSI connections.

fasthalt

2. Check the file /etc/vold.conf to be sure the CD–ROM drive is in the list of devices managed by Volume Management.

sparky% cat /etc/vold.conf
...

```
# Devices to use
use cdrom drive /dev/dsk/c0t6 dev_cdrom.so cdrom0

...
When a CD–ROM containing a file system is inserted into a CD–ROM drive at
address 6, it will automatically be mounted.
```

3. Set the disk address to address 6. Connect the new disk drive. Power on the entire system.

4. To unmount and eject the CD use the following command:

eject cdrom

Adding an HP CD–ROM drive

This is not known to work. SunOS does not have broad support for foreign SCSI devices. Attempting to mount a CD using an HP CD–ROM on your SunOS system could potentially hang your system.

```
For QIC–150 tape devices (Archive Viper):
/dev/rst[0–7]       QIC–150 Format
/dev/rst[8–15]      QIC–150 Format
/dev/rst[16–23]     QIC–150 Format
/dev/rst[24–31]     QIC–150 Format
/dev/nrst[0–7]      non–rewinding QIC–150 Format
/dev/nrst[8–15]     non–rewinding QIC–150 Format
/dev/nrst[16–23]    non–rewinding QIC–150 Format
/dev/nrst[24–31]    non–rewinding QIC–150 Format
```

NOTICE: Note:The drive will automatically read both QIC–11 and QIC–24 formats too.

Solaris 2.3

Reference: Adding and Maintaining Peripherals (801–5289–10)

[Work–around, not tested]

Sun has put some "lock outs" in Solaris 2.3 resulting in distributor drives not working. The only resolution here is to implement work–arounds. The following work–around ONLY works until the DAT drive is removed. Once the drive is removed and the system is rebooted, you must re–do the work–around.

```
For Solaris 2.1, setting underside switches to 00011111  (1=ON)
                                               ^      ^
                                             SW8    SW1
```

will do the trick. (If you find it does not, try boot –r to reconfigure the device once it is attached.) For Solaris 2.2 (and beyond) you need to take the action described below as well as setting these switch settings.

Connect your DAT onto the Sun SparcStation. On first boot, no device files will be created for the DAT drive. Now, perform a kernel reconfigure by using the following :

As superuser (root)

```
# cd /
# touch /reconfigure
# halt
```

```
***********************************NOTE*******************************
*                                                                    *
*     touch /reconfigure may not be necessary if you use boot –r     *
*                                                                    *
***********************************NOTE*******************************
```

This will take the workstation down to the boot prompt "ok"

The next part is disc dependent so you will have to substitute where necessary.

"boot /sbus/esp/sd@1,0 /kernel/unix r"

Adding an HP DAT drive

[Work–around, not tested]

The following description was extracted from a comp.sys.sun News posting:

> I'm attempting to get an HP35450A dat drive to work on a SUN
> SparcStationII. The drive is seen at the ok prompt and is listed during
> boot. However, when I attempt to tar to the device it fails with an I/O
> error, it also repsonds with a message about unknown device type.

1. Add an entry for your drive to the file /usr/sys/scsi/targets/stdef.h:

```
#define ST_TYPE_HP1                0x2a        /* HP 4mm DAT */
```

2. Add an entry for your drive to the file /usr/sys/scsi/targets/st_conf.c:

```
/* HP 4mm Helical Scan Tape */
 {
"HP 4mm DAT", 2, "HP", ST_TYPE_HP1, 10240,
(ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE |
ST_AUTODEN_OVERRIDE | ST_KNOWS_EOD),
6000, 6000,
{ 0x00, 0x00, 0x00, 0x00},
{ 0, 0, 0, 0 }
},
```

3. Reconfigure the kernel as instructed in /usr/sys/sunXX/conf/README

4. Reboot

Adding a Sun QIC–150 cartridge tape drive:

1. Shutdown and power off the system before changing any SCSI connections.

```
# fasthalt
```

2. Set the tape drive address to a unique SCSI address. Connect the tape drive. Power on the entire system.

3. The system normally has a set of default device file for tape drives in /dev. The default device files for tape drives are:

4. Mount the CD–ROM.

```
# mkdir /cdrom
# mount /dev/sr0 /cdrom
```

or, for an ISO 9660 Standard or High Sierra Standard with RockRidge extensions CD–ROM file system

```
# mount –t hsfs /dev/sr0 /cdrom
```

Insert the Interworks 8/92 CD (ISO 9660 without file–versions)

```
# mount –r /dev/sr0 /cdrom

mount: /dev/sr0 on/cdrom: Invalid argument
mount: giving up on:
/cdrom

# mount –rt hsfs /dev/sr0 /cdrom
# ls /cdrom

abstract.fil        common  domain   misc     symlink.sh
bibliog.fil         copyright.fil    hpux     readme
```

Insert the Sun–4m Supplement CD (ISO 9660)

```
# mount –rt hsfs /dev/sr0 /cdrom
# ls /cdrom

Copyright patches
```

Insert the Solaris SunSoft Version C CD (Rockridge)

```
# mount –rt hsfs /dev/sr0 /cdrom
# ls /cdrom

_copyright          avail_arches     export   patches  sunupgrade
```

Adding an HP CD–ROM drive

This is not known to work. SunOS does not have broad support for foreign SCSI devices. Attempting to mount a CD using an HP CD–ROM on your SunOS system could potentially hang your system.

For an explanation of this confusing device naming, here is an excerpt from a notes posting in comp.sys.sun.admin:

> From: fwp@CC.MsState.Edu (Frank Peters)
> Newsgroups: comp.sys.sun.admin
> Subject: Re: Why is sd0 select code 3, and sd3 sc 0?
> Date: 6 Jan 1994 10:43:52 –0600
>
> In the beginning Sun sold desktop units with no room for internal disk (the 3/50, 3/60, 4/110 etc). SCSI devices were housed in external enclosures and you had to actually open up the enclosure and move jumpers around to change addresses.
>
> When the pizzabox systems (SPARCstation 1 and 3/80) came along with their two internal disk bays people wanted to attach their old external disk enclosures to them. Since the enclo sures were typically configured with SCSI target 0 this would conflict if the first internal disk were also SCSI target 0. They wanted to leave targets 1 and 2 alone for second internal and second external disks so they shipped the systems with the first internal disk set to SCSI tar get 3. Then to try to reduce the confusion of having sd0 be the external enclosure disk rather than the first internal disk they also swapped sd0 to target 3 and sd3 to target 0.

4. The Sun manual recommends that you reformat a new disk drive. This is done with the format command. Disks come with a default set of partitions, but you can change them with format. Format uses /etc/format.dat which contains search paths, disk types, and partition tables. Please see the above manual or the man page for format for more details.

5. Determine how to mount the partitions of the new disk and make the appropriate entries in /etc/fstab.

Adding a Sun CD–ROM drive

1. Shutdown and power off the system before changing any SCSI connections.

```
# fasthalt
```

2. Set the CD–ROM drive address to a unique SCSI address. Connect the CD–ROM drive. Power on the entire system.

3. The system normally has a set of default device files for CD–ROM drives in /dev. The default device files for CD–ROM drives are:

```
br–xr–xr–x 1 root   operator        18,      0 Nov 11 18:34    /dev/sr0
br–xr–xr–x 1 root   operator        18,      8 Nov 11 18:34    /dev/sr1
br–xr–xr–x 1 root   operator        18,      16 Nov 11 18:34   /dev/sr2
br–xr–xr–x 1 root   operator        18,      24 Nov 11 18:34   /dev/sr3
br–xr–xr–x 1 root   operator        18,      32 Nov 11 18:34   /dev/sr4
br–xr–xr–x 1 root   operator        18,      40 Nov 11 18:34   /dev/sr5
```

SunOS 4.1.3 version A

Reference: System and Network Administration (800–3805–10)

Adding a Sun SCSI disk drive

1. Shutdown and power off the system before changing any SCSI connections.

```
# fasthalt
```

2. Set the disk address to a unique address. Connect the new disk drive. Power on the entire system.

3. The system normally has a set of default device file for disk drives in /dev. The default device files for disk drives are:

```
brw–r----- 1 root     7,      0 Nov 11 18:34 /dev/sd0a
brw–r----- 1 root     7,      1 Nov 11 18:34 /dev/sd0b
brw–r----- 1 root     7,      2 Nov 11 18:34 /dev/sd0c
brw–r----- 1 root     7,      3 Nov 11 18:34 /dev/sd0d
brw–r----- 1 root     7,      4 Nov 11 18:34 /dev/sd0e
brw–r----- 1 root     7,      5 Nov 11 18:34 /dev/sd0f
brw–r----- 1 root     7,      6 Nov 11 18:34 /dev/sd0g
brw–r----- 1 root     7,      7 Nov 11 18:34 /dev/sd0h
...
brw–r----- 1 root     7,      160 Nov 11 18:35 /dev/sd20a
brw–r----- 1 root     7,      161 Nov 11 18:35 /dev/sd20b
brw–r----- 1 root     7,      162 Nov 11 18:35 /dev/sd20c
brw–r----- 1 root     7,      63 Nov 11 18:35 /dev/sd20d
brw–r----- 1 root     7,      164 Nov 11 18:35 /dev/sd20e
brw–r----- 1 root     7,      165 Nov 11 18:35 /dev/sd20f
brw–r----- 1 root     7,      166 Nov 11 18:35 /dev/sd20g
brw–r----- 1 root     7,      167 Nov 11 18:35 /dev/sd20h
```

CAUTION: SCSI TARGETS 0 & 3 ON SUNOS 4.1.X

In the “Solaris 2.2 System Configuration and Installation Guide”, page 8, it says:

Caution–because the names for SCSI targets 0 and 3 were flip–flopped on some Sun4c systems, device naming is somewhat confusing. Under SunOS 4.1.x, SCSI target 3 was called sd0, but is now properly named c0t3d0. SCSI target 0 was called sd3, but is now named c0t0d0. Other SCSI disk names translate normally. For instance sd2a is now c0t2d0s0 and sd2b is now c0t2d0s1.

```
crw-rw-rw-          1 root  other    121 0x201206 Jul 23 16:31 c201d2mb
crw-rw-rw-          1 root  other    121 0x201205 Oct 7 10:26 c201d2mn
crw-rw-rw-          1 root  other    121 0x201207 Jul 23 16:31 c201d2mnb

/dev/rmt/c201d2c    AT&T style, autorewind, compressed
/dev/rmt/c201d2cb   Berkeley style, autorewind, compressed
/dev/rmt/c201d2cn   AT&T style, no rewind, compressed
/dev/rmt/c201d2cnb  Berkeley style, no rewind, compressed
/dev/rmt/c201d2h    AT&T style, autorewind, high density
/dev/rmt/c201d2hb   Berkeley style, autorewind, high density
/dev/rmt/c201d2hn   AT&T style, no rewind, high density
/dev/rmt/c201d2hnb  Berkeley style, no rewind, high density
/dev/rmt/c201d2l    AT&T style, autorewind, low density
/dev/rmt/c201d2lb   Berkeley style, autorewind, low density
/dev/rmt/c201d2ln    AT&T style, no rewind, low density
/dev/rmt/c201d2lnb  Berkeley style, no rewind, low density
/dev/rmt/c201d2m    AT&T style, autorewind, medium density
/dev/rmt/c201d2mb   Berkeley style, autorewind, medium density
/dev/rmt/c201d2mn   AT&T style, no rewind, medium density
/dev/rmt/c201d2mnb  Berkeley style, no rewind, medium density
```

This naming convention is explained in detail in the man page for mt(7) as follows:

The following naming conventions are recommended because they relate most of the mode flags to the device name:

```
/dev/rmt/(c#d)#[hml]{c}{n}{b}
```

In this format, c#d indicates the controller number (optionally specified by the system administrator), # is the device number, hml indicates the density (h (high) for 6250 bpi, m (medium) for 1600 bpi, and l (low) for 800 bpi), c indicates data compression, n indicates no rewind on close and b indicates Berkeley style. For example, /dev/rmt/2mn is device lu 2, AT&T style at 1600 bpi with no rewind and no compression. The selection of controller and unit numbers is system dependent, and is discussed in the appropriate system administrator's manual.

Adding a Sun QIC–150 cartridge tape drive

Use the same procedure as documented in the "Adding an HP SCSI DAT drive" section above. The QIC–150 works very similar to other SCSI tape devices.

WARNING: One needs to ensure the Sun QIC–150 cartridge tape drive is properly terminated. Not terminating this device could result in a system hang.

Adding an HP SCSI DAT drive

1. Shutdown and power off the system before changing any SCSI connections.

/etc/shutdown–h

2. Set the DAT drive address to a unique address between 0 and 6. Normally, the root disk has already been assigned SCSI address 6. Connect the DAT drive. Power on the entire system.

3. The system normally has a set of default device file for DAT drives in /dev/rmt. If an appropriate device file does not exist, use SAM to create the device file, or the mknod command.

Here are the default devices files in /dev/rmt:

```
/dev/rmt:
crw–rw–rw–          1 bin   bin      121 0x201306 Nov 5 17:50 0m
crw–rw–rw–          1 bin   bin      121 0x201307 Nov  5 17:50 0mn
crw–rw–rw–          1 bin   bin      121 0x20130e Nov  5 17:50 3hc
crw–rw–rw–          1 bin   bin      121 0x20130f Nov  5 17:50 3hcn
crw–rw–rw–          1 bin   bin      121 0x201306 Nov  5 17:50 3m
crw–rw–rw–          1 bin   bin      121 0x201307 Nov  5 17:50 3mn
```

These device files assume that the SCSI address of the DAT drive has been set to 3.

Here is an example of using the mknod command to add the device file for a DAT drive at SCSI address 4. This creates a device file for a Berkeley style, autorewind, low density DAT drive.

```
# mknod /dev/rmt/4m c 121 0x201402
```

If you use SAM to create device files for a DAT drive, SAM will create many device files. For example, SAM will create the following device files for a DAT drive at SCSI address 2:

```
/dev/rmt:
crw–rw–rw–          1 root  other    121 0x20120c Oct 7 10:26 c201d2c
crw–rw–rw–          1 root  other    121 0x20120e Jul 23 16:31 c201d2cb
crw–rw–rw–          1 root  other    121 0x20120d Oct 7 10:26 c201d2cn
crw–rw–rw–          1 root  other    121 0x20120f Jul 23 16:31 c201d2cnb
crw–rw–rw–          1 root  other    121 0x201208 Oct 7 10:26 c201d2h
crw–rw–rw–          1 root  other    121 0x20120a Jul 23 16:31 c201d2hb
crw–rw–rw–          1 root  other    121 0x201209 Oct 7 10:26 c201d2hn
crw–rw–rw–          1 root  other    121 0x20120b Jul 23 16:31 c201d2hnb
crw–rw–rw–          1 root  other    121 0x201200 Oct 7 10:26 c201d2l
crw–rw–rw–          1 root  other    121 0x201202 Jul 23 16:31 c201d2lb
crw–rw–rw–          1 root  other    121 0x201201 Oct 7 10:26 c201d2ln
crw–rw–rw–          1 root  other    121 0x201203 Oct 7 10:30 c201d2lnb
crw–rw–rw–          1 root  other    121 0x201204 Oct 7 10:26 c201d2m
```

- ISO 9660
  If the version numbers are used in the file names, HP–UX 9.X will not be able to correctly read the file names. A file name can look something look ABCDEFGH.ASC;1. The ";" gets interpreted by the shell unless it is preceded by "\". This turns into a big annoyance for users. One workaround is to use a script which will create symbolic links to the CD files. The symbolic links would basically hide the version numbers. The other workaround is to use a software package from Young Minds, Inc. called PFS (Portable File System) which mounts the CD and provides a useful name mapping.

NOTICE: At the time of this writing, information on how to get the Young Minds PFS package through HP was not available.

If you don't use either workaround as shown below with the Sun–4m Supplement CD, an "ls" of the file names will show only the first 8 characters and the "." of the file names.

Insert the Interworks 8/92 CD (ISO 9660 without file–versions)

```
# mount–t cdfs /dev/dsk/c201d4s0 /cdrom
# ls /cdrom

ABSTRACT.FIL      COMMON            DOMAIN   MISC     SYMLINK.SH
BIBLIOG.FIL       COPYRGHT.FIL      HPUX     README
```

Insert the Sun–4m Supplement CD (ISO 9660 format)

```
# mount–t cdfs /dev/dsk/c201d4s0 /cdrom
# ls /cdrom

COPYRIGHT.  PATCHES
```

Compare these examples to mounting the same CDs on a Sun system below.

- RockRidge
  HP–UX 9.X will read RockRidge file names with unpredictable results. The only reliable workaround is shown below using the Young Minds, Inc. PFS software to mount RockRidge CDs.

NOTICE: At the time of this writing, information on how to get the Young Minds PFS package through HP was not available.

Insert the Solaris 1.1 SunSoft Version C CD (RockRidge format)

```
# mount–t cdfs /dev/dsk/c201d4s0 /cdrom
# ls /cdrom

AVAIL_ARCHES      EXPORT   PATCHES  SUNUPGRADE        _COPYRIGHT
```

Compare this example to mounting the same CD on a Sun system below.

4. If the disk does not have a file system already on it, create a file system. We recommend that you use SAM to do this. Normally, disks have only one partition so each disk has only one file system associated with it. You can, however, use software disk striping (SDS) to create multiple partitions on a single disk. Please refer to "System Administration Tasks" for more information on SDS. However, SDS does not allow the boot volume to be striped. Consequently, the root volume may contain only one filesystem and potentially one swap partition.

If for some reason you do not use SAM, you can use the newfs command to create a file system on a disk. The newfs command uses /etc/disktab to look up the description for the type of disk being added. Please see the man page for newfs for more details.

5. Determine how to mount the new file system and make the appropriate entries in /etc/checklist. You can do this in SAM, or by editing /etc/checklist as root.

Adding an HP or Sun SCSI CD–ROM drive

1. Shutdown and power off the system before changing any SCSI connections.

```
# /etc/shutdown–h
```

2. Set the CD–ROM drive address to a unique address between 0 and 6. Normally, the root disk has already been assigned SCSI address 6. Connect the CD–ROM drive. Power on the entire system.

3. The device files used for disk drives are the same ones used for CD–ROM drives. Please refer to the section above for device files.

4. Mount the CD–ROM. You can use SAM, or you can manually mount the CD. Here is an example of manually mounting a CD with the CD–ROM drive at SCSI address 5:

```
# mkdir /cdrom
# mount –t cdfs /dev/dsk/c201d5s0 /cdrom
```

CAUTION: CD FORMATS and HP–UX 9.X
The most common CD formats in use today are High Sierra, ISO 9660, and RockRidge. HP–UX can mount CDs which were created with any of these formats, but not all formats are read correctly. Here is the situation:

- High Sierra
  No problems reading this format on HP–UX 9.X.

HP–UX 9.X

References: Installing Peripherals (B2355–90041)
System Administration Tasks (B2355–90040)

Adding an HP SCSI disk drive:

1. Shutdown and power off the system before changing any SCSI connections.

```
# /etc/shutdown–h
```

2. Set the disk address to a unique address between 0 and 6. Normally, the root disk has already been assigned SCSI address 6. Connect the new disk drive. Power up the entire system.

3. The system will normally have a set of default device files for disks in /dev/dsk and /dev/rdsk. If an appropriate device file does not exist, we recommend that you use SAM to create the device file.

Here are the default devices files in /dev/dsk and /dev/rdsk:

```
/dev/dsk:
brw–r----- 1 root     sys     7 0x201000 Nov 5 17:50 c201d0s0
brw–r----- 1 root     sys     7 0x201100 Nov 10 10:35 c201d1s0
brw–r----- 1 root     sys     7 0x201200 Nov  5 17:50 c201d2s0
brw–r----- 1 root     sys     7 0x201300 Nov  5 17:50 c201d3s0
brw–r----- 1 root     sys     7 0x201400 Nov  5 17:50 c201d4s0
brw–r----- 1 root     sys     7 0x201500 Nov  5 17:00 c201d5s0
brw–r----- 1 root     sys     7 0x201600 Nov  5 17:00 c201d6s0

/dev/rdsk:
crw–r----- 1 root     sys     47 0x201000 Nov  5 17:50 c201d0s0
crw–r----- 1 root     sys     47 0x201100 Nov 10 10:35 c201d1s0
crw–r----- 1 root     sys     47 0x201200 Nov  5 17:50 c201d2s0
crw–r----- 1 root     sys     47 0x201300 Nov  5 17:50 c201d3s0
crw–r----- 1 root     sys     47 0x201400 Nov  5 17:50 c201d4s0
crw–r----- 1 root     sys     47 0x201500 Nov  5 17:00 c201d5s0
crw–r----- 1 root     sys     47 0x201600 Nov 11 17:32 c201d6s0
```

If for some reason you do not use SAM, you can use the mknod command. Here is an example of using the mknod command to add the device files for a disk at SCSI address 4:

```
# mknod /dev/dsk/c201d4s0 b 7 0x201400
# mknod /dev/rdsk/c201d4s0 c 47 0x201400
```

Chapter 4
SCSI Devices

This section will cover adding SCSI devices. Not all SCSI devices on each of the three systems were tested and documented. We have included disk drives, CD–ROM drives, and tape drives. Only SCSI devices are covered in this section. Interoperability issues of adding and utilizing cross–vendor devices will also be covered. The following table describes a summary of the device interoperability described in this section.

Table 4–1. Device Interoperability

Device	**SunOS 4.1.3**	**Solaris 2.3**	**HP–UX 9.X**
Sun QIC –150	Yes	UNDOC	Yes
Sun CD–ROM	Yes	Yes	Yes
Sun Disk	Yes	UNDOC	UNKNOWN
HP DAT	DOC	DOC	Yes
HP CD–ROM	No	No	Yes
HP Disk	UNDOC	UNKNOWN	YES

Yes = Successfully Tested and documented below
No = Not known to work
DOC = Documented workaround not tested in lab
UNDOC = Known to work, not documented, not tested
UNKNOWN = Not tested

1. /etc/rc.boot – Sets hostname from /etc/hostname.xx0 file if it exists, initializes network interfaces, sets up default static route using /etc/defaultrouter, checks file systems if necessary, runs /etc/rc.single to finish single user setup.

2. /etc/rc – Mounts 4.2 file systems, runs /etc/rc.local, turns on swapping, starts update, cron, inetd, lpd.

3. /etc/rc.local – Mounts NFS file systems, starts NIS, sets netmask, runs routed if a default route has not been established, starts system logger, starts other local daemons, starts the automounter.

Solaris 2.3

Reference: Solaris 2.3 Transition Guide (801–5386–10)

The startup files which get executed when the system boots depend on the contents of the /sbin/rc* scripts. The scripts involved in coming up to multi–user run–level 2 are described here. For full details, read /etc/init.d/README.

- /sbin/rc2 – This script is initiated by init for run–level 2. It executes scripts in /etc/rc2.d which are prefixed with “K”, then scripts in /etc/rc2.d which are prefixed with “S”.
- /etc/rc2.d/K<n><name> – The “K” scripts stop processes which shouldn’t be running at run–level 2. Each “K” script is executed in alpha–numeric order.
- /etc/rc2.d/S<n><name> – The “S” scripts start processes which should be running at run–level 2. Each “S” script is executed in alpha–numeric order.

Chapter 3
Startup Configuration Files

This section describes the startup configuration files which are used to set up the system's IP address, hostname, system time, mounted file systems, and swap space.

HP–UX 9.X

Reference: How HP–UX Works: Concepts for the System Administrator (B2355–90029)

There are several "rc" files which are executed when the system boots. They are executed in the following order:

1. /etc/bcheckrc – Runs the /etc/eisa_config program if necessary, checks file systems if necessary.

NOTICE: This file should not be modified.

2. /etc/brc – Clears the mounted file system table /etc/mnttab, loads any programmable microprocessors with their appropriate scripts.

NOTICE: This file should not be modified.

3. /etc/rc – Starts system daemons, mounts file systems, turns on swapping, starts error and system activity logging, sets hostname, IP address, timezone and date if necessary. Much of the work is done via /etc/netlinkrc. You can customize /etc/netlinkrc for your system's needs.

4. /etc/netlinkrc – Initializes networking interfaces, sets up optional static routes, starts NFS if necessary as well as NIS via /etc/netnfsrc, starts the Internet daemon (inetd), starts ARPA/BSD networking services via /etc/netbsdsrc, performs NFS mounts after inetd is running via /etc/netnfsrc2, starts HP Network Management Agent via /etc/netnmrc, starts HP LAN Manager/X via /etc/netlmrc, starts NCS via /etc/netncsrc, starts NetLS via /etc/netlsrc.

SunOS 4.1.3

Reference: System and Network Administration (800–3805–10)

There are several "rc" files which are executed when the system boots. They are executed in the following order:

/kernel/sched	Modules containing scheduling classes and corresponding dispatch tables
/kernel/strmod	STREAMS modules
/kernel/sys	Loadable system calls

/dev/rmt	Raw tape devices
/dev/sad	Entry points for STREAMS Administrative Driver
/dev/term	Terminal devices
/etc directory:	
/etc/default	Default system configuration
/etc/inet	Internet services configuration
/etc/lp	LP system configuration
/etc/opt	installed optional software
/etc/rc<n>.d	Run–state transition operations
/etc/saf	Service Access Facility (SAF) configuration
/usr directory:	
/usr/ccs	C compilation systems
/usr/snadm	Files used by admintool
/usr/bin	Same as /usr/5bin and /usr/xpg2bin in SunOS 4.1.3
/usr/include	Same as /usr/5include and /usr/xpg2include in SunOS 4.1.3.
/usr/lib	Same as /usr/5lib and /usr/xpg2lib in SunOS 4.1.3
/usr/sbin	Same as /usr/etc in SunOS 4.1.3
/var directory:	
/var/opt/<packagename>	Software package objects whose sizes change
/var/sadm	Software package management databases
/var/saf	Service Access Facility (SAF) logging and accounting files
/var/mail	Same as /var/spool/mail in SunOS 4.1.3
/kernel directory:	
/kernel/drv	Device driver and pseudo–driver modules
/kernel/exec	Kernel modules to run ELF or a.out executable files
/kernel/fs	File system kernel modules
/kernel/misc	Miscellaneous modules

/usr/src	Contains source code for licensed machines
/usr/stand	Symbolic link to /usr/kvm/stand
/usr/sys	Symbolic link to /usr/kvm/sys
/usr/ucb	Berkeley UNIX commands

Solaris 2.3

Reference: Solaris 2.3 Transition Guide (801–5386–10)

NOTICE: Not every directory is described. Some of the changes between SunOS 4.1.3 and Solaris 2.3 are noted.

/etc	System–specific files for system administration
/usr	Architecture–dependent and –independent sharable files such as man pages
/home	Mount point for users's home directories. By default, /home is an automounted file system
/var	System files and directories on the local system that change or grow. These include system log files, vi and ex backup files, and uucp files
/opt	Mount point for optional, third–party software
/tmp	Temporary files, cleared on reboot
/vol	Directories for removable media, managed by vold(1M)
/proc	Contains a list of active processes (uses no disk space)
/dev	Device files
/mnt	Temporary mount point
/sbin	Essential executables used in the booting process and in manual system failure recovery
/export	Default root of the exported file system tree
/kernel	Loadable kernel modules, includes the base kernel /kernel/unix

/dev directory:

/dev/dsk	Block disk devices
/dev/rdsk	Raw disk devices
/dev/pts	Pseudo terminal (pty) slave devices

/var	Contains subdirectories with data files that tend to grow
/vmunix	SunOS kernel
/var directory:	
/var/adm	System accounting files
/var/spool	Files being processed for printing and e–mail
/var/crash	Holds an image of the contents of memory when there is a crash
/var/preserve	Files saved by vi and ex if the system crashes
/var/yp	Programs and files for yp
/var/tmp	Similar to /tmp, available for users a temporary work space, files are not cleared when system reboots
/usr directory:	
/usr/bin	Commands traditionally found in /bin as well as basic system administration commands
/usr/5bin	System V programs that are incompatible with those in Berkeley UNIX
/usr/5lib	Libraries for compiling System V software
/usr/5include	Include files for compiling System V software
/usr/dict	English language spelling lists used by spell
/usr/etc	Commands used for system administration
/usr/games	Games
/usr/hosts	Contains script MAKEHOSTS which creates symbolic links for rsh command for each host in /etc/hosts
/usr/include	Standard C include files
/usr/kvm	SunOS kernel binaries
/usr/lib	Contains files originally in /lib, is a catch–all for SunOS utility files
/usr/local	Local files
/usr/pub	Contains files used in printing
/usr/sccs	SCCS commands
/usr/share	Files that can be shared across all architectures

/usr/local	Local, site–specific files
/lost+found	Orphaned files and directories created by newfs and used by fsck
/usr/mail	Used by the mail facilities for your mail box
/usr/news	System–wide news files
/usr/spool	Spooled (queued) files for various programs such as cron, the lp spooler, uucp
/usr/tmp	Temporary files
/usr/man	On–line documentation

SunOS 4.1.3

Reference: System and Network Administration (800–3805–10)

Root file system:

/bin	Symbolic link to /usr/bin
/boot	Contains program for booting the system
/dev	Device files
/etc	System administration files
/export	Contains the file hierarchies that clients access with read/write permission from a server
/home	Mount point for users' home directories
/kadb	Kernel debugger
/lib	Symbolic link to /usr/lib
/lost+found	Used by fsck for links to files that it can't link elsewhere in the file system
/mnt	Extra mount point
/sbin	Executable files necessary for bringing up the /usr file system at boot time
/sys	Symbolic link to /usr/kvm/sys
/tmp	Contains temporary working files not cleared on reboot
/tftpboot	Only present on NFS diskless servers, contains files used to boot diskless clients over the network
/usr	Mount point for usr file system

Chapter 2
File System Layout

The system directories for HP–UX 9.X, SunOS 4.1.3, and Solaris 2.3 are summarized in this section

HP–UX 9.X

Reference: System Administration Tasks (B2355–90040)

/bin	Compiled, often–used commands
/dev	Block and character special device files used to communicate with devices
/etc	Most system administrator commands and configuration files
/etc/newconfig	New configuration files and shell scripts placed here during an update so you can use them for reference
/etc/conf	Kernel configuration description files
/etc/filesets	List of loaded software filesets
/lib	Object code libraries and related utilities
/system	Revision lists and customize scripts from software installation
/tmp	Temporary files not cleared on reboot
/usr	Commands and log files
/usr/adm	System administration data files
/usr/bin	Commands not required to boot, restore, or repair the file system
/usr/contrib	Files and commands contributed by user groups
/usr/diag	Diagnostic tools
/usr/include	C header files
/usr/lib	Less–used object–code libraries, utilities, lp commands, and miscellaneous data files

Solaris 2.3 Shutdown

Reference: Solaris 2.3 Transition Guide (801–5386–10)

You can shutdown the system using:

- /usr/sbin/shutdown – shut down the system or change system states. “shutdown –i 6” is the same a “reboot” on SunOS 4.1.
- /usr/sbin/init – process spawner used to create processes according to the contents of /etc/inittab. “init 0” is the same as “halt” or “fasthalt” on SunOS 4.1. “init 1” places the system in single–user state.

NOTICE: Page 45 of ”Solaris 2.3 Transition Guide” says

The SunOS 4.1 fastboot and fasthalt comands are available if you are running the SunOS/BSD Source Compatibility package on SunOS 5.3 systems. The file system–checking features of these commands are not appropriate to the Solaris 5.3 environment.

SunOS 4.1.3 Shutdown

Reference: System and Network Administration (800–3805–10)

You can shutdown the system using:

- /usr/etc/shutdown – provides an automated shutdown procedure that notifies users that a system halt is pending.
- /usr/etc/halt – immediately shuts down the system in an orderly fashion, unless you explicitly specify otherwise.
- /usr/etc/reboot – reboot performs a sync operation on the disks, and then a multiuser reboot is initiated.
- /usr/etc/fastboot– shell scripts that reboot/halt the system and arrange that the file systems are not checked when the system comes back up.

Solaris 2.3 Startup

Reference: Solaris 2.3 Transition Guide (801–5386–10)

- Power up the system
- The PROM loads ufsbootblk from disk. /ufsbootblk opens the boot device and loads /ufsboot.
- /ufsboot loads the kernel from /kernel/unix.
- The kernel loads drivers from the /kernel/drv directory.
- /sbin/init creates processes to set up the system based on /etc/inittab.
- The /etc/inittab file defines which processes are started at each run–level.

Table 1–2. Solaris 2.3 Run–Level Processes

Run–Level	Description
0	shuts down the system
1	single–user state for performing system administration tasks
2	multi–user state without NFS file systems exported
3	multi–user state with NFS file systems exported, starts Remote File System (RFS) daemons
4	Alternate multi–user state (not used)

NOTICE: L1–a can be used to abort a bootup sequence. Press L1 (the stop key) and the “a” key together. At the prompt >b –s to boot up in single user mode.

Select from menu: b p0 isl

An example of the command to boot up in single–user mode:

```
ISL> hpux –is boot disk(scsi.6;0)/hp–ux
```

After the kernel has been loaded, it is not possible to abort a boot sequence. The system will continue on up to the run–level specified.

HP–UX 9.X Shutdown

References: How HP–UX Works: Concepts for the System Administrator (B2355–90029)
System Administration Tasks (B2355–90040)

You can shutdown the system using:

- /etc/shutdown – terminates all currently running processes in an orderly and cautious manner. Can be used to put the system in single–user mode.
- /etc/reboot – terminates all currently executing processes except those essential to the system, then halts or reboots the system. When invoked without arguments, reboot syncs all disks before rebooting the system.
- /etc/initt – process spawner used to create processes according to the contents of /etc/inittab. “init s” takes the system to single–user level.

SunOS 4.1.3 Startup

Reference: System and Network Administration (800–3805–10)

- Power up the system
- The monitor program is loaded from the PROM. It runs the system self–tests. The monitor prompt is “>”.
- Upon a successful self–test, the automatic boot process begins. The monitor program loads the boot file /boot from the default boot device (local disk).
- The monitor program loads the bootblock code from the boot device. The bootblock code loads /boot.
- /boot loads the kernel file /vmunix from the same device which held /boot.
- Init starts and runs /etc/rc.boot, followed by /etc/rc, and then /etc/rc.local, which starts daemons.

NOTICE: L1–a can be used to abort a bootup sequence. Press L1 (the stop key) and the “a” key together. At the prompt>b –s to boot up in single user mode.

Chapter 1
System Startup and Shutdown

This section describes the startup and shutdown processes under HP–UX 9.X SunOS 4.1.3, and Solaris 2.3.

HP–UX 9.X Startup

Reference: How HP–UX Works: Concepts for the System Administrator (B2355–90029)

- Power up the system
- The boot program is loaded from the boot ROM, it initializes and tests the hardware.
- The boot program runs the secondary loader. The secondary loader loads the kernel file /hp–ux.
- The kernel locates the root file system and starts the init process as PID 1.
- Init reads /etc/inittab. /etc/bcheckrc is executed, followed by /etc/brc, and then /etc/rc, which starts system daemons.

The /etc/inittab file defines which processes are started at each run–level.

Table 1–1. HP–UX 9.0 Run–Level Processes

Run–Level	Description
2	multi–user level
0	reserved for system installation
s	single–user level used for performing system administration tasks
3,4	run–levels at which HP VUE is typically started

You may wish to abort the boot process and access single–user mode. This may be necessary to fix the network setup. While the system is coming up press the esc key until the message

```
“Terminating selection process”
```

is displayed.

Managing NFS and NIS
by Hal Stern
O'Reilly & Associates, Inc.
ISBN 0–937175–75–7

HP–UX System Administrator's "How To" Book
by Marty Poniatowski
Prentice Hall, Inc.
ISBN 013–099821–4

DNS and BIND
by Paul Albitz & Cricket Liu
O'Reilly & Associates, Inc.
ISBN 1–56592–010–4

Version 1.1 is identical to Version 1.0 except for minor formatting corrections..

Chapter 10: DNS (Domain Name System)

Chapter 11: Electronic Mail

Chapter 12: Printing Services

Chapter 13: Common Login Environments

A series of appendices accompanies this document. They provide reference information, for example, the test network used, and a summary of patches which should be considered.

Appendix A: Test Network Configuration

Appendix B: Patches

Appendix C: AnswerBook and LaserROM Configuration

Appendix D: User Level 1 Command Cross Reference

Appendix E: System Administrator Commands

Appendix F: User Environment Mappings

Appendix G: Public Domain Software Availability and HP Support Line

Appendix H: ypmake script

Appendix I: Z–mail

If time permits, it is recommended that the administrator attend a training course on HP–UX system administration or look over the following HP–UX 9.X manuals before beginning the integration project.

How HP–UX Works: Concepts for the System Administrator
(B2355–90029)

System Administration Tasks manual
(B2355–90040)

Installing and Updating HP–UX 9.0
(B2355–90039)

Shells: User’s Guide
(B1862–90046)

Finding Information
(B2355–90007)

HP–UX Reference
(B2355–90033)

A Beginner’s Guide to HP–UX
(B1862–90000)

To obtain information on Hewlett–Packard Educational offerings or register for specific classes: in the United States, call toll free 1–800–472–5277 or contact your local Hewlett–Packard office.

Three other references texts which we found very useful are:

5. The integrator must have root privileges on the Suns and on the HP–UX workstations.

Conventions

The following conventions are used in this document:

1. For ease of notation, a # is used for the generic shell prompt in the examples provided.

2. Note that the least common denominator for login shells is csh. We did not have a version of the Korn shell for SunOS 4.1.3. However, a Korn shell is available for Solaris 2.3. In this document, the csh is the login shell for all non–root users on both Sun and HP systems. For root on the HP system, the login shell is ksh.

3. Example output used to demonstrate system responses contains date/time/version stamps, internet addresses and hostnames of systems in our test network. This information is network and workstation specific. Please remember to substitute your site's values as appropriate when executing any of the documented commands.

4. When you get a new HP system which was ordered with Instant Ignition, the HP VUE window system is automatically started via /etc/inittab when the system comes up. A new Sun system, by default will come up with a console prompt. In this document, HP VUE is the window environment used on the HP–UX workstation, and OpenWindows is used on the Sun workstations.

5. Many system administration tasks on HP–UX can be performed using the SAM tool (System Administration Manager). SAM is a menu–driven program which makes it easy to do various tasks with limited HP–UX knowledge. Although SAM was used in some of the procedures described in this document, manual steps are also included for comparison with the Sun procedures.

Organization

This document is divided into sections. Each section covers one of the many system administrative tasks.

Preface

Assumptions and Conventions

In order to address the task at hand without reiterating the contents of the HP and Sun manual sets, certain assumptions were made. These assumptions were chosen to help direct the flow of the instructions and to aid in their readability.

Assumptions

The following assumptions are used in this document:

1. The integrator has basic UNIX system administration experience.

2. The overall objective of these activities is to place a Series 700 HP–UX workstation into an existing Sun network in such a way that it interoperates effectively. Because we cannot cover all possible configurations, the information presented is meant to provide a basis for more complex, real–world installations. Information for HP–UX 9.X, SunOS 4.1.3, and Solaris 2.3 is included for the purpose of integration and comparison.

3. The existing Sun network makes use of the following services:

   - TCP/IP Communications (ftp, telnet, rlogin, rcp)
   - NFS (Network File System) and NIS (Network Information Services)
   - OpenWindows window system
   - Electronic Mail (Sendmail)
   - lpr for printing

   In addition, the Sun network MAY use:

   - DNS (Domain Name Services)

4. The Series 700 system was ordered with ”Instant Ignition” or has had the operating system installed at some earlier date.

   If your system arrives without an installed operating system, you will need to refer to the “Installing and Updating HP–UX 9.0 ” manual, part number B2355–90039. This manual provides step by step procedures for installing or updating system software products.

Chapter 9 NFS and the Automounter

Chapter 10 DNS

Chapter 11 Electronic Mail

Chapter 12 Printing

Chapter 13 Login Environment for HP−UX and SunOS

Contents

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HP–UX / Sun Interoperability Cookbook
Version 1.0

The purpose of this document is to help incorporate an HP 9000 Series 700 workstation into an existing Sun network. It will guide the system administrator through the basic steps needed to establish network communication, to set up accounts for users, to establish “transparent” file access, and to deliver compute resource sharing. Information for both HP–UX and Sun is included for comparison of system administration tasks in a mixed network. Every attempt has been made to include references to the supporting HP and Sun documentation.

Many of the procedures contained in this document were developed with a test network of four machines. This network consisted of an HP 9000 Series 700 Model 720 running HP–UX 9.01, a Sun SPARCstation 10 running Solaris 1.1 (aka SunOS 4.1.3), a SPARCstation 2 running Solaris 1.1, and a SPARCstation LX running Solaris 2.3. These workstations were connected to one another via Ethernet. A more complete description of the hardware and software is included as an appendix.

If you would like to respond to anything in this cookbook, please send your comments via email to:

cookbook@apollo.hp.com