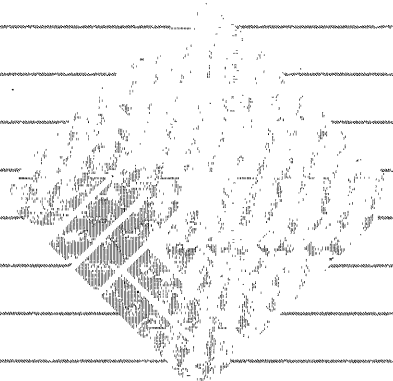




Sun™ Common Lisp Installation Guide





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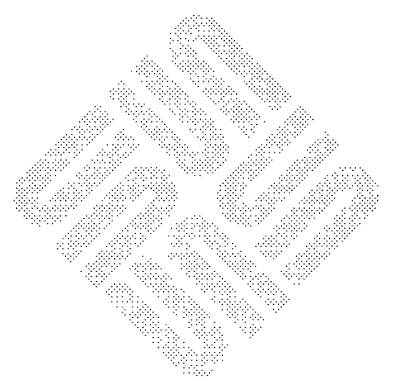
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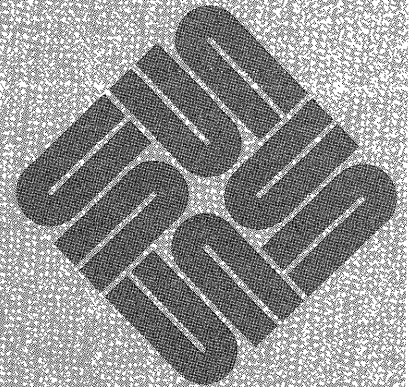
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Introduction

Introduction 3



Introduction

This guide covers Release 2.0 of Sun Common Lisp: what is in the distribution and how to install and configure it.

Sun Common Lisp runs on standalone workstations, on file servers, or on a file server's NFS clients. It runs on the 3.0 and 3.2 releases of the Sun UNIX operating system, and on Sun-2, Sun-3, Sirius, and Prism machines. Throughout this guide, a file server's "client" means any workstation, diskless or diskful, that mounts a file system from that server. To run Common Lisp on a file server and/or its NFS clients, you must install and configure Lisp on the file server. You must also be logged in as root. *You cannot install or configure Lisp from an NFS client.*

The installation procedure entails these steps:

- Possibly reconfigure your root and swap disk space
- Read contents of Lisp release tape onto your system
- Construct a configuration file to configure your Lisp properly
- Run Lisp to complete the installation

Skim the entire manual before beginning any of these steps.

Documentation Conventions

Bold face typewriter font indicates commands that you should type in exactly as printed in the manual. Regular typewriter font represents what the system prints on your workstation screen, and the prompt

```
tutorial%
```

represents your system's prompt. This font also indicates Sun system program names and file names. *Italics* specifies variables or parameters that you should replace with an appropriate word or string. Italics is also used for emphasis.

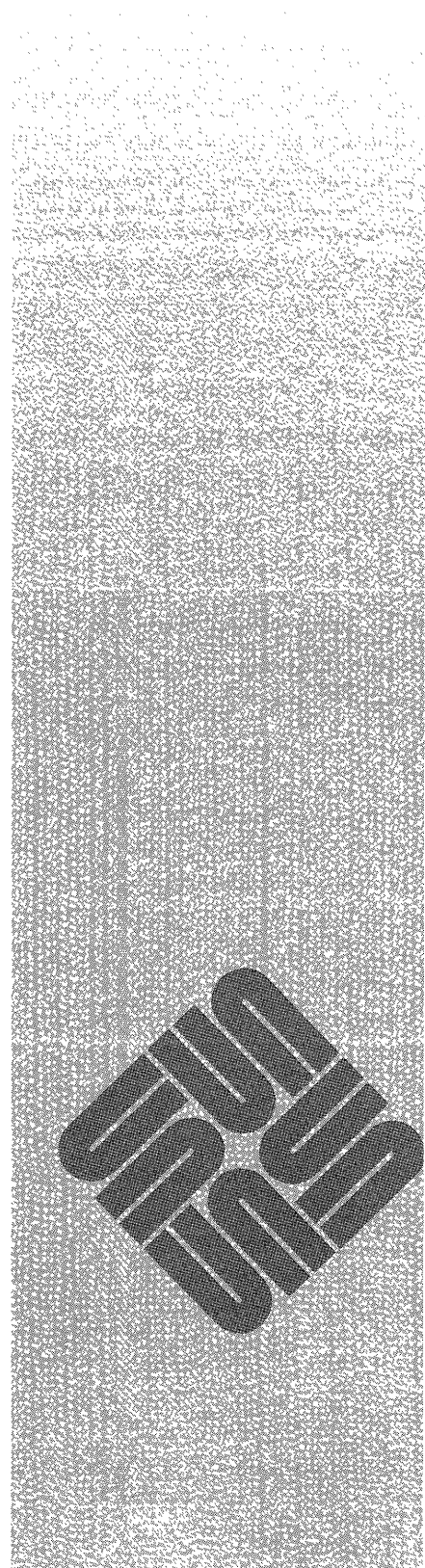
Supporting Documentation

You should have the following reference document on hand during the installation process:

Installing UNIX on the Sun Workstation

Contents of the Release Tape

Contents of the Release Tape 7



Contents of the Release Tape

The distribution software is on a single 1/4'' cartridge or a 1/2'' tape.

The following table gives the contents of the release tape along with a description of the contents and their *approximate* sizes:

Table 2-1 *Contents of the Release Tape*

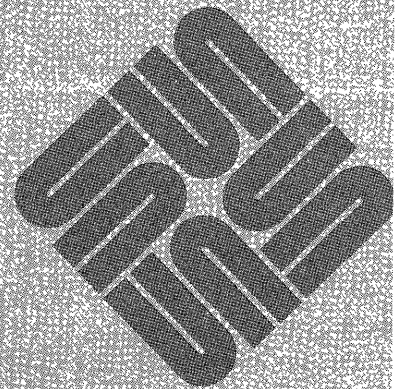
File	Size (Bytes)	Description
First file		Copyright file.
bold-roman.font	6310	Font used by Lisp Window Tool Kit.
configuration.lisp	396	Default configuration file.
configurator	770048	Used to generate configuration file.
configure-lisp.lbin	6281	Used to update configured host ids.
ctags	40960	Used to create a tags file for source code.
editor-support.o	1267	Library support for Lisp Editor.
editor.lbin	972000	Lisp Editor module.
eipc	49152	Support for communication between Emacs and Lisp.
flavors.lbin	192926	Lisp Flavor module.
float-support.o	4773	Library support for floating point.
goodies	512	Directory of demos and utilities.
halftone.bitmap	46	Used by Lisp Window Tool Kit.
hbubble.bitmap	32	Used by Lisp Window Tool Kit.
italic.font	3170	Font used by Lisp Window Tool Kit.
lc	38	Script for compiling Lisp programs.
lisp	5510047	Lisp image.
lisp-icon.bitmap	526	Used by Lisp Window Tool Kit.
maclib	512	Library of Emacs macros.
medium-roman.font	4136	Font used by Lisp Window Tool Kit.
patches	24	Directory containing patches (possibly empty).
roman.font	6306	Font used by Lisp Window Tool Kit.
screen-14.font	2338	Font used by Lisp Window Tool Kit.

Table 2-1 *Contents of the Release Tape—Continued*

File	Size (Bytes)	Description
screen-bold-14.font	2598	Font used by Lisp Window Tool Kit.
small-roman.font	1576	Font used by Lisp Window Tool Kit.
vbubble.bitmap	32	Font used by Lisp Window Tool Kit.
windows-support.o	761	Library support for Lisp Window Tool Kit.
windows.lbin	630874	Lisp Window Tool Kit module.

Space Requirements

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Space Requirements

3.1. Minimum Space Requirements

Note: The foreign loading required by Lisp installation creates large files in `/tmp`, so you need to have about 4 MBytes of `/tmp` space. If you don't have the space, you may want to create a symbolic link from `/tmp` to another disk partition with enough space before installing.

Your workstation will need a **minimum of 15 MBytes** of disk file space for loading the tape, and an **additional 10 MBytes** of disk file space (on the file system where the installation is taking place) to install and configure the Lisp image.

Your workstation will also need a **minimum of approximately 30 MBytes** of disk swap space; for large programs you may need substantially more disk swap space. This large swap space is not used strictly for Lisp; it allows for space you will need for your usual working environment. Lisp does not need this much to start up, but its memory needs can grow quickly, so the larger the swap area the better.

Remember, we strongly recommend that your workstation have **at least 8 MBytes** of real memory (RAM) installed in the machine(s) on which you intend to run Lisp. Attempting to run the Lisp program development environment with less memory causes excessive paging and poor performance.

3.2. Circumstances Affecting Space

Your swap space will be affected by the space used by your normal working environment, along with Lisp's large working set. To get an idea of how much available swap space your workstation normally has, use `pstat (8)` to print your system facts. Do this test after you have been running in your normal environment for a couple of hours; your swap space will have eroded, and `pstat` will reveal numbers that fairly represent your typically available swap space. (If you run `pstat` for this purpose right after booting, it will not yield useful numbers.)

```
tutorial# /etc/pstat -s
xxxxk used (xxxk text), xxxxxk free, xxxk wasted, xk missing
max process allocable = [KBytes ]
[ etc...]
```

In its first instance, Lisp uses 12 MBytes of swap space. Therefore, if *KBytes* is not at least 12,000, you will need more swap space. We recommend 15,000 KBytes of available swap space (after what your normal environment has used up) for moderate programs. If at any time you do not have enough swap space, you will see the following message when invoking Lisp:

```
tutorial# lisp
lisp: Not enough core
tutorial#
```

This is not a performance issue: UNIX will not run a process if there is not sufficient swap space available for it; it might even kill some processes.

Note: We recommend that you only run one Lisp process at a time on a workstation.

We recommend that you only run one Lisp session at a time on a single workstation because of Lisp's large working set. If you do choose to run simultaneous Lisp sessions, you will need a minimum of 7 MBytes of swap space for *each* additional Lisp process that may exist. (You will not need 30 MBytes per process, since that number includes the space your normal non-Lisp processes need). For example, if you were running three simultaneous Lisp sessions, you would need at least 44 Mbytes (30 + 7 + 7) of swap space available.

3.3. Where to Go from Here

The following outlines where you should proceed from here.

Root Space Change

If you find you need to change your root space, you will have to use `diag` and re-install UNIX. This procedure is outlined in the document *Installing Unix on the Sun Workstation*.

Swap Space Change

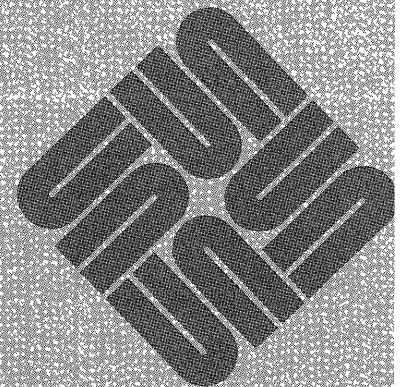
If you need to change only your swap space, you will also have to use `diag`, but you will not have to re-install UNIX. We give an example of this case in this guide; proceed to Chapter 4, *Disk Reconfiguration*.

No Partition Changes

If you do not need to change your disk partitions at all, proceed to Chapter 5, *Installing Sun Common Lisp Release 2.0*.

Disk Reconfiguration

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Disk Reconfiguration

4.1. Overview

You can ascertain your current disk layout information with `dkinfo (8)`. (We give an example later in this chapter.) Note that partitions must start on cylinder boundaries. A disk is usually divided into three partitions:

- a** — root file system
- b** — swap area
- g** — `/usr` file system

The `c` partition maps to the entire disk and should not be modified during this process.

If you do not have enough root or swap space for Lisp, you will have to reconfigure your disk partitions. To change your partitions, you use `diag (8S)`. To change your root partition, you will also have to re-install UNIX; refer to *Installing Unix on the Sun Workstation*.

Basic Process

The basic disk reconfiguration process can be summarized as follows:

1. Put the system in to single-user mode with `shutdown (8)`.
2. Run `fsck (8)` to make sure the present file systems are healthy.
3. Back up the entire system with `dump (8)`. These need to be Level 0 dumps. *If you do not understand the preceding sentence, do not continue further without getting assistance from your local system administrator or Sun Technical Support, or you may risk losing user files or whole file systems.* For added safety, we suggest you make an additional tape backup of critical user files using `tar (1)`.
4. Determine the necessary changes to your current disk partitioning scheme.
5. Use `diag` to implement your swap partition changes.
6. Boot mini-UNIX, and restore the root and `/usr` file systems.
7. Boot UNIX.

Note: Whenever you change your disk, you should backup your entire system with `/etc/dump`.

4.2. Using `diag`

`diag` will prompt you for changes to your disk partitions. The most difficult part of this process is calculating the partition changes. We walk you through this process in the following.

First, you must know how many sectors per cylinder your disk uses. You can find this with `dckinfo`; it will yield several lines, the first two of which will look like the following:

```
sd0: SCSI controller at addr ff260800, unit # 1
1022 cylinders 8 heads (base 2) 17 sectors/track
```

(This is taken from the invocation of `dckinfo` in our sample disk reconfiguration, which comes later in this chapter.) To calculate the sectors per cylinder, multiply the number of heads times the number of sectors/track. In this example, our disk has 136 sectors per cylinder.

Say we want to change our swap partition `b` from 25 MBytes to 36 MBytes, taking the space from `/usr` partition `g`, which has 36 MBytes. (We will implement these changes in our sample disk reconfiguration, later in this manual.)

First compute how many sectors partition `b` will need by multiplying 36 MBytes * 2 * 1000; we use these numbers because a sector is 1/2 kilobyte, and 1000 kilobytes comprise one megabyte. Next, divide this number of sectors by 136 (the number of sectors per cylinder) to find out how many cylinders we need. $72000 / 136$ equals 529.4 cylinders; we round this to the next cylinder, 530. Since we will have to give `diag` exact sectors and cylinders, we multiply 530 by 136; our result is 72080 sectors (or blocks), taking up 530 cylinders.

Partition `g` is easily computed by subtracting partitions `a` and `b`'s space from partition `c`. (Again, we get partition `c`'s numbers from `dckinfo`.) The following calculates partition `g`'s sectors: $138992 - 20128 - 72080 = 46784$, or the total (`c`) sectors minus `a`'s sectors minus `b`'s sectors. Cylinders are computed in the same way; they calculate to 344. Partition `g` will start at cylinder 678 (the sum of `a` and `b`'s cylinders). (This arithmetic is also explained under *Allocating a Larger Root Partition* in the document *Installing Unix on the Sun Workstation*.) The rest of the `diag` procedure is covered in the next section, *Sample Disk Reconfiguration*.

4.3. Sample Disk Reconfiguration

The following section provides an example of disk reconfiguration on a standalone machine with a 71 megabyte disk. We will reconfigure the disk to enlarge its swap partition `b` from 25 to 36 megabytes, taking the extra space from the `/usr` partition `g`. We realize that this is a specific and somewhat limited example that does not entail the more complicated root reconfiguration and UNIX reinstallation, but that process is clearly explained in the document *Installing Unix on the Sun Workstation*. We hope that this will be an adequate guide for other configurations.

1. Use `/etc/shutdown (8)` to bring the machine down to single-user state:

```
tutorial# /etc/shutdown now
System going down IMMEDIATELY
#
```

2. Run `/etc/fsck` (8) to check the health of the hard drives that are presently configured on the disk (from the file `/etc/fstab`):

```
# /etc/fsck
[messages from fsck ]
```

3. Back up all file systems.

When making changes to your disk, it's good practice to make tape backups of all file systems on the disk using `/etc/dump` (8). These need to be level 0 dumps. *If you do not understand the preceding sentence, do not continue further without getting assistance from your local system administrator or Sun Technical Support, or you may risk losing user files or whole file systems.*

For added safety, we suggest that an additional tape backup be made of critical user files using `tar` (1).

4. Begin the process of changing your disk layout.

Note: Write down your current disk label information.

First, write down or print out the current disk label information. These numbers will vary from system to system. Use `/etc/dkinfo` (8) to display the information — for example, on disk `sd0` :

```
tutorial# /etc/dkinfo sd0
sd0: SCSI controller at addr ff260800, unit # 1
1022 cylinders 8 heads (base 2) 17 sectors/track
a: 20128 sectors (148 cyls)
   starting cylinder 0
b: 50048 sectors (368 cyls)
   starting cylinder 148
c: 138992 sectors (1022 cyls)
   starting cylinder 0
g: 68816 sectors (506 cyls)
   starting cylinder 516
```

5. Use `diag` to change your partition. First compute your disk repartitioning scheme by doing the arithmetic described in this manual's section Using `diag`. Halt the system and boot `diag` as follows. When `diag` prompts you, enter the information appropriate for your system configuration. (You can get this information by using `/etc/dmesg` (8), but you will need your system administrator to interpret the output for you. If you do this, it should be done before halting the system.) Substitute the correct controller address for *address* from the table below:

Controller Type	Address (hex)	
	1st Controller	2nd Controller
Xylogics 450/440	ee40	ee48
Adaptec ACB 4000-SCSI for Multibus System	80000	84000
Adaptec ACB 4000-SCSI for VMEbus System	200000	
Adaptec ACB 4000-SCSI for the Sun-3/50	140000	

First halt and boot diag:

```
tutorial# /etc/halt
Syncing disks ... done.
Unix halted.
> b stand/diag
Boot: sd(0,0,0)stand/diag
Load: sd(0,0,0)boot
Boot: sd(0,0,0)stand/diag
Size: 34816+20480+1160 bytes
```

```
Version 2.3 84/09/25
Disk Initialization and Diagnosis
```

When asked if you are sure, respond with 'y' or 'Y'

Specify controller:

- 0 - Interphase SMD-2180
- 1 - Xylogics 440 (prom set 926)
- 2 - Xylogics 450
- 3 - Adaptec ACB 4000 - SCSI

which one? 3

Specify controller address on the mainbus (in hex): *address*

Device address: *address_you_typed*

Which target? 0 [for the first controller]

Which unit? 0 [for the first drive]

Specify drive:

- 0 - Micropolis 1304
- 1 - Micropolis 1325
- 2 - Maxtor XT-1050
- 3 - Fujitsu-M2243AS
- 4 - Vertex V185
- 5 - Other

which one? *your_disk_type*

```
ncyl 1022 acyl 2 nhead 8 nsect 17 interleave 1
diag> [The numbers on the previous line may vary.]
```

6. Next, use `diag`'s **partition** command to specify a new disk label.

When you give this command to `diag`, the system will prompt you to specify the default partition table to modify. Use your current partition

table. Next the system will prompt you for a starting cylinder number and the size in sectors for each possible partition on this disk. Carefully enter the new partition numbers; remember that partitions must start on cylinder boundaries. Here we use the numbers we calculated in this manual's section Using `diag`. We are changing the swap partition `b` from 25 to 36 Mbytes, taking the extra space from the `/usr` partition `g`, which is currently 36 MBytes. Partition `b` will then take up 72080 sectors or 530 cylinders, starting at cylinder 148; partition `g` will take up 46784 sectors or 344 cylinders, starting at cylinder 678 (where partition `b` ends).

```
diag> partition
Select partition table:
    0 - Micropolis 1304
    1 - Micropolis 1325
    2 - Maxtor XT-1050
    3 - Fujitsu-M2243AS
    4 - Vertex V185
    5 - Other
Which one? your_current_disk_label
Do you wish to modify this table? y
Partition a: starting cyl=0, # of blocks 20128
Change this partition? n
Partition b: starting cyl=148, # of blocks 50048
Change this partition? y
Starting cylinder? 148
# of blocks? 72080
Partition c: starting cyl=0, # of blocks 138922
Change this partition? n
Partition g: starting cyl=516, # of blocks 68816
Change this partition? y
Starting cylinder? 678
# of blocks? 46784
...
diag>
```

You now have a completed partition map ready for storage on your disk.

7. Now that you have designed a new partition map, you need to actually write it to the disk. You do this with `diag`'s `label` command:

```
diag> label
label this disk...
OK to use logical partition map 'your_disk_type' ? y
Are you sure you want to write? y
```

When this completes, you can quit `diag`. This returns control back to the PROM monitor:

```
diag> quit
>
```

8. Boot UNIX single-user and restore the `/usr` file system.

- a) Since the `/usr` partition has been modified, we must boot UNIX single-user:

```
>b -s
```
- b) Next, make a new file system `/usr` by running `/etc/newfs (8)` on `/dev/rdisk0g` (substitute the correct device abbreviation for `disk`: `sd` for a SCSI disk or `xy` for the Xylogics disk).
- c) Mount the dump tape and make sure it is online.
- d) Change directories to the mount directory.
- e) Restore the `/usr` file system from the dump tape by running `/etc/restore (8)`, with `rbf` options, on `/dev/rtape0` (substitute the correct tape drive abbreviation for `tape`: `ar` for the Archive drive, `st` for a SCSI tape drive, `xt` for a Xylogics half-inch (6250 bpi) drive, or `mt` for the Tapemaster half-inch (1600 bpi) drive).
- e) Run `/etc/fsck (8)` on the restored file system.

For example, with a SCSI disk and tape drive, this process appears as follows:

```
# /etc/newfs /dev/rsd0g
# /etc/mount /dev/sd0g /a
# cd /a
# /etc/restore rbf 126 /dev/rst0
# cd /
# /etc/umount /dev/sd0g
# sync
# /etc/fsck /dev/rsd0g
#
```

9. Finally, halt and boot up the full UNIX system:

```
# /etc/reboot
Syncing disks...done
Unix halted.
> b
Boot: sd(0,0,0)vmunix
Load: sd(0,0,0)boot
Boot: sd(0,0,0)vmunix
login:
```

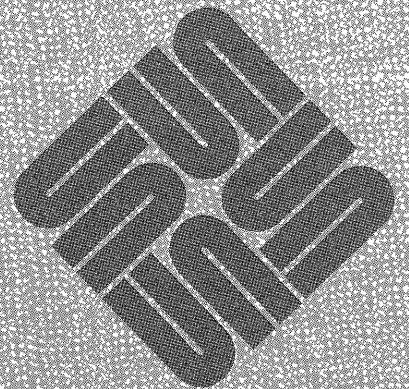
You are now up and running UNIX multi-user with an enlarged swap space. If we now checked our partitions with `dinfo`, they would look like this:

```
tutorial# /etc/dinfo sd0
sd0: SCSI controller at addr ff260800, unit # 1
1022 cylinders 8 heads (base 2) 17 sectors/track
a: 20128 sectors (148 cyls)
   starting cylinder 0
b: 72080 sectors (530 cyls)
   starting cylinder 148
c: 138992 sectors (1022 cyls)
   starting cylinder 0
g: 46784 sectors (344 cyls)
   starting cylinder 678
```

This completes your disk reconfiguration.

Installing Sun Common Lisp Release 2.0

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Installing Sun Common Lisp Release 2.0

To install the Sun Common Lisp Release 2.0, you must:

- Load the contents on the release tape
- Configure Lisp for your system
- Run Lisp

You should already have completed any necessary disk reconfiguration; if you haven't, return to the chapter on disk reconfiguration, Chapter 4.

As mentioned in the introduction, you can install Sun Common Lisp on a standalone workstation or an NFS file server. Sun Common Lisp can run on a standalone workstation, a file server, or a file server's NFS clients. To run Common Lisp on a file server and/or its NFS clients, you must install and configure Lisp on the file server.

5.1. Loading Tape Contents

1. First, become super-user (in other words, log in as `root`) on a standalone system or a file server, and pick an installation directory with adequate space for the distribution (`/usr` would be common). Check for available space with the `df (1)` command:

```
tutorial# df
Filesystem      kbytes    used   avail capacity  Mounted on
/dev/xy0a         7437     5470    1223     82%      /
/dev/xy0h       148455  128709    4900     96%    /usr/misc
/dev/xy0g       117327   66896   38698     63%    /usr
[and so on ]
```

2. Next, change to your selected directory, load the tape (rewind tape to tension and position properly), skip over the first copyright mark using `mt (1)` and, finally, use `tar (1)` to extract the files from the tape.

Local Tape Drive

If you are using a local tape drive, remember to replace the word *tape* with the appropriate device abbreviation for your tape (`ar` for the Archive drive, `st` for a SCSI tape drive, `xt` for the Xylogics half-inch (6250 bpi), or `mt` for the Tapemaster half-inch (1600 bpi)). Note that the sizes of the files and the numbers of tape blocks given in this tutorial are examples.

```
tutorial# mt -f /dev/nrtape 0 rew
tutorial# mt -f /dev/nrtape 0 fsf 1
tutorial# tar xvpf /dev/nrtape 0
[list of files, size in bytes, number of tape blocks...]
tutorial#
```

Remote Tape Drive

When you are using a remote tape drive, do the following. Note that since you are performing a remote process as super-user, the hostname of the local machine (which you are typing commands on) must be in the remote machine's `/etc/hosts` file to avoid permission problems. If you are running the distributed database services' Yellow Pages, the hostnames must be in the Yellow Pages' `hosts` file. If there is no Yellow Pages on one machine, entries must be in the `/etc/hosts` file. Remember to replace *tape* with the appropriate device abbreviation for the remote tape drive you are using, and to replace *remote_host* with the hostname of the machine this tape drive is attached to:

```
tutorial# rsh remote_host mt -f /dev/nrtape 0 rew
tutorial# rsh remote_host mt -f /dev/nrtape 0 fsf 1
tutorial# rsh remote_host dd if=/dev/nrtape 0 bs=20b | tar xvpBf -
[messages from tar]
tutorial#
```

If you get a "Broken pipe" message when you run the last command, you can ignore it.

5.2. Configuring Sun Common Lisp

To configure Sun Common Lisp for your machine, you must:

- Construct a `configuration.lisp` file
- Run Lisp to complete the installation

Constructing a `configuration.lisp` File

Sun provides a window-based program called `configurator` to help you construct your `configuration.lisp` file. You can also edit the `configuration.lisp` file using a text editor like `vi`.

The `configurator` program is in the directory where you loaded the rest of the files from the release tape. While using the SunView window system on your workstation¹, invoke the program by changing to that directory in a window and typing `configurator`. The `configurator` appears on your screen like this:

¹ For more information on using SunView and SunView programs, see the *Windows and Window-Based Tools: Beginner's Guide*.

Sun Common Lisp Configurator

Configuration file name: configuration.lisp
 Write configuration file and exit Cancel and abort

Full (unabbreviated) site name:
 Short (possibly abbreviated) site name:
 Sun system software release level:

Help Source file for host ids:

Desired subsystems: Editor Lisp Windows Flavors

Help Source file for forms:

Help Verbose? NIL
 Number of reserved free segments: 2
 Number of dynamic free segments: 4

You must complete these steps to construct properly the `configuration.lisp` file using the `configurator` program:

- Check the configuration filename.
- Insert the long and short forms of your site name and your software release level.
- Specify a list of host ids acceptable to the Lisp you install.
- Choose which combination of Lisp subsystems — the Lisp editor, Lisp windows, and Lisp flavors — to include in this configuration of Lisp.
- Add any extra forms to execute when completing the installation.
- Specify memory management parameters for the resulting Lisp image.

Configuration Filename

Note: The files associated with a Lisp configuration must appear in the same directory as the Lisp that you are installing, otherwise Lisp won't find them when you complete the installation.

The default configuration filename listed by the `Configuration file name:` prompt of the `configurator` program is `configuration.lisp`. `configuration.lisp` is the filename that Lisp looks for when you run Lisp to complete the installation.

Most often, you'll want to use the default filename, but you can edit the configuration filename when you wish to construct a configuration file to store in another filename for later use.

To edit the configuration filename, click the left mouse button on the area where the default filename appears. Then, just as if you are typing to a command line, you can delete the default filename and type an alternative filename in its place.

Specify Site Names and Software Release Level

Below the configuration filename prompt are prompts for long and short versions of your site name. First, enter the long version of your site name by clicking the left mouse button in the area just to the right of the long version prompt `Full (unabbreviated) site name:` and typing the full, unabbreviated name for your computer site, for example `Frammitz Goggles, Inc.`. The Common Lisp function `LONG-SITE-NAME` uses the long version of the site name.

Next, supply a short, possibly abbreviated, name for your computer site after clicking the left mouse button in the area to the right of the short version prompt `Short (possibly abbreviated) site name:`. The Common Lisp function `SHORT-SITE-NAME` uses the short version of the site name.

Enter the release level of the Sun system software you are running after the `Sun System software release level:` prompt.

Choose Host IDs

Part of configuring Common Lisp is deciding which machines licenses to run Common Lisp you will permit to run this instance of Common Lisp software. To specify which machines, you need the hexadecimal host ID for each licensed machine that will run the Common Lisp you are installing. To get this number, run the `hostid (1)` command on each machine you want to have access to this instance of Common Lisp:

```
tutorial% hostid
2000781
```

It's a good idea to keep a copy of the list of the host numbers you enter during this initial configuration. Though you can check and modify the list later (see section *Modifying Host IDs in an Installed Lisp*), it's good to have the list in case of problems or questions.

Note: We suggest you keep a copy of the list of the host numbers you enter during this initial configuration.

To enter the host IDs for all the machines licensed to run this Common Lisp image, you can either:

- Create a text file and read it into the `configurator`, or
- Type each of the host IDs directly to the `configurator`

For the first method, create a file of host IDs, one per line, using your favorite text editor. Click the left mouse button near the `Source file for host ids:` prompt and type in the host ID list filename. Select this filename by clicking the left mouse button on the first letter of the filename and the middle mouse button on the last letter of the filename. Move the cursor to the subwindow with a scroll bar just below. Hold down the right mouse button to bring up a menu and choose the `Load file` or `Get from file` menu item to insert the host ID contents of the file into the subwindow.

When you don't choose to use a file of host IDs, simply type the host IDs one per line in the subwindow just below the host ID filename prompt.

Choose Editor, Window, and Flavor Subsystems

A bit lower on the `configurator` window is a panel which permits you to choose which subsystems you wish to install with the instance of Common Lisp you are configuring. You can choose any or all of the following: `Lisp Editor`, `Lisp Windows`, and `Lisp Flavors`. To pick each of the subsystems you need, simply click the left mouse button over the square just to the left of the panel item. A check mark appears to confirm the subsystem items you choose.

Add Extra Installation Forms

Adding extra installation forms is an optional configuration step. Similar to the way you could specify host IDs by using a file or by typing them in directly, you can specify some extra Common Lisp installation forms that will execute during the completion of the installation process. When you have a file of such forms, specify the filename to the extra forms filename prompt, then load the file into the subwindow just below the prompt. Otherwise, just type the forms in directly to the subwindow.

Specify Memory Management Parameters

In this portion of the configuration, you specify how many reserved free segments and dynamic free segments you want to allocate for the newly started Common Lisp image. You can also specify if you want to see progress messages during the memory management portion of the installation.

Sun Common Lisp chooses as a default a minimum of 2 reserved free segments and 4 dynamic free segments with the verbose option off by default. You will probably want to change the memory management parameters depending on the size of your application or you will encounter undue numbers of garbage collection because of the space restrictions specified on that instance of Common Lisp. A good first try at allocation of the numerical memory management parameters is **10 reserved free segments and 14 dynamic free segments**.

To change the numerical memory management parameters, click the left mouse button in the area to the right of the prompt, then delete the old value and type in the new. To change the verbose option, just click the left mouse button to toggle from not verbose to verbose.

Create the Configuration File

To complete your work with the `configurator` and to create the configuration file (usually `configuration.lisp`), click the left mouse

button on the Write configuration file and exit panel item in the uppermost panel.

You can look at the configuration file you have created using `more` to see if it corresponds to what you wanted. You can edit the file with your favorite text editor if you wish.

Here is an example `configuration.lisp` file:

```
;;;
;;; Sun Common Lisp Configuration File
;;;
;;; Created: Fri Nov 14 13:35:47 1986
;;;

(in-package 'lucid)
(setq long-site-name "Frammitz Goggles, Inc.")
(setq short-site-name "Frammitz")
(setq software-version "3.2")

(register-host-keys
 #x20003c8 #x10301a7)

(load-subsystems :WINDOWS :FLAVORS)

(set-disksave-parameters
 :reserved-free-segments 10
 :dynamic-free-segments 10
 :verbose NIL)

;;; Local initialization
(in-package 'uses)

(setq lucid::*lucid-version-date*
 (lucid::current-time-string :exclude-day t :exclude-time t))
```

Figure 5-1 *Example configuration.lisp File*

Initial Lisp Invocation

To complete the installation, you must run Common Lisp so that it will read the `configuration.lisp` file located in the same directory, as well as any other files it needs to complete the installation.

```
tutorial# lisp
;;; Sun Common Lisp, Version 2.0, [date ]
;;;
;;; Copyright (c) 1986 by Sun Microsystems, Inc. All Rights Reserved
;;;
;;; This software product contains confidential and trade secret
;;; information belonging to Sun Microsystems. It may not be copied
;;; for any reason other than for archival and backup purposes.

>
```

This last step usually takes about 15 minutes. Unless you need to modify some host IDs specifications or make some other modifications, you have finished the

Common Lisp installation.

5.3. Modifying Host IDs in an Installed Lisp

A system administrator may list the current host IDs, add a new valid host ID, or remove a host ID. To do this, the system administrator must log in as root and must be on the machine where Common Lisp was originally installed and configured. Also, the system administrator must know the host IDs for any CPUs to add or remove, and must have at least as much free disk space as twice the size of the Common Lisp image to be modified.

1. Start up the Common Lisp image you wish to modify (`lisp`). You must be logged in as root, and you must be on the machine the Lisp was originally installed and configured on. Make sure you don't load a `lisp-init` file at this point; Lisp will automatically load an `init` file if one is there. You can avoid this by renaming the file and changing it back to its original name afterwards.

```
tutorial# cd /usr/lisp
tutorial# lisp
;;; Sun Common Lisp, Version 2.0, [date ]
;;;
;;; Copyright (c) 1986 by Sun Microsystems, Inc. All Rights Reserved
;;;
;;; This software product contains confidential and trade secret
;;; information belonging to Sun Microsystems. It may not be copied
;;; for any reason other than for archival and backup purposes.

>
```

2. Load `configure-lisp.lbin`. Note that loading this file automatically starts the script that allows you to edit valid host IDs.


```
> (load "configure-lisp")
```
3. `configure-lisp` provides you with a simple command menu and prompts. The `q` (quit) command aborts the session and returns you to UNIX. The `i` command installs the new configuration (this takes a couple of minutes) and returns to UNIX. When the whole reconfiguration process is complete, you will be returned to UNIX and you can use the newly-configured Lisp.

For example, changing one of the acceptable host IDs from the directory where `lisp` is located looks like this:

```
tutorial# lisp
;;; Sun Common Lisp, Version 2.0, [date ]
;;;
;;; Copyright (c) 1986 by Sun Microsystems, Inc. All Rights Reserved
;;;
;;; This software product contains confidential and trade secret
;;; information belonging to Sun Microsystems. It may not be copied
;;; for any reason other than for archival and backup purposes.

> (load "configure-lisp")

;;; Loading binary file "/usr/lisp/configure-lisp.lbin"

Welcome to the Host Modification Procedure for Sun Common Lisp.

Note: All CPUs accessing Sun Common Lisp must be duly authorized through
a Sun program license agreement.

Enter one of the following single-letter commands:

?          -- Print this command list
(Q)uit     -- Abort this session
(L)ist     -- List the current host IDs
(A)dd      -- Add a new host ID
(R)emove   -- Remove one of the current host IDs
(I)nstall  -- Disksave Lisp with the current host information

Command: l

Here is the current list of Host IDs:

1001211
10013C5
1100003E

Command: r

Enter host ID to remove: 10013c5

Command: l

Here is the current list of Host IDs:

1001211
1100003E

Command: a

Enter host ID to add: 10015db
```

Command: **l**

Here is the current list of Host IDs:

```
10015DB
1001211
1100003E
```

Command: **i**

Thank You. Now please wait a few minutes while the system modifies itself.

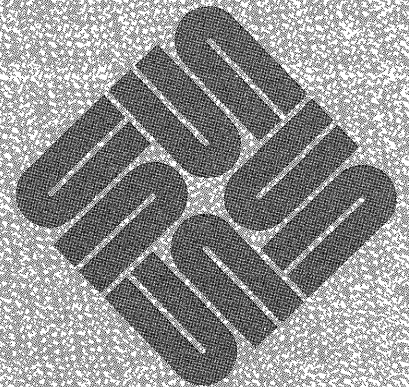
```
;;; GC: 4070 words [16280 bytes] of dynamic storage in use.
;;; 1142558 words [4570232 bytes] of free storage available before a flip.
;;; 2289186 words [9156744 bytes] of free storage available if GC is disabled.
;;; GC: 4070 words [16280 bytes] of dynamic storage in use.
;;; 1142558 words [4570232 bytes] of free storage available before a flip.
;;; 2289186 words [9156744 bytes] of free storage available if a GC is disabled.
;;; Adding a Foreign-Static segment to Foreign-Area
```

Modification Procedure Complete.

tutorial#

Running Sun Common Lisp

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Running Sun Common Lisp

6.1. Over the Network

If you are licensed to run Sun Common Lisp on several machines and have installed it on a server, you can simply export the appropriate file system from the server using NFS, mount the file system on the NFS clients whose host IDs are configured into the image, and run from the NFS clients.

Here's an example of this process:

1. On the server, edit the `/etc/exports` file (or create it if it does not exist), and enter a line for the file system you wish to export:

```
/usr
/usr/ike
/usr/doc
/usr/lisp    [new ]
```

2. On the NFS clients, edit `/etc/fstab` and add a line for the file system you wish to mount. For example:

```
/dev/nd0 / 4.2 rw 1 1
/dev/ndp0 /pub 4.2 ro 0 0
athena:/lib /lib nfs rw,hard 1 1
athena:/usr /usr nfs rw,hard 1 1
athena:/usr/athena /usr/athena nfs rw,hard 1 1
titan:/usr/doctools /usr/doctools nfs rw,noquota,hard 1 2
ike:/usr/lisp /usr/athena/alison/lisp nfs ro,soft 0 0 [new ]
```

3. As super-user, mount the new file system on the NFS clients:

```
client# /etc/mount -a
mount: /dev/ndp0 already mounted
mount: athena:/lib already mounted
mount: athena:/usr already mounted
mount: athena:/usr/athena already mounted
mount: titan:/usr/doctools already mounted
```

You should now be able to run normally.

6.2. Without Emacs

If you want to run the Sun Common Lisp system without Emacs support, all you need do is execute the `lisp` file in your Lisp directory (`/usr/lisp`, if you installed as suggested). Sun Common Lisp will then run in a window under Sun Windows.

6.3. With Emacs

If you want to run Sun Common Lisp under Emacs, you should read the file `emacs-support.doc` in the `maclib` installation directory. Information in this file supersedes the information in the *Sun Common Lisp User's Guide* about running Common Lisp under Emacs and about the commands in the `common-lisp.ml` library.

Systems for Open Computing™

Corporate Headquarters

Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, CA 94043
415 960-1300
TLX 37-29639

For U.S. Sales Office

locations, call:
800 821-4643
In CA: 800 821-4642

European Headquarters

Sun Microsystems Europe, Inc.
Bagshot Manor, Green Lane
Bagshot, Surrey GU19 5NL
England
0276 51440
TLX 859017

Australia: (02) 413 2666

Canada: 416 477-6745

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