

# Software Installation Guide and Primer

*symbolics™*

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# Software Installation Guide and Primer

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**This document corresponds to Genera 7.0 and later releases.**

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## PART I.

### Software Installation Concepts Primer

You have just received your Symbolics computer. Your machine is uncrated and you are eager to get it up and running. Or, you may be new to the job of installations, or maybe you just received Genera 7.0 and want to install it at your site.

Your first step is to read this primer.

The purpose of this primer is to help you understand site installation concepts. It is meant to help you integrate your new machine into your environment as quickly as possible. In order to get your machine set up and running you must understand what steps to take and why they should be taken. After reading this, you will understand the importance of all of the pieces that make up the site installation process.

This primer will be of interest to you if you are:

- A new Symbolics customer with a new Symbolics computer
- A Symbolics customer who wants more information about site installation
- Anyone who is curious about Symbolics site installation philosophy

The Genera 7.0 software installation documentation consists of:

1. The *Software Installation Concepts Primer (SICP)*. Read this for conceptual material before installing your machine. Topics covered in this include:

- Definition of a site
  - Explanation of why you must configure and name a site
  - Explanation of the Symbolics computer disk structure
  - Description of the Symbolics computer software systems
  - Explanation of the boot process
2. The *Software Installation Guide*. Read this while installing your machine. This document contains specific instructions for installing the software, and refers to the *SICP* for a conceptual backdrop.
  3. *Book 0* of the Genera 7.0 documentation set. Read this for answers to any site maintenance questions you might have. Some of the topics explained in this document are:
    - The various magnetic tapes which can be used on Symbolics computers
    - The tasks you can perform with the File System Editing Operations program
    - Managing the file system of your Symbolics computer



## 1. Basic Site Installation Concepts

### 1.1 What is a Site?

Symbolics documentation uses the term *site*, in relation to site installation, to mean a collection of computers resources connected to a single local-area network. The resources include: *hosts*, *networks*, possibly other hardware, and users located in a single place. The term *host* is used interchangeably with *computer* and *machine*. A network is the hardware and software that enables two computers to communicate. All Symbolics computers are capable of being on a Chaosnet. Chaosnet is one type of network. DNA and IP-TCP are other types of networks.

For a better understanding of the vocabulary used in site organization, see the section "Glossary of Networking Terminology" in *Networks*.

### 1.2 What Kinds of Sites Are There?

There are two categories of sites: *standalone* sites, and sites that connect their hosts together on a network. A standalone site consists of a single machine that has no network connections to another Symbolics computer.

Although every Symbolics computer is capable of running by itself in a standalone environment, if you own more than one Symbolics computer, you greatly enhance utility if you allow each host to reside on the same network.

Among the advantages of connecting machines on a network are that you can check the status of other machines on the network, send mail electronic to other machines, perform remote login operations, and access source files and online documentation from any host on the network.

### 1.3 What Does Symbolics Mean by Site Configuration?

*Site configuration* is the process of configuring your Symbolics software to describe the resources available on the network. Once a site is configured, each machine at the site can find out about the other hosts, printers, and users at the site.

The Symbolics computer system utilizes the *namespace system* to manage site configuration. Any site that connects its hosts on a network must use the namespace system. For more information about the namespace system see "Introduction to the Namespace System" in *Networks*. The namespace system is a distributed network database that is managed by a designated *namespace server*

*machine*. The namespace server has the ability to describe the environment of a particular site. The namespace server might not store the namespace database files locally, but it is configured to know where to locate those files. The namespace server collects and maintains a complete set of information for the site in the database. All of the information known about each host, printer, and user is stored in the database. For more information about the namespace objects: See the section "Namespace Objects" in *Networks*.

There can be multiple namespace servers at a site. One namespace server is called the *primary*, and the others are *secondary*. For information about the differences between server machines: See the section "Different Types of Machines", page 10.

A typical Symbolics network consists of a namespace server machine that stores the namespace database, and a file server machine that stores the system sources and online documentation. It is possible for one machine to perform both these services, if you have enough available disk space. The only restriction is that the namespace database server must be a Symbolics computer, and the system sources and online documentation must reside on a Symbolics computer or a VAX running Berkeley UNIX or VMS which is available via Chaosnet or DECNet. No other system can be used to store sources or online documentation.

## 1.4 Why Must I Configure My Site?

In order for a host to use any of the services provided by another host, it must determine two important pieces of information:

- how the remote host is connected to the local host (this is the *network address*)
- what *network protocol* must be used in order to obtain the desired service

Information provided by the namespace server and site configuration allow a host on a network to discover the network address and protocol of a remote host that uses the same protocol.

A host discovers the address of a namespace server through site configuration. The individual in charge of a site must provide enough information to each host to get started. To do this, each Symbolics computer host is provided with a *site configured world*, a Lisp environment which contains sufficient information so that the machine knows where and how to obtain namespace service.

## 1.5 How Do I Configure My Site?

Here is an outline of the site configuration process for a new site:

1. **Design the Site.** This includes inventing a name for the site and for each machine, and assigning a Chaosnet address to each Symbolics computer. Each machine must have a unique Chaosnet address. Machines that are not Symbolics computers might already have network addresses for DNA or IP-TCP networks. Remember that site names must be unique, so try to pick a name that is unusual. For more information on Site names: See the section "Choosing a Name for Your Site", page 6.
2. **Complete the set-site dialogue.** The first time you boot a Symbolics distribution world at your site, you must complete a dialogue known as the *set-site dialogue*. This step connects the namespace software with the permanent database on the disk. For a new site, it creates the initial database. Once you have entered data into the namespace database, it is stored permanently and does not go away unless deleted. Every time a Symbolics host on the network boots, or asks about another host on the network, or performs any network-related service, it contacts the namespace server machine for the information. You only need to set up your site once, but it is essential that you do so.
3. **Create a non-server world.** These worlds can be copied to all of the machines in the local network. For instructions on how to do this see the section "Configuring User Machines" in the *Software Installation Guide*.
4. **Create a namespace server world.** For instructions on how to do this see the section "Configuring Your Namespace Server" in the *Software Installation Guide*. The initial site-configured world will be a namespace server world. The information stored in this world will always be somewhat out-of-date, as other machines and hosts are added to your site. For this reason, we suggest that you make Incremental Disk Saved worlds on top of the full site world, from time-to-time. Use the Save World Incremental command to do this.
5. **Add other types of machines to the site.** For information on how to do these see the section "Adding a Foreign Machine to Your Site" in the *Software Installation Guide*.
6. **Add users to the site.** Use the *namespace editor* to do this. For more information about using the namespace editor: See the section "Updating the Namespace Database" in *Networks*.

7. **Add printers to the site.** See the *Printer Installation Guide* for installation instructions for your type of printer.

## 1.6 Choosing a Name for Your Site

Before setting up a new site, select a *site name* that designates the physical locality of your machines. This is different from the *host name*, which designates the name of a particular machine at that location. For more information see the section "Concepts of the Namespace System" in *Networks*. When choosing a site name, select a name that is not likely to be duplicated by any site with installed Symbolics computers. For example, if you are setting up a site at Acme Computers in Cambridge, Massachusetts and your department works on robotics, you might call your site *ACME-Robotics* or *ACME-Cambridge* rather than just *ACME*, to assure a unique site name.

## 1.7 Choosing Machine Names and Chaosnet Addresses

Machines have names because it is easier for users to refer to a machine by its name than by its Chaosnet address. You can refer to your machine by its Chaosnet address, but that can become tedious. Most customers choose a theme by which to name their machines. For example, each machine at your site might be named after a lake.

Chaosnet addresses are represented on the Symbolics computer as a single number that contains both subnet number and host number. This number contains eight bits for the subnet number and eight bits for the host number. The result is a 16-bit number whose most significant eight bits are the subnet number and whose least significant eight bits are the host number. This number is always displayed in its octal representation. For example, if you decide to have a machine whose subnet number is 1 and whose host number is 2, the resulting Chaosnet address is 402. For more information about Chaosnet addresses see: See the section "Format of Chaosnet Addresses" in *Networks*.

Most sites have all of their machines on the same Ethernet cable and thus have only one subnet. Choose a number for your subnet. Each host on the cable should be assigned a unique host number. Each Ethernet cable is assigned a unique subnet number. If you have machines on more than one Ethernet cable, you should assign each cable a unique subnet number.

All machines come from Symbolics with the Chaosnet address of 52525 in the initial boot file. This is never the address you want. You will get an error message if any machine at your site has this chaosnet address. If your site is new, you must boot the machine with a different chaosnet address. If you site

already exists, and a machine is already configured with this address, you must change it. For instructions on how to make this change see the section "Installing the Genera 7.0 Software" in page 43. For more general information see: See the section "Choosing a Network Addressing Scheme" in *Networks*.

If your site uses other types of networks, such as DNA or IP-TCP, as well as Chaosnet, we suggest an addressing scheme that encompasses all all networks used at the site. For more information see: See the section "Choosing a Network Addressing Scheme" in *Networks*.

## 1.8 The Set Site Dialogue: an Analysis

Here is an explanation of each line of the Set Site Dialogue. Each line of the Set Site dialogue appears, and the explanatory text follows. This dialogue defines a new site, but the questions are the same whether you define a new site or an existing one.

Command: Set Site (site name) downunder

First you issue the command, and give the site name.

Define a new site named DOWNUNDER (as opposed to looking for an existing definition of DOWNUNDER on disk)? (Y or N) Y

This allows you to define a new site. If the site already exists, Set Site will use information that has been previously entered into the namespace database and will ask you where to find the information.

What host is to be a namespace server for DOWNUNDER (default: local): RETURN

This allows you to choose the namespace server for your site. It may be the machine that you are typing from; if so, then it is the local host. If it is a machine different from the one on which you are typing, then you can provide the name of the namespace server for the site. If it is the local host, do **not** type the host's name, instead use the default.

What host is to be the SYS host for DOWNUNDER (default: local): RETURN

This allows you to choose the SYS host for your site. It may be the machine that you are typing from; if so, then it is the local host. If it is a machine different from the one on which you are typing, then you can provide the name of the SYS host for the site. For information on SYS hosts: See the section "What Are SYS Hosts?", page 9.

What Symbolics computer will store the namespace data files for DOWNUNDER (default: local):RETURN

This allows you to choose a machine which will store the namespace data files. Although this machine must be a Symbolics computer, it does not have to be the

same machine that is the namespace server, but we strongly suggest that it be the same machine.

What host is to be used for bug reports for DOWNUNDER (default: local): RETURN

This is most likely the machine that you use for your mailer. For information about the mailer, see "Installing and Configuring the Mailer" in *Site Operations*.

What is the real name of the local host: Koala

This allows you to enter the name of the machine from which you are typing the Set Site dialogue.

What directory on KOALA will host the namespace data files (default >sys>site>): RETURN

This allows you to choose the location of your namespace data files.

What directory on KOALA corresponds to SYS:SITE; (default: >sys>site): RETURN

The Set Site dialogue creates the system translations files, which are necessary for logical pathnames. Note that SYS:SITE; is a logical pathname. This question allows you to put your system translations files on any directory, although we recommend putting your translations files in the >sys>site> directory.

What account should be used for the system to login to KOALA (default: LISPM): wombat

This lets you specify name for the system to use automatically when it needs to access files. Do not supply your own name or that of another real user.

What is the local timezone (without daylight savings time) (default: EST): RETURN

This allows you to specify a time zone at your site. For more information about doing this, see the section "Specifying a Time Zone For Your Site" in *Site Operations*.

Is DOWNUNDER a standalone site (there are no servers to respond to a Who-am-I request)? (Y or N) Y

This allows you to indicate whether your site consists of one machine or many machines.

[13:15:16 Namespace lock DIS-LOCAL-HOST: reloading namespace DOWNUNDER. Recent servers contacted are DIS-LOCAL-HOST.]

The local host is now KOALA.

This message appears, and lets you know that the machine on which you are performing the Set Site dialogue is now known to the network as Koala.

## 1.9 What Are SYS Hosts?

A *logical pathname* is a kind of pathname that does not correspond to any particular physical file server on a host. Logical pathnames are used to make it easy to keep software on more than one file system. For example, the set of files that constitutes the Symbolics system source and online documentation system is stored at each site. Some sites store the files on a Lisp Machine File System (LMFS), while others store them on a VAX/VMS or VAX/ Berkeley UNIX host running Chaosnet, or on a VAX/VMS running DNA. In any case, all software in the system must use logical pathnames for those files in such a way that the software works correctly at all sites. This is accomplished with a *logical host called SYS*. All pathnames for system software files are actually logical pathnames with a logical host SYS.

At each site, SYS is defined as a logical host, but the translation is different at each site. For example, at a site where the system software is stored on a VAX/VMS system, pathnames of the SYS host are translated into VAX/VMS pathnames. A site that stores the system software on a LMFS needs to translate pathnames of the SYS host into LMFS pathnames.

The flexibility of logical pathnames enables sites to split their logical SYS host across several physical hosts. A given physical host might contain some of the system software, but the logical entity called a SYS host contains all of it.

For more information on logical pathnames: See the section "Logical Pathnames" in *Reference Guide to Streams, Files, and I/O*.

### 1.9.1 Why Do I Want the System Sources and Online Documentation?

Symbolics distributes online a portion of the sources from which the Lisp environment was developed, and all of the documentation sources. If you set up one machine as a server for these files, then you have access to a portion of the system sources. This greatly enhances your development environment and facilitates your development of application packages. You can access these sources from anywhere on the network, without using any disk space other than that on the server machine. For more information: See the section "What Are SYS Hosts?", page 9.

In a distributed environment, all of the printed documentation is also available online. You need only select Symbolics online documentation system, called the *Document Examiner*, or execute a few simple commands, in order to view any part of the documentation for the system. To use the Document Examiner press SELECT D. Once the Document Examiner window appears, you can view the documentation on how to use the Document Examiner by using the mouse to click middle on the menu option [Help].

## 1.10 Different Types of Machines

The type of machine you have determines which kind of world is appropriate.

### User machines

User machines may or may not have special software loaded into their worlds. The distinguishing characteristic of these machines is that they rely on the server and namespace server machines for many services, such as files (including online documentation) and the mail delivery.

You can build special worlds for user machines if you want them to run software that is not part of the standard system. For example, you may load Symbolics layered products such as FORTRAN, PASCAL, Prolog, or IP-TCP, into the worlds which you run on the user machines.

### Server Machines

Server machines are those machines designated to provide network services to many, or all, of the machines at a site. Typically, server machines provide the following services:

- File storage: they have a LMFS where many users store files
- Print spooling: they receive requests to hardcopy information, queue the information, and print it on one or more printers
- Store and Forward Mail Service: they receive mail messages, and store them locally in mail files for users to read or forward the messages elsewhere over the network

Any machine can offer these services. However, Symbolics recommends that a machine upon which many users depend for services be used *only* as a server. No users should use it directly.

Often, servers run software that is not part of the standard world. In particular, the Print and Mailer systems have to be loaded in order to provide printer and store and forward mail service, respectively. To avoid having to load these systems every time that a server is booted, and to improve the performance of the server, you should save separate server Incremental Disk Save Worlds (IDS), which you optimize using the Optimize World command. For information about this command: See the section "Optimizing a World" in *Site Operations*. After you optimize the world, you can then save the server worlds that contain whatever additional software systems your servers run.

### Namespace Servers

A special case of server machines is the namespace server. A namespace server is a machine configured as a primary or secondary server for some namespace. All



the other machines at the site depend on the namespace server to get up-to-date namespace information. For additional information on the namespace system: See the section "Introduction to the Namespace System" in *Networks*.

Primary namespace servers read and write the permanent files of the namespace database. These files can be stored on any file server on the network, however, namespace update operations are much faster if the files are stored on the primary namespace server's local LMFS. This is only possible if the machine has enough disk space to store the files.

Secondary servers are not an authority on a namespace, but can provide a backup in case the primary server is temporarily unavailable. These servers attempt to keep a copy of the namespace information current by querying the primary server more often than a nonservice machine would.

All namespace servers load the entire namespace database into their virtual memory at boot time. As your namespace grows, this process will take longer and longer. To avoid this delay, we recommend that you create special worlds for your namespace servers. To do this, boot a world with the appropriate software on a namespace server machine. In booting, it loads all of the namespace information. Then when you save the world you get a permanent copy of the namespace information in the world. You have to repeat this process from time to time as your namespace information changes.

When you boot a namespace server, it only loads the namespaces for the machines that it is a server for. Therefore, if you have more than one namespace server, and your namespace servers serve different namespaces, you have to save different worlds for each set of namespaces. For example, consider the following set of namespaces and servers:

Your site, ALCATRAZ, defines namespace ALCATRAZ locally. The host BIRD-MAN is the primary namespace server for ALCATRAZ. The host CAPONE is a secondary namespace server for ALCATRAZ.

You have a CHAOS network connection to the site SING-SING, and you want to have one of your machines act as a secondary server for SING-SING. (This provides a back-up for SING-SING, and allows your machines to get information on SING-SING quicker). You configure CAPONE as a secondary for SING-SING.

So now you have two namespace servers: BIRD-MAN serves ALCATRAZ, and CAPONE serves ALCATRAZ and SING-SING.

If you save a world on BIRD-MAN, it will contain the ALCATRAZ namespace. That world won't be very useful on CAPONE, since it *will not* contain the SING-SING namespace.

On the other hand, if you save a world on CAPONE, it will contain both the ALCATRAZ and SING-SING namespaces. If you boot it on ALCATRAZ, it will print a notification about having the SING-SING namespace loaded, but it will otherwise be just like booting a world which has been saved on ALCATRAZ.

Prior to creating any new worlds, you may want to create a special file to help you customize each one. For information about this: See the section "Creating a Script File for Your Site".

## 2. Worlds and Systems

### 2.1 What is a Distribution World?

Core software, containing the Lisp language, and all of the programming tools including the Zmacs editor, the Lisp Machine File System, the Zmail electronic mail facility, the Document Examiner, and others, are distributed in the form of a *distribution world*. This world is formally known as some version of *Genera*. For example, the name of the current distribution world is Genera 7.0.

When you receive the distribution world from Symbolics, it is a bare world without any customizations. Once the distribution world is loaded on your machine, you must make all the modifications to it, such as loading special systems or software, to make it customized for your site.

### 2.2 What Happens When My Machine Boots?

*Cold-booting* a Symbolics computer means loading a saved Lisp environment, called a *world load*, into memory. A *world load* is a snapshot of a Lisp environment. Usually, a Symbolics computer has several different world load snapshots on its disk, each one tailored for a specific application or need. For example, you might have two world loads on your machine: one consisting of the standard Symbolics distributed world with minor local configuration-related changes, and one consisting of the first world load enhanced with software that you have developed.

You boot a Symbolics computer by typing the Boot command to the front-end processor, which is called the *FEP*. The FEP is a small auxiliary processor that is included in the system, for loading certain files that enable the Symbolics computer to boot, and for taking care of certain needs of the machine during operation, such as listening to the keyboard and mouse. The FEP's command format is similar to that of the Lisp Command Processor. As is the case nearly everywhere in the Symbolics computer environment, the FEP gives useful information if you press the HELP key on the right-hand edge of the keyboard.

The command Boot to the FEP, which you enter by typing Boot or B, means *read in a boot file and execute the lines in it sequentially as FEP commands*. The default boot file is displayed for you if you type a space after the word Boot or B. The default boot file when the Symbolics computer is powered up is FEP0:>boot.boot. After that, the default boot file is the last boot file used. You can give an argument to the boot command that specifies a different file from which to boot. For example, you can create a different boot file for each world load on your machine. All machines shipped by Symbolics have a boot.boot file on

the default disk unit (FEP0). It contains the commands needed to boot the machine.

In order to boot a Symbolics computer, you must be in the FEP. You cannot boot a machine when you are running a Lisp world. You stop the current Lisp World by typing the command `Halt` to the Command Processor. Once you have halted the machine, you can give boot commands to the FEP.

Here is an example of the command sequence in a boot file:

```
Clear Machine
Load Microcode
Load World
Set Chaos-Address 401
Start
```

You can type all of these FEP commands manually instead of using a boot file.

A more detailed explanation follows:

- The FEP command *Clear Machine* clears the internal state of the registers and memories.
- The FEP command *Load Microcode* loads the microcode memory and other high-speed memories from the specified file.
- The FEP command *Load World* copies a portion of a world load into main memory. This command also loads the paging file from the same disk unit as the world load.
- The FEP command *Set Chaosnet-Address* sets the correct chaosnet address for your machine
- The FEP command *Start* sets the Lisp program counter at a fixed address, where the low-level function *system-startup* resides, and says *Go*.

After the FEP command `Start` is executed, Lisp takes over; when the boot process completes, you are in Lisp and are ready to log in to the machine. After Lisp has been started, the rest of the world load is integrated into the paging areas as required. Newly created or modified pages are placed in the paging area of the disk, which is one or more files in the FEP file system.

When you start the Symbolics computer a number of operations occur. These include:

- Creating/reshaping the initial Lisp Listener window, if necessary
- Polling the network to determine the current date and time

- Polling the network to determine the identity of the current machine. For a list of booting commands: See the section "FEP Command Summary", page 19.

## 2.3 Symbolics Systems

*Systems*, as used by Symbolics, are collections of files that when loaded together affect the Lisp environment in useful ways. For example, if you load the Print System into the Lisp environment of your machine, the machine will have the capabilities of a print spooler; it will take network requests from other hosts and will print them one at a time on the local printer.

The term *loading* means to read files from disk into memory. Once a file has been read into memory, all of the functions defined in it are accessible. These functions can be contained in a single source file or in many files. Systems provide a convenient way to describe, compile, and load a piece of software.

Some systems are already loaded into your world by Symbolics; these loaded systems make up what is called the base world. The Document Examiner is an example of a system that is part of the distribution world. There are other systems provided by Symbolics that are not loaded into the distribution world. These systems provide additional facilities that might not be needed by all Symbolics computers. An example of a *non-loaded* system is the Store-and-Forward Mailer.

Most systems Symbolics ships contain several files, and optionally include some *patches*. The patches are modifications that are too small to warrant compiling the entire system, and are loaded after the regular system files.

Each system has a *major* and *minor* version number. The major version number indicates how many major revisions and recompilations the system, as a whole, has had. The minor version number indicates how many patches have been made to the system since the last total system recompilation.

For a list of software Symbolics ships that is organized into bundled systems, and layered products, see "Loading Additional Systems" in the *Software Installation Guide*.

## 2.4 Understanding Symbolics Computer Disks

The disk of a Symbolics computer is physically divided into *FEP files*. This collection of files constitutes the FEP file system, called *FEPFS*. The FEPFS is a very simple file system that can be manipulated by the *Front-End Processor*. The FEPFS typically contains a small number of special-purpose files necessary for the

operation of the Symbolics computer. One of the special types of files commonly found in the FEPFS is a *Lisp Machine File System* partition, called *LMFS*.

There can be several disk units connected to a given Symbolics computer. Each one has a FEP file system. To distinguish between disk units, the syntax *FEPn* is used, where *n* is the disk unit number in the FEPFS filename. The first disk unit number is *FEP0*, and subsequent disks are numbered accordingly. For example, *FEP3:>boot.boot* means *the FEPFS file >boot.boot residing on disk unit 3 of this Symbolics computer*.

The Lisp Machine File System or LMFS partitions are typically large files that provide storage space for use by the Lisp Machine File System. The LMFS (pronounced "limfuss") is the file system used for day-to-day storage and access of files. Users' files and system sources and all files that are not specifically required to be FEP files are all stored in the LMFS. Note that the LMFS is a *file system within a file system*. When one speaks of the file system of a Symbolics computer, one is usually referring to the LMFS of that machine. An example of a LMFS partition:

```
FEP0:>LMFS.FILE.1
```

A Symbolics computer can have several FEP file systems, but only one Lisp Machine File System (LMFS). The LMFS can contain more than one LMFS partition. Remember, each LMFS partition is a file in one of the machine's FEP file system. The total storage capacity of the LMFS is the sum of the sizes of the LMFS partitions. No matter how many partitions make up the LMFS, together they make up only one Lisp Machine File System.

The following situation, which might initially seem confusing, is not uncommon: A Symbolics computer could have three disk units, each containing a FEP file being used as a partition of the machine's LMFS. Each of these files resides in a different FEPFS, but the three files together make up one LMFS. Remember this: *A Symbolics computer can have only one LMFS*.

Now that it is clear that there are two kinds of file systems on a Symbolics computer, let's talk about how to assess what space is available in each.

#### 2.4.1 Examining the FEP File System

The Command Processor command `Show FEP Directory machine-name unit-number` prints information about the FEP directory on a given machine and unit-number. All numbers are expressed in decimal. An example follows:

```
Show FEP Directory (on host) Corot (unit number) 0
```

```

124546 free, 137598/262144 used (52%)
FEP0:>BAD-BLOCKS.FEP.1    89      0(8)   7/21/86 17:23:52 [List of bad blocks] DE
FEP0:>DISK-LABEL.FEP.1    24      0(8)   7/21/86 17:23:52 [The disk label] DE
FEP0:>FREE-PAGES.FEP.1    29      0(8)   7/21/86 17:23:52 [Free pages map] DE
FEP0:>LMFS.FILE.1 20000      0(8)   6/14/86 12:55:58 [] schatsky
FEP0:>PAGE.PAGE.1 84000      0(8)   7/20/86 16:58:14 [] schatsky
FEP0:>Release-7-0.load.1 33348 34836480(8) 4/18/86 14:10:25 [Rel 7.0]
FEP0:>tmc5-mic.mic.360    108 123493(8) 6/24/86 09:12:00 [TMC5-MIC 360] rodney

```

The first line of the display gives useful status information. In this case, you can see that there are 124546 blocks available in Corot's FEPFS disk number 0. Each line of the display is of the form:

```

Filename Size-In-Blocks Actual-Size--in-Bytes-If-Known
Creation-Date Comment Author

```

One FEPFS block contains approximately 1100 8-bit bytes of data. In general, you can assume that approximately 10 to 15 percent of the storage space of any given disk is consumed as overhead due to formatting, or is unavailable due to various media defects. Thus, if you have a 335 megabyte drive, only about 300 megabytes are available after formatting. In the example above, the disk contains 262144 FEPFS blocks of storage, which is approximately 300 megabytes.

In the above directory listing we can see that LMFS.FILE.1 takes up 20000 blocks. Therefore, in this example, 20000 blocks of disk space are consumed by the Lisp Machine File System (and are unavailable for other purposes) regardless of how much of the space is actually allocated to files within the LMFS. In other words, 22 megabytes (20000 \* 1100) of the FEPFS have been allocated as "Lisp Machine File System storage", and are not available for any other use. An additional thing to keep in mind is that once storage has been allocated as LMFS storage, it is effectively committed to being LMFS storage for all time. It is an easy procedure, however, to allocate additional disk space as LMFS storage if necessary.

**Warning:** Never delete your LMFS partitions under any condition.

In addition, a small amount of space in every FEPFS is taken up by a collection of files that should not be deleted or modified. Files with types FSPT and DIR, as well as FEP, which appears in our example.

A chart showing the disks available from Symbolics and their storage capacities appears in the section "Disk Types" in *Site Operations*.

## 2.4.2 Examining the Lisp Machine File System

The Command Processor command Show Directory *directory-pathname* prints out useful information about the LMFS directory. Look at the LMFS of the machine named Corot, with the following command:

Show Directory (files [default C:>Emille>\*.\*.\*]) Corot:>\*.\*.\*

COROT:>\*.\*.\*

1650 free, 3340/4990 used (67%)

```
art-suppliers.directory.1 1 DIRECTORY ! 01/23/86 10:09:07 X=01/23/86 corot
patrons.directory.1 1 DIRECTORY ! 02/04/86 09:32:58 X=02/04/86 corot
brush-types.directory.1 1 DIRECTORY ! 01/14/86 12:58:56 X=01/14/86 corot
customers.directory.1 1 DIRECTORY ! 03/04/86 10:23:46 X=07/10/86 corot
galleries.directory.1 1 DIRECTORY ! 02/08/86 16:39:20 X=02/08/86 corot
```

10 blocks in 10 files.

The information displayed by this command is very similar to that displayed by the command Show FEP Directory. The first line of information shows the status of the LMFS. This LMFS has 4990 records of space, of which 1650 are currently unused. Each of the remaining lines is of the form:

```
Filename Size-In-Records Other-Useful-Information Status-Bits
Creation-Date Modification-Date Author
```

One LMFS record is equal to four FEP blocks, or approximately 4500 bytes of data. Thus, in the above case, this LMFS has room for  $4990 * 4500 =$  approximately 22 megabytes of file storage. Currently,  $3340 * 4500 = 15$  megabytes of the LMFS are in use.



### 3. FEP Command Summary

These are the FEP commands that are commonly used.

Like the Lisp command processor, the FEP command processor requires you to type only as much of the command name as it takes to make it unique. The new FEP redisplay the line so it shows the full spelling of the command name. Thus, you may type "l m" instead of "load microcode". The <HELP> key is active in the FEP command processor, telling you what commands are possible, given what you've already typed in.

For further documentation: See the section "The Front-End Processor" in *Site Operations*.

#### Basic booting commands:

**Boot** Reads a file on the FEP directory which contains other FEP commands. If you just say *Boot*, it will read the commands in the file >Boot.boot. If you say, for example, *Boot >test-something.boot*, it will read the commands in that file. [Actually, *Boot* by itself will read the file you last used, or the last file you printed with *Show File*.]

**Clear Machine** Clears memory. Also clears various other parts of the machine hardware, such as the GC map. You usually have to do this when you change the microcode, or when you want to use the *Disk Restore* or *Disk Format* commands.

#### Declare Paging-files

Declares *file-names...* to be the paging files for all subsequent Load World commands until a new Declare Paging-files command overrides it. *file-names* is a list of files separated by spaces, not commas. The default pathname (directory and file extension) for the first file is always FEP0:>.page. The default for subsequent files is the previous pathname without the filename. For example, if you specify FEP1:>abc.xyz, the default for the next file is FEP1:>.xyz. This command replaces the Add Paging-files command in boot files.

**Load Microcode** Loads microcode plus various other machine memories, such as A and B memory and the type map. You must do this before bringing up Lisp, and also if you want to use *Disk Format*. If you clear the machine using *Clear Machine*, you must reload the microcode.

- Load World** Loads the Lisp environment into the machine. This command also loads the file FEPn:>page.page. To cold boot the machine, you use *Load World* followed by *start*.
- Set Chaos-Address** Sets the Chaos address for this machine. A Symbolics computer **must** have a Chaos address before it can be *Started*. For further information on the legal values for the Chaos address: See the section "Format of Chaosnet Addresses" in *Networks*.
- Set Ethernet-Address** Sets the Ethernet address for this machine. This command is only needed if your site is running DNA.
- Enable IDS** Turns on the Incremental Disk Save feature.
- Start** Starts the Lisp world. This takes a while to figure out how big the screen is and so forth, and then clears the screen and begins to initialize the rest of the environment. The next few things you will see will be the "run lights" (small bars across the bottom of the screen) jiggling, then the screen borders. Eventually it will finish initializing, and prompt you with the *Command:* prompt. A machine which is not connected to a Chaos network will also ask the time.

## 4. Software Installation Terminology

This section describes some terms from the viewpoint of a site upgrading to the newest release, and notes some general restrictions.

*namespace server* Every site has associated a *namespace* with it. A namespace is a context in which names of user, hosts, and printers are resolved into their representative objects. A *namespace server* maintains these mappings of names into objects. These mappings are stored in files that make up the *namespace database*. A namespace server also processes queries and updates about the mappings and the objects to which those mappings refer. All hosts chosen as namespace servers must be Symbolics machines.

*primary namespace server*

A namespace has a single *primary namespace server*. This server is responsible for maintaining the files that make up the namespace database, and for controlling the access of users and secondary namespace servers to this information.

*secondary namespace server*

A namespace can have one or more *secondary namespace servers*. The secondary namespace servers answer queries when their information is up to date and can ask the primary server for up-to-date information. Secondary namespace servers are most useful for large sites (more than 25 machines).

*namespace database*

The namespace database consists of a number of files containing information about objects of various classes. You can create, modify, or delete objects in the namespace database by using the namespace editor. To run the namespace editor, click on [Namespace] in the System menu or use the Edit Namespace Object command. These invoke a window-based editor for the database. The namespace database usually resides in files in the `sys:site;` logical directory.

The default location for the namespace database is on the primary namespace server. The default name for the file that contains the names of the other files making up the database (the *namespace description file*) would be as follows, assuming that SITENAME is the registered name of the site:

```
sys>site>SITENAME-namespace.text
```

Other files constituting the database would have names such as:

```
sys>site>SITENAME-namespace-log.text
sys>site>SITENAME-namespace-changes.text
sys>site>SITENAME-hosts.text
sys>site>SITENAME-users.text
sys>site>SITENAME-others.text
```

The Edit Namespace Object command can be run on any host at the site. To update a database, both the primary namespace server and the host on which the namespace database resides must be available.

*objects and classes* The namespace database contains *objects* of several different *classes*. The set of classes in the database is as follows:

```
namespace
site
network
host
printer
user
```

For example, suppose you have a user, CHARLEY, logged in to Symbolics machine TUNA at site FISHERY.

```
CHARLEY is an object of class user.
TUNA is an object of class host
FISHERY is an object of class site.
FISHERY is an object of class namespace.
```

*namespace object* A namespace object is named by an identifier that is qualified by the namespace name:

```
FISHERY|TUNA
```

TUNA happens to be both an object of class host and an object in the FISHERY namespace.

*standalone site* A site is said to be *standalone* if it has no way of accessing a namespace server at boot time. The most common standalone site is a single Symbolics machine that is not connected to any network. However, because only Symbolics machines can provide namespace service, a site is also considered standalone if it consists of one Symbolics machine and any number of non-Symbolics-machine hosts. An organization with several Symbolics machines, none of which is on a network, constitutes

several independent standalone sites; that is, each machine appears as the single Symbolics machine host at a standalone site.

*who-am-i*

The *who-am-i* request is part of the procedure Symbolics machines use at boot time to determine if the saved Lisp environment matches the current site. If the information returned in response to the *who-am-i* request differs from the information that was saved away in the booted world load, the machine asks the user to confirm the machine's identity. If the user replies negatively, the machine disassociates itself from the old site and waits for the user to adjust it to the new site.



**PART II.**

**Software Installation Guide**





## 5. Introduction

This document explains how to install the Genera 7.0 software on your Symbolics computer.

Before you begin installation, you should read the *Software Installation Concepts Primer*, to acquaint yourself with the Symbolics site installation philosophy, if you are not already familiar with it. In addition, site installation requires that you configure machines in a particular manner. You may also read this in order to understand the philosophy of installation independent of site configuration. You need to decide what role each machine will play at your site. The choices include: *user machine, namespace server machine, file server machine* and *mail server machines*. It is important to understand the differences between these machine types, and how they work together to form your site.

For a description of each machine type see the section "Different Types of Machines" in *Software Installation Concepts Primer*.



## 6. Setting up a New Site

There are two reasons why you would want to set up a new site. One reason is if you are a first-time customer, with new machines. The second reason is if you are installing a new set of machines at an already-created site, but you wish to put these machines on a different chaos network from the rest of the machines at your site.

Instructions for setting up a new site are divided into two sections: a decision-making section for a new site, and then installation instructions for machines that have Genera 7.0 on disk. Many sections reference the *Software Installation Concepts Primer*, called the *SICP*, for background information. You should read the *SICP* before you perform the installation, or as references to the *SICP* occur in these installation instructions. **NOTE:** In the following dialogues, anything you type is underlined.

### 6.1 Decisions to Make Before Setting up a New Site

Before making any decisions about your new site, you should read the section "Different Types of Machines" in *Software Installation Concepts Primer*. This section explains the differences between namespace servers, servers, and user machines.

#### Decisions:

##### 1. Choose initial site parameters.

Choose a name for your site. Choose names and network addresses for all machines you currently have, including any foreign hosts you will talk to. See the following sections in *Software Installation Concepts Primer*.

- For information about choosing a name for your site, see the section "Choosing a Name for Your Site".
- For information about assigning your machine(s) names and Chaosnet addresses, see the section "Choosing Machine Names and Chaosnet Addresses". **Note:** All machines come from Symbolics with the Chaosnet address of 52525 in the initial boot file. This is never the address you want. You will get an error message if you try to boot a machine at your site with this chaosnet address. For more information see: See the section "Choosing a Network Addressing Scheme" in *Networks*.

## 2. Select your namespace server.

Choose the machine that will be your namespace server. It must be a Symbolics computer.

## 3. Select your file server, and if needed a print server, mail server and Domain Server. These machines may also be the same as the namespace server machine.

## 4. Analyze your machines to determine how much disk space is available to you for storing files.

For more information on disks and structuring your disk: "Understanding Symbolics Computer Disks" in *Software Installation Concepts Primer*.

## 5. Decide where to restore the Genera 7.0 distribution materials.

You must restore all of the Genera 7.0 distribution tapes, which are labeled *Genera 7.0 Sources & Examples & Documentation* (1/3, 2/3, 3/3). These tapes contain the available system sources, the online documentation files and the compiled versions of the print spooler, mailer, and IP Domain server sources.

If you do not have room to store all of these files on disk, you can first load the files and then delete the ones you do not have room for.

To help get an idea of the sizes of each system: See the section "Sizes of the Genera 7.0 Systems". If you have any questions about why it is good to have certain software online, see "Why Do I Want the System Sources and Online Documentation?" in *Software Installation Concepts Primer*.

### a. Choose the SYS Hosts

Decide on which hosts (and, in the case of VAX SYS hosts, which disks) you want to store the sources and documentation. Double check that each machine that will be a SYS host will be capable of supporting these decisions by figuring out if the machine will have enough disk space. For help in deciding what can be a SYS host, see the section "What Are SYS Hosts?" in the *Software Installation Concepts Primer*.

The file SYS:SITE;SYS.TRANSLATIONS contains a default translations file which points to storage on the SYS host(s) at the local site. You must edit this file at the appropriate time (indicated below) in order to store your sources and documentation. If you intend to store your sources on your namespace server see the section "Storing Your

Sources on Your Namespace Server Machine". If you do not intend to store the sources on your namespace server, see the section: "Storing Your Sources on a Non-Namespace Server Machine".

**6. Decide whether you want to save a complete or incremental world load.**

For help in making this decision: See the section "Saving a Site Configured World", page 75.

## **6.2 Instructions for Setting up a New Site If Your Machines Have Genera 7.0 on Disk**

Here is an overview of the steps to take to set up a new site:

- 1. Configure the namespace server machine.**
  - a. Boot the Genera 7.0 distribution world on the namespace server.
  - b. Log in as the default system user.
  - c. Edit the boot file to contain the correct Chaosnet address for your machine.
  - d. Boot the Genera 7.0 distribution world on the namespace server for the second time.
  - e. Log in as the default system user.
  - f. Create the site, using the Set Site command.
  - g. Create new namespace objects by editing the namespace database to register other hosts and users at the site.
  - h. Edit the SYS:SITE;SYS.TRANSLATIONS file.
  - i. Boot the machine in preparation for saving a clean copy of the Genera 7.0 world.
  - j. Load the site information into the world by using the Set Site command.
  - k. Save the newly configured Genera 7.0 world and update the boot file.

- l. **Back up the new site-configured Genera 7.0 world you just created.**
  - m. **Boot the new Genera 7.0 world.**
  - n. **Restore the files from the three source, examples, and documentation tapes onto the appropriate SYS hosts, if the SYS host does not already have the sources on it.**
- 2. Configure your user machines.**
- a. **Boot the Genera 7.0 distribution world on the any user machine.**
  - b. **Edit the boot file for the machine.**
  - c. **Boot the Genera 7.0 distribution world on the user machine for the second time.**
  - d. **Log in as the default system user.**
  - e. **Use the Set Site command.**
  - f. **Save the world using the Save World Incremental command or Save World Complete command.**
  - g. **Boot the site-configured version of the world**
  - h. **Load any software you want to include in the world.**
  - i. **Optimize the world using the Optimize World command:**
  - j. **Save the world using the Save World Incremental command.**
  - k. **Boot the new incremental version of the world.**
  - l. **Repeat this procedure for all user machines at the site.**

Follow these procedures for installing Genera 7.0 at a new site, if you have Genera 7.0 on disk.

### **6.2.1 Configuring Your Namespace Server**

Follow these steps to configure the namespace server at your site.

1. **Boot the Genera 7.0 distribution world on the namespace server.**

**Boot the machine manually, without using the boot file supplied.** When booting the machine, use the chaosnet address chosen in the section "Decisions to Make Before Setting Up a New Site" page 29. **Do not use the chaosnet address 52525.**

For information on how to do this, see the section "What Happens When My Machine Boots" page 13.

**If your machine is not connected to the network, or if your other machines are not configured, then you must enter the date and time.**

After you have booted the world on your namespace server the following appears on the screen:

```
Please type the date and time (default is 7/16/86 12:33:52 or
NONE to leave unspecified):
```

If the default date and time is correct, press RETURN, otherwise specify the correct date and time. After doing this, the initial window appears.

**Note:** You can set your time zone to be anything valid by specifying a time zone mnemonic symbol. You aren't, for example, limited to Eastern Standard Time (EST), Central Standard Time (CST), and Pacific Standard Time (PST); you can use other commonly accepted mnemonic symbols for zones for all over the world. For information about setting your time zone, see "Specifying a Time Zone for Your Site" in *Site Operations*.

Now log in as the default system user.

Type to the command prompt:

```
Login Lisp-Machine
```

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

Now edit the boot file to add the correct Chaosnet Address.

The boot file is usually called FEP0:>Boot.boot. You can edit this file by pressing SELECT E to select the editor. Then use c-X c-F to get the file. Save the file after you have edited it.

```
Clear Machine
Load Microcode microcode-file-name
Declare Paging-files paging-file-name
Load World distribution-world-file-name
Set Chaos-Address this-machine's-chaos-address
Enable IDS
Start
```

If you need an explanation of the commands contained in the boot file, see the section "Boot File Contents" in *Site Operations*.

If you need to know how to assign a Chaosnet Address for your machine, see the section "Choosing Machine Names and Chaosnet Addresses" in *Software Installation Concepts Primer*.

If you would like to know what happens when a machine boots, see the section "What Happens When My Machine Boots?" in *Software Installation Concepts Primer*.

2. **Boot the Genera 7.0 distribution world again, this time with the correct Chaos address.**
3. **Log in as the default system user.**

Type to the command prompt:

```
Login Lisp-Machine
```

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

4. **Create the site, using the Set Site command.**

An example of the Set Site dialogue for a new site is presented below. If you want an explanation of the dialogue, see the section "The Set Site Dialogue: An Analysis" in *Software Installation Concepts Primer*.

The Set Site command starts a dialogue to set the current site to be *site name*. This command is used to configure the software and identify your machine before you use a new world load. It should be the first thing you type to your machine after booting the new software.

When a new world is booted for the first time, the herald gives the machine name as *DIS-LOCAL-HOST*. You are prompted in the course of the Set Site dialogue for a name for the machine.



Use this dialogue if you are installing new software on a machine at your site that is the namespace server. What you type is underlined in this example. RETURN means press the key labeled RETURN.

```

Command: Set Site (site name) downunder
Define a new site named DOWNUNDER (as opposed to looking for an existing
definition of DOWNUNDER on disk)? (Y or N) Y
What host is to be a namespace server for DOWNUNDER (default: local):
RETURN
What host is to be the SYS host for DOWNUNDER (default: local): RETURN
What Symbolics computer will store the namespace data files for DOWNUNDER
(default: local):RETURN
What is the real name of the local host: Koala
What directory on KOALA will host the namespace data files (default >sys>site>):
RETURN
What directory on KOALA corresponds to SYS:SITE; (default: >sys>site): RETURN
What account should be used for the system to login to KOALA (default: LISPM):
RETURN
What is the local timezone (without daylight savings time) (default: EST):
RETURN (If your site is in the EST, press return.
Otherwise, enter your time zone here.)
Is DOWNUNDER a standalone site (there are no servers to respond to a Who-am-I
request)? (Y or N) N
[13:15:16 Namespace lock DIS-LOCAL-HOST: reloading namespace DOWNUNDER. Recent
servers contacted are DIS-LOCAL-HOST.]
The local host is now KOALA.
Command:

```

If the machine on which you are installing Genera 7.0 is the only Symbolics computer at your site, answer Yes to this question:

```

Is DOWNUNDER a standalone site (there are no servers to respond to a Who-am-I
request)?

```

##### 5. Create new namespace objects by editing the namespace database to register other hosts and users at the site.

If you know that there will be other hosts on the network, you can enter these now. Add users that will be part of your site, too. To edit a namespace object, type the following to the Command Processor prompt:

```

Command: Edit Namespace Object

```

For more information about editing your namespace object, see the section "Editing Your Namespace Object After Installing a New Release" in *Site Operations*.

## 6. Edit the SYS:SITE;SYS.TRANSLATIONS file.

The Set Site command automatically creates the SYS.TRANSLATIONS file. The following question in the Set Site dialogue allows you to choose where to store these files. In this example, *Koala* is the name of the local host.

```
What directory on KOALA corresponds to SYS:SITE; (default: >sys>site):
```

Depending on where you are going to store your sources, see the section "Storing Your Sources on a Non-Namespace Server Machine" or "Storing Your Sources on Your Namespace Server Machine" in *Software Installation Concepts Primer*.

The SYS.TRANSLATIONS must be edited to identify the directory where the system files and sources are placed. For information on editing see: *Text Editing and Processing*. Name the top level directory "Rel-7". This is the name used by Symbolics on systems with large disks or multiple disks, where the "Rel-7" directory is already present. Using "Rel-7" as the top-level directory name is part of the basis of a smooth upgrade path.

For an example of editing the SYS.TRANSLATIONS file: See the section "Editing the SYS.TRANSLATIONS File for a New Site", page 75.

If you need information on logical pathnames, see the section "What are SYS Hosts?" in *Software Installation Concepts Primer*.

## 7. Boot the machine in preparation for saving a clean copy of the Genera 7.0 world.

Using the Set Site command, editing namespace objects, and any other activities you may have done in the steps above change the state of the world. When you save a world, you want it to be as "clean" as possible. Booting the world returns it to a clean state.

Use the same boot sequence as in step 1.

**Note:** If you have a 3640 with a 140-megabyte disk, boot the machine with only one of the two paging files on disk.

## 8. Load the site information into the world by using the Set Site command.

When you boot the machine without having saved the world, the effects of issuing the Set Site command are not stored, and the herald again gives the machine name as *DIS-LOCAL-HOST*.

When you are asked the following question, make sure that you answer No to this question:

Define a new site named DOWNUNDER (as opposed to looking for an existing definition of DOWNUNDER on disk)? (Y or N) N

**9. Save the newly configured Genera 7.0 world and update the boot file.**

At this point you should save the world. You can save a complete world, or an incremental world. If you want to keep a Genera 7.0 distribution world that has not been site configured on disk, then you should use the Save World Incremental command. If you want to keep a site-configured world on disk, then use the Save World Complete command.

If you need help with the Save World command, see: "Using the Save World Command" in *Site Operations*.

For example, type:

```
Save World Complete FEP0:>Genera-7-0-site.load
```

**10. Back up the new site-configured Genera 7.0 world you just created.**

You should backup the world and the appropriate microcode.

It is important to back up the world at this point. This world represents a Genera 7.0 world load that you know can be booted and that has your local site information. If you should later destroy your Genera 7.0 world, this backup will provide a bootable Genera 7.0 world that includes your local site configuration.

Use the "FEP-Tape System" to back up the world. See *Site Maintenance* for a complete description of the FEP-Tape application, but here is the procedure in brief:

a. Type the command:

```
Select Activity FEP-Tape
```

b. Use the command Add File to add a single file to the list of files to be written to tape. For example, type to the FEP-Tape command prompt:

```
Add File pathname of the base site world
```

c. Use the command Write Tape to write the file to tape; type this to the FEP-Tape command prompt:

```
Write Tape
```

### 11. Boot the new Genera 7.0 world.

Boot the world using the new boot file you created in step 9.

### 12. Restore the files from the three source, examples, and documentation tapes onto the appropriate SYS hosts.

Now you can load documentation and source files onto the machine you have decided will be your SYS Host, if the SYS host does not already have the sources on it.

If you have any questions about SYS hosts, see the section "What are SYS Hosts?" in *Software Installation Concepts Primer*. To see if your disk can accommodate these files see the section "Sizes of the Genera 7.0 Systems" in this document.

If you are restoring the Genera 7.0 distribution tapes to a VAX/VMS SYS host, please read the following section: See the section "VAX/VMS Version 4.4 Pathnames and Genera 7.0", page 85.

Loading the sources, documentation, and examples files is not optional in Genera 7.0. If you do not have adequate disk space to restore the three Genera 7.0 tapes, please call Symbolics Software Services.

Load each distribution tape by typing:

```
Restore Distribution
```

You can load these tapes in numerical order.

## 6.2.2 Configuring User Machines

Follow these steps to configure user machines at your site.

Before you begin to add other new machines to the site, find out the Chaosnet address of the namespace server at your site, and write it down. To find out the Chaosnet address, use the Show Host command.

If you plan to have two or more user machines run identical software, follow the steps below in the first section. If the user machines at your site will be running different software, see the second section.

Follow these instructions if two or more of the machines at your site will run identical software. For convenience, we will refer to the user machine that is used to build the user worlds as *User-1*.

1. **Use the Namespace Editor on the namespace server to create a host object for the user machine to be added to the site.** For information on using the namespace editor: See the section "Details of the User Interface to the Namespace System" in *Networks*.

In the Namespace Editor, the host name is added automatically when you create the object for the host, but you must enter host's Chaos address under *Address* and your site name under *Site*. You must also add any services to be provided by the host.

2. **Boot the Genera 7.0 distribution world on the *User-1* machine.**

Log in as the default system user.

Type to the command prompt:

```
Login Lisp-Machine
```

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

3. **Edit the boot file to contain the correct Chaosnet address for your machine.**

The boot file is usually called FEP0:>Boot.boot. You can edit this file by pressing SELECT E to select the editor. Then use c-X c-F get the file. Save the file after you have edited it.

For help with this see "Choosing Machine Names and Chaosnet Addresses" in the *Software Installation Concepts Primer*.

4. **Boot the Genera 7.0 distribution world on the *User-1* machine using the correct Chaosnet address.**
5. **Log in as the default system user.**

Type to the command prompt:

```
Login Lisp-Machine
```

6. **Use the Set Site command.**

Answer No to this question:

Define a new site named DOWNUNDER (as opposed to looking for an existing definition of DOWNUNDER on disk)? (Y or N) N

The dialogue asks you for the Chaosnet Address of the namespace server at your site.

**7. Save the world using the Save World Incremental command or Save World Complete command.**

For example:

```
Save World Complete FEP0:>Gen-7-from-Site.load
```

When asked if you want to update the boot file, answer Yes.

**8. Boot the site-configured version of the world**

Use the boot file that was created when you saved the world.

**9. Load any software you want to include in the world.** For a list of additional software you might want to load: See the section "Loading Additional Software", page 88. **Do not use the editor, Zmail, or any other application. If you go into the debugger, fix the cause, boot, and start the procedure over again from the beginning.** Use the Load System command to load any additional software. For example, to load the IP-TCP system, type:

```
Load System IP-TCP
```

**10. Optimize the world using the Optimize World command:**

```
Optimize World
```

The Optimize World command reorganizes the world to improve paging performance. After using this command, you can use either the Save World Complete command, or the Save World Incremental command depending on the situation. For information about what Optimize World does and how to use it see the section "Optimizing a World" in the chapter "Commands Used to Customize and Save Worlds", in *Site Operations*.

**11. Save the world using the Save World Incremental command.** For example, type:

```
Save World Incremental FEP0:>Inc-Gen-7-from-Site.load
```

**12. Boot the new incremental version of the world.**

On each user machine that will run the same software as the *User-1* machine, perform this sequence of commands:

- Boot the Genera 7.0 Distribution world.
- Log in as the default system user.
- Edit the boot file to contain the correct Chaosnet address.
- Boot the Genera 7.0 Distribution world using the correct Chaosnet address.
- Log in as the default system user.
- Use the Set Site command. You are asked the for the Chaosnet Address of the namespace server at your site.
- Copy the site-configured version of the world from the *User-1* machine to this machine. To do this, type:

```
Copy World User-1|FEP0:>Gen-7-from-Site.load
```

This world is called the parent world. It must be on the disk of each user machine that will receive an incremental world from the *User-1* machine.

- Copy the incremental version of the world from the *User-1* machine to this machine. To do this type, for example:

```
Copy World User-1|FEP0:>Inc-Gen-7-from-Site.load
```

If the user machines at your site will all run different software, create the site-configured world as detailed above, and then create individual incremental worlds which contain special software, which is also detailed above. If you prefer, you can make one version of the world, which contains the site-configured software as well as any special software. To do this, after creating the site-configured world you:

- Load additional software
- Use the Optimize World command to optimize the world
- Use the Save World Incremental command to save an incremental version of the world.

If you are adding a non-Symbolics computer to your site: See the section "Adding a Foreign Machine to an Existing Site", page 86.





## 7. Genera 7.0 Installation Overview for an Existing Site

### 7.1 Procedural Overview for Installing Genera 7.0 At an Existing Site

Genera 7.0 is the newest version of Symbolics software. This is distributed in the form of a distribution world, which you must configure for your site in order to be able to use.

To install Genera 7.0 at your site, you have to accomplish three main tasks:

1. **Install the Release-6-7 Compatibility System on all machines that will continue to run Release 6 after you have updated other machines at your site to run Genera 7.0.** This includes server and user machines. You must run the Release-6-7 compatibility system on all Release 6 machines that will:
  - Use Genera 7.0 machines as a file or namespace server.
  - Read text files written with machines running Genera 7.0
  - Serve as the LMFS file server or as the namespace server for machines running Genera 7.0
  - Receive mail sent from machines running Genera 7.0

For Instructions on doing this: See the section "Installing the Symbolics 6.1 to 7.0 Compatibility Patches", page 55.

2. **Restore the Genera 7.0 world into your FEP file system from tape.**
3. **Configure the appropriate Genera 7.0 worlds for your site and distribute them to the machines that will run Genera 7.0.**
4. **Back up your world to tape.**
5. **Restore the Genera 7.0 documentation, sources, and binaries into your file system from tape.**

**Note:** If you have a 3640 with a 140-megabyte disk: See the section "Installing Genera 7.0 on a 3640 with One 140-Mbyte Disk At an Existing Site", page 69.

## 7.2 Decisions to Make Before Installing the Genera 7.0 Software

Here are some decisions to make before you install the Genera 7.0 software:

1. **Decide whether you want to save a complete or incremental world load.**

For help in making this decision: See the section "Saving a Site Configured World", page 75.

## 7.3 Installing the Genera 7.0 Software

Here are the instructions for creating an initial Genera 7.0 site-configured world at an existing site.

1. **Examine the chaosnet address of each Symbolics computer at your site.**

All machines come from Symbolics with the Chaosnet address of 52525 in the initial boot file. This is never the address you want. You will get an error message if any machine at your site has this chaosnet address. If one of your machines already has this address, you must change it.

For user machines with a chaosnet address of 52525, you must:

- a. **Choose a new chaosnet address for your machine in your site's current subnet.**
- b. **Edit your host's namespace object.**
- c. **Change the chaosnet address to reflect the new address.**
- d. **Save the namespace object.**
- e. **Edit your boot file to contain the new chaosnet address.**
- f. **Boot your machine using the new boot file.**

For a namespace server machine that is a standalone machine, with a chaosnet address of 52525, you must create a new site in order to change the chaosnet address. To do this, follow the instructions in the section "Setting up a New Site", page 29.

If you have a namespace server machine in a multi-host site with a Chaosnet address of 52525 you have two choices. You can recreate the namespace information for the entire site. To do this, follow the instructions in the section "Setting up a New Site", page 29. If your site is too large and the namespace is too difficult to re-create, contact Software Services to help you configure Genera 7.0 with your existing site.

For more information see: See the section "Choosing a Network Addressing Scheme" in *Networks*.

## 2. Restore the Genera 7.0 world load and appropriate microcode files.

*This step corresponds to conceptual step 2 in the section "Procedural Overview for Installing Genera 7.0 at an Existing Site."*

The details for doing this are described below. There are three tapes labeled *Genera 7.0 Distribution World (1/3, 2/3, 3/3)*.

- a. Choose a machine to use for building your site's Genera 7.0 worlds. *Don't* choose your namespace server, if possible. Choosing a machine with a local tape drive will speed up the process considerably. Your best choice is to use a machine that:
  - has a tape drive
  - has enough disk space to boot Genera 7.0
  - is not a critical machine at your site (for example, preferably not the namespace server)

If you do not have a machine at your site that fits this description, you can use a machine that has a tape drive, which may or may not be the namespace server but does not have room on its disk for you to be able to restore Genera 7.0. In this case you can restore the new distribution to a remote machine's FEP, as long as this machine is not the namespace server. This procedure is much slower than if you were restoring Genera 7.0 on to the local machine's disk.

Make sure that this machine has enough free disk space on its FEP for the Genera 7.0 distribution world and microcodes (about 40,000 blocks). You restore the software to your FEP file system with new tools that are included in the Release-6-7 compatibility system. If the machine that you will use for building your site's Genera 7.0 worlds has not been saved with the Release-6-7 compatibility system, then you need to load this system into your world. See the section "Installing the Symbolics 6.1 to 7.0 Compatibility Patches."

- b. Insert the first *Genera 7.0 Distribution* tape into the tape drive you will use to restore Genera 7.0.

Invoke the FEP-Tape reading program for Release 6 by typing the function (**tape:fep-file-restore**). This function restores the contents of the tape to disk.

This prompts you for a tape spec. Specify the cart tape drive that you

put the tape into, either local or accessible over the network, through which you wish to read the tapes.

- c. The program first asks you whether you want to load each microcode file. The tape contains a complete set of microcodes for Genera 7.0. Before you begin to restore the microcode, look at the chart of microcode types for each machine model so that you can see what microcode pathname you need to restore. See the section "Genera 7.0 Microcode Types", page 65.

For each microcode type you are asked whether or not you want to restore the file. Here is an example of what you see on the screen. In this example, the microcode is for the 3600 machine model:

```
Filename: SYS:L-UCODE;3600-MIC.MIC.393
Length: 126791 bytes (111 blocks)
Created: 8/05/86 17:28:33
Author: Lerner
Restoration Comment: For microcode 39
Restore this file? (Y or N)
```

If you answer N, for No, the program skips the microcode file and prompts you for another version. If you answer Y, for Yes, the program asks you:

```
Into the file (default is SYS:L-UCODE;3600-MIC.MIC.393)
```

When you respond to this question, be sure to specify a FEP pathname that indicates microcode, such as "FEP0:>3600-mic.mic.393". This pathname has the disk unit only (for example, FEP0:>), since the microcode is to be stored on the local machine. Use this pathname instead of the default, which is the source file name (a LMFS pathname).

If the microcode is to be stored on a different host (machine) use the pathname that includes the disk unit number plus the name of the host. For example:

```
Host-name|FEP0:>3600-mic.mic.393
```

**Note:** The naming conventions for microcode are different for Genera 7.0 than they were for Release 6.1. There are fewer microcode files for Genera 7.0, since COLOR microcodes are no longer distinct from non-COLOR microcodes, and the same microcode handles all disk interface types.

After the microcode files are presented, and you have restored the

appropriate one, you are asked if you want to restore the world load file. Specify a FEP pathname that indicates a world load, such as "FEP0:>Genera-7-distribution.load", if the local machine will boot Genera 7.0, or "*Host-name*|FEP0:>Genera-7-distribution.load", if you are planning to boot Genera 7.0 on another machine. The FEP-tape loading program will then load the world from the tape(s) in the Genera 7.0 Distribution set.

- d. Create and save a new boot file (for example, FEP0:>rel-7.boot) on the machine on which you loaded the Genera 7.0 world. For information about booting and boot files, see the section "What Happens When My Machine Boots?" in *Software Installation Concepts Primer*. Be sure that this boot file contains the appropriate microcode which you restored from tape. We recommend that you insert the Enable IDS command after the Load World command in the boot file. This permanently enables IDS until you remove the command from the boot file and boot the machine again.

Here is the sequence of commands that may be contained in a boot file. Make sure that the Enable IDS command is included in the boot file. Once this file is created, you can invoke the boot command by typing the command Boot to the FEP command prompt.

```

Clear Machine
Load Microcode microcode-file-name
Load World world-load-file-name
Clear Paging
Add Paging-file paging-file-name
Enable IDS
Set Chaos-Address this machine's-Chaosnet-address
Set Ethernet-Address if your machine runs DNA
Start

```

### 3. Create a Genera 7.0 site-configured world for your site.

*This step corresponds to conceptual step 3 in the section "Procedural Overview for Installing Genera 7.0 at an Existing Site."*

#### a. Edit the SYS:SITE;SYS.TRANSLATIONS file.

We strongly recommend that you load Genera 7.0 binary, documentation, and source files into a separate file system hierarchy than the one used for Release 6. This makes it much easier to have different users running Release 6.1 and Genera 7.0 at the same site, at the same time. To do this, you must edit the file

SYS:SITE;SYS.TRANSLATIONS to define different logical pathname translations for Genera 7.0 than for Release 6.1. The Genera 7.0 files can be on different hosts than those used to store the Release 6.1 files.

**Note: You must edit SYS:SITE;SYS.TRANSLATIONS before restoring the Genera 7.0 Sources, Examples, and Documentation tapes.**

If your site is going to run only Genera 7.0: See the section "Editing the SYS.TRANSLATIONS File for a New Site", page 75.

If your site is going to run Release 6.1 and Genera 7.0 at the same time: See the section "Updating the SYS.TRANSLATIONS File When Running Two Releases", page 79.

**b. Boot the Genera 7.0 distribution world.**

Boot the Genera 7.0 distribution world on the machine that is not the namespace server. (This machine must be the one on which you have restored the Genera 7.0 world.)

**c. Disable Services, using the Disable Services command, as shown:**

Command: Disable Services

**d. Log in as the default system user.**

Type to the command prompt:

Login Lisp-Machine

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

**e. Use the Set Site command to configure the machine for your site.**

For information about the Set Site command, see the section "Set Site Command" in the chapter "Commands Used to Customize and Save Worlds" in *Site Operations*.

You will be asked several questions as part of the Set Site dialog. *Koala* is the name of the host and *Wombat* is the namespace server. Respond as shown in the example with the correct information for your site.

Define a new site named KOALA (as opposed to looking for an existing definition of KOALA on disk)? (Yes or No) No

What host is a namespace server for KOALA (Default :Local) WOMBAT

What is the Chaosnet address for WOMBAT? 24535

Host responds as WOMBAT, OK (Y or N) Y

**f. Save the new world, using either the Save World Complete command or the Save World Incremental command.**

At this point you may want to save a complete or incremental version of the world load, depending on your circumstances. For information about making this decision: See the section "Saving a Site Configured World", page 75.

For example, if you want to save a complete version of the world, you type:

```
Save World Incremental FEP0:>Inc-Site-from-Genera-7-0.load
```

This world will serve as the base world for all worlds that you build at your site, except the namespace server. For information on how to make user and server worlds for your site: See the section "Making Genera 7.0 User and Server Worlds for Use At Your Site", page 51.

**4. Back up the world that you just created to tape.**

*This step corresponds to conceptual step 4 in the section "Procedural Overview for Installing Genera 7.0 at an Existing Site."*

You should backup the world and the appropriate microcode.

See the section "FEP-Tape System" in *Site Operations* for a complete description of the FEP-Tape application, but here is the procedure in brief:

**a. Type the command in the Lisp Listener:**

```
Select Activity FEP-Tape
```

**b. Use the command Add File to add a single file to the list of files to be written to tape. For example, type to the FEP-Tape command prompt:**

Add File *the appropriate microcode files*

Add File *the pathname of the base site world*

Or, you can click on [Add File] and provide the name of the base site world.

- c. If you back up both the world load and the microcode files, these files can both be restored if needed.
- d. Use the command Write Tape to write the file to tape; type this to the FEP-Tape command prompt:

Write Tape

Or, you can click on [Write Tape].

#### **5. Restore the Genera 7.0 Documentation and Source tapes.**

These tapes are labeled *Genera 7.0 Sources, Examples, and Documentation*.

The Restore Distribution command does not allow you to pick and choose systems to load. You must have enough disk space to load the entire distribution. If you do not have adequate disk space to restore the three Genera 7.0 tapes, please call Symbolics Software Services.

If you are restoring Genera 7.0 distribution tapes to a VAX/VMS SYS host, please read the following section: See the section "VAX/VMS Version 4.4 Pathnames and Genera 7.0", page 85.

To restore the documentation and sources, boot the Genera 7.0 site-configured world and put the first documentation and examples tape into the tape drive. Then, use the command Restore Distribution to restore the files from that tape. Repeat this procedure for each tape until you have restored all of the sources and documentation to your file system. For information about the command Restore Distribution: See the section "Distribution Subsystem" in *Site Operations*. You type:

Restore Distribution

Use the same command to restore the distribution tapes for any Genera 7.0 layered products such as IP-TCP, DNA, Fortran, or Pascal.

#### **6. Copy the new version of FEP Eprom overlay files (flod files) to every machine at your site.**

In order to take advantage of new FEP commands, you must load the new version of the FEP overlay files.



On each machine, copy the overlay files (flod files) from sys:n-fep; onto the FEP file system. Use the Copy File command to do this. For example:

```
Copy File SYS;n-fep;v127-*.flod.newest Host|FEPn:>
```

In this example, *Host* is the name of the host to which you are copying the overlay files, and *FEPn* is the disk unit number.

7. **Halt your machine using the Halt Machine command.**
8. **Reset your FEP by using the Reset FEP command.**
9. **Type Hello to the FEP command prompt.**
10. **Boot your machine.**
11. **Edit your boot file to contain the new paging file command.**

After you load the new version of FEP overlay files, you should remove the Add Paging-file and Clear Paging commands from your boot file. Then, insert the Declare Paging-files command in your boot file. The Declare Paging-files command is different from the Add Paging-files command, but is used in boot files to declare the paging files for all subsequent Load World commands until a new Declare Paging-files command overrides it. For information on this command's special features, and for instructions on where to place this command in your boot file, see the section "FEP System Commands: General Usage" in *Site Operations*.

Insert this command in your boot file, after the Load World command.

```
Declare Paging-files paging-file1 paging-file2
```

The paging file names should include the correct disk designation, such as FEP0:> or FEP1:>.

Now that you have a configured world for your site, you can make user worlds and server worlds to transfer to the other machines at your site.

## 7.4 Making Genera 7.0 User and Server Worlds for Use At Your Site

This section describes the procedures for making Genera 7.0 user and server worlds for your site.

### 7.4.1 Making Worlds for User Machines

If you build worlds containing Symbolics layered products or site-specific software, in addition to the base world, follow the procedure below to create these worlds for Genera 7.0. If you do not usually build customized worlds (which include layered products or site-specific software), the site-configured world build described in the section above, "Installing the Genera 7.0 Software", is fine. Note that we recommend the use of Incremental Disk Save for these worlds, as it reduces the difficulty of distributing newer worlds at your site, especially to machines with small disk configurations.

1. **Boot the site-configured world with IDS enabled.** (If you are not sure, check to see that your boot file contains the command Enable IDS immediately after the Load World command.) *Don't* use your namespace server machine to boot this world.

2. **Disable Services, using the Disable Services command, as shown:**

Command: Disable Services

3. **Log in as the default system user.**

Type to the command prompt:

Login Lisp-Machine

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

4. **Load any software you want to include in the world.** For example, to load the IP-TCP system type:

Load System IP-TCP

**Do not use the editor, Zmail, or any other application. If you go into the debugger, you should fix the cause, boot, and start the procedure over again from the beginning.**

5. **Optimize the world using the Optimize World command:**

Optimize World

The Optimize World command reorganizes the world to improve paging performance. After using this command, you can use either the Save World Complete command, or the Save World Incremental command depending on the situation. For information about what Optimize World does and how to use it see the section "Optimizing a World" in the chapter "Commands Used to Customize and Save Worlds", in *Site Operations*.

**6. Save the new world, using either the Save World Incremental command or the Save World Complete command.**

At this point you may want to save a complete or incremental version of the world load, depending on your circumstances. For information about making this decision: See the section "Saving a Site Configured World", page 75.

For example:

```
Save World Incremental FEP0:>Inc-Color-7-from-Inc-Site.load
```

This world will serve as the base world for all of the non-server machines at your site.

Once you have created these worlds, copy them to the appropriate machines using the Copy World command. If you make an IDS world, all machines must also have the parent world (which is your site's version of the Genera 7.0 world from which the IDS world was made) present on their FEPFS. If the parent world(s) are on disk, the names will appear when you use the Show FEP Directory command. Here are some possible worlds you might have on disk:

- A distribution world
- A site-configured version of the world
- An incremental version of the world, specifically created for the user machine(s)
- An incremental version of the world, specifically created for the server machine(s)
- An incremental version of the world, specifically created for the namespace server machine

If the user machines at your site will all run different software, create the site-configured world as detailed above, and then create individual incremental worlds that contain special software, which is also detailed above. If you prefer, you can make one version of the world, which contains the site-configured software as well as any special software. To do this, after creating the site-configured world you:

- Load additional software
- Use the Optimize world command to optimize the world
- Use the Save World Incremental command to save an incremental version of the world.

If you are adding a non-Symbolics computer to your site: See the section "Adding a Foreign Machine to an Existing Site", page 86.

#### 7.4.2 Making Worlds for Server Machines

##### **Servers:**

If you have server machines that run additional software, such as Print or Mailer or some site-specific server, you should follow the procedure used in "Making Worlds for User Machines" and build an IDS world, with the appropriate systems loaded, for use on those servers. For more information on server machines, see the section "Different Types of Machines" in *Software Installation Concepts Primer*.

##### **Namespace Servers:**

Whether or not your namespace server(s) runs any different software from any other machine at your site, you should make a special world for it. A world for use on your namespace server should be built *on* the namespace server, and worlds for non-namespace server machines should be built on non-namespace server machines. If you do not do this, the machine will take much longer to boot each time you boot it. You can use the procedure detailed in "Making Worlds for User Machines" *on your namespace server machine* to make that machine's world.

When you boot a namespace server machine, the namespace database for your site is loaded. Since the namespace database is in this world, the size of this world is larger than other server worlds. In addition, loading the namespace database makes this machine boot more slowly than other server machines.

For more information on namespace server machines see the section "Different Types of Machines" in *Software Installation Concepts Primer*.

## 8. Installing the Symbolics 6.1 to 7.0 Compatibility Patches

Use these instructions to install the Release-6-7 Compatibility System on all machines that will continue to run Release 6 simultaneously with Genera 7.0.

*This step corresponds to conceptual step 1. in the section "Procedural Overview for Installing Genera 7.0 at an Existing Site."*

1. **Restore the Release 6 distribution tape containing the Release-6-7 compatibility system into your file system.** The tape is labeled *Symbolics 6.1 to 7.0 Compatibility Patches*. To load this system use the function:

**(dis:load-distribution-tape)**

This system will be restored into the logical directory

```
SYS:REL-6-7;
```

After you use the function **(dis:load-distribution-tape)**, a menu appears. This menu contains the names of the systems to load. Click on [Do It]. This loads all of the systems. These systems contain the Symbolics 6.1 to Genera 7.0 Compatibility Patches, and the newest versions of the v127 and G206 FEP overlay files (flood files). The overlay files are loaded into the logical file sys:n-fep;.

2. **Copy the appropriate overlay files for your machine.** Copy these files to FEP $n$ , where  $n$  is the disk unit number. If you have a 3620 or 3650 machine, you should use the g206-\*.flood files, otherwise use the v127-\*.flood files. If you do not know what machine model you have, use the command Show Herald. This command displays the machine model. On each machine at your site, copy the overlay files (flood files) from sys:n-fep; into the FEP file system. Use the Copy File command to do this. For example:

```
Copy File SYS;n-fep;v127-*.flood.newest FEP0:>
```

In this example, you are copying the overlay files to FEP unit 0 of your machine.

3. **Once you have copied these files to your FEP File System, make sure you have a hello.boot file on your FEP.** The hello.boot file scans the overlay files, and makes them available for use. Make sure that the hello.boot file has no version numbers of the overlay files. Your hello.boot file should look like this if you have a 3620 or 3650 machine model:

```
Scan FEP0:>G206-info.flod
Scan FEP0:>G206-loaders.flod
Scan FEP0:>G206-lisp.flod
Scan FEP0:>G206-debug.flod
Initialize Hardware Tables
```

Your hello.boot file should look like this if you have any machine other than a 3620 or 3650 machine model:

```
Scan FEP0:>V127-info.flod
Scan FEP0:>V127-loaders.flod
Scan FEP0:>V127-lisp.flod
Scan FEP0:>V127-debug.flod
Initialize Hardware Tables
```

If you do not have a hello.boot file, create one for your machine model using the appropriate example above, and then save it.

4. **Follow these steps after confirming that you have a hello.boot file:**
  - a. **Use the Logout command to log out of the machine.**
  - b. **Use the Halt Machine command to put you into the FEP.**
  - c. **Use the Reset FEP command to reset the FEP.**
  - d. **Use the Hello command to initialize the new overlay files.**

Following this procedure scans the new flod files, and readies your machine to boot the Genera 7.0 world. If you do not follow this procedure you will not be able to load your new Genera 7.0 world correctly.

5. **Build the appropriate worlds for the machines that will continue to run Release 6.1. Here are the possible worlds:**
  - a. A site-configured world with all of the software that *all* of the machines at your site run. We recommend that this be an Incremental Disk Save (IDS) world from your existing Release 6.1 site-configured world. Here are the steps for building this world:
    - i. **Boot an existing Release 6.1 world that has the systems that you want *all* of your machines to run. *Don't* use your namespace server machine for this. Be sure that the boot file you use contains the command Enable IDS after the command Load World and before the Start command. IDS **must** be enabled in the boot process. If Enable IDS is not in your boot file, insert**

the command in your boot file and boot the machine again. After you boot the Release 6.1 world on the machine, **do not read mail or use the editor or any other application. If you go into the debugger, during this procedure, fix the cause of the error, boot, and start the procedure over again from the beginning.**

- ii. **Disable Services, using the Disable Services command, as shown:**

```
Command: Disable Services
```

- iii. **Turn on the Ephemeral-object Garbage Collector (EGC using the command:)**

```
Start GC :Ephemeral Yes
```

- iv. **Log in as the default system user.**

Type to the command prompt:

```
Login Lisp-Machine
```

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

- v. **Load the Release-6-7 system into virtual memory by typing:**

```
Load System Rel-6-7
```

- vi. **Save the an incremental version of the world, using the command Save World Incremental, for example:**

```
Save World Incremental FEP0:>Inc-Rel-6-7-from-Site-6-1.load
```

FEP *n* is the number of the disk unit.

This world can now be distributed to all user machines that need the Release-6-7 compatibility software in their worlds.

- b. A world that contains server-specific software. If you use a world with the Print, Mailer, or other server-specific systems loaded for your server machines, you should follow the procedure in step in 3.a to make an Incremental Disk Save world that adds the Release-6-7 system to your server world.
- c. A namespace server world. Your namespace server should run a world that has been disk-saved as a namespace server, to save time when it

boots. This world should also have been saved with the Release-6-7 compatibility system. Follow the procedure in step 3.a *on the namespace server machine* to make a namespace server world saved with Release-6-7 compatibility system.

- 6. After creating these worlds, copy them to the appropriate machines using the Copy World command.** If you make an IDS world, all machines must also have the parent(s) world (which is your site's version of the Release 6.1 world from which the IDS world was made) present on their FEPPS. If the parent world is on disk, its name appears when you do a directory edit of your FEP(s). If anyone at your site has private IDS worlds, she must either recreate them on top of this world, or recreate them including the Release-6-7 compatibility system in addition to her own systems.



## 9. Genera 7.0 Distribution Tapes

The Genera 7.0 distribution includes the following tapes:

- Three world load tapes that contain the Genera 7.0 microcodes and world load. The labels on these tapes are:

Genera 7.0 Distribution World 1/3 IFS Format  
Copyr.(c)1986, 1985, 1984, 1983, 1982, 1981, 1980 by Symbolics, Inc.  
All Rights Reserved. Portions Copyright (c) 1980, Massachusetts  
Institute of Technology. All rights reserved. P.N.: 995348

Genera 7.0 Distribution World 2/3 IFS Format  
Copyr.(c)1986, 1985, 1984, 1983, 1982, 1981, 1980 by Symbolics, Inc.  
All Rights Reserved. Portions Copyright (c) 1980, Massachusetts  
Institute of Technology. All rights reserved. P.N.: 995348

Genera 7.0 Distribution World 3/3 IFS Format  
Copyr.(c)1986, 1985, 1984, 1983, 1982, 1981, 1980 by Symbolics, Inc.  
All Rights Reserved. Portions Copyright (c) 1980, Massachusetts  
Institute of Technology. All rights reserved. P.N.: 995348

- Three source, examples, and documentation distribution tapes that contain the system sources, microcodes, nfep-overlays, IP-Domain-Server, and documentation. The labels on the tapes are:

Genera 7.0 Sources, Examples, Fonts and Doc 1/3 Rel 7 Distrib.Format  
Copyright (c) 1986, 1985, 1984, 1983, 1982, 1981, 1980  
Symbolics, Inc. All Rights Reserved. Portions  
Copyright (c) 1980, Massachusetts Institute of Technology.  
All rights reserved.  
P.N.: 995349

Genera 7.0 Sources, Examples, Fonts and Doc 2/3 Rel 7 Distrib.Format  
Copyright (c) 1986, 1985, 1984, 1983, 1982, 1981, 1980  
Symbolics, Inc. All Rights Reserved. Portions  
Copyright (c) 1980, Massachusetts Institute of Technology.  
All rights reserved.  
P.N.: 995349

Genera 7.0 Sources, Examples, Fonts and Doc 3/3 Rel 7 Distrib.Format  
Copyright (c) 1986, 1985, 1984, 1983, 1982, 1981, 1980  
Symbolics, Inc. All Rights Reserved. Portions  
Copyright (c) 1980, Massachusetts Institute of Technology.  
All rights reserved.  
P.N.: 995349

- One Release-6-7 Compatibility Patches tape. The label for this tape is:

Genera 7.0 Compatibility Patches Rel. 6 Distrib.Format  
Copyright (c) 1986 by Symbolics, Inc. All Rights Reserved.  
P.N.: Beta-995343

## 10. What Part of the Genera 7.0 Distribution Do I Need?

The Genera 7.0 World Load tape set consists of seven tapes:

- Three *Genera 7.0 Distribution World* tapes
- Three *Genera 7.0 Sources, Examples, and Documentation* tapes
- One *Symbolics 6.1 to 7.0 Compatibility Patches* tape

The table in the next section contains the sizes of most of the systems in the Release distribution. After this table, a table of the sizes of the Release 6.0 directories appears. You can use this for reference when installing the Genera 7.0 systems.

### 10.1 Sizes of the Genera 7.0 Systems

Directory	LMFS Records
sys: **;	31091
sys: basic sage; **;	860
sys: examples; **;	37
sys: distribution-microcodes; **;	10906
sys: fonts-system; **;	911
sys: hardcopy; **;	430
sys: ip-domain-server; **;	51
sys: lgp1-fonts; **;	16
sys: lmfs; **;	756
sys: mailer; **;	210
sys: nfep-overlays; **;	375
sys: print; **;	123
sys: server utilities; **;	36
sys: sys; **;	13133
sys: tape; **;	349

<b>sys: utilities; **;</b>	1360
<b>sys: zmail; **;</b>	1538

Table 1. Sizes of the Genera 7.0 Systems

## 10.2 Sizes of Release 6.0 Directories

Directory	LMFS Records
<b>sys: **;</b>	6652
<b>sys: cl; **;</b>	5
<b>sys: debugger; **;</b>	94
<b>sys: dialnet; **;</b>	28
<b>sys: doc; **;</b>	2060
<b>sys: examples; **;</b>	150
<b>sys: fonts; **;</b>	991
<b>sys: fonts; lgp-1; **;</b>	636
<b>sys: fonts; nlgpl; **;</b>	21
<b>sys: fonts; tv; **;</b>	331
<b>sys: hardcopy; **;</b>	13
<b>sys: io; **;</b>	309
<b>sys: iol; **;</b>	89
<b>sys: l-fep; **;</b>	36
<b>sys: l-ucode; **;</b>	1240
<b>sys: lmfs; **;</b>	33
<b>sys: lmsym; **;</b>	31
<b>sys: lmtape; **;</b>	80
<b>sys: mailer; **;</b>	53
<b>sys: network; **;</b>	234

<b>sys: patch; **;</b>	77
<b>sys: print; **;</b>	38
<b>sys: sage; **;</b>	7
<b>sys: sys; **;</b>	102
<b>sys: sys2; **;</b>	256
<b>sys: window; **;</b>	315
<b>sys: zmail; **;</b>	21
<b>sys: zwei; **;</b>	361

Table 2. Sizes of Release 6.0 Directories in LMFS records



## 11. Genera 7.0 Microcode Types

Here is a list of the microcode pathnames for each machine model. If you have a 3600 machine model, go to this section: See the section "3600 Machine Model Microcodes", page 66. Otherwise, read this section.

If you are unsure of your machine model, use the Show Machine Configuration command, with the keyword :detailed, to look at your configuration. For example type:

```
Show Machine Configuration :detailed
```

Initially, you restore microcode from the *Genera 7.0 Distribution World* tape. Then, you can distribute microcode versions from machine to machine using the Copy Microcode command.

There have been several changes from Release 6.1 to Genera 7.0 in the way that microcode files are named. Here is some information about the new microcode pathnames:

- *ST506*, which signified a type of disk interface, has been removed from each microcode pathname.
- *FPA* is a hardware option that is independent of machine type; it indicates that the machine has a Floating Point Accelerator.
- *XSQ* is a hardware option that is independent of machine type; it indicates that the machine has an extended sequencer. Machines that run Prolog require this option, as do machines with an IFU.

Here are the possible microcode pathnames for each machine model.

**Note:** In these examples, the version number at the end of the pathname may not be the correct version number for Genera 7.0. The microcode version number varies from release to release. The correct microcode version number for Genera 7.0 is in the microcode section of the tape labeled *Genera 7.0 Distribution World*.

### 3610 AE model:

3610 AE	3610-MIC-MIC.393
3610 AE, FPA	3610-FPA-MIC-MIC.393

### 3620 model:

3620	3620-MIC-MIC.393
3620, FPA	3620-FPA-MIC-MIC.393

**3640 model:**

3640	3640-MIC.MIC.393
3640,FPA	3640-FPA-MIC.MIC.393
3640,PROLOG	3640-XSQ-MIC.MIC.393
3640,FPA,PROLOG	3640-FPA-XSQ-MIC.MIC.393

**3645 model:**

3645	3645-MIC.MIC.393
3645,FPA	3645-FPA-MIC.MIC.393

**3650 model:**

3650	3650-MIC-MIC.393
3650, FPA	3650-FPA-MIC-MIC.393

**3670 model:**

3670	3670-MIC.MIC.393
3670,FPA	3670-FPA-MIC.MIC.393
3670,PROLOG	3670-XSQ-MIC.MIC.393
3670,FPA,PROLOG	3670-FPA-XSQ-MIC.MIC.393

**3675 model:**

3675	3675-MIC.MIC.393
3675,FPA	3675-FPA-MIC.MIC.393

**11.1 3600 Machine Model Microcodes**

If your machine is a 3600, please use the Show Machine Configuration command to see your machine's IO REV. To do this type:



Show Machine Configuration :detailed

Then follow the chart below to figure out what microcode version to use for your machine.

If your 3600 has IO REV 2, use this chart of microcode pathnames to determine what microcode you should use:

3600, IO REV 2 3600-MIC.MIC.393

3600, IO REV 2, PROLOG  
3600-XSQ-MIC.MIC.393

3600, IO REV 2, IFU  
3600-IFU-MIC.MIC.393

3600, IO REV 2, FPA  
3600-FPA-MIC.MIC.393

3600, IO REV 2, PROLOG, FPA  
3600-FPA-XSQ-MIC.MIC.393

3600, IO REV 2, IFU, FPA  
3600-FPA-IFU-MIC.MIC.393

If your 3600 has IO REV 6, use this chart of microcode pathnames to determine what microcode you should use:

3600, IO REV 6 3640-MIC.MIC.393

3600, IO REV 6, PROLOG  
3640-XSQ-MIC.MIC.393

3600, IO REV 6, IFU  
3640-IFU-MIC.MIC.393

3600, IO REV 6, FPA  
3640-FPA-MIC.MIC.393

3600, IO REV 6, PROLOG, FPA  
3640-FPA-XSQ-MIC.MIC.393

3600, IO REV 6, IFU, FPA  
3640-FPA-IFU-MIC.MIC.393



## 12. Installing Genera 7.0 on a 3640 with One 140-Mbyte Disk At an Existing Site

Since the 140-megabyte disk drive of the 3640 has a smaller paging file than the 3600 or 3670, installing a new release on it requires a special installation procedure. Although your disk has approximately 110,000 blocks of storage, which can be divided into approximately 35,000 for the world load, and 75,000 for paging space, there is a critical moment during the installation procedures where you briefly need enough room for two world loads: the one you booted from and the one you are saving. The installation procedure described below will let you get through this tricky moment safely. Before you read the details, however, make sure that you understand the basics of this procedure.

The procedure requires that your disk be partitioned as follows: 35,000 for the world load, 45,000 for the "main" paging area (typically named `page.page`), and 30,000 for the "auxiliary" paging area (typically named `aux.page`). (These are approximate figures. Your 3640 is shipped to you in roughly this configuration.) Normally, your boot file should be set up to specify both paging areas as your virtual memory. However, when you want to install software, you must remember to boot by hand (typing the lines from the boot file explicitly), specifying only the auxiliary paging area. You should boot this way whenever you see "Boot the machine in preparation for saving a world load" in this document. [When booted with only this 30,000 block paging area, you'll see low-address-space warnings periodically. You should ignore them, as you won't be booted long enough to run out of address space.]

After you've booted with only the one paging area, you can delete and expunge the other one, thereby freeing up disk space temporarily that can be used to save the new world.

After you've verified that the new world boots properly, you can delete and expunge the old world and create a new main paging file from the space you've freed (or simply rename the old world to `page.page`) and you'll be back to your normal configuration.

When these basic steps are executed properly, you should have no problems installing software. It is important to remember these basic constraints, though, because if you ever merge your two paging areas into one big one, it is a difficult and dangerous task to change them back into two smaller ones.

When your 3640 is shipped to you, the disk has a large paging file (called `page.page`) and an auxiliary file that is the same size as the world load file (called `aux.page`). During the installation procedure we assume that your disk is organized with this structure.

## 12.1 Preparing to Install Genera 7.0 on a 3640 with a 140-Mbyte Disk

A 140-mbyte disk yields approximately 110,000 blocks in the FEP file system. To prepare this space to receive the new Genera 7.0 world you must:

- Keep the Release 6.1 world and microcode files on your disk until the new world has been completely validated. The documentation tells you when it is safe to remove your old world.
- Make sure that there are 45,000 blocks for the new Genera 7.0 world load. This space is in the form of a page.page file and will be truncated to about 30,000 blocks at the end of the installation procedure.
- Make sure that there is an auxiliary paging file of 30,000 blocks in the form of an aux.page file.
- Reserve roughly 3,000 blocks for various other files in the FEP file system, for example, microcode files and flod files.

Remember, when you receive the Genera 7.0 world, the old Release 6.1 world and microcode must be running. Consequently, there must be enough room on the disk for both the old world and the new world.

## 12.2 Instructions for Installing Genera 7.0 on a 3640 with a 140-Mbyte Disk

You should install Genera 7.0 on your 3640 after you have disk restored Genera 7.0 on one or more hosts at your site. This way, you can copy a world (either a complete or incremental world) from another host, instead of restoring the world from distribution tape. Copying a world requires less disk space than does disk-restoring a world.

Before you attempt to install Genera 7.0 on your 3640, you must have a FEP file system configured in the same way it was when the machine was shipped to you from Symbolics. The machine must have:

- An already-resident world load and microcode file
- A 45,000-block paging file called page.page
- A 30,000-block paging file called aux.page

To look at the FEP directory, use the command Show FEP directory from the Lisp Listener. This displays the contents of your disk.

If this is the configuration on your machine's disk, you can begin installation. Otherwise, you must call Software Services for help with this installation.

It is important to follow these instructions closely, since it is a complicated procedure to install a new, large-size world on your machine. While you are installing this release on your machine you will receive garbage-collection notifications warning you that your address space is running low. These messages underline your precarious situation, but do not actually prevent the installation. Ignore the garbage-collection messages and proceed with the installation as directed.

These instructions assume that your 3640 is able to copy both microcode files and world loads from the SYS host at your site.

1. **Boot the already-resident world load and microcode files. This should be some version of the Release 6.1 world.** Use only the 30,000-block auxiliary paging file when you boot.

Do this by halting the machine with the Halt Machine command and then typing:

```
Clear Machine
Load Microcode microcode-file-name
Load World world-load-file-name
Clear Paging
Add Paging File  FEP0:>aux.page
Start
```

The Load World Command automatically adds the paging file called FEP0:>page.page. The Add Paging File command in this boot sequence loads the auxiliary paging, which is a 30,000-block paging file.

2. **Once you have booted, log in and rename the FEP0:>page.page file to FEP0:>old.page, for example:**

```
Rename File  FEP0:>page.page  FEP0:>old.page
```

FEP0:>old.page is now a 45,000-block paging file. Booting no longer loads this file automatically because it is not a page.page file anymore.

3. **Rename the FEP0:>aux.page file to FEP0:>page.page.** For example:

```
Rename File  FEP0:>aux.page  FEP0:>page.page
```

FEP0:>page.page is now a 30,000-block paging file.

4. **Delete FEP0:>old.page, the 45,000-block paging file by typing:**

```
Delete File FEP0:>old.page
```

5. **Expunge FEP0:>old.page by typing:**

```
Expunge Directory FEP0:>*.x
```

After deleting and expunging FEP0:>old.page you have 45,000 free blocks.

6. **Copy the microcode from the SYS Host at your site by typing:**

```
Copy Microcode 3640-mic.mic.393
```

The microcode version number used in these examples is only an example, since this varies from release to release.

**Warning:** When copying microcode from a machine running Genera 7.0 to a machine running Release 6.1, **you must specify the microcode file name**, rather than just the version. The name of the microcode files changed from Release 6.1 to Genera 7.0, and the Copy Microcode command does not understand the name change. It tries to find a microcode version with the same name components as the old microcode.

For example, to copy a new microcode to a machine type on that machine:

```
Copy Microcode SYS:L-UCODE; 3600-mic.mic.393
```

For a list of microcode types for Genera 7.0: See the section "Genera 7.0 Microcode Types", page 65.

When the Copy Microcode command asks if you want to update your boot file, answer No. Wait until you have restored the world, and then update the boot file.

7. **Copy a Genera 7.0 world from a host that has it to your 3640, using the Copy World command.** In the following example, the world Release-7-0.load.1 is copied from FEP0 on a host named VanGogh to FEP0 of your 3640.

```
Copy World VanGogh|FEP0:>Release-7-0.load.1 FEP0:>Release-7-0.load
```

For help with using the Copy World command, See the section "Copy World Command" in *User's Guide to Symbolics Computers*.

When the Copy World command asks if you want to update your boot file, answer Yes. It will also ask you if you want to update the microcode. Answer Yes. The boot file is automatically updated.

The new world is copied into the free space allocated by deleting and expunging the file FEP0:>old.page in steps 4 and 5.

**Note:** If the host you are copying the world to has a large enough disk to receive the Genera 7.0 world and is able to save it using the Save World Complete command, then you should copy this complete Genera 7.0 world to your 3640. If, though, the SYS Host at your site does *not* have a large enough disk and had to save the Genera 7.0 world using the Save World Incremental command, then you must copy both the Genera 7.0 distribution world **and** the incrementally-saved Genera 7.0 to your 3640. Remember that you must keep **both** the Genera 7.0 distribution world and the incremental world derived from that world on your disk.

**8. Boot the new Genera 7.0 world by typing:**

```
Clear Machine
Load Microcode microcode-file-name
Load World world-load-file-name
Set Chaos-Address this-machine's-chaos-address
Start
```

This boot sequence loads the FEP0:>page.page file, which gives you 30,000 blocks of paging space.

**9. When you are confident that the Genera 7.0 world is valid, that is, that the world runs without any problems, you can delete and expunge the old world. For example:**

```
Delete File FEP0:>release-6-1.load
```

followed by:

```
Expunge Directory FEP0:>*. *.*
```

**10. Create a new paging file with the space retrieved from the old world load. For example:**

```
Create FEP File FEP0:>aux.page 30000
```

This gives you an extra paging file of 30,000 blocks.

**11. Copy the new version of FEP Eprom overlay files (flod files) to every machine at your site.**

In order to take advantage of some new commands, you must load the new version of the FEP overlay files.

On each machine, copy the overlay files (flod files) from sys:n-fep; onto the FEP file system. Use the Copy File command to do this. For example:

Copy File SYS;n-fep;v127-\*.*flod.newest Host|FEPn*:>

In this example, *Host* is the name of the host to which you are copying the overlay files, and *FEPn* is the disk unit number.

12. **Halt your machine using the Halt Machine command.**
13. **Reset your FEP by using the Reset FEP command.**
14. **Type Hello to the FEP command prompt.**
15. **Boot your machine.**
16. **Edit your boot file to add the auxiliary paging file after the Load World command.** Add this command to your boot file:

```
Declare Paging-files fep0:aux
```

Your boot file might look like this after adding the command:

```
Clear Machine
Load Microcode microcode-file-name
Declare Paging-files fep0:aux
Load World world-load-file-name
Set Chaos-Address this-machine's-Chaosnet-address
Start
```

This ensures that the next time you boot, the auxiliary paging file is automatically loaded into your world.

The Declare Paging-files command is different from the Add Paging-files command, but is used in boot files to declare the paging files for all subsequent Load World commands until a new Declare Paging-files command overrides it. For information on this command's special features, and for instructions on where to place this command in your boot file, see the section "FEP System Commands: General Usage" in *Site Operations*.

17. **Use the Add Paging File command so that you can immediately use the new auxiliary paging file.** Type this to the command prompt:

```
Add Paging File FEP0:>aux.page
```

Now you are all set to run your new world.



## 13. Related Installation Procedures

### 13.1 Saving a Site Configured World

After you configure a world for your site, you must save it so that all of the information will be stored in the world. You have two choices. You can use the Save World Complete command, or the Save World Incremental command, depending on the amount of disk space you have and how the saved world will be used.

If you want to keep a Genera 7.0 distribution world on disk that has not been site configured, then you should use the Save World Incremental command. This way, only the incremental version of the world will contain your site-specific software.

You can use the Save World Incremental command as well if you wish to create a small world that contains only additional software or layered products. If you do this, then you can transfer the incrementally-saved version of the world to specific machines that you want to run this software. In addition, you save time when a new version of a layered product is released, since you only have to rebuild the small incremental world; the parent world can remain unchanged.

An incrementally saved world must be resident on the same disk as the parent world from which the incremental world is built.

If you decide to make an incremental world, **do not use the (si:full-gc) command anytime prior to using the Incremental Disk Save command.** Using (si:full-gc) reorganizes all of the pages in the world, and since the Save World Incremental command makes a world out of all of the changed pages in a world, the resulting world is not significantly smaller than the parent world.

**Note:** You can use the Optimize World command prior to using the Save World Incremental command.

Use the Save World Complete command if you prefer to make one large world which contains all of your machine's software.

Before using the Save World Complete command, use (si:full-gc), and then the Optimize World Command.

### 13.2 Editing the SYS.TRANSLATIONS File for a New Site

There are differences in editing the SYS.TRANSLATIONS file, depending on whether or not you are able to store your system sources and documentation on the namespace server.

### 13.2.1 Storing Your Sources on Your Namespace Server Machine

If you wish to store the system sources and documentation on the namespace server, follow these steps:

First, read in the SYS.TRANSLATIONS file, which has the logical pathname SYS:SITE;SYS.TRANSLATIONS. If you want to put your sources in a directory other than the one in that file, edit the file accordingly and save out the changes. Name this top level directory "Rel-7". This is the name used by Symbolics on systems with large disks or multiple disks, where the "Rel-7" directory is already present. Using "Rel-7" as the top-level directory name is part of the basis of a smooth upgrade path.

We also recommend naming your site directory >sys>site>. The software imposes no restriction on the name of the site directory in Genera 7.0, but it is helpful to give it a name independent of any individual release.

The standard Genera 7.0 version of the translations uses the "wild-inferiors" wildcard, which allows matching to any level of directory. This translation is adequate for whenever all the files are kept on a single host.

If some machines at your site will continue to run Release 6.1: See the section "Updating the SYS.TRANSLATIONS File When Running Two Releases", page 79.

The following example is a sample translations file for a Symbolics Computer:

Edit the file SYS:SITE;SYS.TRANSLATIONS so that it contains the information from this example, modifying the information to reflect your site-specific information.

```
;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
;; Translations for Genera 7
(fs:set-logical-pathname-host "SYS"
 :physical-host "ACME-YUKON"
 :translations '(("SYS:**;*. *.*" "ACME-YUKON:>Rel-7>**>*. *.*")))
```

Once you have edited the translations file:

- Save the edited SYS.TRANSLATIONS file.
- Cold boot the site-configured world.

### 13.2.2 Storing Your Sources on a Non-Namespace Server Machine

If you are unable to store your sources on the namespace server at your site, follow these steps:

First, read in the SYS.TRANSLATIONS file, which has the logical pathname SYS:SITE;SYS.TRANSLATIONS. If you want to put your sources in a directory other than the one in that file, edit the file accordingly and save out the changes.

Name this top level directory "Rel-7". This is the name used by Symbolics on systems with large disks or multiple disks, where the "Rel-7" directory is already present. Using "Rel-7" as the top-level directory name is part of the basis of a smooth upgrade path.

We also recommend naming your site directory >sys>site>. There is no software restriction as to the name of the site directory in Genera 7.0, but it is helpful to give it a name independent of any individual release.

The Genera 7.0 version of the translations uses the "wild-inferiors" wildcard, which allows matching to any level of directory. This translation is adequate for whenever all the files are kept on a single host.

If some machines at your site will continue to run Release 6.1: See the section "Updating the SYS.TRANSLATIONS File When Running Two Releases", page 79.

The following example is a sample translations file for a Symbolics Computer.

Edit the file SYS:SITE;SYS.TRANSLATIONS so that it contains the information from this example, modifying the information to reflect your site-specific information.

```
;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
;; Translations for Genera 7
(fs:set-logical-pathname-host "SYS"
 :physical-host "ACME-YUKON"
 :translations '(("SYS:**;*. *.*" "ACME-YUKON:>Rel-7>**>*. *.*")))
```

This is a sample translations file for a VAX/VMS operating system:

```
(fs:set-logical-pathname-host "SYS"
 :translations '(("SYS:**;*. *.*" "ACME-VMS:SYMBOLICS:[REL7...] *.*;*")))
```

Before deciding to use a VAX/VMS host, please read the following: See the section "VAX/VMS Version 4.4 Pathnames and Genera 7.0", page 85.

This is a sample translations file for a UNIX operating system:

```
(fs:set-logical-pathname-host "SYS"
 :translations '(("SYS:*;*. *.*" "ACME-UNIX://usr//symbolics//rel-7//**/*.*.*")
 ("SYS:*;*.*.*" "ACME-UNIX://usr//symbolics//rel-7//**/*.*.*")
 ("SYS:*;*;*.*.*" "ACME-UNIX://usr//symbolics//rel-7//**/*.*.*")
 ("SYS:*;*;*;*.*.*"
 "ACME-UNIX://usr//symbolics//rel-7//**/*.*.*")))
```

The following example is a sample translations file for storing files simultaneously on VMS, UNIX running Symbolics Chaosnet Package, and a Symbolics Computer.

All directories and subdirectories on sys: are mapped to subdirectories of ACME-YUKON:>Rel-7>. However, if for space considerations, you decided to put the documentation files on ACME-VMS, some of the larger source directories on ACME-UNIX, and the rest on ACME-YUKON, this example would look like this:

```
;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-

;; Translations for Genera 7.0
(fs:set-logical-pathname-host "SYS"
 :translations '(("SYS:DEBUGGER;*. *.*" "ACME-UNIX://usr//re17//debugger//*. *.*")
 ("SYS:IO;*. *.*" "ACME-UNIX://usr//re17//io//*. *.*")
 ("SYS:IO1;*. *.*" "ACME-UNIX://usr//re17//io1//*. *.*")
 ;; LMTAPE; has subdirectories
 ("SYS:LMTAPE;*. *.*" "ACME-UNIX://usr//re17//lmtape//*. *.*")
 ("SYS:LMTAPE;*;*. *.*" "ACME-UNIX://usr//re17//lmtape//**/*. *.*")
 ("SYS:LMTAPE;*;*;*. *.*" "ACME-UNIX://usr//re17//lmtape//**/**. *.*")
 ("SYS:NETWORK;*. *.*" "ACME-UNIX://usr//re17//network//*. *.*")
 ("SYS:SYS;*. *.*" "ACME-UNIX://usr//re17//sys//*. *.*")
 ("SYS:SYS2;*. *.*" "ACME-UNIX://usr//re17//sys2//*. *.*")
 ("SYS:WINDOW;*. *.*" "ACME-UNIX://usr//re17//window//*. *.*")
 ("SYS:ZWEI;*. *.*" "ACME-UNIX://usr//re17//zwei//*. *.*")
 ;; All documentation goes on ACME-VMS
 ("SYS:DOC;**;*. *.*" "ACME-VMS:DISK$USER:[REL7.DOC...]*. *.*")
 ;; Examples go on ACME-VMS, too.
 ("SYS:EXAMPLES;**;*. *.*" "ACME-VMS:DISK$USER:[REL7.DOC...]*. *.*")
 ;; Everything else goes on Yukon
 ("SYS:**;*. *.*" "ACME-YUKON:>Rel-7>**>*. *.*")))
```

Note that because `sys:lmtape;` has subdirectories, and because UNIX does not support "wild-inferiors" multiple-directory-level wildcards, there is an entry for each additional level of directory. If this were not done, these directories would have been placed on ACME-YUKON, because the last entry in the translation table would be the only match. The following directories include subdirectories:

```
sys: cl;  
sys: doc;  
sys: examples;  
sys: fonts;  
sys: hardcopy;  
sys: lmfs;  
sys: lmtape;  
sys: mailer;  
sys: patch;  
sys: print;  
sys: sage;  
sys: zmail;
```

Some of the subdirectories can in turn contain an additional level of subdirectory. The system software does not currently use more than three levels of logical directory. Thus we listed all three of the following in the example above.

```
sys: lmtape;  
sys: lmtape; *;  
sys: lmtape; *; *;
```

Once you have edited the translations file:

- Save the edited `SYS.TRANSLATIONS` file.
- Cold boot the site-configured world.

For more information on logical hosts: See the section "Logical Pathnames" in *Reference Guide to Streams, Files, and I/O*.

### 13.3 Updating the `SYS.TRANSLATIONS` File When Running Two Releases

Before installing Genera 7.0 at this site, you need to prepare the file which will tell the new world about the new SYS host. To do this, edit the file `SYS:SITE;SYS.TRANSLATIONS` to know about where the Genera 7 sources will be kept. Name the top level directory "Rel-7". This is the name used by Symbolics

on systems with large disks or multiple disks, where the "Rel-7" directory is already present. Using "Rel-7" as the top-level directory name is part of the basis of a smooth upgrade path.

If you are planning to continue to use Release 6 after installing Genera 7.0, your first step is to *conditionalize* the SYS.TRANSLATIONS file as shown below. This allows Release 6 and Genera 7 to coexist, each with their own translations.

If you are not going to run Release 6.1 and Genera 7.0 at your site at the same time, see the following section: See the section "Editing the SYS.TRANSLATIONS File for a New Site", page 75.

Genera 7.0 gets the translation for SYS:SITE from the site object, not from this file, so Release 6 and Genera 7.0 continue to share the site directory.

You may be lucky and already have your site directory named >sys>site>. If so, we recommend leaving it with that name. The software imposes no restriction on the name of the site directory in Genera 7, but it is helpful to give it a name independent of any individual release.

Note that if you are planning to continue to use Release 6 for a time, it considerably more convenient *not* to change the name of the site directory until you are no longer using Release 6.

If you are not planning to continue to run Release 6, you can create a directory for SYS: SITE; which is not part of any particular release hierarchy. For example, create the directory >sys>site>, and copy the files from SYS: SITE; into this directory, and edit SYS.TRANSLATIONS there. If you do this, you can still boot Release 6 worlds, but you cannot run the namespace server in Release 6, or do other things which depend on reading information from the site directory.

In the example below, note that the attribute line has been modified to have a Syntax: ZetaLisp; and a Base: 10; attribute. If this is not done, a minor warning message results when configuring the Genera 7 world.

If you are creating new SYS.TRANSLATIONS files, you can set the syntax to Common Lisp. For UNIX pathnames, files with Common Lisp syntax have single slashes, whereas files in ZetaLisp syntax have double slashes.

In the example below, note that the attribute line has been modified to have a Syntax: ZetaLisp; and a Base: 10; attribute. If this is not done, a minor warning message results when configuring the Genera 7 world.

Change the site definitions by reading in and then editing the file SYS:SITE;SYS.TRANSLATIONS, to have a separate source hierarchy for Release 6 and Genera 7. You should modify the following examples to contain your site-specific information.

Here is a Release 6 and Genera 7.0 sample translations file for a Symbolics Computer. This SYS.TRANSLATIONS file allows for both Release 6 and Genera 7.0 translations.

For both Release 6 and Genera 7.0:

```
;;; -*- Mode: LISP; Package: FS; Syntax: Zetalisp; Base: 10; -*-
(select (or (si:get-release-version) (si:get-system-version))
  ;; Translations for Release 6
  (6 (fs:set-logical-pathname-host "SYS"
     :translations '(("SYS:**;*. *.*" "ACME-YUKON:>REL-6>*** *.*"))))
  ;; Translations for Release 7
  (7 (fs:set-logical-pathname-host "SYS"
     :translations '(("SYS:**;*. *.*" "ACME-YUKON:>REL-7>*** *.*"))))
  (otherwise (ferror "~D unknown release or system version.~
                    Edit SYS:SITE;SYS.TRANSLATIONS to add this system."
                    (or (si:get-release-version) (si:get-system-version))))))
```

Here is a Release 6 and Genera 7.0 sample translations file for the VAX/VMS operating system. This SYS.TRANSLATIONS file allows for both Release 6 and Genera 7.0 translations. If you are going to run both Release 6 and Genera 7, you need both of these files. If not, you can delete the Release 6 translations.

Before restoring the Genera 7.0 distribution tapes to a VAX/VMS SYS host, please read the following section: See the section "VAX/VMS Version 4.4 Pathnames and Genera 7.0", page 85.

Translation for both Release 6 and Genera 7.0:

```
;;; -*- Mode: LISP; Package: FS; Syntax: Zetalisp; Base: 10; -*-
(select (or (si:get-release-version) (si:get-system-version))
  ;; Translation for Release 6
  (6 (fs:set-logical-pathname-host "SYS"
     :translations '(("SYS:**;*. *.*" "ACME-VMS:SYMBOLICS:[REL6...] *.*;*"))))
  ;; Translation for Release 7
  (7 (fs:set-logical-pathname-host "SYS"
     :translations '(("SYS:**;*. *.*" "ACME-VMS:SYMBOLICS:[REL7...] *.*;*"))))
  (otherwise (ferror "~D unknown release or system version.~
                    Edit SYS:SITE;SYS.TRANSLATIONS to add this system."
                    (or (si:get-release-version) (si:get-system-version))))))
```

Here is a Release 6 and Genera 7.0 sample translations file for the UNIX operating system. This SYS.TRANSLATIONS file allows for both Release 6 and Genera 7.0 translations:

```

;;; -*- Mode: LISP; Package: FS; Syntax: Zetalisp; Base: 10; -*-
(select (or (si:get-release-version) (si:get-system-version))
  ;; Translation for Release 6
  (6 (fs:set-logical-pathname-host "SYS"
    :translations '(("SYS:**;*. *.*" "ACME-VMS:SYMBOLICS:[REL6...]*.*;*"))))
  ;; Translation for Release 7
  (7 (fs:set-logical-pathname-host "SYS"
    :translations '(("SYS:**;*. *.*" "ACME-VMS:SYMBOLICS:[REL7...]*.*;*"))))
  (otherwise (ferror "~D unknown release or system version.~
    Edit SYS:SITE;SYS.TRANSLATIONS to add this system."
    (or (si:get-release-version) (si:get-system-version))))))

```

The above translations files are adequate if you keep all the files on a single host. However, if for space considerations, you decide to store files simultaneously on VMS, UNIX, and a Symbolics Computer, here is a Release 6 and Genera 7.0 sample translations file. ACME-YUKON represents the Symbolics Computer in this example. This SYS.TRANSLATIONS file allows for both Release 6 and Genera 7.0 translations:



```

;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
(select (or (si:get-release-version) (si:get-system-version))
; ; Translations for Release 6
(6 (fs:set-logical-pathname-host "SYS"
   :translations '(("SYS:DEBUGGER;*.*.*" "ACME-UNIX://usr//re16//debugger//*.*.*")
                   ("SYS:IO;*.*.*" "ACME-UNIX://usr//re16//io//*.*.*")
                   ("SYS:IO1;*.*.*" "ACME-UNIX://usr//re16//io1//*.*.*")
                   ; ; LMTAPE; has subdirectories
                   ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re16//lmtape//*.*.*")
                   ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re16//lmtape//**/*.*.*")
                   ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re16//lmtape//***/*.*.*")
                   ("SYS:NETWORK;*.*.*" "ACME-UNIX://usr//re16//network//*.*.*")
                   ("SYS:SYS;*.*.*" "ACME-UNIX://usr//re16//sys//*.*.*")
                   ("SYS:SYS2;*.*.*" "ACME-UNIX://usr//re16//sys2//*.*.*")
                   ("SYS:WINDOW;*.*.*" "ACME-UNIX://usr//re16//window//*.*.*")
                   ("SYS:ZWEI;*.*.*" "ACME-UNIX://usr//re16//zwei//*.*.*")
                   ; ; All documentation goes on ACME-VMS
                   ("SYS:DOC;**;*.*.*" "ACME-VMS:DISK$USER:[REL6.DOC...]*.*.*")
                   ; ; Examples go on ACME-VMS, too.
                   ("SYS:EXAMPLES;**;*.*.*" "ACME-VMS:DISK$USER:[REL6.DOC...]*.*.*")
                   ; ; Everything else goes on Yukon
                   ("SYS:**;*.*.*" "ACME-YUKON:>Re1-6>**>*.*.*"))))
; ; Translations for Release 7
(7 (fs:set-logical-pathname-host "SYS"
   :translations
   '(("SYS:DEBUGGER;*.*.*" "ACME-UNIX://usr//re17//debugger//*.*.*")
     ("SYS:IO;*.*.*" "ACME-UNIX://usr//re17//io//*.*.*")
     ("SYS:IO1;*.*.*" "ACME-UNIX://usr//re17//io1//*.*.*")
     ; ; LMTAPE; has subdirectories
     ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re17//lmtape//*.*.*")
     ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re17//lmtape//**/*.*.*")
     ("SYS:LMTAPE;*.*.*" "ACME-UNIX://usr//re17//lmtape//***/*.*.*")
     ("SYS:NETWORK;*.*.*" "ACME-UNIX://usr//re17//network//*.*.*")
     ("SYS:SYS;*.*.*" "ACME-UNIX://usr//re17//sys//*.*.*")
     ("SYS:SYS2;*.*.*" "ACME-UNIX://usr//re17//sys2//*.*.*")
     ("SYS:WINDOW;*.*.*" "ACME-UNIX://usr//re17//window//*.*.*")
     ("SYS:ZWEI;*.*.*" "ACME-UNIX://usr//re17//zwei//*.*.*")
     ; ; All documentation goes on ACME-VMS
     ("SYS:DOC;**;*.*.*" "ACME-VMS:DISK$USER:[REL7.DOC...]*.*.*")
     ; ; Examples go on ACME-VMS, too.
     ("SYS:EXAMPLES;**;*.*.*" "ACME-VMS:DISK$USER:[REL7.DOC...]*.*.*")
     ; ; Everything else goes on Yukon
     ("SYS:**;*.*.*" "ACME-YUKON:>Re1-7>**>*.*.*"))))

```

```
(otherwise (ferror "~D unknown release or system version.~
             Edit SYS:SITE;SYS.TRANSLATIONS to add this system."
             (or (si:get-release-version) (si:get-system-version))))))
```

For more information on logical hosts: See the section "Logical Pathnames" in *Reference Guide to Streams, Files, and I/O*.

Save the edited SYS.TRANSLATIONS file.

Note that because SYS: LMTAPE; has subdirectories, and because Unix does not support "wild-inferiors" multiple-directory-level wildcards, there is an entry for each additional level of directory. If this were not done, these directories would have been placed on ACME-YUKON, because the last entry in the translation table would be the only match. The following directories include subdirectories:

```
sys: cl;
sys: doc;
sys: examples;
sys: fonts;
sys: hardcopy;
sys: lmfs;
sys: lmtape;
sys: mailer;
sys: patch;
sys: print;
sys: sage;
sys: zmail;
```

Some of the subdirectories can in turn contain an additional level of subdirectory. The system software does not currently use more than three levels of logical directory. Thus we listed all three of the following in the example above.

```
sys: lmtape;
sys: lmtape; *;
sys: lmtape; *; *;
```

Once you have completed the editing of SYS: SITE; SYS.TRANSLATIONS and written it out, there is no need to update the Release 6 worlds, as the information for them has not been changed. Genera 7.0 now gets the new information automatically when you configure it for your site.

For more information on logical hosts: See the section "Logical Pathnames" in *Reference Guide to Streams, Files, and I/O*.

### 13.3.1 Managing System Source Files When Running Two Releases

If you are planning to run two releases simultaneously, Symbolics recommends keeping sources for both systems available. Keeping all sources available may not be possible because of disk space limitations on your SYS host or hosts, but the lack of certain source files may cause problems. This means that if you wish to delete some of the Release 6 sources, you may have to employ a workaround. The workaround is to change the SYS.TRANSLATIONS file so that Release 6 can find its needed files in the Genera 7.0 sources. The workaround is limited to fonts, microcode, site files, and FEP flod file directories. Do not use the workaround on documentation, Lisp sources or binaries.

For example, if you have to delete the Release 6 font files from your SYS host, you'll have to modify the translations file as shown in bold in this example:

```
;;; -*- Mode: Lisp; Package: FS; Syntax: Zetalisp; Base: 10; -*-
(select (or (si:get-release-version) (si:get-system-version))
  ;; Translations for Release 6
  (6 (fs:set-logical-pathname-host "SYS"
     :translations '(("sys:fonts;*.*.*)" "ACME-YUKON:>Rel-7>fonts>*.*.*)"
                    ("SYS:*.*.*)" "ACME-YUKON:>REL-6>*.*.*")))
  ;; Translations for Release 7
  (7 (fs:set-logical-pathname-host "SYS"
     :translations '(("SYS:*.*.*)" "ACME-YUKON:>REL-7>*.*.*")))
  (otherwise (ferror "~D unknown release or system version.~
                    Edit SYS:SITE;SYS.TRANSLATIONS to add this system."
                    (or (si:get-release-version) (si:get-system-version)))))
```

This translation is necessary to allow users of Release 6 systems to find screen fonts and to print jobs on printers spooled from Genera 7.0 systems.

## 13.4 VAX/VMS Version 4.4 Pathnames and Genera 7.0

Genera 7.0 supports VAX/VMS Version 4.4 pathnames with hyphens in them. Previously, hyphens in logical pathnames were changed to the underscore character in the translation from logical pathnames to VAX/VMS physical pathnames. For a general description of the treatment of VAX/VMS pathnames, including how hyphens have been handled: See the section "VAX/VMS Pathnames" in *Reference Guide to Streams, Files, and I/O*.

If you are using a VAX/VMS system as your SYS host, the order you upgrade to Genera 7.0 and to VAX/VMS 4.4 affects whether you can take advantage of this

support. This change affects only logical pathnames that are being automatically translated by the Symbolics system, as when the VAX/VMS system is your SYS host.

If you upgrade your VAX/VMS system to Version 4.4 *before* you upgrade your Symbolics system to Genera 7.0, Symbolics pathnames and VAX/VMS pathnames will be identical. Hyphens and underscores will be used in the same places on both systems. Symbolics recommends this procedure.

If you upgrade to VAX/VMS Version 4.4, then you must edit the host object so that the host has a system-type of VMS4.4. This assures you complete compatibility in pathnames between the two systems.

If, for some reason, you cannot upgrade your VAX/VMS system to Version 4.4 before upgrading your Symbolics system to Genera 7.0, you can identify your SYS host in the namespace editor as being an earlier version of VAX/VMS, from Version 4.0 through 4.3, in which case the pathname translation rules will remain as before. See the section "VAX/VMS Pathnames" in *Reference Guide to Streams, Files, and I/O*. In this case, even when you upgrade to VAX/VMS Version 4.4, you should leave the namespace identification the same, unless you plan to go back and rename all the affected files by hand.

In this case, you must edit the host object so that the host has a system-type of VMS4 (for Versions 4.1 through 4.3 of VAX/VMS) or a system-type of VMS3 (for all Version 3 VAX/VMS systems).

When such systems are upgraded to VAX/VMS Version 4.4, you can avoid renaming all the affected files (and give up the advantages of VAX/VMS Version 4.4 pathname support) by editing the host-object so that the host has a system-type of VMS4.

## 13.5 Adding a Foreign Machine to an Existing Site

Follow these steps if you are going to add a non-Lisp machine to your site:

1. Ensure that the network hardware and foreign network software is installed correctly. The other host usually has some software for testing this network, which is run on the foreign host.
2. Add the host to the namespace at your site, using the Edit Namespace Object command. For information about using the namespace editor: See the section "User Interface to the Namespace System" in *Networks*.
  - If there is another host at your site running the same foreign operating system, which is already in the namespace database, you can use the [Copy] menu item in the namespace editor window. Be sure to change any network addresses and all of the names.

- If there is not another host running the same operating system, you have to type one in. Use the [Create] menu item. For information about what properties this new host should have: See the Section "Namespace Attributes of Non-Lisp Machine Hosts", in *Networks*.

## 13.6 Loading Additional Software

After you install Genera 7.0, you may want to install additional software or layered products. You can load special products into one specific world load which runs on only one machine. Or, you can load these special products into a world load that can be transferred to many different machines. Here are some examples of systems you might load after installing Genera 7.0.

- **The Mailer**  
To load the mailer, use the Load System command. This system is usually loaded into a world that runs on a server machine, and then this world is saved.
- **The Spell Dictionary**  
To initialize the spell dictionary, you must use the function (**zwei:read-spell-dictionary**) in your init file. For additional information about using the spell dictionary: See the section "Speller Dictionary Functions" in *Text Editing and Processing*.
- **The Internet Domain Server**  
In order to install this you must add a service attribute to the host object for the host of this service. For instructions on how to do this: See the section "How to Install the Internet Domain Names System" in *Symbolics IP/TCP Software Package*.
- **The Print System**  
To load the Print System, use the Load System command. This system is usually loaded into the world which runs on a server machine, and then this world is saved.

Here is a list of some layered products you might load after installing Genera 7.0. These products are not in the standard world, but can be ordered from Symbolics. Each product comes with its own documentation, which explains how to install it.

- Symbolics Ada (R)
- Symbolics Color
- Symbolics DMP1 Printer Support
- Symbolics DNA
- Symbolics FORTRAN

- Symbolics IP/TCP
- Symbolics LGP2 Printer Support
- Symbolics Optional Compiler Sources
- Symbolics Optional Kernel Sources
- Symbolics Optional Zmail Sources
- Symbolics Pascal
- Symbolics Prolog
- Optional Sources for Symbolics Common Lisp
- Symbolics VAX UNIX 4.2 BSD Chaosnet Software

## **13.7 Installing Genera 7.0 At Sites Whose SYS Host Must Be Reached with DNA**

This section discusses installing Genera 7.0 at new sites and at existing sites where the SYS host must be reached with DNA.

### **13.7.1 Installing Genera 7.0 At a New Site Whose SYS Host Must Be Reached with DNA**

Follow these instructions if your SYS host can only be reached by DNA.

- 1. Boot the Genera 7.0 distribution world.**
- 2. Disable Services, using the Disable Services command, as shown:**

Command: `Disable Services`

- 3. Log in as the default system user.**

Type to the command prompt:

`Login Lisp-Machine`

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

- 4. Create a local LMFS.**

To create a local LMFS, press SELECT F, which selects the File System Editing Operations Program. Click right on [Local LMFS Operations], which invokes the second level of the program. Click on right on [LMFS Maintenance Operations]. This invokes the third level of the program. Click left on [Initialize]. This offers to create an initial partition location. Use the default which is FEPO:>lmfs.file. After you press RETURN, you are asked for the number of blocks to allocate for this file. You should make this file slightly larger than the size of the DNA files.

#### 5. Use the Set Site command to create the site database files.

For information about the Set Site command, see the section "Set Site Command" in the chapter "Commands Used to Customize and Save Worlds" in *Site Operations*.

The following question in the Set Site dialogue allows you to choose where to store these files. *Koala* is the name of the host.

```
What directory on KOALA corresponds to SYS:SITE; (default: >sys>site):
```

When this dialogue asks you where you want your SYS.TRANSLATIONS file, specify a directory on your newly created local LMFS. Use the default.

#### 6. Edit the SYS:SITE;SYS.TRANSLATIONS file.

The Set Site command automatically creates the SYS.TRANSLATIONS file.

You must load the DNA system into the LMFS file you just created. (Later on in the installation you will specify the permanent SYS host, which can be a VAX/VMS system.)

If you plan to restore the Genera 7.0 distribution tapes to a VAX/VMS SYS host, please read the following section: See the section "VAX/VMS Version 4.4 Pathnames and Genera 7.0", page 85.

Edit the file sys:site;SYS.TRANSLATIONS so that it contains your site-specific information. The physical host **must** be a Symbolics computer.

```
;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
;;; Translations for Genera 7
(fs:set-logical-pathname-host "SYS"
 :physical-host "ACME-YUKON"
 :translations '(("SYS:**;*. *.*" "ACME-YUKON:>Re1-7>*** *.*")))
```

#### 7. Compile the translations file.



Use Control-SH-C to compile this file.

**8. Restore the DNA system.**

Restore the files from tape into the LMFS you created earlier. Follow the instructions in the manual *Symbolics Digital Network Architecture (DNA) Software Package*. You must be familiar with the contents of this manual to install DNA successfully. Follow the instructions all the way through so that you have verified that DNA works. In particular, follow the instructions in "Assigning DNA and Ethernet Addresses".

**9. Create new namespace objects by editing the namespace database to register other hosts and users at the site.**

If you know that there will be other hosts on the network, you can enter these now. Add users that will be part of your site, too. If you have not already done so, create a VAX/VMS host object at this time. To edit a namespace object, type the following to the Command Processor prompt:

```
Command: Edit Namespace Object
```

For more information about registering hosts and users: See the section "Editing a Namespace Object" in *Networks*.

**10. Boot the same world, which now has the correct Ethernet address.**

**11. Load the DNA system.**

Type:

```
Load System DNA
```

**12. Use the Set Site command to configure the machine for your site.**

**13. Save the world, using Save World Incremental or Complete.**

**14. Update the SYS.TRANSLATIONS file to indicate where you want to permanently store your files.**

Edit the file `sys:site;SYS.TRANSLATIONS` so that it contains your site specific information. Specifically, this time the physical host can be a VAX/VMS system. Here is an example.

```
;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
;;; Translations for Genera 7
(set-logical-pathname-host "SYS"
  :translations '(("SYS:DNA;**/*.*)" "ACME-YUKON:>Rel-7>**>*.*)"
    ("SYS:**/*.*)" "PRESTO:USER2:[YUKON.REL7...]**.*"))
```

**15. Restore the files from the three source, examples, and documentation tapes onto the appropriate SYS hosts.**

Now you can load documentation and source files onto the machine you have decided will be your SYS Host, if the SYS host does not already have the sources on it.

If you have any questions about SYS hosts, see the section "What are SYS Hosts?" in *Software Installation Concepts Primer*. To see if your disk can accommodate these files see the section "Sizes of the Genera 7.0 Systems" in this document.

Loading the sources, documentation, and examples files is not optional in Genera 7.0. If you do not have adequate disk space to restore the three Genera 7.0 tapes, please call Symbolics Software Services.

Load each distribution tape by typing:

```
Restore Distribution
```

You can load these tapes in numerical order.

**13.7.2 Installing Genera 7.0 At an Existing Site Whose SYS Host Must Be Reached with DNA**

Follow these instructions if your SYS host can only be reached by DNA.

**1. Boot the Genera 7.0 distribution world.**

Boot the 7.0 distribution world on the machine that is not the namespace server. (This machine must be the one on which you have restored the Genera 7.0 world.)

**2. Disable Services, using the Disable Services command, as shown:**

```
Command: Disable Services
```

**3. Log in as the default system user.**

Type to the command prompt:

### Login Lisp-Machine

This command line logs you in as the default user and is useful during installation procedures, when you must do certain operations after cold booting.

4. **Make sure your LMFS has enough available space to hold the DNA distribution.**
5. **Use the Set Site command to configure the machine for your site.**

For information about the Set Site command, see the section "Set Site Command" in the chapter "Commands Used to Customize and Save Worlds" in *Site Operations*.

You will be asked several questions as part of the Set Site dialog. *Koala* is the name of the host and *Wombat* is the namespace server. Respond as shown in the example with the correct information for your site.

```
Define a new site named KOALA (as opposed to looking for an existing
definition of KOALA on disk)? (Yes or No) No
```

```
What host is a namespace server for KOALA (Default :Local) WOMBAT
```

```
What is the Chaosnet address for WOMBAT? 24535
```

```
Host responds as WOMBAT, OK (Y or N) Y
```

6. **Edit the SYS:SITE;SYS.TRANSLATIONS file.**

The Set Site command automatically creates the SYS.TRANSLATIONS file.

You must load the DNA system into the LMFS you just created. (Later on in the installation you will specify the permanent SYS host, which can be a VAX/VMS system.)

Edit the file sys:site;SYS.TRANSLATIONS so that it contains your site-specific information. The physical host for DNA **must** be a Symbolics computer. Here is an example.

```
;;; -*- Mode: LISP; Package: FS; Syntax: ZetaLisp; Base: 10; -*-
;; Translations for Genera 7
(set-logical-pathname-host "SYS"
 :translations '(("SYS:DNA;**.*.*" "ACME-YUKON:>Rel-7>DNA>**>*. *.*")
 ("SYS:**.*.*" "PRESTO:USER2:[YUKON.REL7...]*.*;*")))
```

**7. Compile the translations file.**

Use Control-SH-C to compile this file.

**8. Restore the DNA system.**

Restore the files from tape into a LMFS. Follow the instructions in the manual *Symbolics Digital Network Architecture (DNA) Software Package*. You must be familiar with the contents of this manual to install DNA successfully. Follow the instructions all the way through so that you have verified that DNA works. If you do not have an Ethernet address or a DNA address, pay particular attention to the instructions in "Assigning DNA and Ethernet Addresses".

**9. Make sure the VAX/VMS SYS host is registered in your namespace with the correct DNA address.**

If you know that there will be other hosts on the network, you can enter these now. Add users that will be part of your site, too. To edit a namespace object, type the following to the Command Processor prompt:

Command: Edit Namespace Object

For more information about registering hosts and users: See the section "Editing Your Namespace Object After Installing a New Release" in *Site Operations*.

**10. Boot the same world, which now has the correct Ethernet address.**

**11. Load the DNA system.**

Type:

Load System DNA

**12. Use the Set Site command to configure the machine for your site.**

**13. Save the world, using Save World Incremental or Complete.**

**14. Restore the files from the three source, examples, and documentation tapes onto the appropriate SYS hosts.**

Now you can load documentation and source files onto the machine you have decided will be your SYS Host, if the SYS host does not already have the sources on it.

If you have any questions about SYS hosts, see the section "What are SYS

Hosts?" in *Software Installation Concepts Primer*. To see if your disk can accommodate these files see the section "Sizes of the Genera 7.0 Systems" in this document.

Loading the sources, documentation, and examples files is not optional in Genera 7.0. If you do not have adequate disk space to restore the three Genera 7.0 tapes, please call Symbolics Software Services.

Load each distribution tape by typing:

```
Restore Distribution
```

You can load these tapes in numerical order.

### 13.8 Distributing the New World and Microcode to Other Machines

To distribute the new Genera 7.0 world and the accompanying microcode, use the Copy World command to copy the world to specified machines. In the following example, the world Genera-7-0.load.1 would be copied to the host Puffin.

```
Copy World FEP0:>Genera-7-0.load.1 Puffin|FEP1:>
```

When using the Copy World command, be sure to provide the correct disk unit. In this example, the world exists on FEP0:>, and will be copied to FEP1:> on the host Puffin.

For help with using the Copy World command, See the section "Copy World Command" in *User's Guide to Symbolics Computers*.

To distribute the new microcode, use the Copy Microcode command on the machine that will receive the new microcode. For example, to copy a microcode for a 3640 type:

```
Copy Microcode FEP0:>3640-mic.mic.393
```

**Warning:** When copying microcode from a machine running Genera 7.0 to a machine running Release 6.1, **you must specify the microcode file name**, rather than just specifying the microcode version. The name of the microcode files changed from Release 6.1 to Genera 7.0, and the Copy Microcode command does not understand the name change. It tries to find a microcode version with the same name components as the old microcode.

For example, to distribute a new microcode using the Copy Microcode command on the machine that will receive the new microcode, type:

Copy Microcode SYS:L-UCODE; 3600-mic.mic.393

For a list of microcode types for Genera 7.0: See the section "Genera 7.0 Microcode Types", page 65.

When the Copy Microcode command asks if you want to update your boot file, answer Yes. The file is now updated.

### 13.9 Creating a World-build Script File for Your Site

A world-build *script file*<sup>1</sup> is a customized file that you load during site initialization. This file contains all the code you need to initialize a world at a site.

Creating this file relieves you of the need to enter each command manually. Some of the forms in this file take many minutes to operate. In addition, without the aid of a script file, someone must monitor the process, in order to enter a form after the previous one finishes. The order in which each form is evaluated is important, too. By using a script file, you make the process of world initialization easier.

We recommend giving this file a pathname such as SYS:SITE;SITE-INIT.LISP. One instance of when to use this file is when you are setting up a new site. you use the Set Site command, which configures the software and identifies your machine before you use a new world load, and then use the Load File command to load the script file to initialize all of the actions that you want performed in your new world. Another instance of when to use this file is anytime you are going to build a new world.

While the functions in the script file are running, the process notifies you of its progress.

You can modify this file to create a user world or a server world, by using the appropriate keyword with the first form in the script file. If you want to create a server world, the appropriate systems, such as the mailer and the print spooler, are automatically loaded into the world. You can create a different script file for each type of world, server and non-server.

Examples of actions you might want to include in the script file are loading patches, turning on the garbage collector, and reordering memory.

Here is an example of a script file, with some suggested forms you might put in your site's script file. Read the comments (prefaced by three semi-colons) for an explanation of the file's contents.

---

<sup>1</sup>We understand that this is not a script file in the traditional sense, but use it here to denote a file containing forms enclosed in a wrapper function.

```

;;; -*- Syntax: common-lisp; Base: 10; Mode: LISP; Package: SYSTEM-INTERNALS; -*-

;;; a large function to do the entire job of building
;;; a world, given that you boot an appropriate starting world

;;; use this to create a user or server world
(defun produce-world (&key server)

  (format t "~2& Enabling the EGC")

  ;;; make sure that the GC is in a consistent condition
  (gc-on :ephemeral t :dynamic nil)

  ;;; disable screen-dimmer to avoid interrupts-off surprises
  (let ((tv:*dim-screen-after-n-minutes-idlex nil))

    (setq time-start (time:get-universal-time))
    ;;; disable the services, to avoid any unwanted network interactions
    (disable-services)
    ;;; turn the global more breaks off, in case not already done
    (setq tv:more-processing-global-enable nil)
    ;;; this assures that someone is logged in to the machine
    (fs:force-user-to-login)

    (format t "~2& *** Constructing your site's world, System ~D.~2%~
      ~4TServices disabled, more processing on locally, off globally,
      logged in as ~A.~@ ~4TLoading patches." (get-system-version) user-id)

    ;;; load patches to make sure you're up to the current patch level
    (load-patches nil :query nil)

    (format t "~2& *** Up to current patch level; loading added systems.~%" )

    ;;; now load the extra systems that you want in your world
    (flet ((load-a-system (name)
      (unless (sct:find-system-named name nil t)
        (format t "~2& Loading ~A.~2%" name)
        (sct:load-system name :query :no-confirm))))))

```

```
(load-a-system "IP-TCP")
(when server
  (load-a-system "Print")
  (load-a-system "Mailer"))

(format t "~2& *** Added systems loaded.~%"

;;; compile the who-calls database
(si:enable-who-calls :all-no-make)

;;; now do a full gc. This takes about 1.75 hours
(format t "~2% *** Beginning Full-GC.")
(full-gc)

(format t "~2% *** Beginning Reorder-Memory.")
  (reorder-memory :incremental nil
    :run-without-interrupts t) ;;;run-without-interrupts is faster

;;; Last (and least) make this function disappear
(fundefine 'produce-world)

;;; Print final statistics.
(format t
  "~2& *** Full-GC, Reorder-Memory and final parameter settings complete.
  If everything~@ ~5@Tlooks OK, please save the result via Save World .~2%")
(values)))

(format t "~2&Start the world production by calling ")
(present '(produce-world) 'sys:form)
(format t ".~%")
```



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