



The Mainframe Software Partner
For The Next 50 Years

License Management System

User/Reference Guide

Centralized Licensing Facility

Release 4.0

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Licensing Facility
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Introduction

This manual describes the Compuware License Management System Centralized Licensing Facility application and its use.

Manual Structure

The following list briefly describes the contents of each chapter in this manual:

- **Chapter 1, “The License Certificate”** provides an overview of the license certificate for the License Management System (LMS) and steps to follow when upgrading to LMS 4.0.
- **Chapter 2, “Centralized Licensing Facility Processing”** describes the LMS Centralized Licensing Facility implementation for Release 4.0.
- **Chapter 3, “Starting and Stopping the Server and Client”** describes how to start the and stop the LMS server and client.
- **Chapter 4, “Server Start-up Parameters”** details the contents of the LMZINIT parameter file.
- **Chapter 5, “ISPF Interface”** describes the screens used in the ISPF interface on the LMS server.
- **Appendix A, “Compuware Maintenance Utility”** is a program distributed with LMS, and executed through JCL that, by default, generates reports listing all PTFs currently applied to a particular system, for all specified Compuware mainframe products.

User Guide Conventions

In this document, the following conventions are used:

- Client refers to the LMS client LPAR program.
- Server refers to the LMS server program.
- ISPF refers to the user interface.

Screen Conventions

This section presents information that is common throughout the ISPF User Interface screens.

Product Title

The product title is displayed at the top center of each License Management System screen.

Short Message

The Short Message area is in the right corner of the first line.

COMMAND or OPTION Field

The COMMAND field (command line) is shown on all screens. On some screens, it is named the OPTION field. Use this field to enter primary commands or option selections on the LMS ISPF Interface screens. Primary commands are valid for all screens.

HELP	Provides tutorial information about the License Management System screens and options.
END	Takes you to the previous screen.
EXIT	Takes you to the previous screen.
UP	Scrolls the display up by the specified amount.
DOWN	Scrolls the display down by the specified amount.

SCROLL Field

The SCROLL field lets you set the scroll value for screens that permit scrolling. The positioning commands DOWN and UP are used with this field. The following values are valid for the SCROLL field:

CSR	Scrolls based on the cursor's location.
HALF	Scrolls the display a half screen.
MAX	Scrolls to the beginning or end of a data area.
PAGE	Scrolls the display a full screen.
nnnn	Scrolls <i>nnnn</i> lines. Valid entry is from 1 to 9999.

Screen Title

The screen title is usually displayed below the COMMAND or OPTION line. It consists of a short description of the screen's function.

Function Key Default Definitions

The default PF key settings are the following:

Key	Function	Description
PF1/PF13	HELP	Provides tutorial information about the License Management System screens and options.
PF2/PF14	SPLIT	Splits the screen in two. Use this key to run two sessions simultaneously.
PF3/PF15	END	Takes you to the previous screen.
PF7	SCROLL UP	Scrolls the display up.
PF8	SCROLL DOWN	Scrolls the display down.
PF9/PF21	SWAP	Switches back and forth between two screens when working in split screen mode.
PF12/PF24	CANCEL	Cancels the current transaction and returns to the previous screen.

You may reset the values assigned to the PF keys with the ISPF command **KEYS**. If your terminal has 24 PF keys, keys 13 through 24 are set to match the values assigned to 1

through 12. You can use the ISPF command PFSHOW TAILOR to change the display of valid PF key settings at the bottom of each screen.

Related Publications

The *Enterprise Common Components Installation and Customization Guide* details the installation and customization of the License Management System and other Compuware Common Components.

The *License Management System User/Reference Guide* details the Compuware License Management System and its use. It includes information on the License Administration Utility and error messages.

For information on your specific Compuware product and its dependency upon the License Management System, refer to that product's technical documentation.

Getting Help

At Compuware, we strive to make our products and documentation the best in the industry. Feedback from our customers helps us to maintain our quality standards.

Questions about the License Management System or comments on this document should be directed to:

Compuware Corporation
One Campus Martius
Detroit, MI 48226-5099
1-800-538-7822

If problems arise, consult this manual or the License Management System technical support representative at your site. If problems persist, please obtain the following information before calling Compuware. This information helps us to efficiently determine the cause of the problem.

1. Obtain your client number and write it in the space below.
Client No. _____
2. If you are experiencing an error message during use of the ISPF Interface screens, type **HELP** in the COMMAND line for an extended explanation of the error.
3. If you are getting a batch error message from the License Management System, save the JCL and output.
4. Identify the License Management System release.
5. Determine the product function being used and the sequence of events leading up to the problem.
6. If files are involved, determine the file characteristics.
7. Record any ISPF/PDF error messages or operating system messages. If an abend occurs, it is very important that you record the abend and any screen information and save all related dumps.
8. Determine the versions of current operating system components that may have an impact on the problem.

Chapter 1.

The License Certificate

This chapter describes how to successfully administer Compuware licenses for the License Management System (LMS) Centralized Licensing Facility (CLF) Release 4.0.

License Certificate Types

The LMS Client/Server implementation supports the following license certificate types:

- CEC/MODEL type (for downward compatibility with LMS 1.0)
- CEC/LPAR type (for downward compatibility with LMS 2.0)
- Product/MSU type

Migration to LMS Centralized Licensing

When upgrading to LMS 4.0 from existing LMS 1.0, 2.0, 3.0 or 3.1, Compuware recommends the following phased migration.

1. Install LMS 4.0 and run it in LMS 2.0 mode (no server). In this mode, LMS 4.0 executes exactly the same as LMS 2.0, LMS 3.0, and 3.1 without CLF.
2. Install an LMS license server and prove connectivity to each of the client mainframe LPARs. The TSO PING command can be useful to prove TCP/IP connectivity.
3. Import existing certificates into the LMS server in preparation for connecting with clients.
4. One by one, change the LMSINIT parameters on each LPAR to indicate client/server mode. As each LPAR is changed, its license file comes from the server and not from local DASD.
5. When all LPARs are successfully connected to the license server and the system is running successfully using the server, you can import the CLF certificate.

Obtaining Your License Certificate

Upon acquisition of a Compuware product, you also receive a license certificate for the product. A license certificate is delivered in each of the following situations:

- The first time you acquire the product.
- Upon delivery of another release of the product.
- Any time your license terms are modified.

In addition to the license certificates associated with your current license agreements, you may have interim license certificates with special temporary access information. These license certificates, which provide access for a limited duration, remedy a software license incompatibility situation that could arise when a change in your computing environment occurs prior to an addendum to the license agreement. You and your Compuware sales representative must report these situations to Compuware's Worldwide License Management department. The special temporary access license certificate is

replaced with a license certificate associated with the addendum to the license agreement upon the agreement's completion.

Upon acquisition of your Compuware product, your organization is asked to supply an electronic mail (e-mail) ID. This ID is used as the recipient of the license certificate. If you do not want to receive your license certificate through e-mail, you may request that your license certificates be delivered through another method. Most commonly, the alternate delivery could be accomplished through one of the following:

- FTP site
- 1.44mb floppy disk
- ISO9001 CD

The license certificate, whether attached to your e-mail or delivered on other media, is in a file named `ENVxxxx.txt`. The file is delivered in simple ASCII text file format and must be translated to 80-byte EBCDIC character set format records when transferred to the mainframe. The resulting file on the mainframe is the file that you import into your License Management System.

If your organization or site has a designated License Management Administrator, Compuware can update your organization or site delivery method preference and related information in our records at your request. Doing so upon receipt of your first license certificate and any time the License Management Administrator changes, may accelerate the information gathering steps in future license certificate deliveries. Please contact Compuware's Worldwide License Management Department at 1-800-538-7822 to communicate your license certificate delivery preferences.

Chapter 2.

Centralized Licensing Facility Processing

The License Management System (LMS) Centralized Licensing Facility (CLF) implementation provides a single server administration and distribution for all license types. LMS manages the execution of Compuware products regardless of where they reside within an enterprise.

LMS 3.0, 3.1, or 4.0 is required in order to support the Compuware mainframe product licensing wherein you purchase a certain number of MSUs, either for one location within your enterprise (site) or for your entire enterprise. You are free to deploy these MSUs in any way you choose, across any number of CECs or LPARs.

LMS 4.0 is fully compatible with LMS 1.0, 2.0, 3.0 and 3.1 license certificates. License certificates obtained for earlier releases of LMS can be imported into a LMS 4.0 server and distributed to LMS clients. Hence new certificates are required only if you are changing from older license types to the new product/MSU type of license and the new license certificates are required for product/MSU licensing.

Utilization VS. Size

The CLF feature of LMS supports two distinct types of sub-capacity licensing:

1. By adding together the capped LPARs sizes for each product and option chosen by you to execute on the LPARs.
2. By adding together the current rolling 4-hour average MSU utilization values from each LPAR chosen by you to run a particular product or option.

In each of these cases, LMS compares the sums created above to the number of MSUs licensed for each product and/or option. As long as the sums remain at or below the licensed number the product or option is allowed to execute. In the first case, if the sum of the LPAR sizes exceeds the licensed value the products or options enter a 14-day LPAR size grace period. In the second case, if the sum of the rolling 4-hour average MSU utilization values exceeds the licensed value, products or options enter a 14-day LPAR utilization grace period. A new license certificate is required in either case to exit these grace periods.

If you have chosen utilization, then the size of the LPARs are of no consequence and are not checked by LMS. Your LPARs may all be uncapped in this mode of operation. Uncapped LPARs are supported and are expected in most installations.

You may choose either utilization or size licensing for your enterprise, but whichever you choose must be used on all LPARs connected to the same CLF server. You choose utilization by specifying LPAR_MODE(UTIL) in the LMSINIT parameters for all client LPARs. You choose size by specifying LPAR_MODE(SIZE) in the LMSINIT parameters for all client LPARs. You may choose either, but you must be consistent among all clients connected to the same server. LMS does not check to insure that all clients are using the same mode so you must be certain that you specify the same value in every LMSINIT SYSIN data set.

Since all client LPARs in a CLF environment are connected via TCP/IP, there is no requirement that these all be on the same CEC. The CECs can be any "z" mainframe. And all supported releases of z/OS can be used and they need not all be at the same release level (only z/OS is supported by CLF: MVS/ESA and OS/390 are not supported in this mode).

LPAR_MODE(SIZE) has been available in CLF since LMS 3.0. LPAR_MODE(UTIL) is new with LMS 4.0. Note that the default value if this parameter is not specified or is specified as a null value is LPAR_MODE(SIZE).

The license certificates are the same for both of these modes. These certificates specify CERTVER<03.00.00>, a product or option section, a CPU section and an LPAR section which contains only the number of MSUs you have licensed for the product or option. You may license fewer MSUs for an option than for its product but you cannot license more.

For LPAR_MODE(UTIL), it is the rolling 4-hour average MSU utilization which is extracted from each LPAR and sent to the LMS server for processing. The server adds together these values on a product or option basis (i.e. only values from LPARs you have chosen for a product or option are added together) and the sum is compared to the value on the license certificate for that product or option.

LMS does not calculate the current rolling 4-hour average MSU utilization values but instead obtains these values from z/OS via IBM supported system calls. Spikes in utilization are not reported as the current value but are averaged with all the values for each 5-minute period over the previous 4 hours and are, therefore, averaged out and often do not increase the final sum (assuming for some 5-minute periods the utilization is less than the average value). Also, immediately following an IPL when z/OS does not have values for the previous 4 hours, it still divides the utilization sum by 48¹. Hence a significant utilization immediately following an IPL (e.g. extreme CPU utilization during IMS start-up) is under-reported and does not cause the total utilization to be inordinately large. The utilization is accurate 4 hours following an IPL.

Requirements and Coexistence of LMS Releases

You may implement the CLF option of LMS 4.0 on an LPAR by LPAR basis whilst retaining your older licensing releases, or LMS 4.0 without CLF on other LPARs.

When CLF is employed however, all LMS clients and the LMS server must be at the same release level. Error messages are displayed on the system console and on the client or server SYSPRINT data set if mismatched versions of LMS are detected. The LMS 4.0 client will abend with a User 319 abend code if the client detects that it has been configured to communicate with a release of the LMS server which is not 4.0. The LMS 4.0 server will display messages on the console and on the server SYSPRINT if it detects that an LMS client, not at the 4.0 release level, is attempting to connect to it.

Thus you must insure that ALL the client LPARs which are to connect to the LMS 4.0 CLF server are at the 4.0 release level.

Prior to implementing CLF, please contact Compuware and obtain all current PTF maintenance available for LMS 4.0. In this way you will be assured of the most stable and correctly executing product.

If you have only CERTVER<01.00.02> license certificates, connectivity between LMS clients and the LMS server is required only in order for LMS to transmit these certificates to the LMS clients. Once a particular configuration has been activated and the certificates transmitted, the LMS server can be brought down. The LMS clients will execute on their own without server connectivity. These LPARs can be IPL'd (and LMSINIT run again) without server connectivity because the license information is stored locally on each client checkpoint data set.

However, when you have imported LMS 3.0 certificates (CERTVER<03.00.00>) and have distributed these to the LMS clients, connectivity with the server is required at all times. If communication between a client and the server is lost, then products licensed with CERTVER<3.00.00> will enter a 72 hour server grace period. This grace period will automatically be exited when connectivity is restored.

1. There are 48 5-minute periods in 4 hours.

Components

The major components involved in the CLF implementation of LMS 3.0 are:

- Client LPAR
- Server LPAR
- ISPF interface

Each of these components is described below.

Client LPAR

A client LPAR is a logical partition running one or more Compuware products and containing an LMS client address space active within it. If client/server mode is not chosen when LMS is installed, the result is each client LPAR contains LMS code identical to LMS 2.0 and no address space is consumed. Only in CLF mode is a long-running address space required on each client LPAR.

Server LPAR

One LPAR within your location is designated a server LPAR and runs the LMS server program. The server executes as long-running address spaces within the LPAR. The LMS server can run in an LPAR which is also running Compuware products, and thus, that LPAR is designated both as a Client LPAR and a Server LPAR.

ISPF Interface

All user access to the LMS server occurs via an ISPF interface. ISPF runs under a TSO session and that TSO session can exist on any LPAR in your environment. Because TCP/IP is used to communicate between the ISPF user interface and the LMS server, no requirement exists that the TSO session be active on the same LPAR as the server or any of the LMS clients.

Server Connectivity

The following rules govern the connectivity requirements between the LMS server and the LMS clients:

- LMS clients running in non-CLF mode have no connectivity requirements as there is no server program involved.
- LMS clients running in CLF mode initiate all connections with the LMS server. Thus, the client startup parameters include the IP name (or IP address) and port number of the LMS server. The addition of these parameters differentiates a client running in non-CLF mode from one running in CLF mode.
- LMS clients running in CLF mode, but which have only LMS 1.0 or LMS 2.0 certificates, only require connectivity to the LMS server once in order to receive their license file. These clients write information to a local checkpoint dataset and the data from this dataset is used for all subsequent LMSINIT processing. Only a customer-initiated change, a Dynamic CPU Upgrade (CUoD), or an LPAR size change requires reconnecting to the server. Operating system IPLs and their subsequent LMSINIT execution do not require connection to the server.
- LMS clients running in CLF mode and licensed via a Product/MSU (CERTVER<03.00.00>) license must remain connected to the LMS server at all times. Loss of this connectivity causes the client to enter a server grace period. Exit from this grace period is automatic as soon as server connectivity is reestablished.

Server Licensing

The scope of an LMS server encompasses the LPAR on which the server is running and all client LPARs connected to that server. There is no physical implication to this definition; it is a logical construct only. A single physical location (for example, a computer room) can be divided into multiple logical server sites due to mandated security requirements that preclude the interconnection of all client LPARs to a single server LPAR. A separate LMS server is, of course, required for each logical site.

Each CLF certificate contains a server section. Within each exists the physical identification of the LPAR on which the server is allowed to execute. This identification takes the form of the concatenation of CEC_SERIAL, LPAR_NAME, and OS_NAME (i.e., CVTSNAME). The server can only run on this specified CEC/LPAR/OS. No backup server capability exists. If this particular CEC/LPAR/OS is not available, contact Compuware's Worldwide License Management (WWLM) department and a temporary server license can be sent allowing server execution on any CEC/LPAR. Compuware products execute in server grace mode until connectivity with the server is reestablished.

In order to determine exactly what the SERVER_ID<> on a CLF certificate must specify, you need only to execute the LMS server (LMZMAIN) on the LPAR you wish to designate as the "server" LPAR. The server's SYSPRINT data set will contain a message which shows exactly what you must communicate to WWLM in order for them to correctly construct the SERVER_ID<> parameter.

User Functions

The following section describes those functions available if the CLF facility of LMS is implemented. Each of these functions is presented via TSO/ISPF. Refer to Chapter 5, "ISPF Interface" for more information about using these functions.

Specifying Server IP Name or Address

Your DNS (Domain Name Server) is used to convert a server name to its IP address. You have to update the DNS with these values if you wish to use a server name. No update is required if an IP address is used. You must ensure that physical and logical IP connectivity is required between each of the client LPARs and the server LPAR. Logical connectivity includes ensuring that all routers and firewalls involved in the connection be made to pass LMS connection requests.

Logging On to the Server

You must enter your RACF (ACF/2 or TOPSECRET) USERID and password to access the LMS server. Optionally, a group name and new password can be entered. An administrator can limit access to the server via a Facility Class Entity that associates USERIDs with LMS server images. Each server image has a unique entity name allowing users to access one server, but not another one. When RACF is used, if the administrator has not added the Facility Class Entity, then any user with a valid USERID and password can access the server.

Note: Multiple users can simultaneously be logged on to the same LMS 3.0 server. Protection is maintained such that two users are not allowed to perform update functions resulting in the integrity of the server tables being jeopardized.

In order to determine exactly what the RACF (ACF/2 or TOPSECRET) facility class entity should be, you need only to execute the LMS server (LMZMAIN) on the LPAR you wish to designate as the "server" LPAR. The server's SYSPRINT data set will contain a message which shows exactly what you must code as the facility class entity in order to protect

execution of the LMS 4.0 server. Userids or Groups must be granted ACCESS(READ) to this entity.

Logging Off from the Server

You can log off manually from the server. Logoff is also performed automatically by the server if no activity on the ISPF front-end occurs within a 15-minute period. In-flight configuration processing may be lost upon automatic logoff, and you are warned of pending configuration processing upon manual logoff.

Maintaining Logging Parameters

LMS contains a logging facility, primarily for debugging, but useful for other historic research purposes as well. You can start and stop this logging and can swap from one log file to another. You can also assign a log level that specifies how much log data is written. Logs are VSAM ESDSs defined automatically by LMS using customer supplied parameters, that is, name, volume, or SMS parameters. Currently logs can only be viewed from a batch report program, not from ISPF.

Maintaining Grace History Information

LMS supports an optional Grace History File where you can see in one place, a list of all your licensed products and see if and when any of them have entered any of the 14-day grace periods. Information from all connected LPARs can be contained in this one data set.

No automatic facility exists for browsing this file but you can export it via IDCAMS to a sequential data set or you can invoke Compuware's File-Aid product to browse the data itself.

A set of functions exists within LMUSER to open, close, and rename this data set.

Specifying the License File

You can add and delete license files and can query a list of currently defined files. Each license file is a VSAM KSDS and is updated only by the import process of the LMUSER. The LMS 2.0 import program has been updated for LMS, but is used as-is by the server program. Setting emergency passwords, disaster recovery mode, and logging levels are performed directly by the server against the LPAR definitions and are not recorded in the license files.

Note: The LMS license files are only accessible by the LMS server. These files no longer reside on each client LPAR.

Importing License Certificates

License certificates are sent as attachments in e-mail messages by Compuware's WWLM department. You import license certificates by completing the following steps:

1. Save the attachment as a file on the PC.
2. Cut and paste the attachment into a file on the mainframe.
3. Access the server.
4. Invoke the function to send the certificate to the server for import to a license file.

The license certificate must reside on the LPAR from which you are executing the TSO/ISPF LMUSER facility. This LPAR may or may not be the LPAR on which the LMS server is running.

Receiving an Import Report

The report program generated by the license import facility can be saved to a file or can be transmitted to the ISPF user requesting the import. You can scan the report and make note of any errors that occurred. Errors on the certificates may require retransmission of the certificate from Compuware's WWLM department to the customer.

Adding a Configuration Name

You can add a name of a new configuration and can use that name in subsequent configuration changes. Multiple configurations can exist concurrently, but only one can be active, that is, transmitted to client LPARs.

Cloning an Existing Configuration

You can clone an existing configuration under a new configuration name. All LPARs, license files, and associations between products and options and LPARs are copied to the new configuration.

Verifying a Configuration

You can request that a configuration be validated to ensure that the specifications in that configuration do not violate what the license certificate dictates.

Assigning Active Status

You can assign one configuration to active status. This must be done before the configuration is deployed to client LPARs. Only one configuration can be active at a time. A previously active configuration becomes inactive when a new active one is assigned. Previous configurations are maintained so that a fallback facility exists whenever a new configuration is found to be in error.

You decide when you want to deploy a new configuration to your client LPARs, by assigning an active configuration status. This deployment involves the transmission of license information to each connected LPAR, which happens within 30 seconds for all connected LPARs. LPARs coming online later receive the new configuration as well. If a client LPAR connects to the server and if its size or utilization does not match the size contained in the current configuration, an error is generated and the new LPAR enters a 14-day grace period.

An administrator must manually intervene to correct the size or utilization discrepancies. There is no requirement that the administrator be logged onto the server at the time that an LPAR connects. The process of notifying the user may be problematic because he may not even be at work when this connection occurs. The administrator should ensure that all LPARs that can connect, have connected, before logging off from the server.

Defining LPARs

You can query a list of all connected client LPARs, add new LPARs, and delete existing ones. Each LPAR is shown with its CEC_SERIAL, LPAR_NAME and OS_NAME, the size of the LPAR, plus any descriptive information as well. The size is the defined capacity or capped capacity of any LPAR running z/OS or z/OS-e. Or the size is the CEC capacity when either z/OS or z/OS-e is not running. In addition, the LPARs current MSU utilization is shown as well whether the LPAR mode is size or utilization.

When an LPAR definition is added manually, it is because the administrator is pre-defining a client LMS and the LPAR is not already active or is not running the client program.

When that LPAR becomes active, either the pre-defined entry is used (all key values match), or a new entry is added. You must manually detect that an LPAR you thought you previously added has become active. However, since one or more of the key elements did not match, the server assigned it as a new LPAR entry.

If a pre-defined LPAR becomes active and the size of that LPAR does not match the size you entered, the real LPAR size is used and the size you entered is discarded.

Querying Product/Versions

You can query a list of all Compuware products maintained by the server. New products can be added only by importing a certificate containing valid product specifications. You cannot add products on your own. You must contact Compuware's WWLM department for a license certificate. The product list contains the names (both short and long names) and version of the product, the dates for which each is valid, any special access granted to the product, and the number of MSUs purchased. Options to each product can be displayed as well, but if an option is missing even if you thought you had purchased the option, a new certificate must be transmitted.

Associating Product/Version to LPAR

The administrator must associate a product/version for each product/option licensed by MSUs to one or more defined LPARs. Before a product/version can run on a client LPAR, it must be associated with that LPAR and a license definition must have been sent to the client LMS.

LMUSER Tutorial

The following is a step-by-step tutorial of one of the most common functions you will perform using the ISPF EXEC LMUSER.

This tutorial will take you through the process of importing and activating a new license certificate from Compuware. Other tutorials may be created in the future describing other LMUSER functions.

Accessing the ISPF User Interface

You may invoke LMUSER from any ISPF command line and the Compuware LMS Logon screen (Figure 2-1) will appear.

Figure 2-1. ISPF Interface Server Logon Screen

```

----- Compuware License Management 04.00.00 -----
Command ==>

                                Server Logon

Server Information:
Port Number . . . (required)
Host Name . . . . .
Host Address . . . . .
TCP/IP STC Name . . (multi-stack environment only)
IPv6? . . . . . (Y or N)

User Information:
UserID . . . . . (required)
Password/Phrase . . . . .
Group Name . . . . .
New Password/Phrase . .
Verify Password/Phrase.
    
```

On this screen you must enter the Host Name or Host Address and the Port Number of your CLF server. You must specify whether you are using IPv6 (Y or N). You must enter your UserID and Password.

Note: The UserID and Password must be valid on the system on which the CLF server is running.

Some common mistakes:

- When the Host Name of the server is changed, the Host Address must also be cleared (if one is shown) , otherwise the address will be used and not the new name.
- When the Host Address of the server is changed, the Host Name must also be cleared (if one is shown) otherwise a conflict between name and address will occur.

You will then be presented with the ISPF Interface Main Menu screen (Figure 2-2) where you may execute each individual function.

Main Menu Screen

Figure 2-2. User Interface Main Menu Screen

```
----- Compuware License Management 04.00.00 -----  
  
                          Main Menu  
  
1 Configure  Configuration maintenance  
2 Define    Define license files  
3 Import    Import license certificates  
4 LPAR      LPAR maintenance  
5 Product   Product maintenance  
6 ServerLog Server Log maintenance  
7 History   Server History maintenance  
8 LPAR View View products/options by LPAR  
X Logoff    Disconnect from LMS server  
  
Current Environment:  
Configuration . : MY CONFIG  
License File . : EFHMJCO.LMS400.CW01.SERVER.LICENSE      on PRD9A2  
  
User Status:  
Password Expiry . . : 53 DAYS  
Previous Logon . . . : 10-JUL-2007
```

Execute the following steps in the order specified to import and activate a new license.

1. Select **Option 1 (Configure)** and then select an existing configuration from which to clone a new configuration.
2. Select **Option 2 (Define)** and then either select an existing license file or define a new one.
3. Select **Option 3 (Import)** and then import your new certificate and check the results from this import.
4. Select **Option 5 (Product)** and then associate all of your products and options to the LPARs on which they are to be licensed.
5. Return to **Option 1 (Configure)** and activate the new configuration.

Each of these steps is described in detail below.

Option 1, Configure

Figure 2-3. Configuration Maintenance Screen (Part 1 of 2)

```

----- Compuware License Management 04.00.00 -- Row 1 to 3 of 3

                          Configuration Maintenance

Current Environment:
Configuration . :

N New          S Select      C Clone        R Rename
D Delete      V Validate    A Activate

Configuration Name          Status
-----
_ DEFAULT CONFIGURATION    ACTIVE
***** Bottom of data *****
    
```

There is only one configuration shown in this example, the DEFAULT CONFIGURATION which is created automatically by LMS. As you create more configurations they will be shown in this list as well. You will probably want to select the most current configuration and make your changes to that configuration. You can choose any configuration you want, however.

Select this configuration and press **Enter**. This configuration is now shown at the top of the screen and is marked as CURRENT ACTIVE. Type a C to the left of this configuration and overtype the name with the name you want to use for your new configuration.

Figure 2-4. Configuration Maintenance Screen (Part 2 of 2)

```

----- Compuware License Management 04.00.00 -- Row 1 to 3 of 3

                          Configuration Maintenance

Current Environment:
Configuration . : CLONED CONFIGURATION

N New          S Select      C Clone        R Rename
D Delete      V Validate    A Activate

Configuration Name          Status
-----
_ CLONED CONFIGURATION    ACTIVE
***** Bottom of data *****
    
```

The CLONED CONFIGURATION is shown as active and is named at the top of the screen. Press **PF3** to go back to the main menu and select **Option 2 (Define)**. You will see the License File Maintenance screen (Figure 2-5).

Option 2, Define

Figure 2-5. License File Maintenance Screen (Part 1 of 3)

```

----- Compuware License Management 04.00.00 ----- Row 1 of 1
Command ==> __                               Scroll ==> PAGE
                               License File Maintenance

Current Environment:
  Configuration . : CLONED CONFIGURATION
  License File . :                               on

SMS Parameters:
  Storage Class . . .
  Management Class . .
  Data Class . . . .

N Define new file  S Select  D Delete

Data Set Name (fully qualified)                Volser
-----
***** Bottom of data *****

```

You must type the name of a new license file because none currently exist. Type an **N** in the blank line under Data Set Name and then type the license file name. Press **Enter**. You will see the License File Maintenance screen (Figure 2-6).

Figure 2-6. License File Maintenance Screen (Part 2 of 3)

```

----- Compuware License Management 04.00.00 ----- Row 1 of 2
Command ==> __                               Scroll ==> PAGE
                               License File Maintenance

Current Environment:
  Configuration . : CLONED CONFIGURATION
  License File . :                               on

SMS Parameters:
  Storage Class . . .
  Management Class . .
  Data Class . . . .

N Define new file  S Select  D Delete

Data Set Name (fully qualified)                Volser
-----
EFHAWCO.LMS.V40.LICENSE                        SMS900
***** Bottom of data *****

```

You may type more license file names, but normally you will have only one. You must select this file by typing an **S** to the left of it and pressing **Enter**. This name will now appear at the top of the screen. See Figure 2-7.

Figure 2-7. License File Maintenance Screen (Part 3 of 3)

```

----- Compuware License Management 04.00.00 ----- Row 1 of 2
Command ==> __          License File Maintenance          Scroll ==> PAGE

Current Environment:
  Configuration . : CLONED CONFIGURATION
  License File   . : EFHAWCO.LMS.V40.LICENSE                on SMS900

SMS Parameters:
  Storage Class . . .
  Management Class . .
  Data Class . . . . .

N Define new file   S Select   D Delete

  Data Set Name (fully qualified)          Volser
  _____                              _____
  EFHAWCO.LMS.V40.LICENSE                  SMS900
  ***** Bottom of data *****
    
```

Notice that the name of this license file appears at the top of the screen. Press **PF3** to go back the main menu and choose **Option 3 (Import)**.

Option 3, Import

Figure 2-8. Import License Certificate Screen

```

----- Compuware License Management 04.00.00 -----
Command ==> __          Import License Certificate

Current Environment:
  Configuration . : CLONED CONFIGURATION
  License File   . : EFHAWCO.LMS.V40.LICENSE                on SMS900

Certificate DSN . . EFHAWCO.LMS.V40.CERTIFS(V400CERT)

Report DSN . . . . EFHAWCO.LMS.V40.ANDY.REPORT
    
```

Note: A certificate data set name and a report data set name are filled in. You must type these yourself the first time you invoke the import function. They will be saved for subsequent entries to this screen. The certificate data set must already exist on the server LPAR. The report data set will be created for you.

When you press Enter, import will proceed. Wait until the import has completed and you will be presented with the Display Import Results Screen (Figure 2-9).

Figure 2-9. Display Import Results Screen

```

----- Compuware License Management 04.00.00 -----
Command ==> __
                                Report File Disposition

Current Environment:
Configuration . : CLONED CONFIGURATION
License File . : EFHAWCO.LMS.V40.LICENSE                on SMS900

V View report  D Delete report
_ EFHAWCO.LMS.V40.ANDY.REPORT

```

The cursor will be placed in front of your report data set name. Type a **V** to view the contents of this data set on your terminal and press Enter. You will see the View License File Screen (Figure 2-10).

Figure 2-10. View License File Screen

```

BROWSE   EFHAWCO.LMS.V40.ANDY.REPORT                Line 00000000 Col 001 080
Command ==> __                                     Scroll ==> HALF
***** Top of Data *****
Date: 06-MAR-2007                                COMPUWARE License Management
Time: 16:01:06                                   License Certificate IMPORT
                                                Update Mode

License File DSN: EFHAWCO.LMS.V40.LICENSE

*****
WLM660I CERTIFICATE IMPORTED - NO ERRORS OR WARNINGS
*****
CUSTOMER CERTVER<01.00.02> CUSTNUM<000001>
CUSTNAME<COMPUWARE CORPORATION>
SERVER CERTVER<03.00.00>
SERVER_ID<5DOA,CW06,CW06>
STATUS<LONG_TERM> START<01-SEP-2003>
AUTH<1234567879ABCDEF>
SITE CERTVER<01.00.02> SITE_ID<001>
SITE_NAME<FARMINGTON HILLS HEADQUARTERS>
PRODUCT CERTVER<03.00.00> SNAME<FILE-AID> VER<01.00>
LNAME<FILE-AID/MVS>
CERTIFICATE_ID<200909240926>
STATUS<LONG_TERM> START<01-DEC-2003>
AUTH<123456789ABCDEF>
CPU CPU_ID<***,***-00-*****,***>
LPAR NAME<*> TYPE<*> MSUS<100>
OPTION SNAME<SPF> VER<01.00>
LNAME<FILE-AID/SPF>
STATUS<LONG_TERM> START<01-DEC-2003>
AUTH<123456789ABCDEF>
CPU CPU_ID<***,***-00-*****,***>
LPAR NAME<*> TYPE<*> MSUS<100>

```

Notice the message "WLM660I CERTIFICATE IMPORTED - NO ERRORS OR WARNINGS". This is the indication that you can proceed. If you receive an error message other than this one, you must examine the remainder of the report looking for the error messages that describe the error. Most likely, the SERVER_ID value will be incorrect and will be flagged as such. If this is the case you must contact the Compuware WWLM and tell them that they must correct the SERVER_ID value and send you a new certificate. The value required for SERVER_ID can be found in the SYSPRINT data set of the CLF server which you are running. Insure that WWLM has the correct value.

Press **PF3** to exit viewing the import report and return to the import results screen. Pressing **PF3** twice more returns you to the main menu where you will choose **Option 5 (Product)**. You will see the Product / Option Maintenance Screen (Figure 2-11).

Option 5, Product

Figure 2-11. Product / Option Maintenance Screen (Part 1 of 2)

```

----- Compuware License Management 04.00.00 ---- Row 1 from 51

                Product / Option Maintenance

Current Environment:
Configuration . . MY CONFIG
License File . . EFHMJCO.LMS400.CW01.SERVER.LICENSE           on PRD9A2

Enter "/" to select option
__ Propagate LPAR associations

Valid line commands:
A, AP, D, X, E, EA, C, CA

      Name                               Release   Certver   MSUs
__ + ABEND-AID FOR CICS                  05.02    01.00.02
__ + ABEND-AID FOR CICS                  11.01    02.00.00
__   HIPERSTATION FOR MAINFRAME SERVERS  04.02    03.00.00
__ + HIPERSTATION FOR VTAM               07.07    03.00.00
__   HIPERSTATION FOR WEBSHERE MQ       02.04    03.00.00
***** Bottom of data *****

```

To expand and view the option(s) available for a product, place an **E** next to that product and press Enter. To view all options/LPARS available for all products, place an **EA** on any table row and press Enter.

To select a product or option for further processing, place an **A** beside each product or option you want to associate and press Enter. You will see the Product Associations Screen (Figure 2-12). A list of all LPARs currently defined to the server is displayed.

To select a product and its related options for further processing, place an **AP** next to each product you want to associate and press Enter. You will see the Product Associations Screen (Figure 2-12). A list of all LPARs currently defined to the server is displayed.

Note: The **AP** command can only be used on a line next to a product.

Placing a **/** next to Propagate LPAR Associations will process all **A** and **AP** commands using the same set of LPARS that will be selected on the Product Associations Screen (Figure 2-12). The product association screen will appear only one time for all products and options selected.

If you do not place a **/** next to Propagate LPAR Associations you will be presented with the Product Associations screen for each product and related option selected.

Product Association Screen

This screen displays a list of all LPARs which are currently defined for the selected configuration.

Figure 2-12. Product Associations Screen

```

----- Compuware License Management 04.00.00 ----- Row 1 from 2
                Product Associations

Current Environment:
Configuration . . : MY CONFIG
License File . . : EFHMJCO.LMS400.CW01.SERVER.LICENSE           on PRD9A2

Current Product/Option:
Product Name . . . : HIPERSTATION FOR MAINFRAME SERVERS
Product Version . . : 04.02
Option Name . . . . :

Enter "/" to select option
_ Select all
_ Invert selection

Valid line commands:
S Associate LPAR with current Product/Option

----- LPAR ----- CPU      LMS
Name      Mode  Type  Size  Util  Pri  Status      Serial  ID
*****   ****  ***   ****  ****  ***  *****    *****
_ CW01    SIZE  UNC   74    0    0    CONNECTED   005D0A  C721
_ CW06    UTIL  UNC   0     0    0    CONNECTED   005D0A  C721
*****
***** Bottom of data *****

```

If you did not place a / next to Propagate LPAR Associations on the Product / Option Maintenance Screen (Figure 2-11) you will be presented with the Product Associations screen once for each product and related option selected previously. Type an **S** to the left of the LPAR(s) you want this product to run on and press Enter. You will be shown this screen again with the word **ASSOC** on each line you selected. Press **PF3** to return to the association panel for the next product or option which you have chosen. Select the LPAR(s) you want and press Enter for each. Press **PF3** when you want to go to the next product or option. When you are finished, press **PF3** again and you will be presented with the Product / Option Maintenance Screen (Figure 2-13).

If you typed a / next to Propagate LPAR Association on the Product / Option Maintenance Screen (Figure 2-11), the product association screen will appear only one time for all products and options selected. Type an **S** to the left of the LPAR(s) you want this product to run on and press Enter. You will be shown this screen again with the word **ASSOC** on each line you selected. Press **PF3** and you will be presented with the Product / Option Maintenance Screen (Figure 2-13).

Figure 2-13. Product / Option Maintenance Screen (Part 2 of 2)

```

----- Compuware License Management 04.00.00 ---- Row 1 from 51
                Product / Option Maintenance

Current Environment:
Configuration . . MY CONFIG
License File . . EFHMJCO.LMS400.CW01.SERVER.LICENSE           on PRD9A2

Enter "/" to select option
Propagate LPAR associations

Valid line commands:
A, AP, D, X, E, EA, C, CA

      Name                               Release   Certver   MSUs
--- - ABEND-AID FOR CICS                 05.02    01.00.02
--- - Base Associations
---   *ALL* on 005D0A ** EXCLUDED **
---   *ALL* on 00A8AE ** EXCLUDED **
--- - ABEND-AID FOR DB2
---   *ALL* on 005D0A ** EXCLUDED **
---   *ALL* on 00A8AE ** EXCLUDED **
--- + COMPUWARE COBOL PROCESSOR
--- + COMPUWARE PL/I PROCESSOR
--- + REGION DUMP ANALYSIS
--- + TRANSACTION DUMP ANALYSIS
--- + ABEND-AID FOR CICS                 11.01    02.00.00
---   HIPERSTATION FOR MAINFRAME SERVERS  04.02    03.00.00
--- + HIPERSTATION FOR VTAM              07.07    03.00.00
---   HIPERSTATION FOR WEBSPPHERE MQ     02.04    03.00.00
***** Bottom of data *****

```

Notice that under each product and option you selected, the LPARs on which these are to be licensed is shown. Notice also that the type of licensing (LPAR size or LPAR Utilization) is shown on the right.

Press PF3 to return to the main menu and choose **Option 1 (Configure)** again.

Option 1, Configure

Type a **V** next to the configuration you have been working on and press enter. This causes LMS to verify that the configuration is valid. With LPAR MSU Utilization licensing, the reason a configuration would not be valid is if the current sum of the rolling 4-hour average utilization values of the LPARs you chose exceeded the number on the license certificate for one product or option. For LPAR Size licensing, the configuration would not be valid if the current sum of the sizes of the LPARs you chose exceeded the number on the license certificate. You must return to the LPAR association screen and remove at least one LPAR from the product or option. The current utilization and size of each LPAR is shown, so it is a matter of adding up these numbers and comparing the results to your license certificate.

If no errors are reported you may continue by typing an **A** next to the configuration you have been working on and press Enter. Note that if the verification process detected an error, you will NOT be allowed to activate the configuration.

You can exit to the main menu by pressing PF3 and exit LMUSER.

You have completed the functions required to clone a new configuration, define or select a license file, import a new certificate, associate your products and options to LPARs and activate the new configuration.

Within 30 seconds the client LPARs on this configuration will begin to receive their new license information. This may take a couple of minutes to complete but when it has the new license is active.

Notes:

- The first time you perform these steps you will use the DEFAULT configuration as the basis for the cloning. Subsequently you should use your then-currently active configuration to clone yet another configuration.
- After the first time, license files active in the cloned-from configuration will be shown and you may select them. You need not define new license files for each new configuration. In fact, since you will be adding licenses to your set of licensed products, you should NOT define new license files. Simply continue to use the one you initially defined.
- After each import, all of your product/option to LPAR associations will disappear and all must be re-established.
- Whenever a new client LMS is started it automatically connects with the LMS server. But this LPAR will be reflected ONLY on the ACTIVE configuration. Thus, if while you are associating products and options to LPARs, a new client connects, it will NOT be reflected in the cloned configuration you are manipulating. You should abandon this configuration, delete it and start again by cloning the active configuration again.

LMS Client Address Space

When an LMS client is running in CLF mode (that is, SERVER_NAME() or SERVER_ID() is specified in the LMSINIT parameters), a long running address space is created. LMSINIT does not terminate upon completion of its processing, but invokes the mainline program of the LMS client implementation. This mainline initiates communication with the LMS server.

Emergency Passwords in a CLF Environment

Emergency passwords are obtained from Compuware whenever a situation has occurred which precludes normal license processing. These passwords are supplied for a limited number of days and can be obtained by calling World Wide License Management or by logging on to Frontline and selecting License Management System. An emergency password obtained via Frontline remains in effect for a total of 7 days starting from the day after the day the password was obtained.

In the CLF environment emergency passwords can *only* be applied by adding an EMERGENCY() parameter to the LMSINIT SYSIN data set, and stopping and restarting the LMS Client. There is no method for applying an emergency password to the license file.

Disaster Recovery in a CLF Environment

Different disaster recovery scenarios lead to different behavior of LMS. If the disaster site exactly replicates the original site then LMS will operate with no manual intervention by customer personnel. This replication must include LPAR names and sizes (assigned by the Hardware Management Console), the system names and the LMS subsystem names. TCP/IP addresses must be identical and all DASD volumes must be available at the disaster site.

These will probably not all be identical at both sites so some intervention will be required at the disaster site.

The simplest method for insuring Compuware product execution is to apply an emergency password to each LMSINIT client at the disaster site. Since these passwords can be obtained from Frontline, little time will be spent applying them. And there is no

need to even execute the LMS server at the disaster site if emergency passwords exist in the LMSINIT client SYSIN data set.

If, however, you want to run the LMS server at your disaster site you must insure that the checkpoint data set and the license file(s) from your main site be available to the server. You need not transport the server log, VSAM SMF data set or the history data set as these will be created automatically by the server and they are output only data sets so there is no need for them to be read by the server. Each client may or may not require its checkpoint data set. If any of the variables which define an LMS client (LPAR name, system name and subsystem ID) differ at the disaster site then the LMS client will not process data on its checkpoint data set.

If the TCP/IP address of the server LPAR differs at the recovery site, then each LMSINIT client's SYSIN data set must be changed to reflect the different server address.

Note that differences in the three client definition values will cause the **LMS clients to not allow any product execution** until these differences are resolved. Of course an emergency password would alleviate this situation and all Compuware products would be allowed to run.

If you correct the TCP/IP address of the server than it will transmit license information to each client which connects with it as follows.

CERTVER<01.00.02> CEC/MODE and CERTVER<02.00.00> sub-capacity licensed products will be allowed to run for a 14 day grace period.

CERTVER<03.00.00> licensed products will **not** be allowed to run until LMUSER is invoked and the different LPARs selected for the desired products. If the sum of the sizes or utilizations of the LPARs does not exceed the licensed amount then no grace period will be entered. If the sum of the sizes or utilizations of the LPARs does exceed the licensed amount then the cloned configuration will not activate and the products will not run. You may have to choose a fewer number of LPARs to run your Compuware products in this case.

You may not define a new license file at the disaster site intending to import your license certificates into it unless you obtain a new certificate carrying the correct LMS server identification. The LMS server will, however, read existing license files and transmit their contents to the LMS clients even though the server parameters which created these files is no longer valid. The 14 day grace period of the clients insures no contract violation in this case.

It is extremely important to recognize that you must not bring back to your main site the checkpoint data sets from the disaster recovery site after the disaster has passed. These may contain 14 day grace period indications which if these files were returned to the main site would necessitate a complete reimport of new license certificates obtained from Compuware.

Disaster Recovery Testing in a CLF Environment

Disaster recovery testing differs from a real disaster by the fact that it is planned for in advance and requirements for LMS can be accounted for before the actual test. In many cases existing hardware is used for the disaster test but the CEC(s) involved may be increased in size via a CBU operation performed on the Hardware Management Console. Since Compuware products were originally licensed on the CEC(s) before the CBU, they will remain licensed after the CBU albeit with a possible 14 day grace period.

Depending upon the type of licenses you have, different 14 day grace periods will be entered when LMS detects that a CBU has occurred.

CERTVER<01.00.02> CEC/MODEL licenses may enter a 14 day CEC MODEL grace because the model number of the CEC may have changed if additional CPs are brought online.

CERTVER<02.00.00> sub-capacity licenses may enter a 14 day LPAR size grace if the LPARs increase in size due to the CBU. Note that if you have defined capacity LPARs that these will not increase in size even when a model change occurs unless you change the defined capacity limit at the same time you perform the CBU.

You must be aware that once any 14 day grace period occurs that the only way to exit this grace is to obtain entirely new certificates from Compuware and you must import anew into LMS. This is true even if subsequent to the initial CBU event that you revert your CEC to its original model and size. Once a 14 day grace has been entered it cannot be executed without new certificates from Compuware.

Using LMBDISTR to Set Disaster Recovery

If your disaster recovery procedures include setting the disaster recovery indicator in your license files at the disaster site, it may be more convenient for you to continue doing this even when you have installed LMS 4.0 CLF.

Program LMBDISTR must be used in place of the LAU to set disaster recovery. Note that in the CLF mode, the license file is NOT used to contain the disaster recovery indicator. This setting has been moved to each client's checkpoint data set. Therefore, it is this data set that you must supply to program LMBDISTR.

If you have taken multiple LPARs to your disaster site you must run LMBDISTR on each unique LMS client checkpoint data set. If you share your checkpoint data set among multiple LPARs you need to run LMBDISTR only once. It will add disaster recovery to each LPARs section of the checkpoint data set.

Executing LMBDISTR

The following is sample JCL used to execute LMBDISTR:

```
//*
//* Place your JOB statement here
//*
//DISASTER EXEC PGM=LMBDISTR
//STEPLIB DD DSN=** Your LMS load library dsname **,DISP=SHR
//LMSCHKPT DD DSN=** The client checkpoint dsname **,DISP=SHR
```

You may execute this program under TSO by manually allocating the DDNAME LMSCHKPT to your client checkpoint data set and by calling LMBDISTR.

Note: You may set disaster recovery only once into each checkpoint data set. Once it has been set it cannot be set again. As before you must not bring the checkpoint data set back to your primary site after disaster recovery testing is complete.

Messages displayed by LMBDISTR

LMBDISTR writes messages to the system console and to the JOBLOG indicating the status of its execution.

```
LMB100I DISASTER RECOVERY PROCESSING HAS STARTED
LMB101I DISASTER RECOVERY PROCESSING HAS ENDED
LMB102I DISASTER RECOVERY SET FOR SITE nn THROUGH mon day.year
LMB103I DISASTER RECOVERY ALREADY SET FOR SITE nn THROUGH mon day.year
```

Message LMB102I indicates normal execution. If you re-run LMBDISTR you will receive message LMB103 indicating that disaster recovery is already set.

Use of License Administration Utility in a CLF Environment

In all releases of LMS, when the CLF environment is not used, the ISPF application known as the License Administration Utility (LAU) is employed by the customer to perform the following functions:

1. Define and initialize license files
2. Import certificates into license files
3. Submit JCL to run report programs
4. Set disaster recovery processing on/off
5. Set emergency passwords in the license file

When CLF is used, function #1 and #2 (defining license files and importing certificates into them) should not be performed by the LAU. Instead, the ISPF utility named LMUSER provides these functions for the CLF customer. Although the LAU can be used if no LMS certificate exist, Compuware does not recommend doing so. Instead all license file processing should be performed by LMUSER. The LAU is not capable of importing an LMS certificate into a license file.

Submitting JCL to run the licensing report programs can still be performed via the LAU even in a CLF environment.

Disaster recovery and emergency passwords are no longer supported in the same manner as in previous LMS releases and the LAU should not be used to set these values into the license file. See the sections in this document which discuss disaster recovery and emergency passwords.

The Grace History File

An optional facility exists that is the creation of a history data set containing 14 day grace information about products and options. This information includes an indication of when these products were first licensed at your installation, and if they enter any of the 14 day grace periods, and indication as to when they entered the 14 day grace and an indication as to when that grace will expire. You can use the information in this data set to insure yourself that the products and options you have purchased are validly licensed.

Grace History collected by the client LMS systems can be written to VSAM files maintained by the clients. Alternatively you can have the history data sent via TCP/IP to the server where a common history file resides. In this way you have the information about all of your LPARs centrally maintained for ease of use.

In order to request that the history data be transmitted to the server, change the parameter in the LMSINIT SYSIN data set from:

HISTORY_FILE(LOCAL)

to

HISTORY_FILE(SERVER) or

HISTORY_FILE(BOTH)

If you specify HISTORY_FILE(SERVER) then the history data will be transmitted to the server and not stored locally. If you specify HISTORY_FILE(BOTH) then the history data will be both transmitted to the server and stored locally.

If you specify HISTORY_FILE(SERVER) in an LMSINIT SYSN data set then you do not need to specify any of the other history file parameters in that LMSINIT. If you specify

HISTORY_FILE(BOTH) in an LMSINIT SYSIN data set, then you must also specify the history parameters as you would with HISTORY_FILE(LOCAL).

In order for the LMS server to store the history file data it must have parameters added to its SYSIN data set describing this file. These parameters are:

HISTORY_DSNAME(datasetname)

HISTORY_TRACKS(nnn)

HISTORY_VOLSER(volser)

HISTORY_STORCLASS(classname1)

HISTORY_MGMTCLASS(classname2)

HISTORY_DATACLASS(classname3)

These parameters are described in detail in the section titles Server Start-Up Parameters, History File.

Automatic Restart Management

LMS Centralized Licensing Facility supports IBM's Automatic Restart Management (ARM) facility. ARM will automatically restart a failing job or started-task a certain number of times which allows a customer to employ a "lights out" approach to running their z/OS environment.

Both the CLF clients and the CLF server can be configured to implement ARM support. Two parameters have been added to the client and server //SYSIN data sets which control ARM support. These are discussed below.

Before enabling ARM in LMS, you must ensure that you have provided all the necessary z/OS facilities required for ARM to execute. The following IBM manuals may be helpful in this regard:

- z/OS VvRr.0 MVS Sysplex Services Guide
- z/OS VvRr.0 MVS Programming Sysplex Services Reference
- z/OS VvRr.0 MVS Setting Up a Sysplex

For instance, the second manual listed above contains a list of all return/reason codes that can result from issuing the IXCARM macro. You should have this manual handy in case LMS indicates that an unexpected return/reason code has occurred. For instance, if you have not catalogued an automatic restart management couple data set, LMS will report that it has received a return code of X'0C' and a reason code of X'0160' from IXCARM TYPE=REGISTER.

You may add your own policy information which controls the ARM processing for the element names you choose. You may choose the number of times a job is to be restarted in the number of seconds that can elapse after a restart but before the restarted job indicates to z/OS that it has completed its initialization and is ready to continue processing. You should allow at least the same number of seconds as your system default. Normally, CLF clients and server will initialize quite quickly (within 10 seconds) but if there is a delay in your environment, this delay should be reflected in the value you choose for the policy.

You must add "SPIN=UNALLOC" to the //SYSPRINT DD SYSOUT=* DD statement in the JCL or the PROC that invokes both the CLF client or server. If you do not do this, then you will not be able to see the SYSPRINT data from each execution of the client or the server. You will see only the last execution. This DD statement will appear as follows:

```
//SYSPRINT DD SYSOUT=*,SPIN=UNALLOC
```

Note: If you use SDSF to browse the output from CLF execution, you must use the DA, H, or O options and *not* the ST option. ST does not show the correct data within each of the SYSPRINT data sets. This is an SDSF issue and is not unique to LMS.

The parameters for invoking ARM are the same for the CLF client (i.e. LMSINIT) and the CLF server (i.e. LMZMAIN). These parameters are:

ARM(YES|NO)

Specify ARM(YES) if you want Automatic Restart Management to be activated. Specify ARM(NO) or ARM() if you do not. ARM(NO) is the default if this parameter is omitted.

ARM_ELEMENT_NAME (xxxxx... .xxxxxx)

Specify a sysplex unique 1-16 character name to be associated with this CLF client or server. ***This name must be different for the server and for each client.*** Compuware strongly recommends that you use the following naming convention:

Bytes 1-3 C'LMS'

Bytes 4-7 **your SMF system ID**

Bytes 8-16 Any name of your choice but it should indicate "client" or "server"

Note: Only uppercase letters and numbers and the special characters "\$", "#", "@" and "_" are allowed. In addition, the first byte must *not* be numeric.

Examples:

```
ARM_ELEMENT_NAME (LMSSMFA_CLIENT40)
ARM_ELEMENT_NAME (LMSSMFB_SERVER40)
```

You may choose your own names but insure that they are all unique.

If you wish to test ARM you should bring up a CLF client or server and then issue the following command from the console or from an SDSF command line:

```
CANCEL *jobname*,ARMRESTART
```

Replace *jobname* with the name of the client or server JOB. The job will be restarted automatically. When you subsequently stop the client or server by issuing the STOP command the job will end. Browsing via SDSF will show two instances of the SYSPRINT data set within one single job. These two instances represent the two executions (one ending via the CANCEL command and the other ending via the STOP command).

Chapter 3.

Starting and Stopping the Server and Client

This chapter explains how to start and stop the LMS server and the LMS client.

Starting the Server

You must submit batch JCL or issue a START command to initiate the LMS server. Example JCL for each of these types of executions are shown below.

If you have CERTVER<03.00.00> licenses, you are not free to execute the LMS server on any LPAR you choose. You can run the server only on the LPAR that is defined in the SERVER section of your license certificates. The SERVER_ID<> entry specifies the LPAR on which the server can run. If you have only CERTVER<01.00.02> or CERTVER<02.00.00> license certificates, then you may execute the LMS server on any LPAR in your enterprise.

For example, if your SERVER_ID<> specifies:

```
SERVER_ID<5D0A, LPAR1, ZOS1>
```

You must execute the server on the operating system image named ZOS1 (this is the CVTSNAME), on the LPAR named LPAR1, on the CEC with serial number nn5D0A (note that the first two digits of the last 6 digits of the serial number are ignored). If you wish to run your server on another system, LPAR or CEC, you must contact Compuware and obtain another license certificate which carries the desired SERVER_ID<> parameters.

Batch JCL for Starting the LMS Server

You need to add a JOB statement to this JCL and change the data set names used in this example. See Chapter 4, “Server Start-up Parameters” for more details about server startup parameters.

```

/**
/**   --->  PLACE YOUR JOB STATEMENT HERE
/**
//SERVER   EXEC PGM=LMZMAIN,REGION=64M
//STEPLIB  DD DSN=LM.LMS400.APF.LOADLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*,SPIN=UNALLOC
//SYSIN    DD *
           WORK_VOLSER(111111)
           LOG_DSNAME(LM.LMS300.SERVER.LOG)
           LOG_VOLSER(111111)
           LOG_TRACKS(150)
           LICENSE_SERVER_PORT(4567)
           SMF_ID(247)
           CHKPT_DSNAME(LM.LMS300.SERVER.CHKPT)
           CHKPT_VOLSER(111111)
           SMFDATA_DSNAME(LM.LMS300.SERVER.SMF)
           SMFDATA_VOLSER(111111)
           HISTORY_DSNAME()
           HISTORY_TRACKS()
           HISTORY_VOLSER()

```

```

        HISTORY_DATACLASS
        HISTORY_MGMTCLASS()
        HISTORY_STORCLASS()
ARM(YES|NO)
        ARM_ELEMENT_NAME(xxxxx... .xxxxxx)
/*

```

Started Task Procedure for Starting the LMS Server

You must change the data set names used in this example, and you must create the data set which contains the server parameters. See Chapter 4, “Server Start-up Parameters” for more details about server startup parameters.

```

//IEFPROC PROC
//SERVER EXEC PGM=LMZMAIN
//STEPLIB DD DSN=LM.LMS400.APF.LOADLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*,SPIN=UNALLOC
//SYSIN DD DSN=LM.LMS300.SERVER.PARMS,DISP=SHR

```

Ensuring that the Server is Executing

You may browse the SYSPRINT data set at any time using SDSF or an equivalent facility. An example of a successful server initiation is shown below:

```

09/26/2003                                COMPUWARE CORPORATION LICENSE MANAGEMENT
09:44:05.321206

                                                SYSTEM INITIALIZATION REPORT

09:44:05.321470 LMZ301I COMPUWARE LMS 4.0 STARTUP IN PROGRESS
09:44:05.474512 LMZ200I SYSIN CONTROL STATEMENTS:
09:44:05.474550
09:44:05.474649
...+...1...+...2...+...3...+...4...+...5
09:44:05.474682
09:44:05.474800                1                WORK_VOLSER(111111)
09:44:05.475012                2                LOG_DSNAME(LM.LMS300.SERVER.LOG)
09:44:05.475053                3                LOG_VOLSER(111111)
09:44:05.475153                4                LOG_TRACKS(150)
09:44:05.475184                5                LICENSE_SERVER_PORT(4567)
09:44:05.475283                6                SMF_ID(247)
09:44:05.475409                7                CHKPT_DSNAME(LM.LMS400.SERVER.CHKPT)
09:44:05.475516                8                CHKPT_VOLSER(111111)
09:44:05.475547                9                SMFDATA_DSNAME(LM.LMS300.SERVER.SMF)
09:44:05.475646               10                SMFDATA_VOLSER(111111)
09:44:05.478788
09:44:05.478894
...+...1...+...2...+...3...+...4...+...5
09:44:05.478925
09:44:05.479254 LMZ202I PARSING OF CONTROL STATEMENTS IS COMPLETE
09:44:06.729427 LMZ302I COMPUWARE LMS 4.0 STARTUP COMPLETED

```

The presence of the last message, LMZ302I, indicates that the server has successfully initialized and is ready to receive sessions from LMS client systems and the LMUSER interface.

Stopping the Server

You can stop the LMS server by entering the following on the system console or from an SDSF (or equivalent) TSO screen:

```
P jobname
```

What Happens When the Server is Stopped

You may still run Compuware products on an LPAR even though the LMS server has been stopped, but any product licensed with a Product/MSU license will enter the 72 hour server grace period. You must restart the server within this time limit. If 72 hours elapse and the server is not started, Compuware products cease to execute.

LMSINIT Client Parameters

These parameters are documented here as they only apply to the CLF environment.

LICENSE_SERVER_NAME()

Specify the name, as defined in the domain name server used by this mainframe, of the TCP/IP on the LPAR on which you are running the LMS license server.

Note: If you specify LICENSE_SERVER_NAME, you cannot specify LICENSE_SERVER_ADDR. Only one of these is allowed.

LICENSE_SERVER_ADDR()

Specify the address, in dotted decimal notation, of the TCP/IP on the LPAR on which you are running the LMS license server. Dotted decimal notation takes the form nnn.nnn.nnn.nnn, where nnn is a decimal number ranging from 1 to 255.

Note: If you specify LICENSE_SERVER_ADDR, you cannot specify LICENSE_SERVER_NAME. Only one of these is allowed.

LICENSE_SERVER_PORT()

Specify the port number on which the LMS server program is listening. This value **MUST MATCH** the value you specify in the LMZINIT parameters (which control the server execution). If these values do not match, then communication between this client and the server will not occur. The port is a decimal number from 4096 to 65535.

LPAR_MODE()

Specify the mode of sub-capacity licensing you want for this client LMS subsystem. The two choices are SIZE and UTIL. **SIZE** is the default and indicates that the capped size of the LPAR in MSUs is to be used as the determining factor in license conformance. **UTIL** can be specified to indicate that the current rolling 4-hour average MSU utilization of the LPAR is to be used as the determining factor in license conformance.

LMS 3.0 and 3.1 supported only LPAR_MODE(SIZE).

You may specify LPAR_MODE(SIZE or LPAR_MODE(UTIL).

If you wish, you may spell out utilization by specifying LPAR_MODE(UTILIZATION).

If this parameter is omitted, the LPAR_MODE(SIZE) is used by default.

If you are using an existing CLF environment (LMS 3.0 or 3.1) and you want to upgrade to LMS 4.0 using the utilization mode of licensing, then you must specify LPAR_MODE(UTIL).

LPAR_PRIORITY()

Specify the priority of this client LMS with respect to all other clients in a CLF environment. This is a value from 0 to 255. The higher the number the greater the priority of the client. When it has been determined that the sum of all LPAR's rolling 4-hour average utilization exceeds the licensed amount, a product or option must be placed into a 14-day LPAR MSU utilization grace period. The choice of which LPAR is based upon this parameter. A very high number, 255 for instance, indicates that this is the last LPAR to be eligible for the grace period. You would use this value for your production systems. A very low value, 0 for instance, indicates that this is the first LPAR to be chosen for the utilization grace period. You might specify this value for your test or development systems. If more than one LPAR has the same value, then the order that the clients connected with the server determines which LPAR will enter grace.

If this parameter is omitted, then a priority of 0 (very low priority) is used by default. If no LPARs in the CLF environment specify a priority, when an LPAR must be chosen to enter the 14-day utilization grace period, the LPAR which reported an MSU utilization value that caused the license value to be exceeded, will be put into the 14-day grace period.

ARM(YES|NO)

Specify ARM(YES) if you want Automatic Restart Management to be activated. Specify ARM(NO) or ARM() if you do not. ARM(NO) is the default if this parameter is omitted.

ARM_ELEMENT_NAME(XXXXX... .XXXXXX)

Specify a sysplex unique 1-16 character name to be associated with this CLF client or server. ***This name must be different for the server and for each client.*** Compuware strongly recommends that you use the following naming convention:

Bytes 1-3 C'LMS'

Bytes 4-7 **your SMF system ID**

Bytes 8-16 Any name of your choice but it should indicate "client" or "server"

Note: Only uppercase letters and numbers and the special characters "\$", "#", "@" and "_" are allowed. In addition, the first byte must ***not*** be numeric.

Examples:

```
ARM_ELEMENT_NAME (LMSSMFA_CLIENT40)
```

```
ARM_ELEMENT_NAME (LMSSMFB_SERVER40)
```

You may choose your own names but insure that they are all unique.

Starting the Client

You must submit batch JCL, or issue a START command to initiate the LMS 3.0 client on each LPAR that run Compuware products. Below are examples of JCL for each of these types of execution.

Batch JCL for Starting an LMS Client

You need to add a JOB statement to this JCL and change the data set names used in this example. See the *License Management System 4.0 User/Reference Guide* for a discussion of the LMS client parameters in the section “Creating Runtime Environment”.

```

/*      PLACE YOUR JOB STATEMENT HERE
/*
//LMSINIT EXEC PGM=LMSINIT,PARM='LANGUAGE=EN'
//STEPLIB DD DSN=LM.LMS400.APF.LOADLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSIN   DD *
          FUNCTION(UPDATE)
          SUBSYSTEM_ID(AC3A)
          CHKPT_DSNAME(LM.LMS400.CLIENT.CHKPOINT)
          CHKPT_MGMTCLASS(@NONSTD@)
          CHKPT_STORCLASS(STDNOCSH)
          CHKPT_VOLSER(111111)
          CHKPT_DATACLASS()
          DEFAULT(NO)
          EMAIL(PRODUCT(WARN),OPTION(WARN))
          EXIT_PROC(LMS3EXIT)
          GTF_ID(873) HISTORY_FILE()
          HISTORY_DSNAME()
          HISTORY_TRACKS()
          HISTORY_VOLSER
          HISTORY_MGMTCLASS()
          HISTORY_STORCLASS()
          HISTORY_DATACLASS()
          LANGUAGE(EN)
          LICENSE_SERVER_ADDR(10.10.1.30)
          LICENSE_SERVER_PORT(4567)
          MAIL_FROM_NAME(LICENSE_ADMIN@CUSTOMER.COM)
          MAIL_SERVER_ADDR(10.10.1.31)
          LPAR_MODE(UTIL)
          LPAR_PRIORITY(15)
          ARM(YES|NO)
          ARM_ELEMENT_NAME(XXXXX... .XXXXXX)
          MAIL_TO_ABN_NAME(LICENSE_ADMIN@CUSTOMER.COM)
          MAIL_TO_SEC_NAME(LICENSE_ADMIN@CUSTOMER.COM)
          SERVICE_BUREAU(YES)
          SITE(001)
          SMF_ID(, ,SERVER)
          TCPIP_NAME(TCPIP)
          FAILDEST(SERVER,TSOUSER)
          FAILMSG(LIMIT(99),TERSE)
          WARNDEST(SERVER,TSOUSER)
          WARNMSG(LIMIT(99),TERSE)
          MSG_USERID(EFHAWCO)
          DESC(1,2,3,4,5,6,7,8,9,10,11,12,13)
          ROUTCDE(1,2,11)
/*

```

Started Task Procedure for Starting an LMS Client

You must change the data set names used in this example, and you must create the data set which contains the server parameters. See the *License Management System 4.0 User/Reference Guide* for a discussion of the LMS client parameters.

```
//IEFPROC PROC
//SERVER EXEC PGM=LMSINIT,PARM='LANGUAGE=EN'
//STEPLIB DD DSN=LM.LMS300.APF.LOADLIB,DISP=SHR
//SYSPRINT DD SYSOUT=R
//SYSIN DD DSN=LM.LMS400.CLIENT.PARMS,DISP=SHR
```

Ensuring that the Client is Executing

Below is an example of the SYSPRINT data set that is created by each LMS client. Note that the parameter values are for this example only and should not be used in your environment.

```
09/26/2003 COMPUWARE CORPORATION LICENSE M
10:55:00.13529F SYSTEM INITIALIZATION REP
```

```
LM5014I SYSIN CONTROL STATEMENTS:
```

```
.....1.....2.....3.....4.....5.
```

```
1 FUNCTION(UPDATE)
2 SUBSYSTEM_ID(AC3A)
3 CHKPT_DSNAME(LM.LMS400.CLIENT.CHKPOINT)
4 CHKPT_MGMTCLASS(@NONSTD@)
5 CHKPT_STORCLASS(STDNOCSH)
6 CHKPT_VOLSER(111111)
7 CHKPT_VOLSER(111111)
8 DEFAULT(NO)
9 EMAIL(PRODUCT(WARN),OPTION(WARN))
10 EXIT_PROC(LMS4EXIT)
11 GTF_ID(873)
12 LANGUAGE(EN)
13 LICENSE_SERVER_ADDR(10.10.1.30)
14 LICENSE_SERVER_PORT(4567)
15 LPAR_MODE(UTIL)
16 LPAR_PRIORITY(15)
17 MAIL_FROM_NAME(LICENSE_ADMIN@CUSTOMER.COM)
18 MAIL_SERVER_ADDR(10.10.1.31)
19 MAIL_TO_ABN_NAME(LICENSE_ADMIN@CUSTOMER.COM)
20 MAIL_TO_SEC_NAME(LICENSE_ADMIN@CUSTOMER.COM)
21 SERVICE_BUREAU(NO)
22 SITE(001)
23 SMF_ID(, , SERVER)
24 TCPIP_NAME(TCPIP)
25 FAILDEST(SERVER,TSOUSER)
26 FAILMSG(LIMIT(99),TERSE)
27 WARNDDEST(SERVER,TSOUSER)
28 WARNMSG(LIMIT(99),TERSE)
29 MSG_USERID(EFHAWCO)
30 DESC(1,2,3,4,5,6,7,8,9,10,11,12,13)
31 ROUTCDE(1,2,11)
```


.....1.....2.....3.....4.....5.

```
LM5013I PARSING OF CONTROL STATEMENTS IS COMPLETE
LM6044I UPDATE OF CHECKPOINT DATA SET STARTED
LM5300I OPERATING SYSTEM= HBB7707SP7.0.4 HBB7707
LM5137I CPU ID FROM STIDP: TYPE=2066 VERSION=00 SERIAL=00350A
LM5139I EXECUTION ENVIRONMENT: LPAR=YES VM=NO
LM5138I CPU ID FROM STSI: MANUF=IBM TYPE=2066 MODEL=0XC SERIAL=000000000001350A
LM5141I VERSION CODE FROM CONVERSION TABLE=
LM5145I LPAR CW06 IS UNCAPPED IN A 404 MSU CEC
LM5150I ADJ FACTOR 4102 ACCUM WEIGHT 0 TIMES ACCUM 0
LM5143I LPAR_NAME=CW06 LPAR_ID=0001 LPAR_SIZE=28 CEC_SIZE=404
LM6012I UPDATE OF CHECKPOINT DATA SET COMPLETED
LM5020I SUBSYSTEM AC3A HAS BEEN CREATED ON SYSTEM CW06
LM5003I HIGHEST RETURN CODE WAS 00000000 AND REASON CODE WAS 0
```

```
09/26/2003 10:55:01.125991 LM7001I LMS VERSION 4 CLIENT INITIALIZATION STARTED
09/26/2003 10:55:01.126490 LM7009I TCP/IP PROTOCOL USED FOR COMMUNICATION
09/26/2003 10:55:01.200644 LM7012I LMS LINKED TO TCP/IP TCPIP ON HOST CW06
09/26/2003 10:55:01.201399
09/26/2003 10:55:01.201655 LM7032I UPDATE OF STORAGE CACHE FROM CHECKPOINT STARTED
09/26/2003 10:55:01.322024 LM7033I UPDATE OF STORAGE CACHE FROM CHECKPOINT COMPLETED
09/26/2003 10:55:01.322133
09/26/2003 10:55:01.322892 LM7002I LMS VERSION 4 CLIENT INITIALIZATION COMPLETED
```

Stopping a Client

You can stop an LMS client by entering the following on the system console, or from an SDSF (or equivalent) TSO screen:

```
P jobname
```

What Happens When the Client is Stopped

You may still run Compuware products on an LPAR even though the LMS Client for that LPAR has been stopped, but products licensed with Product/MSU licenses will enter the 72 hour server grace period. You must restart the client on each LPAR within this time limit. If 72 hours elapse and the client is not started, Compuware products cease to execute.

Chapter 4.

Server Start-up Parameters

```

*****
**  LMZPARM - SAMPLE LMZINIT PARAMETER FILE          **
*****
*
*****
**                                                    **
** The following are REQUIRED parameters for LMZINIT  **
** execution, preceded by a brief description of valid **
** entries.                                          **
**                                                    **
** Consult the manual "Centralized Licensing Facility" for a **
** more detailed description of these parameters.    **
**                                                    **
** NOTE: CHECK CAREFULLY ALL PARAMETERS WHOSE NAME ENDS IN **
** _VOLSER. IF YOUR INSTALLATION'S SMS PARAMETERS REQUIRE **
** THE VOLUME PARAMETER IN IDCAM DEFINE CLUSTER PARMS, THEN **
** YOU SHOULD SPECIFY A VOLSER FOR EACH OF THESE PARAMETERS **
** SHOWN BELOW.                                     **
**                                                    **
*****
*
*****
**                                                    **
** CHKPT_DSNAME specifies the 1 to 38 character dsname of **
** the LMS 4.0 server checkpoint data set. LMZINIT will **
** automatically create this data set if it does not already **
** exist.                                            **
**                                                    **
** Note: This data set name must be unique, and must NOT be **
** the same name as any of the client checkpoint data set **
** names. This data set is referenced only by the server **
** program and cannot be shared with any other program. **
**                                                    **
**                                                    **
*****
*
    CHKPT_DSNAME()          /* UNIQUE NAME OF SERVER CHKPT */
*
*****
**                                                    **
** Specify the port number on which the LMS 4.0 server **
** program will listen. This value MUST match the value **
** you specify in the LMSINIT parameters for all client LMS **
** systems. If these values do not match, then the **
** communication between this server and the clients will **
** not occur. The port number is a decimal number from **

```

```

** 4096 to 65535.
**
*****
*
  LICENSE_SERVER_PORT()      /* TCP/IP SERVER PORT NUMBER */
*
*****
**
** WORK_VOLSER specifies the 6 character volume serial
** of the DASD volume on which LMS allocates work data
** sets. This parameter is optional. If it does not
** exist, your system installation defaults for VSAM data
** sets will be used to determine the placement of this
** data set. You must insure that any VOLSER your
** specify is consistent the SMS class definitions that
** may also exist.
**
*****
*
  WORK_VOLSER()              /* VOLUME SERIAL FOR WORK DSNS */
*
*****
**
** The following are OPTIONAL parameters for LMZINIT
** execution, preceded by a brief description of valid
** entries.
**
** Consult the manual "Centralized Licensing Facility" for a
** more detailed description of these parameters.
**
*****
**
** LOG_INITIAL specifies whether intensive logging should
** be activated when the LMS server initializes. This
** parameter can specify LOG_INITIAL(OPEN), to start the
** logger task, or LOG_INITIAL(CLOSED) which does not
** start the logger task. Even if you specify (CLOSED),
** you can open the log at a later time using the ISPF
** interface. If LOG_INITIAL(OPEN) is specified, however,
** then LOG_DSNAME and LOG_TRACKS are required. in
** addition, LOG_VOLSER, LOG_DATACLASS, LOG_STORCLASS,
** and LOG_MGMTCLASS may be required (depending upon your
** installation's SMS requirements for IDCAMS DEFINE
** CLUSTER.
**
*****
*
  LOG_INITIAL(CLOSED)        /* NO INITIAL LOGGING */
*
*****
**
** LOG_DSNAME specifies the 1 to 38 character dsname of
** the LMS 4.0 server log data set. a set. LMZINIT will
** automatically create this data set if it does not already
** exist. This parameter is optional if LOG_INITIAL(CLOSED)
** has been specified, but is required if LOG_INITIAL(OPEN)

```

```

** is specified. **
** **
*****
*
LOG_DSNAME()          /* UNIQUE NAME OF LOG DATA SET */
*
*****
** **
** LOG_TRACKS specifies the number of tracks that the LOG **
** data set will initially occupy. This number is optional **
** if LOG_INITIAL(CLOSED) is specified, but is required if **
** LOG_INITIAL(OPEN) is specified. This number represents **
** the initial allocation, and this number represents the **
** secondary allocations as well. You would do well to put **
** the log data set on a DASD volume which contains a large **
** number of available tracks, because the log can become **
** very large. **
** **
*****
*
LOG_TRACKS()          /* NUMBER OF TRACKS FOR LOG */
*
*****
** **
** LOG_VOLSER specifies the 6 character volume serial **
** of the DASD volume on which the logger data set is **
** to reside. This parameter is optional. If it does not **
** exist, your system installation defaults for VSAM data **
** sets will be used to determine the placement of this **
** data set. You must insure that any VOLSER your **
** specify is consistent the SMS class definitions that **
** may also exist. **
** **
*****
*
LOG_VOLSER()          /* VOLSER OF LOG DATA SET */
*
*****
** **
** LOG_STORCLASS, LOG_DATACLASS and LOG_MGMTCLASS specify **
** the names your installation has chosen to describe the **
** allocation of this VSAM LOG data set. These parms **
** are optional, but if specified, will be used within **
** the IDCAMS DEFINE CLUSTER control statements when the **
** data set is created. **
** **
*****
*
LOG_STORCLASS()      /* SMS storage class name */
LOG_DATACLASS()      /* SMS data class name */
LOG_MGMTCLASS()      /* SMS management class name */
*
*****
** **
** CHKPT_VOLSER specifies the 6 character volume serial **
** of the DASD volume on which the checkpoint data set is **
** to reside. This parameter is optional. If it does not **

```

```

** exist, your system installation defaults for VSAM data **
** sets will be used to determine the placement of this **
** data set. You must insure that any VOLSER your **
** specify is consistent the SMS class definitions that **
** may also exist. **
** **
*****
*
  CHKPT_VOLSER()
*
*****
** **
** CHKPT_STORCLASS, CHKPT_DATACLASS and CHKPT_MGMTCLASS **
** specify the names your installation has chosen to **
** describe the allocation of this VSAM checkpoint data **
** set. These parameters are optional, but if specified, **
** will be used within the IDCAMS DEFINE control **
** statements when the data set is created. **
** **
*****
*
  CHKPT_STORCLASS() /* SMS storage class name */
  CHKPT_DATACLASS() /* SMS data class name */
  CHKPT_MGMTCLASS() /* SMS management class name */
*
*
*****
** **
** WORK_STORCLASS, WORK_DATACLASS and WORK_MGMTCLASS **
** specify the names your installation has chosen to **
** describe the allocation of all VSAM work data sets. **
** These parameters are optional, but if specified, **
** will be used within the IDCAMS DEFINE control **
** statements when the data set is created. **
** **
*****
*
  WORK_STORCLASS() /* SMS storage class name */
  WORK_DATACLASS() /* SMS data class name */
  WORK_MGMTCLASS() /* SMS management class name */
*
*
*****
** **
** TCP/IP_NAME specifies the name of the TCP/IP protocol **
** stack that is active on this CPU. This parameter **
** is optional. If omitted, the default IBM TCP/IP **
** protocol stack will be used. Only if your have more **
** than one TCP/IP stack active, and only if you want **
** to choose a particular one, should this parameter be **
** coded. **
** **
*****
*
  TCP/IP_NAME() /* NAME OF TCP/IP REGION */
*
*****
** **

```

```

** SMF_ID specifies a number from 129 to 255 which tocol **
** becomes the identification number used on all SMF **
** records written by the LMS server. These records come **
** from the LMS client LPARs and this number overrides **
** any SMF_ID values specified in the client LMSINIT **
** parameter file. If no client is configured to sendbe **
** its SMF data to the server, then this parameter is **
** unused. If SMF_DSNAME is also specified, then all **
** SMF data will be written to that data set as well **
** as to the system SMF data set using this value. **
**
*****
*
SMF_ID()                /* IDENTIFICATION OF SMF RECORDS */
*
*****
**
** SMFDATA_DSNAME specifies the 1-38 character dsname of **
** the LMS 4.0 server data set to contain SMF record sent **
** from the client LPARs to this server. If this name is **
** specified (along with other SMFDATA_ parameters if **
** required by your installation), then all SMF data will **
** be written to this data set. If SMF_ID is also **
** specified, then the SMF records will be written to the **
** system SMF data set as well. **
**
*****
*
SMFDATA_DSNAME()       /* UNIQUE NAME OF SMF DATA SET */
*
*****
**
** SMFDATA_VOLSER specifies the 6 byte volume serial of **
** the DASD volume on which the SMF data is to reside. **
** This parameter is optional. If it does not exist, your **
** system installation defaults for VSAM data sets will be**
** used to determine the placement of this data set. You **
** must insure that any VOLSER your specify is consistent **
** the SMS class definitions that may also exist. **
**
*****
*
SMFDATA_VOLSER()       /* VOLSER OF SMF DATA SET */
*
*****
**
** SMFDATA_STORCLASS, DATACLASS and SMF_MGMTCLASS specify **
** the names your installation has chosen to describe the **
** allocation of this VSAM SMF data set. These parms **
** are optional, but if specified, will be used within **
** the IDCAMS DEFINE CLUSTER control statements when the **
** data set is created. **
**
*****
*
SMFDATA_STORCLASS()    /* SMS storage class name */
SMFDATA_DATACLASS()   /* SMS data class name */

```

```

SMFDATA_MGMTCLASS()      /* SMS management class name */
*
*****
**
** The following optional parameters apply only if you want **
** LMS to define and maintain a VSAM data set which contains **
** information concerning products and options for which you **
** are licensed and contains an indication of grace periods **
** that these products are, or have been, in. The data for **
** this file will be sent to the LMS server from all of the **
** LMS clients which have specified HISTORY_FILE(SERVER) or **
** HISTORY_FILE(BOTH). **
** **
*****
*****
**
** Specify the 1 to 38 character data set name of the local **
** history file. Be certain that the Userid under which **
** LMZINIT runs has ALTER access to this name and that this **
** name is a valid data set name for your installation. **
** **
*****
*
HISTORY_DSNAME()
*
*****
**
** Specify the number of tracks to be initially allocated **
** to the local VSAM history file. This value must be **
** greater than 1 and less than 65535. This number of tracks **
** will apply to the initial allocation and to all **
** secondary allocations of the data set. **
** **
*****
*
HISTORY_TRACKS()
*
*****
**
** Specify the volume serial number of the volume on which **
** the history file is to be allocated. Your installation **
** may require a VOLSER within an IDCAMS DEFINE CLUSTER job **
** it may not. You may omit this parameter only if your **
** installation does not require it. **
** **
*****
*
HISTORY_VOLSER()
*
*****
**
** Specify the three SMS allocation names for this history **
** file. Your installation may require these, but they **
** are optional within LMZINIT. **
** **
*****
*

```



```

HISTORY_STORCLASS()
HISTORY_MGMTCLASS()
HISTORY_DATACLASS()
*
*****
**
** INVOKING Z/OS AUTOMATIC RESTART MANAGEMENT (ARM) SUPPORT. **
**
** The following two parameters are optional. If you want **
** the LMS server to be automatically restarted by z/OS in **
** case of an abnormal termination then you should request **
** ARM support and supply an element name below. If you do **
** not want this support, retain the parameter given below. **
**
** For ARM support to function you must first enable it in **
** the operating system. Please see the following IBM **
** manuals: **
**
** z/OS V1Rn MVS Programming Resource Recovery **
** z/OS V1Rn MVS Programming Sysplex Services Guide **
** z/OS V1Rn MVS Programming Sysplex Services Reference **
** z/OS V1Rn Setting Up a Sysplex **
**
** These manuals will help you activate Automatic Restart **
** Management Services in the operating system. **
**
** If you have requested ARM support, you must change the **
** //SYSPRINT DD SYSOUT=* DD statement in the JCL which **
** invokes the LMS server (either batch or started task) and **
** to read //SYSPRINT DD SYSOUT=*,SPIN=UNALLOC **
**
** If you do not do this you will only see the last **
** invocation of the server when you browse the job via **
** SDSF. When you do add these two operands you will see **
** all instances of the SYSPRINT data set. **
**
** Specify that you do want, or do not want ARM support **
** enabled: Specify ARM(YES) if you DO want this support. **
** Specify ARM(NO) or ARM() if you do NOT want this support. **
**
*****
*
ARM()
*
*****
**
** If you have specified ARM(YES) then you MUST supply an **
** element name which is used by z/OS to identify this **
** program. Because the LMS server can run on only one **
** LPAR (i.e. system) in your enterprise uniqueness of this **
** name is not a factor. However, Compuware STRONGLY **
** recommends that you use the following naming convention: **
**
** Bytes 1 - 3 = C'LMS' **
** Bytes 4 - 7 = Your SMF System ID **
** Bytes 8 - 16 = Any name of your choice **
**

```

```

** Rules for coding an element name:                **
**                                                    **
** Element names can be from 1 to 16 bytes long (Compuware **
** recommends the first 7 bytes be coded as shown above). **
** Only uppercase letters, numbers and special characters **
** "$", "#", "@" and "_" can be used. The first character **
** cannot be a number. In addition, IBM recommends that **
** names starting with "A" through "I" and "SYS" not be **
** used.                                           **
**                                                    **
** If you have NOT specified ARM(YES), then leave the **
** ARM_ELEMENT_NAME parameter as ARM_ELEMENT_NAME(), or **
** omit this parameter entirely.                 **
**                                                    **
** Example:  ARM_ELEMENT_NAME(LMSSMFA_SERVER)     **
**                                                    **
*****
*
  ARM_ELEMENT_NAME()
*
* End of Parameter listing
*

```

CHKPT_DSNAME

Required operand. Specifies the 1- to 44-character dataset name of the LMS server checkpoint dataset. LMZINIT automatically creates this dataset if it does not already exist.

Note: This dataset name must be unique, and must **not** be the same name as any of the client checkpoint dataset names. This dataset is referenced only by the server program and cannot be shared with any other program.

LICENSE_SERVER_PORT

Required operand. Specifies the port number on which the LMS server program listens. This value must match the value you specify in the LMSINIT parameters for all client LMS systems. If these values do not match, the communication between this server and the clients does not occur. The port number is a decimal from 4096 to 65535.

LOG_INITIAL

Optional operand. Specifies whether intensive logging should be activated when the LMS server initializes. One of two values can be specified:

- LOG_INITIAL(CLOSED)
- LOG_INITIAL(OPEN)

LOG_INITIAL(CLOSED)

Use this parameter to avoid starting the logger task. If specified, the log can be opened at a later time using the ISPF interface.

LOG_INITIAL(OPEN)

Use this parameter to start the logger task. If specified, the LOG_DSNAME and LOG_TRACKS operands are required. In addition, LOG_VOLSER, LOG_DATACLASS, LOG_STORCLASS, and LOG_MGMTCLASS may be required, depending upon the installation's SMS requirements for IDCAMS DEFINE CLUSTER.

LOG_DSNAME

Optional if LOG_INITIAL(CLOSED) has been specified, but required if LOG_INITIAL(OPEN) is specified. Specifies the 1- to 38-character dataset name of the LMS server log dataset. LMZINIT automatically creates this dataset if it does not already exist.

LOG_TRACKS

Optional if LOG_INITIAL(CLOSED) is specified, but is required if LOG_INITIAL(OPEN) is specified. Specifies the number of tracks that the LOG dataset initially occupies. This number represents the initial and secondary allocations. Because the log can become very large, consider placing the log dataset on a DASD volume that contains a large number of available tracks.

LOG_VOLSER

Optional operand. Specifies the 6-character volume serial of the DASD volume on which the logger dataset is to reside. If it does not exist, the system installation defaults for VSAM datasets are used to determine the placement of this dataset. Ensure that any VOLSER specified is consistent with the SMS class definitions that may also exist.

LOG_STORCLASS and LOG_DATACLASS and LOG_MGMTCLASS

Optional operands. Each specifies the names the installation has chosen to describe the allocation of this VSAM LOG dataset. If specified, these operands are used within the IDCAMS DEFINE CLUSTER control statements when the dataset is created.

CHKPT_VOLSER

Optional operand. Specifies the 6-character volume serial of the DASD volume on which the checkpoint dataset is to reside. If it does not exist, the system installation defaults for VSAM datasets are used to determine the placement of this dataset. Ensure that any VOLSER specified are consistent the SMS class definitions that may also exist.

CHKPT_STORCLASS and CHKPT_DATACLASS and CHKPT_MGMTCLASS

Optional operands. Each specifies the names the installation has chosen to describe the allocation of this VSAM checkpoint dataset. If specified, these operands are used within the IDCAMS DEFINE control statements when the dataset is created.

WORK_VOLSER

Optional operand. Specifies the 6-character volume serial of the DASD volume on which LMS allocates word datasets. If it does not exist, the system installation defaults for VSAM datasets are used to determine the placement of this dataset. Ensure that any VOLSER specified are consistent with the SMS class definitions that may also exist.

WORK_STORCLASS and WORK_DATACLASS and WORK_MGMTCLASS

Optional operands. Each specifies the names the installation uses to describe the allocation of all VSAM work datasets. If specified, these operands are used within the IDCAMS DEFINE control statements when the dataset is created.

TCPIP_NAME

Optional operand. Specifies the name of the TCP/IP protocol stack that is active on this CPU. If omitted, the default IBM TCP/IP protocol stack is used. This parameter should be coded only if more than one TCP/IP stack is active and only if a particular one is chosen.

SMF_ID

SMF_ID specifies a number from 129 to 255 that becomes the identification number used on all SMF records written by the LMS server. These records come from the LMS client LPARs and this number overrides any SMF_ID values specified in the client LMSINIT parameter file. If no client is configured to send its SMF data to the server, then this parameter is unused. If SMF_DSNAME is also specified, then all SMF data is written to that dataset as well as to the system SMF dataset using this value.

SMFDATA_DSNAME

SMFDATA_DSNAME specifies the 1- to 38-character dataset name of the LMS server dataset used to contain SMF data whenever you do not want this information written to the system SMF datasets. If this name is specified, along with the other required SMF dataset parameters, all SMF data sent to the LMS server from the client LPARs is written to this dataset. If an SMF_ID is also specified, the SMF data is recorded on the system SMF datasets as well.

SMFDATA_VOLSER

SMFDATA_VOLSER specifies the 6-character volume serial of the DASD volume on which the SMF dataset is to reside. This parameter is optional. If it does not exist, the system installation defaults for VSAM datasets are used to determine the placement of this dataset. Ensure that any VOLSER specified is consistent with the SMS class definitions that may also exist.

SMFDATA_STORCLASS and SMFDATA_DATACLASS and SMFDATA_MGMTCLASS

SMFDATA_STORCLASS, SMFDATA_DATACLASS and SMFDATA_MGMTCLASS specify the names the installation uses to describe the allocation of this VSAM SMF dataset. These parameters are optional but, if specified, are used within the IDCAMS DEFINE CLUSTER control statements when the dataset is created.

HISTORY_DSNAME

Required operand if history data is to be stored at the server. Not used otherwise. Specify the valid 1 to 38 character data set name for the history file. This name must conform to the normal requirements for data set names.

Note: The user ID under which LMSINIT is run must have ALTER access to this data set defined in the security system (RACF, ACF/2 OR TOPSECRET). LMS dynamically invokes IDCAMS to define this data set.

HISTORY_TRACKS

Required operand if HISTORY_FILE(LOCAL) is specified. Not used otherwise. Specify the number of tracks to be used as both the primary and secondary extents for the history data set. This value must be numeric within the range of 15 to 9999. Compuware recommends at least 100 tracks be used for this data set.

HISTORY_VOLSER

Optional operand if HISTORY_FILE(LOCAL) is specified. Not used otherwise. This parameter specifies the 6-character volume serial of the DASD on which the history file will be allocated. LMS automatically defines the history file for you if it does not exist and then uses this data set for subsequent processing. Please check with your SMS administrator to determine if a volume serial number is required or not.

HISTORY_STORCLASS, HISTORY_DATA_CLASS, HISTORY_MGMTCLASS

Optional operand if HISTORY_FILE(LOCAL) is specified. Not used otherwise. These parameters specify the names your installation has chosen to describe the allocation of this VSAM history dataset. If specified, these parameters are used within the IDCAMS DEFINE control statements when the dataset is created.

ARM(YES|NO)

Specify ARM(YES) if you want Automatic Restart Management to be activated. Specify ARM(NO) or ARM() if you do not. ARM(NO) is the default if this parameter is omitted.

ARM_ELEMENT_NAME(#####... .#####)

Specify a sysplex unique 1-16 character name to be associated with this CLF client or server. ***This name must be different for the server and for each client.*** Compuware strongly recommends that you use the following naming convention:

Bytes 1-3 C'LMS'

Bytes 4-7 **your SMF system ID**

Bytes 8-16 Any name of your choice but it should indicate "client" or "server"

Note: Only uppercase letters and numbers and the special characters "\$", "#", "@" and "_" are allowed. In addition, the first byte must ***not*** be numeric.

Examples:

```
ARM_ELEMENT_NAME (LMSSMFA_CLIENT40)
```

```
ARM_ELEMENT_NAME (LMSSMFB_SERVER40)
```

You may choose your own names but insure that they are all unique.

Chapter 5. ISPF Interface

This chapter highlights the features of the ISPF interface to the License Management System Centralized Licensing Facility. This interface gives the user administrator functions to view and modify the licensed capacity.

Allocating ISPLLIB for LMUSER

In order to successfully execute LMUSER from your TSO/ISPF session, you must have statically allocated the License Management load library to the ISPF DDNAME ISPLLIB.

Do not attempt to use the LIBDEF facility for this allocation. If you have incorrectly allocated the License Management load library, or if you do not have it allocated at all, you will receive the following messages when you attempt to execute LMUSER:

```
2984  *- * ADDRESS LINKPGM "LMADTCV DTCV Parm"
      +++ RC (-3) +++
      *- * ADDRESS LINKPGM "LMADTCV DTCV Parm"
      +++ RC (-3) +++
```

The correct allocation can be made in your LOGON CLIST which is automatically executed during your TSO logon. The format of this allocation in your LOGON CLIST can look like this:

```
FREE DD(ISPLLIB)
ALLOC DD(ISPLLIB) DA(*** existing ISPLLIB dsname1 ***  +
                   *** existing ISPLLIB dsname1 ***  +
                   . . . . .
                   *** LMS Load Library dsname)      SHR
```

Accessing the ISPF User Interface

Access the LMS ISPF User Interface by performing the following:

1. Under ISPF TSO, invoke **LMUSER**.

The Compuware License Management User Interface Server Logon screen (Figure 5-1) displays.

Figure 5-1. ISPF Interface Server Logon Screen

```

----- Compuware License Management 04.00.00 -----
Command ==>

                                Server Logon

Server Information:
  Port Number . . . . (required)
  Host Name . . . . .
  Host Address . . . .
  TCP/IP STC Name . . (multi-stack environment only)
  IPv6? . . . . . (Y or N)

User Information:
  UserID . . . . . (required)
  Password/Phrase . . . .
  Group Name . . . . .
  New Password/Phrase . .
  Verify Password/Phrase.

```

2. Type the server port number in the PORT NUMBER field.
3. Optionally, type the server host IP name in the HOST NAME field and the server host IP address in the HOST ADDRESS field.
 - If neither is specified, LMS assumes that the server is running on the same LPAR as the TSO/ISPF session running.
 - If both are specified, the server host address takes precedence over the server host name.
 - If only the server host name is given, it is translated into an IP address via the locally attached DNS facility.
 - If only the server host address is given, it is used without translation.
4. Optionally, type the TCP/IP name in the TCP/IP STC NAME field. Used if multiple TCP/IP servers are running on the same LPAR.
5. Type Y or N in the IPv6? field
 - Y if LMS is using internet protocol version 6
 - N if LMS is using internet protocol version 4
6. Type the user ID in the USERID field.
7. Type the password in the PASSWORD/PHRASE field. The password is hidden as you type and does not display.
8. Optionally, type the group name in the GROUP NAME field. If omitted, RACF assigns the user to the user's default group.
9. Press Enter. The LMS ISPF Interface Main Menu screen displays.

Changing the Password

1. Type the new password in the NEW PASSWORD/PHRASE field.
2. Type the new password a second time in the VERIFY NEW PASSWORD field.
3. Press Enter.

If the passwords in both fields match, and if RACF accepts the new password, then the password is changed. The next time you log onto LMS or TSO on this system, you must use the new password.

Main Menu Screen

The ISPF Interface Main Menu screen (Figure 5-2) displays when you log into the LMS Server. Initially, the CONFIGURATION and LICENSE FILE fields are blank, but are filled in as processing continues.

The number of days until the password expires and the date of the previous logon also display on the screen. These are supplied as informational only. If your security system is topsecret, these two fields will show N/A, indicating that this information is not available.

Figure 5-2. User Interface Main Menu Screen

```

----- Compuware License Management 04.00.00 -----
                                     Main Menu

1  Configure  Configuration maintenance
2  Define    Define license files
3  Import    Import license certificates
4  LPAR      LPAR maintenance
5  Product   Product maintenance
6  ServerLog Server Log maintenance
7  History   Server History maintenance
8  LPAR View View products/options by LPAR
X  Logoff    Disconnect from LMS server

Current Environment:
Configuration . : MY CONFIG
License File   . : EFHJMCO.LMS400.CW01.SERVER.LICENSE      on PRD9A2

User Status:
Password Expiry . . : 53 DAYS
Previous Logon . . . : 10-JUL-2007

```

The following options are available on the LMS ISPF Interface Main Menu screen.

- Option 1** Use the Configuration Maintenance option to perform all processing.
- Option 2** Use the Define License Files option to define license files to be owned by a configuration.
- Option 3** Use the Import License Certificates option to import the license certificate to the LMS server.
- Option 4** Use the LPAR Maintenance option to edit LPAR definitions from the selected configuration.
- Option 5** Use the Product Maintenance option to delete products, select products or options, or disconnect LPARs from products or options.
- Option 6** Use the Server Log Maintenance option to invoke the log facility and request that it begin writing the diagnostic information.
- Option 7** Use the Server History Maintenance option to view, open or close history data.
- Option 8** Use the LPAR View option to view associated products and options by LPAR.
- Option X** Use the Logoff option to disconnect from the LMS server.

Type one of the menu options on the command line and press Enter to proceed. When no information is displayed in the CONFIG field, you must first enter option 0 in order to select a configuration for further processing.

Option 1 – Configuration Maintenance Screen

Use the Configuration Maintenance screen (Figure 5-3) to perform all processing. You can access the Configuration Maintenance screen by typing 1 on the command line of the ISPF Interface Main Menu screen and pressing Enter.

When LMS is first started, a configuration named DEFAULT CONFIGURATION is generated automatically. This configuration is marked as ACTIVE. An active configuration has the following characteristics:

- LMS clients, connected to this LMS server, are automatically added to the currently active configuration.
- LMS clients, already represented in the active configuration, have their LPAR definition values automatically updated whenever the LMS client detects that LPAR changes have occurred.
- LMS clients automatically receive the license file information associated with the active configuration.

Figure 5-3. Configuration Maintenance Screen

```

----- Compuware License Management 04.00.00 -- Row 1 to 3 of 3
                                Configuration Maintenance

Current Environment:
Configuration . :

N New          S Select      C Clone        R Rename
D Delete       V Validate    A Activate

Configuration Name                Status
-----
_ DEFAULT CONFIGURATION           ACTIVE
***** Bottom of data *****

Command ==>                                Scroll ==> PAGE

```

The status of each configuration is shown to the right of the configuration name.

- ACTIVE means the configuration is active.
- SELECTED means you have selected it.
- No status means the configuration is neither ACTIVE nor SELECTED.

Before any function can be performed on a given configuration, that configuration must be one of the following options:

- added (if it is to be created by the user)

Note: A configuration that is added is automatically selected by LMS for you.

- selected (if it already exists)
- selected and cloned

CAUTION:

The only function you can perform on an ACTIVE configuration is cloning.

Selecting a Configuration

1. Type **S** on the blank line next to the configuration name to select it.
2. Press Enter.

Adding a New Configuration

To add or create a new configuration, follow the steps below.

1. Type a configuration name on the blank line under the CONFIGURATION NAME field.
2. Type **N** on the blank line next to the name you typed.
3. Press Enter.

Cloning a Configuration

You can create an exact duplicate of an existing configuration by cloning it. Follow the steps below to clone a configuration.

1. Type **S** on the blank line next to the active configuration name to select it.

Note: Cloned configurations are automatically selected for you. If you are ever unsure which configuration is currently selected, look at the configuration name in the CONFIGURATION field. This is the name of the selected configuration.

2. Press Enter.
3. Type **C** next to the configuration you want to clone and overwrite the existing name with a new name.
4. Press Enter.

A configuration with the new name is created for you with all of the characteristics of the configuration which was cloned. These characteristics include license files, LPARs and associations between products and options and the LPARS.

Renaming a Configuration

1. Type **S** on the blank line next to the configuration name to select it.
2. Press Enter.
3. Type **R** next to the configuration you want to rename and overwrite the existing name with a new name.
4. Press Enter.

Deleting a Configuration

1. Type **S** on the blank line next to the configuration name to select it.
2. Press Enter.
3. Type **D** next to the configuration name you want to delete.
4. Press Enter.

Validating a Configuration

You can validate that an existing configuration has not overcommitted licensed MIPS to LPARs and CECs.

On this screen, you can define entirely new license files and LMS allocates them automatically for you or you can specify the names of existing license files. You can add as many license files as you like before exiting this screen.

You should select a license file for further processing before exiting this screen (see “Selecting a License File” on page 5-7).

Adding a New License File

1. Type **N** on the blank line next to the DATA SET NAME field.
2. Type the fully qualified name of the data set without quotes in the DATA SET NAME field.

Note: Depending upon your installation's SMS rules, you may have to supply a volume serial number (VOLSER) and/or some or all of the SMS CLASS names (STORAGE, MANAGEMENT, or DATA). If you are unsure what you must enter, look at an IDCAMS DEFINE CLUSTER job, which you may have under your user ID. The parameters specified to IDCAMS are acceptable on this screen. You can check with someone in your systems group if you are still unsure as to which of these parameters are required and what the acceptable values are.

3. Press Enter.

Deleting a License File

CLF never physically deletes any license files. Only the identification of them is deleted when you use this function. If you want to physically delete a license file you must perform this function manually.

1. Type **D** on the line next to the fully qualified data set name you want to delete.
2. Press Enter.

Selecting a License File

You can select a license file for further processing. All processing of license certificates and of products and options occur only in the currently selected license file.

1. Type **S** next to the fully qualified data set name you want to select.

Note: The fully qualified data set name also appears at the top of the screen in the LICENSE FILE field.

2. Press Enter.

Option 3 – Import License Certificate Screen

The process of converting a license certificate, as provided by Compuware, into records on a license file is known as importing the license certificate. Use the Import License Certificate screen (Figure 5-5) to send a license certificate to the LMS server and the server performs the import. You can access this screen by typing **3** on the command line of the ISPF Interface Main Menu screen and pressing Enter.

Figure 5-5. Import License Certificate Screen

```

----- Compuware License Management 04.00.00 -----
                                Import License Certificate

Current Environment:
  Configuration . . : MY CONFIGURATION
  License File   . . : MY.SERVER.LICENSE.FILE           on VOL001

Certificate DSN . .
Report DSN . . . .

Command ==>

```

To import a license certificate, follow the steps below.

1. In the CERTIFICATE DSN field, type the fully qualified data set name (without quotes) of the file containing a license certificate.
2. In the REPORT DSN, type the fully qualified data set name of a file to hold the import report.

Note: For both the certificate data set and the report data set, you can specify a member name if the data set is partitioned. If you specify the name of an existing sequential file for the report data set or an existing member name on a partitioned data set, the sequential file or member is replaced by the new report.

3. Press Enter.

The certificate data in this data set is imported into the license file which you previously selected, and whose name appears in the LICENSE FILE field at the top of the screen.

Be patient after pressing Enter, the import can take up to a minute to complete. When the import is finished, you are taken to the Report File Disposition screen (Figure 5-6) where you can display the results of the import.

Report File Disposition Screen

You are automatically taken to the Report File Disposition screen (Figure 5-6) when you complete a license certificate import using the Import License Certificate screen.

Figure 5-6. Display Import Results Screen

```

----- Compuware License Management 04.00.00 -----
                                Report File Disposition

Current Environment:
  Configuration . : MY CONFIGURATION
  License File   . : MY.SERVER.LICENSE.FILE           on VOL001

V View report   D Delete report

_ MY.IMPORT.REPORT.FILE

Command ==>

```

You may choose one of the following options:

- Option V** To view the import results on your terminal. Use the ISPF Browse function to display the report.
- Option D** To delete the import report.

Type the option on the command line and press Enter to process the selection and display the results in the format of your choice.

Option 4 – LPAR Maintenance Screen

You can access the LPAR Maintenance screen (Figure 5-7) by typing **4** on the command line of the ISPF Interface Main Menu screen and pressing Enter. On this screen, you can manually add, update, or delete LPAR definitions from the selected configuration. If you have cloned the active configuration, you can see on this screen a list of all LPARs which were connected to the LMS server (or which had been added before the configuration was activated).

Figure 5-7. LPAR Maintenance Screen

```

----- Compuware License Management 04.00.00 -- Row 1 to 3 of 3
                                LPAR Maintenance

Current Environment:
  Configuration . : MY CONFIGURATION

N Add a new LPAR   D Delete LPAR

----- LPAR ----- CPU      LMS
Name      Mode  Type  Size  Util  Pri  Status      Serial  ID
-----
_ PROD    SIZE  DEF   75    ____  ___  CONNECTED   001234  LMS1
_ DEVL    SIZE  DEF   15    ____  ___  CONNECTED   001234  LMS2
***** Bottom of data *****

Command ==>                                Scroll ==> PAGE

```

The following information is displayed for each LPAR:

CPU SERIAL

The last six hexadecimal digits of the serial number of the CEC on which this LPAR is defined.

LPAR NAME

The name of the LPAR as defined in the Hardware Management Console (HMC) of this LPAR.

SYSTEM NAME

The name of the z/OS (or OS/390) operating system for this LPAR (CVTSNAME).

LMS ID

The LMS SUBSYSTEM ID as defined in the client LMSINIT SYSIN data set.

LPAR TYPE

The types of LPAR — UNCAPPED, CAPPED, or DEFINED (capacity).

LPAR MSUs

The number of MSUs currently allocated to this LPAR.

CEC MSUs

The total number of MSUs consumed by the entire CEC.

LPAR STATUS

The current LMS status of this LPAR.

Add a New LPAR

1. Type N on the blank line next to CPU SERIAL field.
2. Type all of the information about the LPAR into each of the fields described above.
3. Press Enter.

When you later activate this configuration, and the actual LPARs connect with the server, you may see the value of the fields LPAR MSUs and CEC MSUs change from the values you entered. This occurs if the values you entered did not match the actual values in the HMC for this LPAR.

Deleting an LPAR

If you are displaying the active configuration, you cannot delete an LPAR.

1. Type D on the same line as the LPAR you want to delete.
2. Press Enter.

Option 5 – Product/Option Maintenance Screen

You can access the Product/Option Maintenance screen (Figure 5-8) by typing 5 on the command line of the ISPF Interface Main Menu screen and pressing Enter. In order for you to access this screen, you must have first selected a configuration and a license file. You may have imported one or more certificates into the license file, or the license file may have already contained all the products and options.

Figure 5-8. Product/Option Maintenance Screen

```

----- Compuware License Management 04.00.00 ---- Row 1 from 51
                Product / Option Maintenance

Current Environment:
Configuration . . MY CONFIG
License File . . EFHMJCO.LMS400.CW01.SERVER.LICENSE          on PRD9A2

Enter "/" to select option
-- Propagate LPAR associations

Valid line commands:
A, AP, D, X, E, EA, C, CA

      Name                               Release  Certver  MSUs
-- + ABEND-AID FOR CICS                  05.02   01.00.02
-- + ABEND-AID FOR CICS                  11.01   02.00.00
--   HIPERSTATION FOR MAINFRAME SERVERS  04.02   03.00.00
-- + HIPERSTATION FOR VTAM               07.07   03.00.00
--   HIPERSTATION FOR WEBSPHERE MQ       02.04   03.00.00
***** Bottom of data *****

```

On this screen, you may only delete products (not individual options), select products or options, or disconnect LPARs from products or options.

Associate LPAR(s)

To select a product or option for further processing, follow the steps below.

1. Type **A** on the line next to the product or option you want to process.
2. Press Enter.

The Product Associations screen (Figure 5-9) appears, allowing the product or option you have chosen to be associated with one or more LPARs.

Associate Product and Related Options

To select a product and related options for further processing, follow the steps below.

1. Type **AP** on the line next to the product you want to process.
2. Press Enter.

Note: The **AP** command can only be used on a line next to a product.

The Product Associations screen (Figure 5-9) appears, allowing the product and related options you have chosen to be associated with one or more LPARs.

Disassociate LPAR(s)

To disconnect an LPAR from a product or option, follow the steps below.

1. Type **D** on the line next to the LPAR you want to disconnect.
2. Press Enter.

The product or option is no longer licensed to run on that LPAR.

Deleting a Product/Option

To delete a product from the selected license file, follow the steps below.

1. Type X on the line next to the product you want to delete.
2. Press Enter.

The selected product, all of its CPUs and LPARs, and all of the options of this product (and option CPUs and LPARs) are physically deleted from the selected license file.

Expand

To display the next lower level of information for options associated with a product, follow the steps below.

1. Type E on the line next to the product you want to expand.
2. Press Enter.

The next lower level of options for the selected product is displayed.

Expand All

To display all currently non-displayed options/associated LPAR information, follow the steps below.

1. Type EA on the line to expand all products.
2. Press Enter.

All options/associated LPAR information are displayed.

Collapse

To hide the displayed options associated with a product, follow the steps below.

1. Type C on the line next to the product you want to collapse.
2. Press Enter.

The options associated with the selected product are hidden.

Collapse All

To hide all non-product information, follow the steps below.

1. Type CA on the line to collapse all products.
2. Press Enter.

All non-product information is hidden.

Propagate LPAR Associations

To process all A and AP commands using the same set of LPARs that will be selected on the Product Association Screen (Figure 5-9), follow the steps below.

1. Type a / on the line next to Propagate LPAR Associations.
2. Select products and related options/associated LPARs for association.
3. Press Enter.

The product association screen will appear only one time for all products and options selected.

Product Associations Screen

You can access the Product Associations screen (Figure 5-9) by selecting a product or option line on the Product/Option Maintenance screen. This screen displays a list of all LPARs which are currently defined for the selected configuration.

In order to view this screen, you must perform all of the following functions first:

- Select a configuration. See “Selecting a Configuration” on page 5-5.
- Select a license file. See “Selecting a License File” on page 5-7.
- Select a product or option. See “Associate Product and Related Options” on page 5-11.

Figure 5-9. Product Associations Screen

```

----- Compuware License Management 04.00.00 ----- Row 1 from 2
                Product Associations

Current Environment:
Configuration . : MY CONFIG
License File . : EFHMJCO.LMS400.CW01.SERVER.LICENSE           on PRD9A2

Current Product/Option:
Product Name . . : HIPERSTATION FOR MAINFRAME SERVERS
Product Version . : 04.02
Option Name . . . :

Enter "/" to select option
_ Select all
_ Invert selection

Valid line commands:
S Associate LPAR with current Product/Option

----- LPAR ----- CPU      LMS
Name   Mode  Type  Size  Util  Pri  Status  Serial  ID
***** **  **  ****  ****  **  *****  *      *
_ CW01  SIZE  UNC   74   0    0    CONNECTED 005D0A  C721
_ CW06  UTIL  UNC   0    0    0    CONNECTED 005D0A  C721
*****
***** Bottom of data *****

```

Associate LPAR with current Product/Option(s)

To associate an LPAR with the selected product or option, follow the steps below.

1. Type an **S** on the line containing the LPAR you want to associate.
2. Press Enter.

When an LPAR is selected, the LPAR STATUS field is updated with the word ASSOC. See “Validating a Configuration” on page 5-5.

Note: Checking for MIPS exhaustion does not take place at the time an association is made.

Select All

To associate all LPARs with the selected product follow the steps below.

1. Type a / on the line next to Select All.
2. Press Enter.

The LPAR STATUS field for all LPARs will be updated with the word ASSOC. See “Validating a Configuration” on page 5-5

Invert Selection

To associate only the LPAR(s) that do not have an **S** on the line next to the LPAR, follow the steps below.

1. Type a / on the line next to Invert Selection.
2. Type an **S** on the line next to the LPAR(s) you do not want to associate with the selected product or option.
3. Press Enter

The LPAR STATUS field for all LPARs that did not have an **S** on the line next to the LPAR will be updated with the word ASSOC. See "Validating a Configuration" on page 5-5

Column Masking

Column masking is a new facility aimed at simplifying the instances when you must interact with the list of LPARs. It is of particular interest to users who have more than a dozen or so LPARs that are participating in the CLF environment and is intended to reduce the amount of visual information on the panel to a more manageable level.

Note: Although Compuware recommends the use of a 3270 model 4 (43 x 80) terminal type when using LMUSER, the column masking facility may make the use of a 3270 model 2 (24 x 80) terminal type more useful than it might otherwise be.

Column masking is available on the "Product Associations Screen" on page 5-13 and the "LPAR View Screen" on page 5-18. A line of pink asterisks immediately below the table headings on these panels indicates the presence of this facility on a particular panel. Any values entered into these pink asterisk filled fields are logically combined using an AND operator and compared to their respective column values to determine if a table row should be displayed or hidden. Masking can be accomplished by complete or partial data match. Both complete and partial data matching is performed against the table column value from left to right. There is no provision for right to left data matching.

CAUTION:

Using partial data matching on the numeric columns "Size", "Util", "Pri", and "CPU Serial" may cause unintended results. For these columns only use Complete Data Match.

Complete Data Match

To use complete data matching, follow the steps below.

1. Enter the data into the mask field followed by a blank space.
2. Press Enter.

Table rows matching the data entered into the mask field are displayed. All other table are rows hidden.

Partial Data Match

To use partial data matching, follow the steps below.

1. Enter the partial data into the mask field followed by an asterisk and a blank space.
2. Press Enter.

Table rows matching the partial data entered into the mask field are displayed. All other table rows are hidden.

Multiple Data Match

To use data matching in multiple columns, follow the steps below.

1. Enter complete or partial data into multiple mask fields. See “Complete Data Match” on page 5-14 and “Partial Data Match” on page 5-14.
2. Press Enter.

Table rows matching the data entered into the mask fields are displayed. All other table rows are hidden.

Reset Data Match

To clear a column mask, follow the steps below.

1. Enter an asterisk followed by a blank space into the mask field.
2. Press Enter.

The column mask is reset to all asterisks and the table is displayed.

Example:

To display only LPARs that begin with the letter A and are associated with CPU Serial 1234; type A* followed by a blank space in the mask field under the Name column *and* type 1234 followed by a blank space in the mask field under the CPU Serial column. Press Enter. Only LPARs that begin with the letter A and are associated with the CPU Serial 1234 are displayed.

Option 6 – Server Log Status Screen

LMS contains a facility for recording extensive diagnostic information, which is useful to Compuware personnel in debugging errors within LMS. When you install and run the LMS server for the first time, this log facility is not turned on. By using the Server Log Status Screen (Figure 5-10), you can invoke the log facility and request that it begin writing the diagnostic information. You can access the Server Log Status screen by typing 6 on the command line of the ISPF Interface Main Menu screen and pressing Enter.

Figure 5-10. Server Log Status Screen

```

----- Compuware License Management 04.00.00 -----
                          Server Log Status
Level . . ____ Attached . :   Defined . :   Allocated . :
Open  . : ____ ESTAE  . . :   Abended  . :   Call/Ret  . :

          Data Set Name ----- Volume
Current . . :
Previous . . :
New . . . . : -----

SMS Parameters:                Other Parameters:
Storage Class . . . ____      Size . . ____ (Tracks)
Management Class . . ____
Data Class . . . . ____

Action . . _ Open new log _ Close current log _ Swap current & new log

Command ==> _____ Scroll ==> PAGE

```

The following fields contain information about the current status of the log.

LEVEL

A number from 00 to 99 indicating the amount of information that is logged.

ATTACHED

Indicates whether or not a log task is attached. Valid values are Y (yes) and N (no).

DEFINED

Indicates whether or not a log data set is defined. Valid values are Y (yes) and N (no).

ALLOCATED

Indicates whether or not a log data set is currently allocated. Valid values are Y (yes) and N (no).

OPEN

Indicates whether or not the log is currently open and being used. Valid values are Y (yes) and N (no).

ESTAE

Indicates whether or not an ESTAE routine has been established for the log task. Valid values are Y (yes) and N (no).

ABENDED

Indicates whether or not the log task has abended. Valid values are Y (yes) and N (no).

CALL/RET

Indicates whether or not the CALL and RETURN tracing is active. Valid values are Y (yes) and N (no).

CURRENT

The data set name and volume serial number of where the log is being written.

PREVIOUS

The data set name and volume serial number for a log that was previously used, but currently is not.

NEW

Type a fully qualified data set name and a volume serial number of a new log that you want allocated and used.

STORAGE CLASS, MANAGEMENT CLASS, DATA CLASS

You may (optionally) type in storage, management and data class information in order to allocate a new log.

SIZE (TRACKS)

Type the number of tracks you want for the initial allocation of the log.

ACTION

Type one of the following to alter the current log status:

- **O**—to allocate and open a new log and to begin writing data to the new log
- **C**—to close the current log
- **S**—to close the current log, allocate and open a new log, and begin writing data to the new log

Press Enter to process the selection and display the appropriate results.

Option 7 – Server History Maintenance

The Server History Maintenance option is used to view, open or close history data. You can access the Server History Status screen by typing 7 on the command line of the ISPF Interface Main Menu screen and pressing Enter.

Figure 5-11. Server History Status Screen

```

----- Compuware License Management 04.00.00 -----
                                Server History Status
      Defined . . . :           Allocated . . :           Open . . . . :
                                Data Set Name           Volume
      Current . . . :
      New . . . . . : -----
SMS Parameters:                Other Parameters:
  Storage Class . . .           Size . . .           (Tracks)
  Management Class . .
  Data Class . . . . .
Action . . _ Open new history           _ Close current history

```

The following fields contain information about the current status of the server history.

DEFINED

Indicates whether or not a history data set is defined. Valid values are Y (yes) and N (no).

ALLOCATED

Indicates whether or not a history data set is currently allocated. Valid values are Y (yes) and N (no).

OPEN

Indicates whether or not a history data set is currently open and being used. Valid values are Y (yes) and N (no).

CURRENT

The data set name and volume serial number of where the history is being written.

NEW

Type a fully qualified data set name and a volume serial number of a new history that you want allocated and used.

STORAGE CLASS, MANAGEMENT CLASS, DATA CLASS

You may (optionally) type in storage, management and data class information in order to allocate a new history.

SIZE (TRACKS)

Type the number of tracks you want for the initial allocation of the history.

ACTION

Type one of the following to alter the current history status:

- O—to allocate and open a new log and to begin writing data to the new log
- C—to close the current log

Press Enter to process the selection and display the appropriate results.

Option 8 – LPAR View

You can access the LPAR View (Figure 5-12) by typing 8 on the command line of the ISPF Interface Main Menu screen and pressing Enter. This screen displays a list of all LPARs which are currently defined for the selected configuration.

In order to view this screen, you must perform all of the following functions first:

- Select a configuration. See “Selecting a Configuration” on page 5-5.
- Select a license file. See “Selecting a License File” on page 5-7.

Figure 5-12. LPAR View Screen

```

----- Compuware License Management 04.00.00 ----- Row 1 from 28

                                LPAR View

Current Environment:
Configuration . : MY CONFIG
License File . : EFHMJCO.LMS400.CW01.SERVER.LICENSE           on PRD9A2

Valid line commands:
E, EA, C and CA

----- LPAR ----- CPU   LMS
Name      Mode  Type  Size  Util  Pri  Status      Serial  ID
*****   ****  ***   ****  ****  ***  *****
--- - CW01   SIZE  UNC   74    0     0    DISCONNECTED 005D0A  C721
--- -      ABEND-AID FOR CICS                05.02
--- -      ABEND-AID FOR DB2
--- -      COMPUWARE COBOL PROCESSOR
--- -      COMPUWARE PL/I PROCESSOR
--- -      REGION DUMP ANALYSIS
--- -      TRANSACTION DUMP ANALYSIS
--- +      ABEND-AID FOR CICS                11.01
--- -      HIPERSTATION FOR VTAM            07.07
--- + CW06   UTIL  UNC   0     0     0    DISCONNECTED 005D0A  C721
*****
***** Bottom of data *****

```

Expand

To display the selected LPARs associated products and options, follow the steps below.

1. Type E on the line next to the product you want to expand.
2. Press Enter.

The selected LPARs associated products and options are displayed.

Expand All

To display all the selected LPARs associated products and options, follow the steps below.

1. Type EA on the line next to the product you want to expand.
2. Press Enter.

All LPARs associated products and options are displayed.

Close

To collapse the selected LPARs associated products and options, follow the steps below.

1. Type C on the line next to the product you want to expand.
2. Press Enter.

The selected LPARs associated products and options are collapsed.

Close All

To collapse all the selected LPARs associated products and options, follow the steps below.

1. Type CA on the line next to the product you want to expand.
2. Press Enter.

All LPARs associated products and options are closed.

Appendix A. Compuware Maintenance Utility

The Compuware Maintenance Utility (CMU) is a program executed through JCL that, by default, generates reports listing all PTFs currently applied to a particular system, for all specified Compuware mainframe products. With the addition of an optional control file (available from Frontline (<http://go.compuware.com>)), the CMU can produce reports that include a list of PTFs that have *not* been applied or are otherwise missing. The contents of the control file (Figure A-2) are placed into a dataset or in stream JCL for the CMU to scan.

The CMU is distributed in the License Management System loadlib (SLMSLOAD).

Note: The CMU was introduced in License Management System (LMS) via a PTF in May 2013. Since then, the CMU control file format was adjusted and minor enhancements added along with more supported mainframe products. PTF LMF0073 is now required. Make sure all current maintenance is applied to LMS before attempting to use the CMU. Refer to the Compuware products listed in the "z/OS, Compatibility and Supported Releases Table" on FrontLine for any additional product PTF requirements.

The CMU processes a simple list of dataset names that it will scan and report on. The utility is able to scan the system link list for CMU supported Compuware product datasets. It will also scan the STEPLIB DD concatenation of the JCL as well as the datasets specified for SYSIN. The combined scan results from these sources will be presented in the output reports.

JCL Required to Execute the CMU

Several DD statements are required to execute the CMU and some are optional. Sample JCL is provided in the LMS samples library (SLMSCNTL) member LMMNTUTL. The general JCL structure required is shown below:

Figure A-1. General JCL Structure

```
//JOB CARD JOB CLASS=A
//MAINT EXEC PGM=LMMNTUTL
//STEPLIB DD DISP=SHR,DSN=COMPWARE.MLMSNNN.SLMSLOAD
//SYSPRINT DD SYSOUT=*
//REPORT DD SYSOUT=*
//ALLPTFS DD SYSOUT=*
//PRODUCTS DD DISP=SHR,DSN=COMPWARE.LM.MAINTCTL(LMMNTCTL)
//SYSIN DD *
product.dataset.name1
product.dataset.name2
product.dataset.name3
/*
//
```

Required Datasets

STEPLIB — this dataset must point to the License Management System SLMSLOAD library where the CMU resides. Any other Compuware product dataset may

optionally be specified in the STEPLIB DD concatenation for scanning and reporting on their contents as well.

SYSPRINT — a required SYSOUT dataset. This output dataset will contain any error messages resulting from the scan.

REPORT — a required SYSOUT dataset. This output dataset will contain the summary "one-page" report for each product dataset found in STEPLIB, SYSIN, or the system link list.

ALLPTFS — a required SYSOUT dataset. This output dataset will contain the full list of applied or missing PTFs for each product dataset found in STEPLIB, SYSIN, or the system link list.

PRODUCTS — this optional input dataset contains the control file information for the CMU. The CMU uses the information in this dataset to determine the highest levels of maintenance that are available for each product. When this dataset is available and processed successfully, the CMU will produce reports based on PTFs that are not yet applied (missing), by product.

When the PRODUCTS DD statement is not present in the JCL, or if the associated dataset was not in the proper format and could not be processed, the CMU will produce the default report based on all of the PTFs that are applied, by product.

The control file input specified by PRODUCTS can be in stream data in the JCL, or be a PDS dataset member. If the control information resides in a physical dataset, the dataset must be 80-byte fixed length records, any valid blocksize.

The format of the control file data is discussed below in "Control File Format"

SYSIN - this is an optional, but recommended, input dataset. This dataset specifies a list of Compuware product dataset load libraries that are to be scanned. If this dataset is coded, the product dataset names should be specified in columns 1 through 44, one dataset per line.

Control File Format

The control file, provided on Frontline (<http://go.compuware.com>), under License Management System, contains a list of Compuware products and release numbers, which includes a list of all the currently available PTFs for each.

The control file is used by the CMU to determine which PTFs have not yet been applied. That determination is based on what PTFs are actually applied compared to the inclusion list of all the PTFs that are currently available.

The control file will be updated on Frontline each time maintenance is released for the participating products. Be sure to check for updates before running the utility to ensure the reporting is current.

An example of the control file input is in Figure A-2.

Figure A-2. Example of the Control File input

```

*****
**** PTF-INCLUDE-LIST ****
*****
UPDATED 2013 SEP 23

** Compuware Shared Services
*
PRODUCT CX 08.05.00
  CXM0001-CXM0097 CXM0099-CXM0101 CXM0103-CXM0141 CXM0143-CXM0408
PRODUCT CX 08.06.00
  CXN0001-CXN0088 CXN0090-CXN0526 CXN0528-CXN0559 CXN0561-CXN0575
  CXN0577-CXN0593
PRODUCT CX 08.07.00
  CX00001-CX00071 CX00073-CX00080 CX00082-CX00105 CX00108-CX00418
  CX00420-CX00480 CX00482-CX00741 CX00743
PRODUCT CX 08.08.00
  CXP0001-CXP0119 CXP0121-CXP0180 CXP0182-CXP0287 CXP0289-CXP0446
  CXP0448
PRODUCT CX 09.00.00
  CXQ0001-CXQ0046 CXQ0048-CXQ0049 CXQ0052

** License Management System
*
PRODUCT LM 04.00.00
  LMF0000-LMF0061

** Abend-AID Common
*
PRODUCT AC 12.03.00
* FMID MKAZ231
  ACB001Y-ACB002Y ACB004Y ACB006Y ACB008Y-ACB009Y ACB012Y ACB014Y-ACB016Y
  ACB020Y ACB022Y ACB027Y-ACB030Y ACB032Y ACB034Y ACB037Y ACB043Y
  ACB045Y ACB050Y ACB053Y ACB055Y ACB057Y ACB060Y-ACB061Y ACB065Y
* FMID OKAZ231
  ACB004Z ACB006Z ACB008Z-ACB009Z ACB020Z ACB022Z ACB028Z-ACB030Z

** Abend-AID
*
PRODUCT AA 12.03.00
* FMID MPAA230
  AAB005Y AAB007Y AAB010Y AAB013Y AAB015Y AAB019Y-AAB023Y AAB026Y
  AAB028Y AAB031Y-AAB032Y AAB035Y AAB045Y-AAB048Y AAB050Y-AAB052Y
  AAB054Y AAB060Y AAB065Y-AAB066Y
* FMID OPAA230
  AAB020Z AAB022Z AAB032Z

** Abend-AID for CICS
*
PRODUCT CF 12.03.00
* FMID MKFX231
  CFB003J CFB011J CFB015J CFB018J CFB020J-CFB022J CFB025J CFB044J
  CFB050J-CFB051J CFB065J
* FMIDS NKFX232-NKFX236
  CFB017*-CFB018* CFB021* CFB024* CFB033* CFB036* CFB038* CFB041*
  CFB049*-CFB050* CFB065*
* FMID OKFX231
  CFB020A CFB022A

** Fault Analytics
*
PRODUCT MF 12.03.00
  MFB002J

*****
*** END-PTF-INCLUDE-LIST ***
*****

```

The control file specifies all CMU supported Compuware mainframe products back to a reasonable release level, typically no more than two releases back from current ($n-2$).

Lines within the control file that contain an asterisk (*) in column 1 are considered comments and are ignored.

If the CMU is unable to parse the control file information because the format is incorrect or because the information was garbled as a result of download, it will report an error message to SYSPRINT, then produce the default report containing only applied PTFs.

Report Output

Figure A-3 shows the output for the summary report when the CMU is executed *without* a control file (no PRODUCTS DD statement). Following this summary report, is an example of the output showing the list of PTFs applied (Figure A-4).

Further examples are shown providing a sample of the CMU output *with* a control file present (Figure A-5 and Figure A-6).

In the reports, if a product dataset was specified in one of the input sources but it could not be identified as a CMU Supported Compuware product dataset (no xxRELSMP-like module), a double-question mark (??) will appear in the report for the product code and an N/A will appear in the description and release.

If a product dataset was scanned successfully, but that product was not represented in the control file input, then a double-question mark (??) will appear in the highest available PTF column because no control information was available. When this condition occurs, the CMU will also be unable to determine the number of missing PTFs.

Figure A-3. Summary report without a PRODUCTS DD control file

Compuware Product Maintenance at a Glance for specified datasets					
Product code and name	Product Release	Highest PTF Applied	# PTFs Applied	Source	Library
CX Shared Services	08.07.00	CX00486	481	STEPLIB	CX.PROD.R080700.SLCXLOAD
HC Host Communic. Interface	02.50.00	HCA0045	44		SYS2.HC250.S1.AUTHLIB
?? N/A	N/A				SYS2.HC250.S2.AUTHLIB
CX Shared Services	08.08.00	CXP0187	186		CX.PROD.R080800.ALLPTFS.SLCXLOAD
CX Shared Services	08.05.00	CXM0413	404	EXPLICIT	CX.PROD.R080500.SLCXLOAD
FA File-AID/MVS	09.03.01	FA9A011	9		FA.PUBLIC.V9R3M1T.MXFA931.SXFAAUTH
XT Xpediter/TSO	09.01.00	XTI0056	56		XT.PROD.MLXT910.ALLPTFS.SLXTLOAD
XT Xpediter/TSO	07.06.00	XTF0164	163		XT.PROD.MLXT760.ALLPTFS.SLXTLOAD
XD Xpediter/CICS	09.01.00	XDNL068	66		XD.R090100.NMXD910.SMXD065L
XD Xpediter/CICS	08.03.00	XDMI207	205		XD.R080300.MMXD839.SMXD063L
XG Xpediter/Xchange	05.00.00	XGB0014	14		XG.PROD.MLXG500.ALLPTFS.SLXGLOAD
XG Xpediter/Xchange	04.00.00	XGA0077	71		XG.PROD.MLXG400.ALLPTFS.SLXGLOAD
XV Xpediter/Code Coverage	03.01.00	XVC0041	40		XV.PROD.MLXV310.ALLPTFS.SLXVLOAD
XV Xpediter/Code Coverage	03.00.00	XVB0033	33		XV.PROD.MLXV300.ALLPTFS.SLXVLOAD
CX Shared Services	08.08.00	CXP0142	140	LINKLIST	
FA File-AID/MVS	09.03.01	FA9A028	20		

Figure A-4. Full report without a PRODUCTS DD control file

```

Compuware Product Maintenance Applied
                        for specified datasets

CX Shared Services          08.07.00
-----
From: STEPLIB   DSN: CX.PROD.R080700.ALLPTFS.SLCXLOAD

PTFs applied:
CX00001 CX00002 CX00003 CX00004 CX00005 CX00006 CX00007 CX00008 CX00009
CX00010 CX00011 CX00012 CX00013 CX00014 CX00015 CX00016 CX00017 CX00018
CX00019 CX00020 CX00021 CX00022 CX00023 CX00024 CX00025 CX00026 CX00027
CX00028 CX00029 CX00030 CX00031 CX00032 CX00033 CX00034 CX00035 CX00036
CX00037 CX00038 CX00039 CX00040 CX00041 CX00042 CX00043 CX00044 CX00045
CX00046 CX00047 CX00048 CX00049 CX00050 CX00051 CX00052 CX00053 CX00054
CX00055 CX00056 CX00057 CX00058 CX00059 CX00060 CX00061 CX00062 CX00063
CX00064 CX00065 CX00066 CX00067 CX00068 CX00069 CX00070 CX00071
CX00073 CX00074 CX00075 CX00076 CX00077 CX00078 CX00079
CX00082 CX00083 CX00084 CX00085 CX00086 CX00087 CX00088 CX00089 CX00090
CX00091 CX00092 CX00093 CX00094 CX00095 CX00096 CX00097 CX00098 CX00099
CX00100 CX00101 CX00102 CX00103 CX00104 CX00105 CX00108 CX00109
CX00109 CX00110 CX00111 CX00112 CX00113 CX00114 CX00115 CX00116 CX00117
CX00118 CX00119 CX00120 CX00121 CX00122 CX00123 CX00124 CX00125 CX00126
CX00127 CX00128 CX00129 CX00130 CX00131 CX00132 CX00133 CX00134 CX00135
..
..                                     these lines omitted for brevity
..
CX00460 CX00461 CX00462 CX00463 CX00464 CX00465 CX00466 CX00467 CX00468
CX00469 CX00470 CX00471 CX00472 CX00473 CX00474 CX00475 CX00476 CX00477
CX00478 CX00479 CX00480 CX00481 CX00482 CX00483 CX00484 CX00485 CX00486
    
```

Figure A-5. Summary report with a Product DD control File

```

Compuware Product Maintenance at a Glance
                        for specified datasets

```

Product code and name	Product Release	Highest PTF Applied	Highest PTF Avail	# PTFs Missing	Source	Library
CX Shared Services	08.07.00	CX00488	CX00488	2	STEPLIB	CX.PROD.R080700.SLCXLOAD
HC Host Communic. Interface	02.50.00	HCA0045	HCA0045	0		SYS2.HC250.S1.AUTHLIB
?? N/A	N/A		??			SYS2.HC250.S2.AUTHLIB
CX Shared Services	08.08.00	CXP0171	CXP0189	23		CX.PROD.R080800.SLCXLOAD
CX Shared Services	08.05.00	CXM0408	CXM0413	15	EXPLICIT	CX.PROD.R080500.LOADLIB
FA File-AID/MVS	09.03.01	FA9A027	FA9A028	2		FA.PUBLIC.V9R3MIT.MXFA931.SXFAAUTH
XT Xpediter/TSO	09.01.00	XTI0057	XTI0042	0		XT.PROD.MLXT910.ALLPTFS.SLXTLOAD
XT Xpediter/TSO	07.06.00	XTF0164	XTI0164	1		XT.PROD.MLXT760.ALLPTFS.SLXTLOAD
XD Xpediter/CICS	09.01.00	XDNL068	XD*L070	4		XD.R090100.NMXD910.SMXD065L
XD Xpediter/CICS	09.01.00	XDML068	XD*L070	4		XD.R090100.NMXD910.SMXD064L
XD Xpediter/CICS	08.03.00	XDMI207	XD*I207	2		XD.R080300.NMXD830.SMXD063L
XW DevEnterprise	05.03.00	XWE0026	??			X2.PROD.MLXW530.ALLPTFS.SLXWLOAD
XG Xpediter/Xchange	05.00.00	XGB0015	XGB0015	0		XG.PROD.MLXG500.ALLPTFS.SLXGLOAD
XG Xpediter/Xchange	04.00.00	XGA0077	XGA0077	6		XG.PROD.MLXG400.ALLPTFS.SLXGLOAD
XV Xpediter/Code Coverage	03.01.00	XVC0041	XVC0041	1		XG.PROD.MLXG310.ALLPTFS.SLXGLOAD
XV Xpediter/Code Coverage	03.00.00	XVB0033	XVB0033	0		XG.PROD.MLXG300.ALLPTFS.SLXGLOAD
CX Shared Services	08.08.00	CXP0142	CXP0189	49	LINKLIS	
FA File-AID/MVS	09.03.01	FA9A028	FA9A028	1		

Figure A-6. Full report with a PRODUCTS DD control file

```

Compuware Product Maintenance Requirements
for specified datasets

CX Shared Services          08.07.00
-----
From: STEPLIB   DSN: CX.PROD.R080700.ALLPTFS.SLCXLOAD

PTFs missing:
  CX00080 CX00081

HC Host Communic. Interface 02.50.00
-----
From: STEPLIB   DSN: SYS2.HC250.S1.AUTHLIB

PTFs missing:
  NONE

CX Shared Services          08.08.00
-----
From: STEPLIB   DSN: CX.PROD.R080800.SLCXLOAD

PTFs missing:
  CXP0086 CXP0164 CXP0168 CXP0169 CXP0170 CXP0172 CXP0173 CXP0174 CXP0175
  CXP0176 CXP0177 CXP0178 CXP0179 CXP0180 CXP0181 CXP0182 CXP0183 CXP0184
  CXP0185 CXP0186 CXP0187 CXP0188 CXP0189

CX Shared Services          08.05.00
-----
From: EXPLICIT  DSN: CX.PROD.R080500.LOADLIB

PTFs missing:
  CXM0013 CXM0070 CXM0119 CXM0120 CXM0121 CXM0122 CXM0142 CXM0236 CXM0294
  CXM0298 CXM0409 CXM0410 CXM0411 CXM0412 CXM0413
FA File-AID/MVS          09.03.01
-----
From: EXPLICIT  DSN: FA.PUBLIC.V9R3M1T.MXFA931.SXFAAUTH \

PTFs missing:
  FA9A007 FA9A028

```


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