UNICOS® Installation Guide for CRAY J90se™ GigaRing based Systems

SG–5296 10.0

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Preface

This publication documents the UNICOS 10.0 release running on CRAY J90se systems.

Related publications

The following documents contain additional information that may be helpful:

- *UNICOS Release Letter*, Cray Research publication RL–5001
- *Software Overview for Users*, Cray Research publication SG–2052
- *UNICOS Basic Administration Guide for CRAY J90se GigaRing based Systems*, Cray Research publication SG–2210
- *General UNICOS System Administration*, Cray Research publication SG–2301
- *UNICOS Configuration Administrator's Guide*, Cray Research publication SG-2303
- *UNICOS System Configuration Using ICMS*, Cray Research publication SG-2412
- *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218
- *UNICOS User Commands Reference Manual*, Cray Research publication SR–2011
- *UNICOS Administrator Commands Reference Manual*, Cray Research publication SR–2022

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Conventions

The following conventions are used throughout this document:

Convention	Meaning
`command`	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
variable	Italic typeface denotes variable entries and words or concepts being defined.
`user input`	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
[ ]	Brackets enclose optional portions of a command or directive line.
...	Ellipses indicate that a preceding element can be repeated.

The following machine naming conventions may be used throughout this document:

Term	Definition
Cray PVP systems	All configurations of Cray parallel vector processing (PVP) systems, including the following: CRAY J90se series CRAY T90 series
Cray MPP systems	All configurations of the CRAY T3D series. The UNICOS operating system is not supported on

	CRAY T3E systems. CRAY T3E systems run the UNICOS/mk operating system.
All Cray Research systems	All configurations of Cray PVP and Cray MPP systems that support this release.

The default shell in the UNICOS and UNICOS/mk operating systems, referred to in Cray Research documentation as the *standard shell*, is a version of the Korn shell that conforms to the following standards:

- Institute of Electrical and Electronics Engineers (IEEE) Portable Operating System Interface (POSIX) Standard 1003.2–1992
- X/Open Portability Guide, Issue 4 (XPG4)

The UNICOS and UNICOS/mk operating systems also support the optional use of the C shell.

Reader comments

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We value your comments and will respond to them promptly.

Overview [1]

This document is written for system administrators and operators of CRAY J90se computer systems. It shows you how to install the UNICOS operating system on a CRAY J90se mainframe. For last minute changes that may affect the UNICOS installation process, refer to the corresponding UNICOS Errata.

Starting with UNICOS 9.2, all releases are considered *base releases*. This means that updates and revisions are in the same format as the base release. Therefore, instructions for installing an update or revision are the same as for a base release.

1.1 Introduction

The Solaris operating system includes a windows interface that simplifies and streamlines UNICOS installation. Also, the workstation's hard drive and connections to the I/O subsystems via private Ethernet give you single-point control for your installation or upgrade.

This guide includes four chapters. Each chapter focuses on a different operation as follows:

- Overview of the CRAY J90se system and the software installation process
- CRAY J90se UNICOS initial installation
- CRAY J90se UNICOS upgrade installation
- Documenter's Workbench (DWB) installation

1.2 Related information

Before you begin any of the procedures outlined in this guide, you should read the entire chapter that relates to the procedure you intend to perform.

You should have the following documentation available:

- *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218
- *UNICOS Administrator Commands Reference Manual*, Cray Research publication SR–2022
- *UNICOS Basic Administration Guide for CRAY J90se GigaRing based Systems*, Cray Research publication SG–2210
- *UNICOS Configuration Administrator's Guide*, Cray Research publication SG–2303
- *UNICOS System Configuration Using ICMS*, Cray Research publication SG–2412

Note: Before you proceed with your system installation or upgrade, read the *Read Me First for CRAY J90 System Installation* document that was shipped with your system.

1.3 Hardware components

The minimum hardware configuration for each CRAY J90se system includes a CRAY J90se System Workstation (SWS), an SIO (scalable I/O) GigaRing channel, and a CRAY J90se mainframe.

1.3.1 CRAY J90se System Workstation (SWS)

The CRAY J90se System Workstation (SWS) is a Sun SPARCstation workstation that runs the Solaris operating system. This workstation serves as the system console for each SIO and the CRAY J90se mainframe. This console is connected via a private Ethernet connection to each SIO. It is shipped with a CD-ROM drive as the only media device.

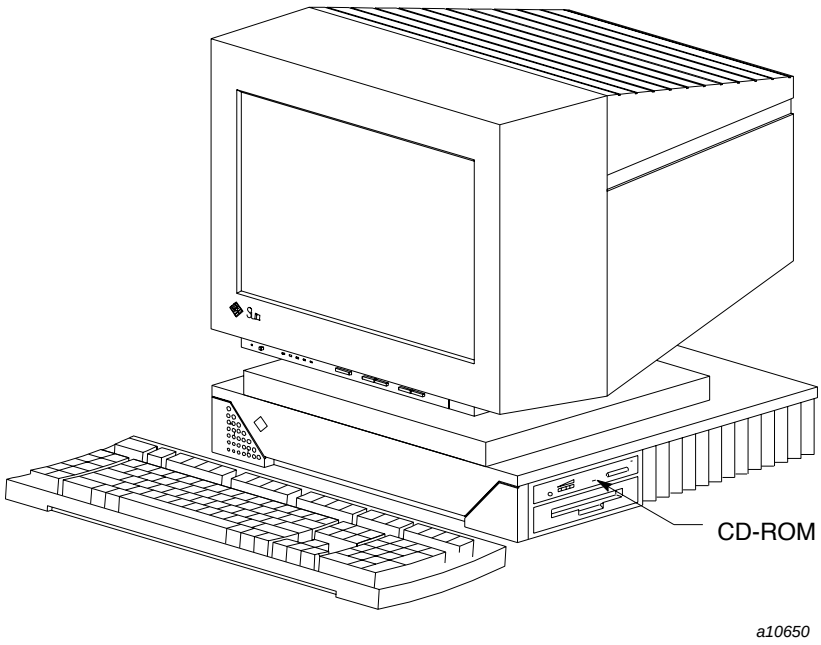

Figure 1. CRAY J90se System Workstation (SWS)

1.3.2 Scalable I/O (SIO): GigaRing channel

The Cray scalable I/O (SIO) architecture consists of a system of I/O nodes (IONs) connected by a new high-speed system channel called the *GigaRing channel*. This channel connects multiple clients with high-speed, point-to-point links to support I/O peripherals.

1.3.3 CRAY J90se mainframe

The CRAY J90se mainframe runs the UNICOS operating system. It allows backplane types of 2x2, 4x4, or 8x8 processor modules. A CRAY J98 system has up to 2 processor modules for a total of 8 CPUs. A CRAY J916 system has up to 4 processor modules for a total of 16 CPUs. A CRAY J932 system has up to 8 processor modules for a total of 32 CPUs. The combined memory capacity of these configurations ranges from 0.50 to 32 Gbytes.

1.4 Software components

CRAY J90se systems include the components described in this section.

Note: All software required to run your system is initially installed by Cray Research. Therefore, your console, I/O subsystem, and CRAY J90se mainframe are fully operational when you receive them.

1.4.1 Sun SPARCstation installation materials

If you need to reinstall your Solaris operating system, a CD is included with your SPARCstation that contains the Solaris operating system, documentation, and installation instructions.

1.4.2 CRAY J90se UNICOS CD

This CD contains the UNICOS operating system that can be used for either initial or upgrade installations. The path to these packages after the UNICOS CD has been mounted on the SWS is `/cdrom/cdrom0`.

Three types of UNICOS packages are distributed for the CRAY J90se system. These packages can be loaded by using the Common Installation Tool (CIT).

`UNICOS_exe`	`UNICOS_Executables` is the CIT name for this package, which is a binary-only release that contains user exits, restricted source relocatable files, and object files for relinking the kernel.
`UNICOS_bin`	`UNICOS_Relocatables` is the CIT name for this package, which is a binary release that contains restricted binary files.
`UNICOS_src`	`UNICOS_Source` is the CIT name for this package, which is a source-only release that contains UNICOS source files and source PLs.

When installing UNICOS, sites should select all UNICOS packages contained on the CRAY J90se UNICOS CD for their initial or upgrade installation. Be sure **not** to include Documenter's Workbench (DWB) during the UNICOS installation. Installation of DWB is performed at a separate point in the UNICOS installation process.

1.5 CRAY J90se GigaRing systems and UNICOS issues

This section highlights CRAY J90se GigaRing enhancements, and compatibilities and differences with previous UNICOS releases.

At this time, there are no enhancements, and compatibilities and differences that need to be documented.

CRAY J90se UNICOS Initial Installation [2]

Caution: Your CRAY J90se UNICOS operating system software was installed at the factory prior to shipping. Unless you need to reinstall the operating system for whatever reason, do not perform an initial installation; the procedures in this document may destroy the pre-installed system software.

This chapter describes the procedures to perform an initial UNICOS software installation on your CRAY J90se, or to perform a reinstallation of your current UNICOS software.

Note: These procedures assume that SWS-ION package, release 3.6 or later is installed on your system. If you are unsure which version you are running, execute the following command: `/opt/CYRIops/bin/siorev`. If you do not have release 3.6 or later, refer to the *SWS Operating System and Devices Installation Guide*, Cray Research publication SG–5293.

Before you begin, make sure that you are logged into your CRAY J90se SWS with your `crayadm` account. If UNICOS is currently running, perform a system shutdown by entering the `/etc/shutdown` command from the system console. Make sure that there are no current `mfcon` connections to the Cray mainframe so that the operating system console is not in use. Also, make sure that there are no current logins to any of the multipurpose nodes (MPNs) in the configuration.

2.1 CRAY J90se UNICOS initial installation

The following is the CRAY J90se UNICOS initial installation procedure.

Note: Throughout this procedure, you must do the following:

- Replace `sn`*SerialNumber* with your Cray system name.
- Replace *CrayHostName* with your Cray network node name.

`sn`*SerialNumber* and *CrayHostName* may be the same name, depending on your site configuration.

1. Insert the UNICOS CD-ROM into the SWS.
2. Log into the SWS as `crayadm`.

3. Execute the following commands to set up the `/opt/CYRIos/sn`*SerialNumber* directory and to copy the `sysinfo.default` file from the UNICOS CD-ROM.

```
sws% mkdir /opt/CYRIos/snSerialNumber
sws% chmod 755 /opt/CYRIos/snSerialNumber
sws% cd /opt/CYRIos/snSerialNumber
sws% cp /cdrom/cdrom0/UNICOS_exe/sysinfo.default sysinfo
sws% chmod 640 sysinfo
sws% chown -R crayadm:crayops /opt/CYRIos/snSerialNumber
```

4. Verify that the following information is present. This information is required for the initial install process to be successful.

Caution: Before installing UNICOS, verify that the `~crayadm/.rhosts` file on the SWS is set up to allow a login from `root` on the Cray mainframe to the SWS without a password, for example:

CrayHostName **`root`**

Also, verify that *CrayHostName* is the first name listed in the corresponding `/etc/hosts` entry, and not an alias (second or third name).

Note: For more information on the communications path between the SWS and the Cray mainframe, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218, which can be printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file.

5. Execute the following commands to start the UNICOS Initial Install GUI as shown in Figure 2. If you prefer not to use the GUI and to perform the installation with a text-based interactive interface, skip this step and go on to step 6. Execute the text-based commands that are listed instead of selecting the specified GUI buttons.

Caution: Once you choose either the GUI or the text-based installation method, you must use that method through the remainder of the installation process in order to avoid problems. Do not switch between the two methods of installation during the course of an install.

```
sws% cd /cdrom/cdrom0/UNICOS_exe
sws% ./initial.install -c snSerialNumber -l root
```

Figure 2. UNICOS Initial Install GUI

6. Edit the `sysinfo` file. Update the parameters to match your site's configuration. Either select `Edit sysinfo file` from the GUI, or execute the following text-based command:

   `sws%` **`vi /opt/CYRIos/sn`*`SerialNumber`*`/sysinfo`**

   The critical parts of the `sysinfo` file that are needed for the initial installation are as follows:

`SYS_SERIALNO`	System serial number
`SYS_SWSIP`	SWS IP address
`SWSHOST`	SWS network node name
`SYS_CRAYIP`	Cray IP address
`SYS_CRAYHOST`	Cray network node name
`SYS_IFNAME`	Network interface name
`SYS_NETMASK`	Network mask ID

SYS_ROOT_FS, SYS_USR_FS, and SYS_SRC_FS	New root/usr/src partitions
SYS_CDROM	Path to the CD-ROM on the SWS after being mounted (be sure to include UNICOS_exe at the end of this path)
SYS_CPUS	Number of CPUs
SYS_MEMORY	Amount of memory in Mwords
SYS_BPTYPE	J90se backplane type
SYS_CPUBITMAP	J90se CPU bitmap
SYS_CPTYPES	J90se CPU type list
SYS_MEMBITMAP	J90se memory bitmap
SYS_MEMLST	J90se memory type list

7. Edit the topology file. Either select Edit topology file from the GUI, or execute the following text-based command:

```
sws% editttopo
```

Note: The topology file keywords (for example, RING, MPN-1, J90, MAINTENANCE, CONNECTION, and BOOTNODE) are case-sensitive.

a. Include the following information in this file, where the CONNECTION number is the processor module number to which the ring is connected. At this time you may also add additional rings and I/O nodes to the topology file. The following is an example:

```
RING    ring-1              1
MPN-1   sn SerialNumber -mpn0   2   MAINTENANCE
J90     sn SerialNumber -0      4   CONNECTION=0 BOOTNODE
```

b. Ensure that the ring, node, and connection numbers are correct for your configuration:

1.) Ring number 127 is reserved for logical GigaRing devices.

2.) Valid ring numbers are 0 through 127.

3.) Valid node numbers are 0 through 63.

4.) Valid connection numbers are 0 through 7.

Caution: An ION or mainframe cannot have both node and ring identifiers with a value of zero. Only a single ring or node identifier in the pair can have a value of zero.

c. The following table is provided to show how the `topology` file `CONNECTION` numbers correspond to the octal mainframe channel numbers that are generated later in the parameter file.

Table 1. CRAY J90se channel definitions

Cray/GigaRing node connection	Octal mainframe channel number
0	024
1	034
2	044
3	054
4	064
5	074
6	104
7	114

8. Make the SWS, IONS, and mainframe ready for the initial install. Either select `Execute initial.setup script` from the GUI, or execute the following text-based command:

```
sws% /cdrom/cdrom0/UNICOS_exe/initial.setup snSerialNumber
```

This script takes approximately 5 minutes to complete. It creates the `console`, `options`, `options.ram`, `boot.ions_rings`, `boot.ram`, `param`, and `param.ram` files. It also runs `haltsys` on the mainframe, boots the I/O node(s) and ring(s), creates the mainframe hardware files, and unpacks and renames the generic kernel.

Note: The `initial.setup` step will produce `param` and `param.ram` files that contain disk devices on the MPN and FCN IONs, and network devices on the MPN. All other possible devices that may exist inside a GigaRing ION will not appear automatically; these will need to be added manually. This `param` file is a starting point and should be customized to suit your site's needs.

9. Boot the mainframe with a RAM file system. Either select `Execute boot_ram script` from the GUI, or execute the following text-based command:

   ```
   sws% /cdrom/cdrom0/UNICOS_exe/boot_ram snSerialNumber
   ```

   This script takes approximately 5 minutes to complete. It boots the UNICOS generic kernel with the RAM root and brings up the mainframe console window.

   After the system has successfully booted the RAM root, exit the mainframe console window so that the Common Installation Tool (CIT) can be used to load the UNICOS operating system.

   ```
   unicos# ctrl-] <CR>
   ```

   Note: If there are any problems bringing up the mainframe console window, run the following command to get a status and to list the UNICOS system message buffer.

   ```
   sws% checkj90 -b snSerialNumber
   ```

10. Use CIT to install the UNICOS operating system by loading it from the SWS to the Cray mainframe. Either select `Execute CIT` from the GUI, or execute the following text-based command:

    ```
    sws% /cdrom/cdrom0/setup -i -c snSerialNumber -l root
    ```

    The installation log files are located on the SWS as `/tmp/cit.crayadm/*.log`.

    For more information about using CIT, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218, which can be printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file. You may also select the `Help` button from the GUI or enter `help all` at the interactive interface prompt.

    Note: Do not select or install DWB (Documenter's Workbench) at this time. The installation of DWB is discussed in Chapter 4 after you have initially installed UNICOS on the mainframe.

    a. Select the UNICOS release(s).

    b. Install the UNICOS release(s).

    c. Verify that the Cray mainframe information is correct. If it is not correct, then correct the data.

d. Quit CIT when you have finished loading the UNICOS release(s).

Warning: During installation, the file systems being used, `SYS_*_FS`, will be labelled with the minimum security level set to 0, the valid security compartment set to 0, and the maximum security level set to 0.

11. Exit the UNICOS Initial Install GUI by selecting `Exit`.
12. Execute the following command to boot the new UNICOS system:

```
sws% bootsys -c snSerialNumber
```

2.2 Tasks to be completed before going to multi-user mode

At this point in the installation of UNICOS, you have completed enough tasks to get the system to single user mode. If you have Documenter's Workbench (DWB) on the UNICOS CD, proceed to Chapter 4 to install DWB. Otherwise, refer to *UNICOS System Configuration Using ICMS*, publication SG–2412, to:

- Customize your system's configuration using ICMS
- See Cray Research recommendations for this release
- Build a properly configured UNICOS system
- Turn off Security Enchancement logging while in single-user mode
- Copy time critical files such as UDB
- Assign PALs to the new file systems
- Complete configuring Security Enhancements
- Turn on Security Enchancement logging
- Go to multi-user mode
- Restart NQE checkpointed jobs or processes
- Access accounting data from previous systems

CRAY J90se UNICOS Upgrade Installation [3]

This chapter guides you though a UNICOS upgrade from UNICOS 9.2 or a later release.

To determine which versions of SWS or asynchronous software work with the version of UNICOS that you are installing, see the following documents included in this release package: *UNICOS Release Overview*, Cray Research publication RO–5000 10.0, and *UNICOS Release Letter*, Cray Research publication RL–5001 10.0.

The following sections will help you prepare for the upgrade from UNICOS 9.2 or a later release to a revision of UNICOS 10.0 and start the automated upgrade.

Note: These procedures assume that SWS-ION package, release 3.0 or later is installed on your system. If you are unsure which version you are running, execute the following command: `/opt/CYRIops/bin/siorev`. If you do not have release 3.0 or later, refer to the *SWS Operating System and Devices Installation Guide*, Cray Research publication SG–5293.

3.1 Prepare for the upgrade

Before you start the installation process, you must go through several preparation steps. The basic steps in this section are:

- Get superuser, appropriate MLS, and network privileges.
- Allocate disk space for the new UNICOS 10.0 file systems.
- Prepare for the UNICOS upgrade installation.

Note: The login ID under which the installation is done cannot have system resource limitations, such as disk quotas, memory limits, or CPU usage.

3.1.1 Get superuser, MLS, and network privileges

UNICOS 10.0 runs with the multilevel security (MLS) features available. The two supported privilege mechanisms are `PRIV_SU` with Privilege Assignment Lists (PALS) and the Trusted UNICOS configuration with PAL-only.

If your system is running UNICOS without the NETW_RCMD_COMPAT bit set in the SECURE_NET_OPTIONS bitmask, you will need to reboot your system with this bit enabled as CIT uses .rhosts to facilitate the transfer of packages from the SWS to the Cray mainframe.

If your system is running Trusted UNICOS, you must reboot with the PRIV_SU kernel to install UNICOS 10.0. Once rebooted, you will need superuser (root) privileges to perform the install.

Note: This may require dedicated time.

3.1.2 Allocate disk space for new file systems

Before starting to install UNICOS 10.0, ensure that your site has enough disk space to contain the UNICOS 10.0 file systems. Table 2 lists the required file systems and the minimum sizes for an executable binary release.

If your site has insufficient disk space for both the current UNICOS release and a later UNICOS release /usr/src file systems, you may use a single source file system (note the special option available in Section 3.1.3 used to start the UNICOS Upgrade Install GUI).

Caution: Choosing to reuse your source file system will require deleting the old source files. Make sure you have a backup copy of the source file system before using this upgrade option.

The installation build process can cause up to 100,000 program invocations. Be sure that the file system that contains your accounting file is big enough to accommodate the large amount of accounting information the build may generate.

Note: The numbers in the following tables are estimates. Partition size can vary greatly depending on the NPROC setting, the optional products loaded, and the number of user programs that will be put on the system.

These numbers were generated with a minimal root and /usr file system loaded, NPROC was set to 8, and no optional products were loaded. The high water meter was found, 15% was added, and then the numbers were rounded up to the next thousand.

Table 2. UNICOS 10.0 file system sizes

File system	Size in 4-Kbyte blocks by device sector size
/	150,000
/usr	205,000
/tmp	80,000
/usr/src	220,000

The sizes shown in the preceding table include room to build the system and room for future revisions to UNICOS, so that reconfiguring disks should not be necessary.

Note: The following information regarding `ldcache` is given as a recommendation and is not a required action.

You may want to use `ldcache` for the old file systems from which you are upgrading and the new UNICOS 10.0 file systems. Using `ldcache` can greatly reduce the amount of time spent during certain steps of the upgrade installation. For more information on `ldcache`, see the `ldcache`(8) man page or the *UNICOS Configuration Administrator's Guide*, Cray Research publication SG–2303.

3.1.3 Prepare for the UNICOS upgrade installation

This section describes the steps that must be completed before you can load the UNICOS 10.0 release. You may upgrade from a specific mount point from which the configuration information is obtained. This can take from 25 minutes to 45 minutes to complete.

Note: Throughout this procedure, you must do the following:

- Replace `sn`*SerialNumber* with your Cray system name.
- Replace *CrayHostName* with your Cray network node name.

`sn`*SerialNumber* and *CrayHostName* may be the same name, depending on your site configuration.

1. Insert the UNICOS 10.0 CD-ROM into the SWS.
2. Log into the SWS as `crayadm`.

3. Execute the following commands to copy the `sysinfo` file from the UNICOS CD-ROM:

```
sws% cd /opt/CYRIos/snSerialNumber
sws% cp sysinfo sysinfo.old
sws% cp /cdrom/cdrom0/UNICOS_exe/sysinfo.default sysinfo
```

   Note: Saving the old `sysinfo` file and using the new UNICOS 10.0 `sysinfo` file is necessary, as a number of changes were made to `sysinfo` for UNICOS 10.0, including the removal of some information and the addition of other information.

4. Verify that the networks are set up correctly to allow the upgrade process to run properly.

   a. Verify that the `~crayadm/.rhosts` file on the SWS allows `root` to send remote shell commands to the SWS from the mainframe.

   b. Verify that the `/.rhosts` file on the Cray mainframe allows `crayadm` to send remote shell commands to the mainframe from the SWS.

   Note: For more information on the communications path between the SWS and the Cray mainframe, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218, which can be printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file.

5. If you have been maintaining your parameter file manually on the SWS console, you should copy that file to */oldroot*`/etc/config/param` now. *oldroot* is the specific file system mount point from which the configuration information will be obtained during the upgrade process.

6. Execute the following commands to start the UNICOS Upgrade Install GUI as shown in Figure 3. If you prefer not to use the GUI and to perform the installation with a text-based interactive interface, skip this step and go on to step 7. Execute the text-based commands that are listed instead of selecting the specified GUI buttons.

   Caution: Once you choose either the GUI or the text-based installation method, you must use that method through the remainder of the installation process in order to avoid problems. Do not switch between the two methods of installation during the course of an install.

   - If the new `SYS_*_FS` file systems (specified in step 7) already contain a dump/restore copy of the previous release file systems, include the `-b` option on the command line to avoid performing a dump/restore copy of the file systems. If you are unsure, then do not include the `-b` option.

If you do **not** include the `-b` option on the command line, the old `root/usr` file systems mounted on `SYS_OLDROOT` (specified in step 7) will be dumped and restored on the new `SYS_*_FS` systems mounted on `SYS_MNT` (specified in step 7).

- If you are planning on re-using your old source partition for the upgrade installation, include the `-s` option on the `upgrade.install` command line. This option implies that you are planning on loading source onto a partition that already contains the previous release's source.

  If you do **not** include the `-s` option on the command line, the upgrade process assumes you have two source file systems for use.

```
sws% cd /cdrom/cdrom0
sws% ./UNICOS_exe/upgrade.install [-b] [-s] -c CrayHostName -l root
```

Figure 3. UNICOS Upgrade Install GUI

7. Update the `sysinfo` file. Update the parameters to match your site's configuration. Either select `Edit sysinfo file` from the GUI, or execute the following text-based command:

   ```
   sws% vi /opt/CYRIos/snSerialNumber/sysinfo
   ```

   The critical parts of the `sysinfo` file that are needed for the upgrade installation are as follows:

SYS_SERIALNO	System serial number
SYS_SWSIP	SWS IP address
SWSHOST	SWS network node name
SYS_CRAYIP	Cray IP address
SYS_CRAYHOST	Cray network node name
SYS_MNT	New root system mount point
SYS_ROOT_FS, SYS_USR_FS, and SYS_SRC_FS	New root/usr/src partitions
SYS_OLDROOT	Old root system mount point from which the configuration information will be obtained during the upgrade process
UPGRADE	Upgrade install keyword, set to YES
SYS_CDROM	Path to the CD-ROM on the SWS after being mounted (be sure to include UNICOS_exe at the end of this path)

8. On the CRAY mainframe, prepare the mainframe and the upgrade file systems. Either select Execute upgrade.setup script from the GUI, or execute the following text-based commands:

```
sws% rcp /opt/CYRIos/snSerialNumber/sysinfo \
  root@CrayHostName:/sysinfo
sws% rcp/cdrom/cdrom0/UNICOS_exe/upgrade.setup \
  root@CrayHostName:/upgrade.setup
sws% rsh CrayHostName -l root chmod 700 /upgrade.setup
sws% rsh CrayHostName -l root /upgrade.setup [-b] [-s]
```

Warning: During the execution of upgrade.setup, the file systems being used, SYS_*_FS, will be labelled with the minimum security level set to 0, the valid security compartment set to 0, and the maximum security level set to 0.

This script executes upgrade.setup on the mainframe and takes approximately 35 minutes to complete.

upgrade.setup performs a mkfs(1) command on the new UNICOS upgrade partitions (if needed), writes the file system labels, mounts the upgrade partitions, performs a dump/restore of the previous UNICOS system (if needed), and cleans up the new source directory by removing old executables and old nmake(1) .mo and .ms files.

The SYS_*_FS devices in sysinfo are assumed not to be mounted when upgrade.setup is executed on the mainframe. If the file systems being used for the upgrade are mounted, upgrade.setup will exit with an error. If the single-source option, -s, is being used, then the source partition must be mounted as */oldroot*/usr/src.

9. If you have any local mods applied to the source on the Cray mainframe, you must remove them now from the new upgrade partitions via sm(1) delete.

   Cray recommends that sites should back up their local mods before their removal, especially if the local mods are to be applied to the upgrade version of UNICOS being installed.

   The end result of sm(1) delete should be the removal of the local mods from the */oldroot*/usr/src/*PLname*/.USM/mods directory on the source partition.

10. Verify that the following information is present. This information is required for the upgrade process to be successful.

    a. Verify that the */oldroot*/usr/src/uts/cf.*SerialNumber* directory is present, and that this directory contains the sn.h file along with other related kernel files. */oldroot* is the upgrade mount point given in step 7 to SYS_OLDROOT.

11. At this time, you can allocate ldcache for the upgrade process if desired.

3.2 Start the UNICOS upgrade installation

You have prepared the mainframe for the upgrade process; now load the new UNICOS release on the mainframe. This process takes about 80 minutes to complete.

1. Use CIT to install the UNICOS operating system by loading it from the SWS to the Cray mainframe. Either select Execute CIT from the GUI, or execute the following text-based command:

   ```
   sws% /cdrom/cdrom0/setup -i -c CrayHostName -l root
   ```

   The installation log files are located on the SWS as /tmp/cit.crayadm/*.log.

   For more information about using CIT, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218, which can be

printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file. You may also select the `Help` button from the GUI or enter `help all` at the interactive interface prompt.

Note: Do not select DWB (Documenter's Workbench) at this time. The installation of DWB is discussed in Chapter 4 after you have initially installed UNICOS on the mainframe.

a. Select the UNICOS release(s).

b. Install the UNICOS release(s).

c. Verify that the Cray mainframe information is correct. If it is not correct, then correct the data.

d. Quit CIT when you have finished loading the UNICOS release(s).

2. Exit the UNICOS Upgrade Install GUI by selecting `Exit`.

Note: Verify that the following files were automatically transferred back to the SWS from */newroot*`/usr/src/uts/c1/stand` . */newroot* is the upgrade mount point given in step 7 to `SYS_MNT`.

`unicos.`*Release Number*

`grsysdmp.`*Release Number*

Note: The system administrator is responsible for renaming these files so that they can be used when using the new operating system.

3.3 List revision and update mods in this release (source systems only)

The `/etc/conv/release_modinfo` script generates a list of mods that have gone into the current and previous releases. Run this script with the `-h` option for more specific information:

```
unicos# /newroot/etc/conv/release_modinfo -h
```

3.4 Apply local mods (source systems only)

If you install UNICOS from source code and have local mods, you may apply them to the new upgrade partitions now.

3.5 Tasks to be completed before going to multi-user mode

At this point in the installation of UNICOS, you have completed enough tasks to get the system to single user mode. If you have Documenter's Workbench (DWB) on the UNICOS CD, proceed to Chapter 4 to install DWB. Otherwise, refer to *UNICOS System Configuration Using ICMS*, publication SG–2412, to:

- Customize your system's configuration using ICMS
- See Cray Research recommendations for this release
- Build a properly configured UNICOS system
- Turn off Security Enchancement logging while in single-user mode
- Copy time critical files such as UDB
- Assign PALs to the new file systems
- Complete configuring Security Enhancements
- Turn on Security Enchancement logging
- Go to multi-user mode
- Restart NQE checkpointed jobs or processes
- Access accounting data from previous systems

Documenter's Workbench (DWB) Installation [4]

This chapter describes the procedures for installing Documenter's Workbench (DWB). If you received DWB on the UNICOS 10.0 CD, follow the instructions in this chapter to load and add DWB to UNICOS.

The installation of the DWB 10.0 release is treated as an upgrade. To avoid problems, **do not** load both UNICOS and DWB at the same time. Load DWB 10.0 onto a system on which UNICOS 10.0 has already been loaded.

4.1 Setup for loading DWB 10.0

The following steps are needed to load DWB using CIT.

1. It is assumed that the `/mnt/usr/src` partitions have already been made and mounted. If not, do so before continuing.
2. Verify that the networks are set up correctly to allow the upgrade process to run properly.
   a. Verify that the `~crayadm/.rhosts` file on the SWS allows `root` to send remote shell commands to the SWS from the mainframe.
   b. Verify that the `/.rhosts` file on the Cray mainframe allows `crayadm` to send remote shell commands to the mainframe from the SWS.

   Note: For more information on the communications path between the SWS and the Cray mainframe, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218, which can be printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file.
3. On the SWS, load the CD-ROM that contains the 10.0 DWB release.
4. On the SWS (as the user name you chose in step 2), change directories to the CD-ROM mount point and run the setup script. This script will start CIT.

   ```
   sws# cd /cdrom/cdrom0
   sws# ./setup -c CrayHostname -l cray_user_name
   ```

cray_user_name must be `root`, unless you want to load it as a user other than `root` on the Cray system, in which case you would need to change the user name in the `~crayadm/.rhosts` file.

The installation log files are located on the SWS as `/tmp/cit.crayadm/*.log`.

For more information about CIT, see the *Common Installation Tool (CIT) Reference Card*, Cray Research publication SQ-2218 which can be printed from the `/cdrom/cdrom0/CYRIinstall/2218.ps` PostScript file.

5. Select the `Documenters_Workbench` package in CIT and install it on the mainframe.

   a. Verify that the Cray mainframe information is correct. If it is not, correct the data in CIT.

   b. Quit CIT when the `Documenters_Workbench` package has finished loading on the Cray mainframe.

6. Eject the CD-ROM.

```
sws# cd /
sws# eject cd
```

4.2 Building DWB for UNICOS 10.0

If you have loaded the optional product, DWB, you can build it manually or by using ICMS.

To build DWB manually, enter the following commands:

```
unicos# /bin/chroot /mnt /usr/gen/bin/ksh
unicos# cd /usr/src
unicos# nmake Sparse_install
unicos# exit
```

This command builds DWB, the kernel, and Kerberos, if they are all installed.

To build DWB by using ICMS, go to the following ICMS menu:

```
UNICOS Installation /Configuration Menu System
->Build/Install System
```

Set the `Specific component to build` to **`prod/text`** instead of what appears. Selecting the `Do the build ...` action will build DWB.

4.3 Tasks to be completed before going to multi-user mode

At this point in the installation of UNICOS and DWB, you have completed enough tasks to get the system to single-user mode. Proceed to *UNICOS System Configuration Using ICMS*, Cray Research publication SG-2412, to:

- Customize your system's configuration using ICMS
- See Cray Research recommendations for this release
- Build a properly configured UNICOS system
- Turn off Security Enchancement logging while in single-user mode
- Copy time critical files such as UDB
- Assign PALs to the new file systems
- Complete configuring Security Enhancements
- Turn on Security Enchancement logging
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