Distributed License Management

License Installation Guide

Release 4.0

COMPUWARE.

Technical support is available from our Technical Support Hotline or via
our FrontLine Support web site.

Technical Support Hotline:
1-800-538-7822

FrontLine Support Web Site:
http://frontline.compuware.com

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Preface

Summary of Changes

This section summarizes the enhancements to Distributed License Management (DLM) Release 4.0.

Release 4.0 Changes

This release offers the following enhancements:

◆ Removed FLEXlm licensing.

◆ The License Administration Utility has the ability to administer and check out borrow capable features.

◆ Reduced the number of ports needed for Compuware licensing.

◆ Added support for the VMS and AS/400 platforms.

◆ Added client/server based grace.

Chapter 1
Introduction
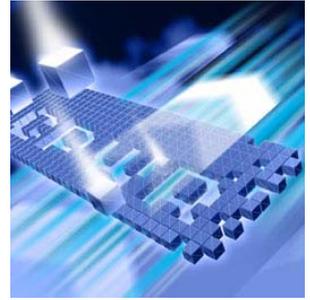
About This Guide

The *Distributed License Management License Installation Guide* provides information and procedures to:

◆ Obtain a license.

◆ Install concurrent (multi-user) or node-locked (single-user) licenses.

◆ Configure the license environment.

◆ Troubleshoot license installation errors.

Who Should Read This Guide

The *Distributed License Management License Installation Guide* is intended for administrators who are installing Compuware products. You can find reference and usage information in the online help of Distributed License Management's (DLM) licensing components. See "License Components" on page 15 for more information on DLM's licensing components.

Compuware assumes that you are familiar with basic Microsoft Windows and Web browser navigation. If this is not the case, familiarize yourself with the documentation for Microsoft Windows and Internet Explorer or Netscape Navigator before reading this guide.

Conventions

The following conventions are used to draw your attention to special information:

Boldface	Information that you type, choices you select from a dialog box or menu, and keys that you press. Boldface is also used to emphasize important information.
italic	Placeholders for items you must supply. For instance, when the guide says $x:\backslash$, x is the letter of the drive that exists on your computer.

Caution: **Situations to be avoided.**

Required: Required tasks or situations.

Note: Important information.

Tip: Helpful hints or alternative methods.

Terminology

Understanding the following terms will facilitate the user's understanding of this guide:

Licensed client	A licensed client is any workstation authorized, through a license source, to run one or more Compuware products.
License source	A license source can be a license file or a reference to a licensed server.
Client	A client is the licensing component of a program that has the capacity to authorize or deny a program's startup. The authorization process is dependent on license sources.
Licensed product	A licensed product is one or more purchased Compuware programs, licensed by a license source.
License key	A license key is an XML object, a sub-component of a license object, which contains application-client specific information and system specific information that defines the extent to which one or more associated applications can run.

Key	See license key.
License object	A license object contains one or more license keys.
License file	A license file is an XML based file that contains a single license object.
License	See license key.
License service	A license service is a service that runs as a background process on a licensed server. It provides a searchable database of license keys to facilitate the process of networked licensing.
Node	A node is a single workstation. Networks consist of one or more nodes.
License server	A license server is a single networked node that hosts a License Service.
Served key	A served key is any licensed key that is loaded into the License Service's database for networked licensing.
Concur-rent key	See Counted key.
Counted key	A counted key is any served key that contains an attribute that specifies a physical limit on the number of licensed clients authorized to run a licensed product concurrently. The limit is enforced by a combination of the License Service and its clients.
Uncount ed key	An uncounted key is any key associated with a product whereby usage of the product is not dependent on a predetermined limit.
Node-locked	See uncounted key.
License token	A license token is the result of a successful license request. It is a copy of a valid key. In the case of counted keys, license tokens are like virtual toll tickets, returned to the license service when the licensed product no longer needs it.
Floating key	See Counted key.

Host id   A host id is any identifier that uniquely identifies a workstation.

Online Help

In addition, online help for Distributed License Management is provided. It includes help on using the following DLM licensing components:

◆ License Administration Utility

◆ Remote License Administration Utility

There are two ways to access the online help from within a licensing component:

◆ From the **Help** menu, choose **Index** to browse for help for the licensing component being used.

◆ Click **[F1]** to open the Help menu.

World Wide Web Information

To access Compuware Corporation's site on the World Wide Web, point your browser to http://www.compuware.com. The Compuware site provides a variety of product and support information.

FrontLine Support Web Site: You can access online technical support for Compuware products via our FrontLine support Web site at http://frontline.compuware.com. FrontLine provides fast access to critical information about your Compuware product. You can read or download documentation, frequently asked questions, and product fixes, or e-mail your questions or comments. The first time you access FrontLine, you are required to register and obtain a password.

Getting Help

At Compuware, we strive to make our products and documentation the best in the industry. Feedback from our customers helps us maintain our quality standards. If you need support services, please obtain the following information before calling Compuware's 24-hour product support hotline:

◆ The name and release number (version) of the Compuware product you are using in addition to the name and release number of the

DLM component. Access this information by choosing **About** from the product's **Help** menu. The name and release number are also displayed on the covers of the product and DLM documentation.

◆ Installation information, including:

◇ Installed options

◇ Whether the product uses local or network databases

◇ Whether it is installed in the default directories

◇ Whether it is a stand-alone or network installation

◇ Whether it is a client or server installation

◆ Environment information, such as the operating system and release on which the product is installed, memory, hardware/network specifications, and the names and releases of other applications that were running.

◆ The location of the problem in the DLM or product software, and the actions taken before the problem occurred.

◆ The exact product error message, if any.

◆ The exact application, licensing, or operating system error messages, if any.

◆ Your Compuware client, office, or site number if available.

Distributed License Management **Technical Support**

Compuware Corporation
One Campus Martius
Detroit, MI 48226-5099

1-800-538-7822

Chapter 2
Overview of Licensing
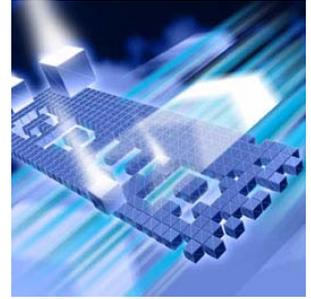
Introducing Licensing

Compuware's software products are protected from unauthorized usage via a standard licensing mechanism. Compuware's Distributed License Management (DLM) software components validate that an appropriate license is available and facilitate the license management and administration needs for your Compuware products.

The licenses are provided in files that can be installed on individual end-user desktops for temporary or node-locked licenses, or can be installed on a central License Server for centralized administration of licenses.

When a central License Server is used, individual end-user (client) machines or servers running Compuware products must connect to a License Service to obtain their license. To do this in Windows, use the License Administration Utility (LAU) on each target machine. On UNIX use the LAUCV to establish the host name and port number of the server machine running the License Server.

Licensing your Compuware product depends on several factors:

◆ The type of license file you received from Compuware.

◆ The number of users specified in your license file.

◆ The use of the Compuware License Service or not.

License Components

This document provides all of the necessary information to install and configure the license components required to run your Compuware

product. Compuware's licensing software consists of the following key components:

◆ **License Administration Utility (LAU)** – A Windows-based administration tool that can display all Compuware product license information available on both the client and server environments. The LAU is also used for license configuration. On systems where a License Service is installed, the user-definable attributes of a License Server can be changed.

◆ **License Service (cpwr.exe)** – An application (invoked by the LAU or executed from the command line) that manages and services requests for the license(s) of your Compuware product(s). The License Service can be installed on Windows and UNIX platforms. In many cases, it is recommended that you collocate the License Service with the server-based components of one of the Compuware products you are installing.

◆ **License File** – A data file that contains information about the license you have obtained for one or more of your Compuware products. To review the contents of your license file, open it with Internet Explorer.

◆ **Remote License Administration Utility** – A Web-based tool that allows an administrator to perform simple license server administration within a browser window.

Note: Some Compuware products do not support all of the product components listed above.

License Types

Some Compuware products allow a time-limited trial license automatically without requiring installation of a license file. Other products require a license file even for a trial. If you start your Compuware product without a license, it either informs you that the license is missing or indicates that an automatic time-limited trial has started. Each time you start a product on an automatic time-limited trial, you may be asked if you want to install a permanent license or to continue the trial. Before the trial runs out, you should acquire a permanent license from Compuware. See "Request a License from Compuware" on page 24.

Compuware offers several types of licenses. These licenses types are described below.

Note: Some products do not support all license types.

Permanent

A permanent license has no ending date.

Temporary

A temporary license has a fixed expiration date. You must request this license from Compuware's Sales Team.

Rolling Trial

A rolling trial license is automatically installed when you install some Compuware products. When this is provided, it allows you to run the product for a specific time period (14–45 days from the day you install the product) and is locked to a specific system. Each time you start your Compuware product, a message appears informing you of the time left before the trial license expires. With a rolling trial license, you have the ability to review the product before deciding to purchase it.

License Models

Compuware offers two license models: node-locked and concurrent.

Node-Locked

A node-locked license is a license that is tied to a particular machine via a unique identifier (generally the NIC MAC Address, but optionally a hard disk signature). There are two types of node-locked licenses: trial (demo) and permanent.

For node-locked licenses, the use of the Compuware License Service is not required, but can be used if you want a central place to store all of your licenses. A node-locked license is denoted by the absence of the <count> tag for the licensed feature. For more information on installing a node-locked license, see "License Server is Not Required (Node-Locked)" on page 22.

Concurrent

A concurrent (counted) license is server-based and requires the use of the Compuware License Service. This license allows you to share the use of a product with more than one user. There are several types of concurrent license models: borrow-enabled, user manage, redundant, and first come, first served (FCFS).

A concurrent license is denoted by the <count> tag for the licensed feature. It allows you to use a specific number of licenses without assigning them to a particular workstation. When all available licenses are checked out, no additional users can run the product until a license is checked back in.

User duplication allows the user to run an unlimited number of instances of an application as long as it is the same user on the same machine. The net usage in this case is always one for the individual user regardless of the number of instances running.

For more information on installing a concurrent license, see "License Server is Required (Concurrent)" on page 21.

Borrow-Enabled

Borrow-enabled is a type of concurrent license model that allows a user to borrow a feature or product up to a specified amount of days. The user checks out a feature and indicates how long to borrow it without exceeding the 365-day limit.

Each checkout is exclusive to each user, meaning multiple users could use the same machine, but have access only to the keys checked out by their user ID. Users can check in the key at any time within the borrow time frame specified. If this is not done, once the time expires the user is no longer able to use that key and it goes back into the server for other users to borrow.

A disadvantage to using this type of concurrent model is that if a machine with a borrowed license on it becomes disabled or lost, the borrowed license remains checked out until the time limit has expired. A good rule of practice is to keep the checkout duration to a minimum.

User Manage

User manage is a type of concurrent license model that allows the license administrator to control user access to specific options or features. Administrators can grant or deny access to specified users or groups of users. The following is the code in the server configuration file:

```
<user_management>
<application>
<user/>
<everyone/>
</application>
</user_management>
```

The systems administrator using the configuration object **user_management** can manage only licenses that contain keys that have the Umanage option (See "Umanage" on page 63.). User Manage-enabled keys authorize an administrator to control which users have access to the key that has the keyword Umanage defined.

Before setting up a user_management section, the administrator must get the App name from the key or keys that support User Management (For more on the license file format, see Appendix B regarding "License Files" on page 59.). Using the App name as a parameter, the administrator then defines which users have access to the application identified by App. For example:

```
<fileAid>
<everyone/>
< pfhwec0/>
< pfhddg0/>
</fileAid>
```

In the above example, the keyword **everyone** instructs the license service that all users are authorized to access the key. When the everyone keyword is specified, individual users that are added to the definition are perceived by the license service as excluded from the set of "everyone". Hence, the above example would read "allow everyone to use the key fileAid except pfhwec0 and pfhddg0." The absence of the **everyone** keyword means that only identified users are to be granted access to the license key. Users that are not listed will be denied access. A separate entry must exist for each key that supports the Umanage option. Users can be defined by either their host id or LAN id (login id).

Redundant

A redundant server license is a type of concurrent license model that provides limited protection against license server failure. It disperses the responsibility of managing the license files over a predetermined amount of servers. To read more about how redundant servers work, see "Redundant License Servers" on page 22.

First-Come, First-Served (FCFS)

First-come, first-served is a type of concurrent license model that limits the number of physical users to a defined set. A physical user is defined as a single networked node and login id. The set of defined users is based on a registration process whereby the License Service registers each licensed user up to N users, where N is based on the license count. The Nth+one user that attempts to register is denied.

License Environment

It is often the case that multiple license sources (or License Servers) are defined in a user's license environment. When a request is made to check out a license for a Compuware product, all license sources in the license environment are scanned until a valid key is found.

For information on configuring the license environment, see:

◆ For Windows, "License Configuration" on page 39.

◆ For UNIX, "Installation for UNIX Clients" on page 34.

Before you attempt to run a particular product, be sure that one of the license sources you have defined contains information for the product you want to run. Also, if there are old or obsolete license sources in your environment setting, you should delete them to improve product response time. Only currently operating servers should be specified in the license environment setting.

Determine if You Need the Compuware License Service

The first step in the licensing process is to determine whether it is necessary to install and run the Compuware License Service. The Compuware License Service is a long running process serving multiple client machines, so most often you install it on one central server machine for your entire organization.

The Compuware License Service can serve all of Compuware's product lines—you do not need multiple license services per product unless you are running redundant servers (see "Redundant License Servers" on page 22).

The License Administration Utility (LAU), for Windows only, provides an interface to configure the Compuware License Service. The LAU determines the need for the Compuware License Service based on the license

files provided to it. If a license file requires the Compuware License Service, the LAU will automatically install, start, and configure the License Service with the default settings.

On non-Windows platforms, the administrator must view the license to determine if a License Service is necessary. In general, the License Service should be started for all counted licenses. As mentioned earlier, any license containing a "<count>" tag is a counted-concurrent license. The License Service can be administered using the LAUCV.

License Server is Required (Concurrent)

A license file containing the <count> tag is considered to be concurrent or floating and requires use of the Compuware License Service. A concurrent license allows you to run a Compuware product on more than one client so that multiple users can access the product. This means that you purchase a specific number of licenses without assigning these licenses to particular clients or having to obtain their unique node identifiers.

The Compuware License Service keeps track of licenses as they are checked out and checked in by users. Licenses are checked out by users on a first-come, first-served basis when they access the product. After all available licenses are issued, no additional users can run the product until another user exits and a license is checked in. Your license determines how many users can access the product at one time.

Figure 2-1. Typical License Configuration for a Concurrent License
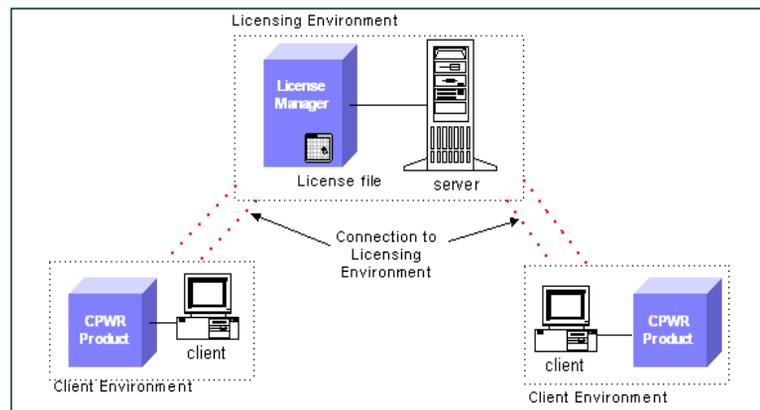
The License Service must be running on a computer or server that is always available to all clients needing access to the product.

◆ For Windows, see Chapter 3, "License Installation and Configuration for Windows".

◆ For UNIX, see Chapter 4, "License Installation and Configuration for UNIX".

License Server is Not Required (Node-Locked)

A node-locked license is tied to a particular machine via its NIC card address or disk ID.

Figure 2-2. Typical License Configuration for a Trial or Node-Locked License
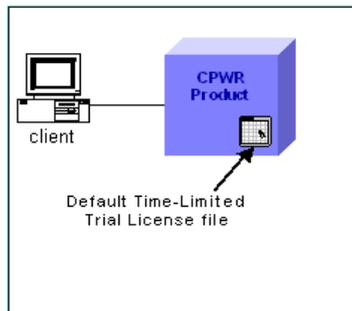
When you have a node-locked license, installation is very straight-forward and is one of the options below.

◆ You can install the license directly on the end-user desktop, in which case you do not need the License Service.

◆ You can install the License Service on a remote node to consolidate your licenses in one location.

Redundant License Servers

Tip: If a large number of licenses are governed by a single license server, failure of the server becomes a major event. To prevent problems, you should set up redundant servers so that if one server goes down, the License Service can still function.

License server redundancy provides quality of state by eliminating a single point of failure. Under license server redundancy, multiple license servers are deployed to support a single license. In the event of a partial failure, that is, the failure of one or more license servers, the subset of remaining servers are able to maintain a temporary state of license support until the initial state is restored.

Most redundant license systems rely on communications between license servers to maintain a consistent count of usage. The Compuware License Service relies on its clients to maintain license count consistency across redundant license servers.

How a redundant license is defined

A license object that supports redundancy contains a redundant-object, identified by the keyword 'redundant', and one or more license-key

objects that reference the redundant-object. Redundant objects begin with "<redundant protected='security key'>" and end with "</redundant>". License keys that reference redundant objects contain the field "<redundant>". Only keys containing the keyword "Redundant" have redundancy. As with license key definitions, a security key to prevent content modification protects redundant objects. Not all keys in a license file that contain a redundant object are necessarily redundant. Hence, a single Compuware License Service can support both redundant and simple concurrent at the same time. Simple concurrent is defined as any non-redundant concurrent license key. This is contrary to other licensing solutions, which can only support redundant or simple concurrent at any given time. A license file can contain multiple redundant objects. Only those servers, identified by id, in a particular redundant object provide support for the redundant policy for that key. A license key is considered redundant only if it contains the keyword 'redundant'.

Components of a redundant object

Redundant objects contain four key fields:

◆ Policy_id - ties the redundant definition to its corresponding license keys.

◆ Failsafe_count - identifies the minimum number of servers that can be running to support a corresponding redundant key.

◆ Initial_state - contains the total number of servers that provide redundancy support for corresponding redundant keys.

◆ Failsafe_duration - identifies the maximum number of days that a failsafe state can exist before the initial state must be restored.

Redundant License Management provides limited protection against license server failure by dispersing the responsibility of maintaining client licenses over three independent servers.

When using redundant server licensing, you need to configure the same license file on all of the identified server systems. Server systems are identified by the host ids contained in the license key.

The servers can be brought up in any order.

For more information on setting up redundant servers on UNIX or Windows, see:

◆ For UNIX, see "Redundant Servers" on page 37.

◆ For Windows, see "Setting Up Redundant Servers" on page 43.

Caution: **Redundant license servers do not work with borrow-enabled licenses.**

Request a License from Compuware

To obtain a permanent license, you must provide Compuware with the host information of the machine on which the license will reside. You can either contact Compuware's Worldwide License Management department at **license_mgt@compuware.com** or determine the host information using the LAU and e-mail that information to Compuware.

When you receive your license file from Compuware, copy the file to a directory on the machine identified in the license file (See Appendix A for license file format.).

Supported Platforms

The following table lists the platforms upon which DLM components can be installed, licensed, and run.

Table 2-1. Supported Platforms

Platforms	License Service	License Client Support
Alpha Open VMS	-	x
DEC (TRUE 64 Open Alpha UNIX)	x	x
HP-UX (32-/64-bit)	x	x
IBM-AIX (32-/64-bit)	x	x
Linux	x	x
AS400	x	-
Sun-Solaris 2.x (32-/64-bit)	x	x
Windows - NT 4.0, 2000, 2003 Server, XP (32-/64-bit)	x	x

*Compuware does not support the DLM License Service on Windows 95, 98, or ME.

Impact to System Performance

The following table identifies the impact to a system due to the License Server running on a machine.

Table 2-2. Impact to System Performance

Service	File Name	Memory	Space
License Server	cpwr.exe	3 MB	320 KB

Getting Started

The remaining chapters in this manual discuss installing and configuring the License Administration Utility (LAU), License Server, and Remote License Administration Utility (RLAU).

To begin installation and configuration, see the appropriate License Installation Checklist below.

License Installation Checklists

If you are installing a Compuware product with an rolling trial capability, you do not need to take any further action until you obtain your permanent license. Your trial license allows you to use your Compuware product between 14–45 days, depending on the product.

The following checklists can assist you in the licensing process after your rolling trial has expired or if you are installing your permanent license. Please begin with the following:

o   Determine the type of license model you have (node-locked or concurrent). See "License Models" on page 17.

o   See "Determine if You Need the Compuware License Service" on page 20.

o   If you are required to install the License Server, see the "Installing the License Server" checklist below.

o   If you have a node-locked license and do not require the License Server, install the Compuware product.

Installing the License Server

o   Select the platform (Windows or UNIX) on which the License Server
     may run.

     • For Windows, see "License Installation and Configuration for Win-
       dows" on page 27.

     • For UNIX, see "License Installation and Configuration for UNIX" on
       page 31.

o   Use the License Administration Utility (LAU) to perform one of the fol-
     lowing:

     • Configure the license.

     • Assign the license file to the License Server.

o   Have end-users add the license server source to their license environ-
     ment using either the LAY (Windows only) or the LAUCV. See "Defin-
     ing a Local License Environment" on page 41.

o   If license borrowing is enabled (for concurrent licenses only):

     • For administrators, see the "License Borrowing for Administrators"
       checklist.

     • For clients, see the "Using the Remote License Administration Util-
       ity (RLAU)"checklist.

o   If you are using the Remote License Administration Utility (RLAU), see
     the "Using the Remote License Administration Utility (RLAU)"check-
     list.

o   If the tag <Umanage> is in your license files, See "Umanage" on
     page 63.

License Borrowing for Administrators

o   Check that you have a concurrent license, which is required in order
     to use license borrowing.

o   If your license file has the <borrow> tag, see Chapter 6, "License Bor-
     rowing".

Using the Remote License Administration Utility (RLAU)

o   See "Overview of Remote License Administration Utility" on page 49.

Chapter 3

License Installation and Configuration for Windows
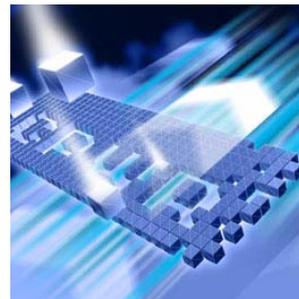
Overview

The procedures in this chapter describe how to install the Distributed License Management (DLM) license components on a Windows server. You can use Windows NT, 2000, XP or XP 64-bit as the server to host the Compuware License Service.

Installing the Compuware License Service

Tip: If you are on a client that may be a server, see "Defining a Local License Environment" on page 41 to install the License Server and bypass the following steps.

Follow the instructions below to install the License Service. For best results, close all programs before installing your Compuware product and the DLM components.

Installation for Windows 32 & 64-Bit Platforms

The following steps apply to installing the Compuware License Service on Windows 32 & 64-bit platforms.

1   From your Compuware product installation CD, select **Install (Compuware) License Service**. This starts the InstallShield Wizard for the License Service. You need to navigate through several screens to proceed through the InstallShield Wizard. These screens require you to perform tasks such as:

   ◇   Read and accept the **License Agreement**.

   ◇   Provide **Customer Information**.

   ◇   Start **Copying Files**.

2   Click **Next** after completing each screen of the InstallShield Wizard.

3 After the files are copied, click **Finish** to complete the installation (reboot the machine, if specified).

4 Click the taskbar's **Start** button and choose **Programs>Compu-ware>License Administration>License Administration Utility - LAU4** to implement your Compuware license.

5 When prompted, specify the location of the served license and click **OK** (see figure 1). The LAU will verify that the license is valid and install and start the Compuware License Service.

Figure 3-1. License Activation Dialog Box

Chapter 4

License Installation and Configuration for UNIX
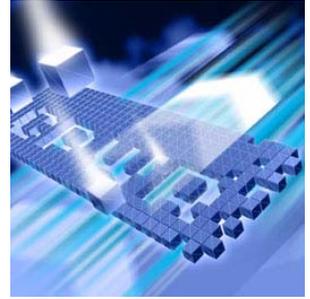
Overview

The licensing process varies based on the Compuware product being installed, your agreement with Compuware, and the platform on which the Compuware License Service is installed.

When a License Service is needed, setup involves the following steps:

1   Install the Compuware License Service and its components. See "Installing the Compuware License Service for UNIX" on page 31.

Installation of the Compuware License Service is only required for concurrent license types (denoted by the <count> tag for the licensed feature). Installing the Compuware License Service is not required if you have a node-locked license. If you have a node-locked license for a client machine, see "Installation for UNIX Clients" on page 34.

2   Configure the License Service to start. See "Configuring the License Service" on page 33.

3   Configure each client to access the License Service. See "Installation for UNIX Clients" on page 34.

Installing the Compuware License Service for UNIX

Follow the steps below to install the Compuware License Service.

1   Mount the CD-ROM on your system (root access required).

2   Change to the mount directory. For example, if `/cdrom` is the mount directory, type the following:

```
cd /cdrom
```

3   Navigate to the directory on the CD that contains the Compuware License Service installation files. See the product documentation for

the specific Compuware product for the location of the license instal-
lation component.

4   To install the License Service on your system, type:

   install.sh *install_bundle target*

   Note: If you do not specify a target, the installation will be
   placed in: /opt/cpwr_*version* (Root access may be
   required to create the directory.).

Figure 4-1. Install the License Service

```
$ ls -l
total 73280
-rw-r--r--   1 pfhwec0   rx        37471232 Mar  3 08:08 cpwr-2005-2-Mar
-rwxr-xr-x   1 pfhwec0   rx            7320 Mar  3 08:07 install.sh
$
$
$
$
$ install.sh cpwr-2005-2-Mar /pfhwec0/CompuwareLicenseManager


install.sh - Copyright (c) 2004, 2005, Compuware Corporation
            All rights reserved


installing licensing support, cpwr


/home/pfhwec0/CompuwareLicenseManager/cpwr_4.0 does not exist.  Do you want to create it?
    [Y]es <default>
    [N]o

y

creating directory /home/pfhwec0/CompuwareLicenseManager/cpwr_4.0
   OK

sensing platform and OS version...
   using SunOS 5.7

extracting supporting binaries from cpwr-2005-2-Mar.....
   verifying installation......
   OK

creating initial server configuration file.....
creating launch scripts.....
cleaning up......


To complete the install you will need to append the LD_LIBRARY_PATH
variable with /home/pfhwec0/CompuwareLicenseManager/cpwr_4.0 to identify the location
of the cpwr runtime libraries.


done
$ ▲
```

5   You are notified when the installation is completed (If install has a
     problem creating the directory, you are notified of the error and are
     forced to exit.).

Configuring the License Service

Before a client can access a served license, the corresponding server must have the License Service installed and running. You can configure the License Service to start automatically (each time the server boots) or to be started manually.

1 Before you can start the License Service, you must supply Compuware with the host ID of the node on which you plan to run the License Service. In return, Compuware will send you a license file. To obtain the host ID, perform the following commands:

```
cd /target/cpwr_version
cpwrinfo.sh
```

The ID, which the licensing system uses for validation, is displayed:

Figure 4-2. Host ID Information

2 Send this ID information to Compuware. Compuware then sends back a license file.

3 Copy the license file you receive from Compuware to:

```
/target/cpwr_version/license
```

> **Required:** You must receive a new license file from Compuware before proceeding with configuring the License Service.

> **Required:** You cannot run two License Services simultaneously and must shut one down before starting a new one.

4   Do one of the following:

◇ **To start the License Service manually** (required each time the server reboots), type:

```
cpwr.sh -start
```

◇ **To start the License Service automatically** each time the server reboots, follow the suggested procedure below for the appropriate platform:

Table 4-3. Suggested Automatic Startup Per Platform (UNIX)

Platform	Action
AIX	In `etc/rc.local`, type the following command on one line: `/target/cpwr_version/cpwr.sh -start`
HP-UX	In `/sbin/rc3.d`, create a file named `s95cwlm.server` and add the following command to the file: `/target/cpwr_version/cpwr.sh -start`
Linux	In `/etc/rc.d/rc2.d`, create a file named `s95cwlm.server` and add the following command to the file: `/target/cpwr_version/cpwr.sh -start`
Sun Solaris	In `/etc/rc2.d`, create a file named `s95cwlm.server` and add the following command to the file: `/target/cpwr_version/cpwr.sh -start`

Installation for UNIX Clients

If the License Service is required (concurrent license), each client must be configured to access the License Service's license key database. If the License Service is not required (node-locked license), a license file is required on each client machine.

The License Administration Utility - Command Line Version (LAUCV) is the command line version of the Windows GUI-based License Administration Utility. While limited in functionality, the LAUCV mirrors most of the functionality provided by its GUI-based counterpart, the LAU. The

purpose of the LAUCV is to provide a simple text interface that is platform and display independent. It provides UNIX text-based support and support for script-based configurations.

The LAUCV application is located in the license installation directory on the same directory level as the Compuware License Service.

To launch the command line version of the LAU, type:

```
laucv.sh
```

The LAUCV user interface uses a series of text-based menus, called **command lists**. Each command list and its submenu is hierarchically organized by category and is based on the functionalities provided by each menu tree. Each menu label begins with one or more uppercase letters. Entering either the label of a menu or its abbreviated character set (denoted by the uppercase characters) provides access to the menu item. Menu items are either references to submenus or commands. Clicking the **<Enter>** key from any sub-menu returns you to the next highest menu level.

When the LAUCV is launched, the LAUCV Main Menu is displayed. It contains two submenus: Client and License Service.

Figure 4-3. LAUCV Main Menu


```
laucv - Copyright (C) 2004, Compuware Corporation.
       All rights reserved


---LAUCV Main---

       Client
       License Service

Hit enter to return to the previous menu or key
in a command. Commands can be abbreviated using
the first N unique characters which are denoted
by the leading uppercase characters.
laucv>
```

To add a license to the Client environment, access the Client menu by typing either:

```
c or client
```

The LAUCV's Client Menu displays the following list of configuration and diagnostics commands for the administration of a license client:

Figure 4-4. Client Menu

```
---Client command list---

Applications
Borrow
BRoadcast
License path
Pools
Server loading
Timeout
Who
Verify

Hit enter to return to the previous menu or key
in a command. Commands can be abbreviated using
the first N unique characters which are denoted
by the leading uppercase characters.

Enter '?' for help.
laucv>?
```

Select the license path by typing: l

Figure 4-5. License Path Command List

```
Current setting(s):

not set

---[License path   ] Command list---

Add
Remove

Hit enter to return to the previous menu or key
in a command. Commands can be abbreviated using
the first N unique characters which are denoted
by the leading uppercase characters.
laucv>
```

At the prompt, specify the port@host to your license server or the fully qualified path to a local license file and hit **Enter.**

Figure 4-6. License Path defined

```
Current setting(s):

7188@sfa141282k

---[License path  ] Command list---

Add
Remove


Hit enter to return to the previous menu or key
in a command. Commands can be abbreviated using
the first N unique characters which are denoted
by the leading uppercase characters.
laucv>
```

Note: For more information on using the displayed commands, type ? from within any of the command menus and hit **Enter**. You can also refer to the LAU's Online Help.

Redundant Servers

After you install the License Service on all three server machines in the redundant configuration, you must add all three license server sources to the license environment for each client.

UNIX Components

The installation directory for the UNIX platform includes the following files:

Readme	Additional License Service information.
/bin	For Compuware use only.
/config	Directory containing server configuration file config.xml.
cpwr.sh	License Service.
cpwrinfo.sh	System information.
install.log	Contains data from the installation process.

laucv.sh	License Administration Utility - Command Line Version.
libdlm32.so	Runtime library used by clients.
libdlm64.so	Runtime library used by clients.
/license	Directory containing license files.
os	Multi-platform support.
vlog.sh	License Service log file.

Troubleshooting

Comparing License Service Versions

Follow the instructions below to compare the License Service version number already on the license server with the version number on the product CD.

1 Determine the version number already on the license server:

   a Navigate to the directory on the server where the License Service is located.

   b Type:

```
cat /target/cpwr_version/version.txt
```

Make note of the License Service version number located in the response message.

2 Determine the version number on the product CD:

   a Insert the product CD, open a command prompt, and navigate to the directory of the CD containing the install bundle.

   b To display the version information, type:

```
cat version.txt
```

3 If the CD has a newer version, see "Installing the Compuware License Service for UNIX" on page 31.

Chapter 5
License Administration Utility
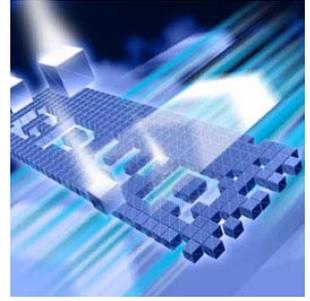
Overview

The License Administration Utility (LAU) is a Windows-based administration tool that can display all Compuware product license information available on both the client and server environments. The LAU is used for license configuration and administration. On systems where the Compuware License Service is installed, its user-definable attributes can be modified.

Starting the LAU

To start the LAU, click the taskbar's **Start** button and choose **(All) Programs>Compuware>License Administration>License Administration Utility - LAU4.**

License Configuration

All client and server systems require that one or more valid license sources be added to their license environments in order to use a licensed Compuware product. A license source can be a local file or a server reference, that is, port@host. In either case, the license source must authorize the system and the Compuware products for which it is deployed.

The LAU simplifies this process by providing an identical method for configuring both client and server systems. The LAU facilitates licensing on client systems by placing the license source in a configuration file. The server system also has a configuration file containing its license sources.

Concurrent License

When using a concurrent license model, each client machine must be configured to reference the licensed server. The licensed server is defined as any system that has been authorized by a valid license file to provide remote start-up authorization for Compuware applications. Before a licensed server can authorize remote application start-up, it must be running the Compuware License Service (cpwr.exe).

The Compuware License Service is automatically registered and started on the licensed server machine by the LAU when a valid server license is presented to the LAU.

In addition to the registration, configuration, and activation of the Compuware License Service, the LAU also creates the Borrow License Server Tab for those server licenses that support license borrowing. On client systems that reference licensed servers that support license borrowing, the Borrow License Client Tab is automatically created by the LAU. For more information on license borrowing, see Chapter 6, "License Borrowing".

Node-locked License

In the case of a node-locked license model, only the system designated in the license file is authorized to run the specified Compuware applications. The LAU only accepts a node-locked license on the system that it authorizes.

First-Time User License Activation

When the LAU is started for the first time, you will see the LAU's main screen. When you select the Local Environment tab, you are prompted to

provide a valid license source. This dialog box will continue to appear until a license source is added to the local environment.

Figure 5-1. LAU: License Activation Dialog Box
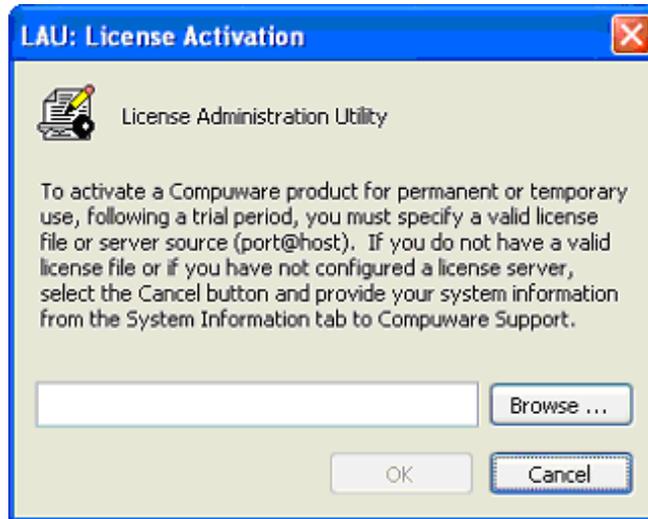
If this dialog box does not appear and you already have a Compuware product installed on your machine, proceed to "Defining a Local License Environment" on page 41. If you want a detailed explanation of what each tab does within the LAU, proceed to its section within this document.

Defining a Local License Environment

If you have not provided the LAU with a license source, the following notification appears each time the LAU is started, until you have defined the local license environment.

Figure 5-2. LAU License Configuration Notification Dialog Box
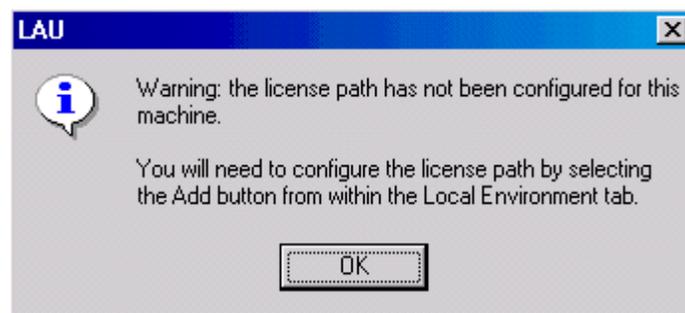
Follow the steps below to define a local license environment by adding a license source.

1   Start the **LAU**. (See)

2   Click the **Local Environment** tab.

3   Click **Add** to open the **Add License Source** dialog box.

Figure 5-3. Add License Source Dialog Box

4   Type the fully qualified path to a license or click **Browse** to open the **Open** dialog box and find the license file. Or type the port@host definition if you are attempting to access a concurrent license.

For example, 7188@sfa141282k; 7188=port and sfa141282k=host.

5   Click **OK** to add the license source to the environment. If this is a concurrent license, this starts and installs the Compuware License Service and adds the Server Environment tab to the LAU. Further, if this concurrent license is borrow-enabled, it will add the Borrow License Server tab to the LAU, as well.

When provided with a license source, the LAU performs an analysis, determines what is needed to implement it into the local environment, and checks for errors.

Server Machine

If the license source is for a server machine, the LAU verifies the license is a match for the current machine. If it is a match and the Compuware License Service has not been installed, the LAU installs it, adds the Server Environment tab, and incorporates the license source into the configura-

tion files. If the concurrent license is borrow-enabled, the LAU will also add a Borrow License Server tab. However, if the license is not a match, a dialog box appears, notifying you that the license is invalid.

Setting Up Redundant Servers

Each client machine must have an entry in its license path to each of the three redundant servers. Perform the following steps using the **Local Environment** tab on the LAU to add each of the three redundant servers to the local license environment.

Figure 5-4. Local Environment Tab on the LAU
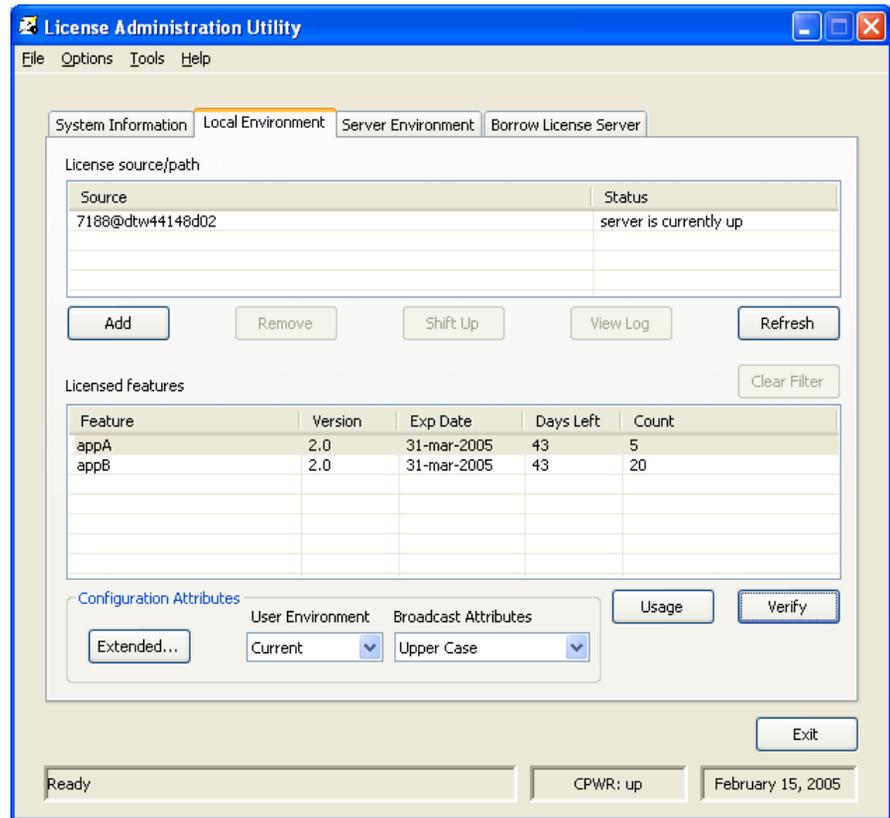
1   Click **Add** to open the **Add License Source** dialog box (see Figure 5-3).

2   Type the *port@host* server location of the License Server in the field next to the **Browse** button.

3   Click **OK** to add the license source to the environment.

The Auditing feature gathers data for all users attached to a server and writes them to a comma delimited file called audit.txt, which can be found in the server's cpwr\logging directory. The data in this file can be imported into an Excel spreadsheet for easy viewing. The first line in the file is a header describing the data found in each column. The captured data is described in greater detail below.

The Auditing feature is controlled by the config.xml file in the cpwr\config directory. The Compuware License Service administrator is responsible for turning the Auditing feature on or off.
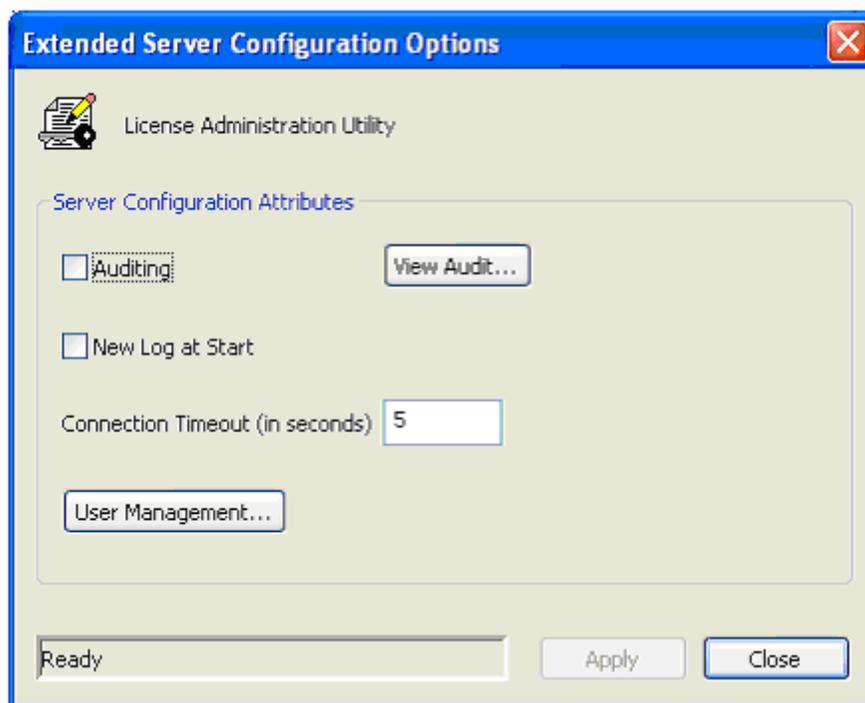
Auditing checkbox – Checking/unchecking this box turns on/off Auditing for the Compuware License Service. When Auditing is enabled, the View Audit button becomes enabled, thereby allowing you to view the audit output. When Auditing is enabled, there can be performance issues due to the amount of data being captured and written to a file.

Description of Data in Audit file

Date: The date and time this data was written to the file.

Request: The type of request processed by the server. The following can be found in this column:

OUT

IN

BORROW

BORROW/IN

GRACE

GRACE/EXIT

App[version/: The application and version being requested and processed by the server.

Count: The number of license tokens requested.

Status: The status of the request to the server. The following can be found in this column:

OK

denied, with a reason for the denial.

Days Borrowed: The number of days a particular license was borrowed.

Chapter 6
License Borrowing
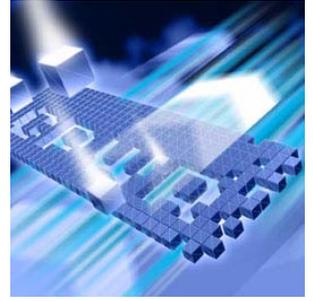
Overview

Configuration of the license borrowing components is handled automatically when a license is installed via the License Administration Utility (LAU) on Windows. For UNIX, use the License Administration Utility - Command Line (LAUCV).

Windows Only: On client systems that reference licensed servers that support license borrowing, the Borrow License Client Tab is automatically configured and added to the LAU. From this tab, you will be able to borrow and return available licenses. On server systems that add a license that supports license borrowing, the Borrow License Server Tab is automatically configured and added to the LAU. From this tab, the system administrator will be able to manage the borrow features. The Borrow License Client Tab and the Borrow License Server Tab cannot coexist in the LAU. The LAU will handle this issue and display a message stating this restriction.

Chapter 7

Remote License Administration Utility
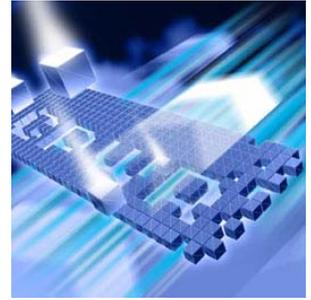
Overview of Remote License Administration Utility

Compuware's Distributed License Management's Remote License Administration Utility (RLAU) provides a central point of license administration. The RLAU runs on an HTTP server and is configured and administered by using the **cpwrCGIAdmin.exe** file.

The RLAU allows the administrator to monitor and maintain the Compuware client/server licensing environment from a remote location via a Web browser (see Figure 7-1).

Figure 7-1. The Remote License Administration Utility
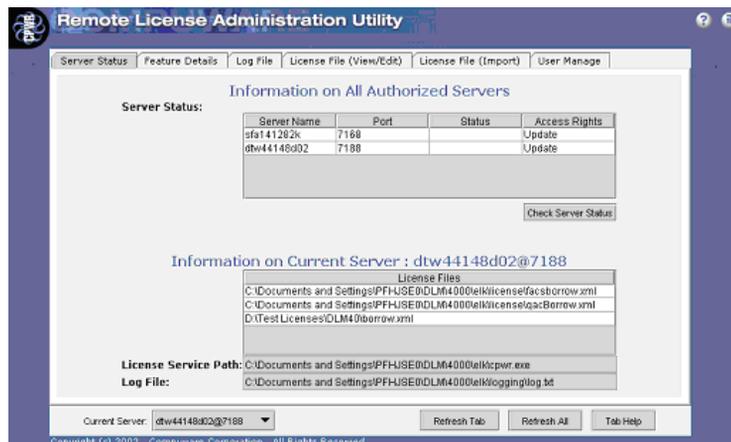
The RLAU consists of three components:

◆ Java applet (rlau4.jar)

◆ User configuration tool (cpwrCGIAdmin.exe)

◆ CGI (cpwrCgi.exe)

Unlike the applet portion of the RLAU, the CGI module and user configuration tool are non-Java applications, which means that unique binaries exist for each supported platform.

The following steps are necessary to install and operate the RLAU in your environment:

1 Install the Compuware License Service, its components, and a concurrent license for the server.

    ◇ For Windows, see the section "Installing the Compuware License Service" on page 27.

    ◇ For UNIX, see the section "Installing the Compuware License Service for UNIX" on page 31.

2 Install the RLAU and its components. See the section "Installing the RLAU" on page 51.

3 Create user accounts. See "Creating User Accounts" on page 52.

4 Define the Compuware License Service. See "Defining the Compuware License Service" on page 54.

5 Configure the RLAU. See the section "Configuring the RLAU" on page 55.

6 Start the RLAU. See the section "Starting the RLAU" on page 56.

Tested Environments

Required: The Java applet component requires that client systems that access the applet via a browser, such as Netscape or Explorer, have a minimum of Java 1.4.2 installed for Java support.

The RLAU was tested and works properly in the following environments:

Web Servers

◆ Apache on UNIX Solaris 8.0

◆ IIS on Windows 2000 Server

◆ iPlanet on Windows NT and Solaris 8.0

Browsers

◆ Internet Explorer 5.5 and 6.0

◆ Netscape 6.2

Note: Java Plug-in 1.3 and 1.4 for Netscape 6.2 are not supported in the AIX, HP, and RedHat environments.

Supported Platforms

The following table lists the platforms and components upon which the RLAU can be installed, licensed and run. The table also shows the binary-to-platform relation of all binary components provided for the RLAU. An administrator with root access to the machine should perform installation and configuration of these components.

Table 7-1. Supported Platforms

Platforms	Component List
Windows NT 4.0, 2000, XP	cpwrCGIAdmin.exe, cpwrCGI.exe
Linux, HP-UX, HP-UX 64, OSF/Digital, AIX, AIX 64-bit, SunOS/ Solaris, and SunOS/ Solaris 64-bit	cpwrCGIAdmin.exe <platform>, aes

Installing the RLAU

Follow the instructions below to install the RLAU components.

Installing the RLAU

Required: You should have root or administrative access to the HTTP server before running the InstallShield Wizard.

1 From your Compuware product installation CD, select and double-click the **Remote_Licensing_Tool** to start the InstallShield Wizard for the RLAU. You need to navigate through several screens to pro-

ceed through the InstallShield Wizard. The screens require you to perform tasks such as:

◇   Read and accept the **License Agreement**.

◇   Provide **Customer Information**.

◇   Choose your **Destination Location** - there is no default for the Destination Location; therefore, you must specify a destination before continuing. This location must be on your HTTP server and it should be designated as the site location for the RLAU application.

◇   Start **Copying Files**.

2   Click **Next** after completing each screen of the InstallShield Wizard.

3   Click **Finish** to complete the installation.

Installation for UNIX

The steps used to install the RLAU for Windows also apply to installing the RLAU components on a UNIX platform.

Creating User Accounts

To create user accounts, run the `cpwrCGIAdmin.exe` executable file for the platform that corresponds to the system you have designated as your HTTP server. The `cpwrCGIAdmin.exe` file has a text-based GUI, which means that it can be run in a text-based terminal window, such as Telnet.

Required: You should have root or administrative access to the HTTP server before running the component.

To run the **cpwr**CGIAdmin component:

1 At the command prompt, type cpwrCGIAdmin to display the **cpwrCGIAdmin Main Menu** screen (see Figure 7-2).

Figure 7-2. cpwrCGIAdmin Main Menu Screen

2 Type U and press **Enter** to access the **User Database Menu** (see Figure 7-3).

Figure 7-3. cpwrCGIAdmin User Database Menu Screen
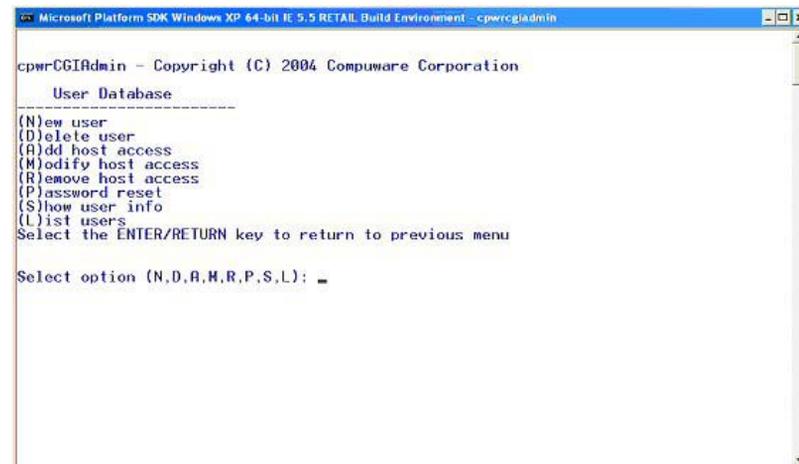
3 Type N and press **Enter** to add a New User to the User Database.

4 Type a user name and press **Enter**.

5 Type a password for the newly created user and press **Enter**.

6 Re-type the password for confirmation and press **Enter**. A message appears on the screen to confirm that the user was added to the User Database.

7 Press **Enter** to add another user, and repeat steps 3 through 6.

8 To return to the Main Menu, press **Enter** three times.

Only users with accounts can access the Compuware License Servers. User accounts are added to the `dlm_password` file that is located in the / etc directory for UNIX platforms and the C:\Windows directory for Microsoft OS platforms.

Defining the Compuware License Service

Before interaction between a client (applet) and a Compuware License Service can occur, you must identify the Compuware License Service to the CGI. To define the License Service:

1 From the Main Menu of cpwrCGIAdmin, type H and press **Enter** to access the **Host Database Menu** screen (see Figure 7-4).

Figure 7-4. cpwrCGIAdmin Host Database Menu Screen
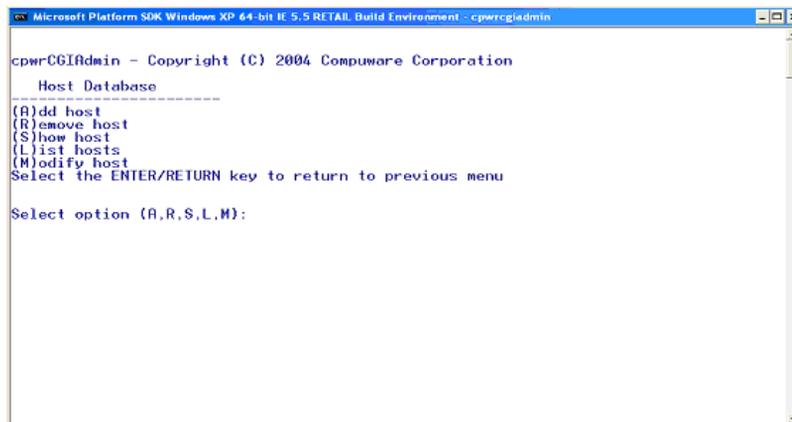
2 Type A and press **Enter** to add a host name or TCP/IP address.

3 Type the host name or TCP/IP address of the Compuware License Service to be added and press **Enter**.

Note: The TCP/IP address can be either the hostname-alias or the actual IP address of a system that is running the License Service.

4 Type an alias name for the host and press **Enter**.

◇ If an alias is specified, the alias is displayed on the client instead of the TCP/IP identifier of the License Service. References to the License Service can use either the alias or the host name.

◇ If an alias is not specified, only the host name or TCP/IP address, whichever is supplied during the creation of the host entry, can be used to identify the License Service.

5　Type the port number where the License Service is listening and press **Enter**. The port number is specified within the server configuration file. A message appears on the screen to confirm that the alias and host was added to the Host Database.

6　Press **Enter** to add another host, and repeat steps 3 through 5.

7　Press **Enter** three times to return to the Main Menu.

8　Type U and press **Enter** to access the User Database Menu.

9　Type A and press **Enter** to add a host to a user's account.

10　Type the name of the user from the list displayed and press **Enter**.

11　Type the host name, or TCP/IP address, or alias of the Compuware License Service where the user needs access and press **Enter**. A message appears on the screen to confirm that the reference to the host name was added for the user.

12　Press **Enter** to add another host reference to a user's account, and repeat steps 10 and 11.

13　Press **Enter** three times to return to the Main Menu.

14　Type E and press **Enter** to exit.

Configuring the RLAU

After you have configured your user accounts (see **"Creating User Accounts"**) and the individual License Services (see **"Defining the Compuware License Service"**), copy the cpwrcgi.exe file to the cgi-bin location on the web server.

Note:　The cpwrcgi.exe file is located in the \exec folder, which was installed during the RLAU installation.

The CGI only allows one client at a time to communicate with an individual License Service.

After the CGI has been configured, perform the steps below to set up the RLAU:

1　Go to the location where the InstallShield Wizard placed the RLAU.

2　Create a link from your intranet site to the RLAU.

　　`Example: http://sitename/dlmweb/rlau4.html`

3　Open the `rlau4.html` file.

4　Modify the `rlau4.html` source file in the following areas:

a The `<param name=cgidir>` must be changed to point to the location of `cpwrcgi.exe`.

b The `<param name=timeout>` value must reflect how long you want to wait before time-out occurs for the user.

Starting the RLAU

After you configure the RLAU, users can access it in a browser window. To start the RLAU:

1 Open a browser window, such as Internet Explorer or Netscape Navigator.

2 Type the intranet site address in the **Address** field of the browser window.

3 Press **Enter**.

Required: In order to run the RLAU, you must have the Java Runtime Environment (JRE) version 1.4.2 or later. If you do not have this JRE, you are prompted by a series of dialog boxes to install the correct version of the JRE.

Where to Go Next

For instructions on how to log in to the RLAU, access the online help by clicking the **Global Help** button on the **Login** screen of the RLAU.

Appendix A
Host Name and Host ID
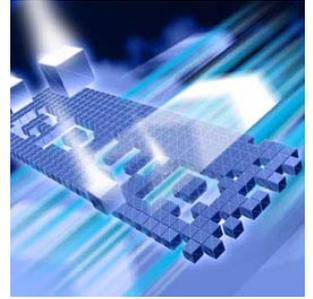
Overview

The **Host Name** is the unique name that identifies a computer on a network. A computer may have several of these (aliases). The **Host ID** is the machine identification number of a Host. For Windows PCs, this is the Ethernet Card ID.

To obtain a license for your Compuware product, you must provide the host information of the machine on which the license will reside. If a License Server is required, this is the server machine. You need to supply Compuware with the Host ID of the server on which the License Server will run, not the Host IDs of all of your clients. If no License Server is required, this is the same machine on which the product is installed.

Determine Host Information of a Computer

To determine the Host information needed in order to request a permanent license from Compuware, follow the steps below according to the platform you are using:

Table A-1 Determining Host Information of Computer

Platform	Step	Action
Windows	1	Start the LAU.
	2	Click the **System Information** tab to view the host information.
	To save the host information:	
	1	Click **Save As** to open the **Save As** dialog box.
	2	In the **Save in** drop down list, select a directory and type the name of the text file (usually hostinfo.txt) in the **File name** field.
	3	Click **Save.**
	4	Send the file via e-mail to Compuware's Worldwide License Management department at <u>license_mgt@compuware.com</u>.
UNIX	1	Navigate to the directory in which the License Server is located (for example, /opt/compuware/cpwr_4.0).
	2	Type **cpwrinfo.sh** A message like the following is displayed: *Byte format : Little-endian* *Current user: fhcwlm* *Hostname : stizus* *Ip Address : 172.16.18.66* *Host id : 18f6ce29*
	3	Provide the Host Name and Host ID information to Compuware's Worldwide License Management department at <u>license_mgt@compuware.com</u>.

Appendix B
License Files
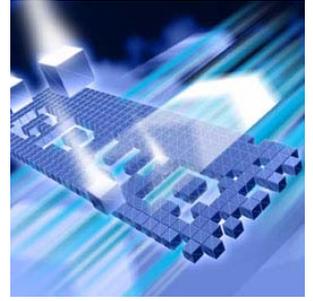
Overview

All license files contain a single license object. Each license object contains one or more sub-objects called license keys. Each licensed product and/or product option has a corresponding license key. A license key identifies, through sub-object definitions, the usage extent of a purchased product. The usage extent defined by the license key, is based on the contractual agreement that was established, with Compuware, when the product was purchased. The modification of license keys within a licensed object by an end-user invalidates the purchase agreement preventing the associated application or application option from functioning.

End-users are free to cut and paste license keys from one license object to another provided that the key shares the same customer id as the target license object. Hence, license keys from different companies cannot be interchanged or merged. The customer id is a sub-object of the license object and is contained within the customer_id tag.

A license key begins with the tag "<key protected='security key' >" and ends with the tag "</key>." The sub-objects of a key are protected by the key tag, "<key protected='security key'>". These sub-objects include App, Vers, Start, End, Count, hostid, Hostid, Fcfs, etc. Each sub-object/parameter within the key defines a particular usage limitation or behavior limitation for the product authorized by the key. A license key can consist of thirteen or more possible parameters/sub-objects.

```
License key format

<license>
<key protected='security key'>
<Description>product description</Description>
<App>application name or undefined</App>
<Vers>application version or undefined</Vers>
<Start>start date or undefined</Start>
<End> end date or undefined</End>
<Count>the number of concurrent users, or the keyword unlimited, undefined,
or infinite</Count>
<hostid>
  <Eth>Ethernet address of licensed system</Eth>
  <Softkey_id>the softkey id of the licensed system</Softkey_id>
  <Serial>the disk serial number of the licensed system</Serial>
  <Ip>the ip address of the licensed system</Ip>
</hostid>
<Hostid>undefined</Hostid>
<Fcfs/>
<Borrowing/>
<Umanage/>
<Dup_usr/>
<Grace>the length of grace in hours</Grace>
<Usr_session_limit>max sessions </Usr_session_limit>
<Parameters>application specific parameters</Parameters>
</key>

</license>
```

The parameters shown in the figure above are defined below.

Parameters

The following parameters can be used to define a license key:

App

The **App** parameter can contain one of three possible value-types:

◆ the name/abbreviation of the application authorized by the key

◆ an alias-list

◆ the keyword **undefined**.

Undefined: A key that has the App parameter defined as **undefined**
authorizes the usage of any Compuware product. The Vers parameter
of keys that have the App field set to **undefined** are ignored. An
undefined key can be multi-user or single-user. The license administra-

tor or end-user determines the usage of the key through its configuration into the license environment. A key contained within a license-object, configured as a served license, is treated as a multi-user counted/concurrent key. A key that is not configured as a served license is treated as a single-user uncounted license.

Alias-lists: An alias-list is a list of application names defined under a single key. Each name in an alias-list is separated by a '|'.

Vers

The **Vers** parameter of a key contains the version of the application authorized by the key. If the version parameter is defined as undefined the key supports all versions of the product or product option identified by the key. In cases were the version number applies, the license key version must be greater than or equal to the version of the product licensed by the key.

Start

The **Start** parameter contains the effective start date of the license agreement. Both the Start and the End fields are formatted DD.MMM.YY. A Start parameter that contains the value undefined does not have an effective start date.

End

The End member contains the effective ending date of the key – the key's end-of-life date. As with the Start parameter, the End parameter is formatted DD.MMM.YY. The End parameter can also be set to undefined. License keys with the End parameter set to undefined do not expire.

Count

The Count parameter defines the maximum number of concurrent instances of a product, end-users using a product, or individuals that can use a product. A License Service is required to support keys that contain a Count parameter. Uncounted single-user licenses do not contain a Count parameter.

A license that has a count of unlimited, undefined, or infinite can be either concurrent-counted or single-user uncounted. All three keywords have the same meaning; either result in a license key that has no limitations on the number of users that can access it. If the unlimited keyword is present and the key is served, count limits are not enforced; however, if a session limit is imposed (See Usr_session_limit), users are limited to a defined number of sessions.

Hostid and hostid

The Hostid and hostid parameters identify one or more systems which are authorized to serve or use a license key. A license key will contain either Hostid or hostid, not both. Each is interpreted differently. They differ by content and the character case of the first letter "H." License keys that have the parameter "<Hostid>undefined</Hostid> ", can run on any machine. If the parameter hostid exists, it will contain references to one or more of the following host id types:

Table 7-2.

Eth	A system's MAC address
Softkey_id	A system's softkey id (softkey is defined in DLM 4.0)
Serial_no	A system's disk serial number (Windows platforms only)
Ip	The ip-address of the system

Fcfs

The Fcfs (First Come First Serve) parameter is a flag that identifies a key that authorizes the first N unique users, where N is defined as Count. Once N-users have been registered with the License Service, other users are denied. The registration process of end-users is based on the First Come First Serve model. In other words, once Count-users have been registered with the License Service, the Count+1th user is denied. User registration is session independent; users remain registered until they are physically removed from the user-registration file. Fcfs is only supported with concurrent-counted licenses. Hence, it is an extension of the concurrent-counted license model.

Borrowing

The Borrowing parameter is a flag that identifies a borrow-enabled key. Borrow-enabled keys must have a Count field defined within the key. Keys that contain the Borrowing flag allow end-users to borrow licenses from a License Service for user defined periods of time, where the smallest interval is one hour and the maximum interval is 365 days. The license administrator can place additional restrictions on the length of time a key-token can be borrowed (See "Server Configuration File" on page 68.).

Umanage

The Umanage parameter allows a license administrator to manage which end-users have access to a key. With User Management, the license administrator must set up a user_management object in the server's configuration file, defining which end-users have access to the licensed application. Users that do not have access to the key will be denied application startup for the application that corresponds to the key.

Dup_usr

If this parameter is present, the same user can start multiple instances of an application with only the first instance consuming a license-token.

Usr_session_limit

If this tag is present, each end-user is limited to running max session instances of a product at a time. Max sessions do not refer to the number of licenses consumed by a product but the number of times a product session is established. Hence, a license key that authorizes user duplication and user session limits only consumes one token per user but limits the user to max session instances of the application.
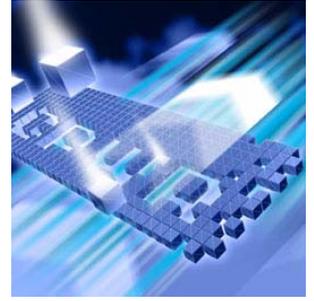
Parameters

The Parameters member contains additional parameters that are defined by the application that sponsors the key.

Appendix C

Client-Server Configuration Files

Overview

CPWR is the standard network based licensing solution used by all Compuware products. The format of data transmissions between CPWR clients and license managers is platform independent, providing support for heterogeneous networks. This means that a License Service running on one platform type, i.e. UNIX, Windows, can communicate with a client running on a different platform type. Conversely, configuration files (files used to configure the license environment on either a client or server) are XML based which provides a similar heterogeneous methodology for component configuration. The placement of these files on CPWR clients and servers is similar for all supported platforms. Hence, administering licensing on one platform is similar and requires the same amount of effort as administering licensing on a different platform. It is not necessary to perform these tasks by hand since the LAU (Windows only) and/or the LAUCV automate these processes. This topic, along with the Client Configuration and Server Configuration topics, provides an overview of the content of the documents produced and used by licensing.

Client Configuration File

.compuware Directory

Each user must have a .compuware directory. The .compuware directory should be created in each user's login directory. If a user's .compuware directory cannot be found, the CPWR client will try to use the .compuware directory that resides in the system's root directory. For Windows, it is the "windows_root_drive:\documents and settings\All Users" direc-

tory and for UNIX it is the "/" directory. The location of the .compuware directory allows an administrator to define a client system's configuration per user or globally for all users. The .compuware directory contains a configuration file config.xml, which identifies license sources that are to be used by the licensed client during key resolution. It also contains other specific client attributes that define the licensed client's environment. On a client system, a licensed source can be a fully qualified path to a license file or a port@host definition of a server.

Configuration File Format

```
<config>
    <connection_timeout>connection timeout in seconds</connection_timeout>
    <nagle_algorithm/>
    <server_loading/>
    <port>
        <start> starting port number</start >
        <range> range based on starting port number </range>
        <linger> length in seconds </linger>
    </port>
    <license>the path to a license file</license>
    <broadcast_attrib>
        <user_case>UPPER or LOWER</user_case>
        <host_case>UPPER or LOWER</host_case>
    </broadcast_attrib>
    <pool>pool id</pool>
</config>
```

File Keys

A client configuration file consists of the following parameters:

license

The license attribute is used to define license sources. A license source can be a port@host definition or a fully qualified path to a license file. Client configurations must have at least one license entry.

connection_timeout

The connection_timeout parameter identifies the maximum amount of time that a client can wait for a reply from an identified License Service before giving up. If connections between a particular client and server result in frequent timeouts, the end-user should increase this value.

nagle_algorithm

The nagle_algorithm switch instructs the license client to use the Nagle Algorithm when transmitting data via TCP/IP to License Service. By default, this action is disabled. You should contact Compuware support before enabling this behavior.

server_loading

Given multiple license sources (i.e. port@hosts delimited by the tag license), the presence of the server loading flag instructs the client to split bulk license requests, requests of one or more license tokens, across multiple license sources.

port

When a CPWR licensed client connects with a License Service to make a license request, it uses the port number of the License Service's source definition, port@host, to define the outgoing stream for data sent to the License Service. The OS on the client chooses a return port to provide to the License Service with its outgoing data stream. By default, clients of client server applications use the first available port. Because port number selection by the OS can seem somewhat random in nature, there can be complications for end-users that are trying to configure openings in their firewall to support licensing. To simplify this process CPWR clients allow end-users to specify a range of ports that can be used by the client for the License Service's outgoing data stream – the client's incoming data stream. This allows firewall administrators to limit the number of return port openings in their firewall.

The **start** member of the port attribute identifies the first port that is to be tried by the client for the License Service's output stream. This port number can be the same or different from the port number specified on the system where the License Service resides; however, if the client and the License Service reside on the same system, the starting port number should be different.

The **range** member of the port attribute specifies the range of ports that will be tried by the client when it attempts to establish an output stream for the License Service. Hence, a client will try port numbers that range from start to start+range where start+range should be less than 65535. As with start, the range of port numbers attempted by the client can not include the port number used by the License Service in the case were the client resides on the same system as the License Service. If a range is not provided, the client will attempt to use the port number that is

defined by the start parameter only. If the range is provided, it must be a value that is greater than or equal to zero.

The **linger** member should only be used with the assistance of Compuware Engineers or TSRs. In most cases, this value should not be set. The linger member is an integer value from -1 to N that controls the length of time that the operating system maintains a TIME_WAIT status on a previously closed socket. Sockets are used by the TCP/IP layer as streams of communications between CPWR clients and servers.

user_case, host_case

This attribute instructs the client on how its information is to be broadcast to the License Service. If the value is UPPER, the client broadcasts user information in upper case, regardless of the character case returned by the system. These attributes are useful when dealing with User Managed licenses.

pool

The pool field identifies the pool/family of users that a client belongs to. This should only be used if virtual license pools have been created by the license administrator in the License Service's configuration file (See **Pools.**).

Server Configuration File

License keys that contain the Count parameter can only be accessed through a License Service. A served key that contains a Count parameter is defined as a concurrent-counted key. As with license files, the License Service uses an XML-formatted file, the configurations file (config.xml), to identify user modifiable attributes. All object names, string tags, are enclosed in "<>" and are case sensitive. They must be entered in exactly as shown. The configuration file (config.xml) is located in the config directory of the License Service's installation directory. The server section of the configuration file contains parameters that define: the server's timeout, license files, and port number. Other parameters/objects within the server section are optional.

A running License Service will automatically re-load the configuration file if changes are detected. Hence, the modification of the configuration file does not require the License Service to be restarted.

```
The Server Section

    <server>
      <port>port number</port>
      <max_threads>port number</max_threads>
      <connection_timeout>timeout in seconds</connection_timeout>
      <audit/>
      <license>the path to a license file</license>
      <net_security>the number of failed transmissions allowed</net_security>

                              -or-

      <net_security/>
      <new_log_on_start/>
    </server>
```

Parameters

The server section of the configuration file is a required section in the License Service's configuration. In the server section, the following parameters are defined:

port

The port number identifies the port number that the License Service is to use; it is a numeric value, for example: 7166. Clients that request application startup from the server, must include the port number in their config definitions (i.e. port@host).

max_threads

On Windows only, handler threads are spawned to handle each license request. The number and frequency at which threads are launched to handle client requests is dependent on the License Service's work load. Under certain conditions, namely network security, license administrators may choose to limit the number of threads that can be launched by the License Service at any given time.

connection_timeout

The connection_timeout parameter specifies, to the License Service, how long it is to keep a non-responding connection open. The timeout value is defined in seconds. Changing the default, 10, to a lower value may cause connection problems for CPWR clients. Changing the default, 10, to a higher value may affect the overall performance of the License Service. If this variable does not exist, 10 seconds is assumed. To determine the optimal performance for your particular configuration, you may need to play around with the value.

audit

The audit parameter enables field delimited auditing. The audit tag instructs the License Service to produce additional output, which is directed to the audit.txt file located in the logging directory of the License Service install. The audit.txt file is formatted to allow its viewing by spreadsheet programs such as Excel.

new_log_on_start

If this option is present, the server will create a new log file when it is started, destroying the previous log.

max_log_size

This parameter, if specified, places a limit on the size of the log file in bytes. If not provided, the log file has no size limitation.

license

The license parameter identifies a single license source. A license source is the fully qualified path to a single license file that contains on or more license keys. A configuration file can contain a single license parameter or multiple license parameters.

If no licenses are defined in the License Service's configuration file, the License Service uses the license repository. Licenses loaded from the repository are loaded in a sequence based on the last access dates of the files. This form of license configuration is known as User Independent License Deployment, whereas User Dependent License Deploy-

ment requires the user to identify the location of each license source to the License Service via the configuration file. If changes are detected in the license files defined in the configuration file or the license repository, the License Service will automatically reload them prior to the next license request. Changes can include the addition of new license files, the removal of existing license files, or the modification of existing license files. The license repository allows users to drag and drop new licenses into a single location for the License Service to pick up, simplifying the administration of new license files.

net_security

The License Service's memory usage is dependent on the number of valid requests that it receives from its clients. To prevent web attacks, that is, the transmission of malicious data designed to overwhelm a CPWR License Service; three levels of security are provided. The first two levels are enforced and maintained by default. The third security layer is controlled by the end-user. The tag net_security instructs the License Service to prevent/ignore frequent unidentifiable transmissions from previously identified sources. Hence, if a transmission source is identified in a connection as having malicious intent the License Service will close the connection immediately with out committing additional resources to process the message. There are three possible configurations for the net_security option.

Configuration 1: Under configuration one, the License Service keeps track of systems that have sent erroneous transmissions. By default, only three failed transmissions are allowed per source before the license manager begins blocking on the source; that is, preventing connections with the source. To enable this behavior, add the tag <net_security/> to the License Service's configuration file, config.xml.

Configuration 2: If the number of denials before blocking is too large or too small, the end-user can specify the number of denials before blocking using the same tag, net_security.

<net_security>nn</net_security>

If the net_security tag is defined in this manner, nn identifies the number of failed transmissions that can occur from a previously identified system before it is blocked.

In both Configurations 1 and 2, the Compuware License Service keeps track of systems that have sent erroneous transmissions in a file called elk_security.txt, located in the License Service's config directory.

Configuration 3: In many cases, the identity of the client machines that will be communicating with the License Service are already known. Users can identify systems to the License Service as 'friendly'. Other systems that are not identified as friendly will be blocked. As with Configuration 1, this configuration is activated by the presence of the key entry <net_security/> in the service configuration file. In addition, the end-user must create the file elk_security.txt in the config directory of the License Service installation tree. Each record in the file should contain one ip-address entry identifying the machine that is authorized to talk with the License Service.

```
10.01.01.02
10.01.02.02
```

The elk_security.txt file: Depending on the configuration chosen for security, the elk_security file will be formatted as above, or each record will be formatted as follows:

Ip-address fault_count

The first field of the record shown above is the IP address of the system that delivered the unidentifiable message and the second field is the number of times that faulty messages were sent from the identified source. This format only applies to Configurations 1 and 2, where the License Service keeps track of bad connections.

Entries within the file can be added and removed using a text editor.

Changes to the elk_security.txt file require a License Service restart before the changes take effect.

user_management

```
<user_management>
    <application>
        <user/>
        <everyone/>
    </application>
</user_management>
```

The systems administrator using the configuration parameter user_management can manage only licenses that contain keys that have the Umanage option (See Umanage.). User Managed enabled keys authorize an administrator to control which users have access to the key. A particular key being any key that has the keyword Umanage defined.

Before setting up a user_management section, the administrator must get the App name from the key or keys that support User Management. Using the App name as a parameter, the administrator then defines which users have access to the application identified by App. For example:

```
<fileAid>
    <everyone/>
    < pfhwec0/>
    < pfhddg0/>
</fileAid>
```

In the above example, the keyword everyone instructs the License Service that all users are authorized to access the key. When the everyone keyword is specified, individual users that are added to the definition are perceived by the License Service as excluded from the set of "everyone". Hence, the above example would read "allow everyone to use the key fileAid except pfhwec0 and pfhddg0." The absence of the everyone keyword means that only identified users are to be granted access to the license key. Users that are not listed will be denied access. A separate entry must exist for each key that supports the Umanage option. Users can be defined by either their host id or LAN id (login id).

pools

```
<pools>
   <application>
      <pool_id0>max token count</pool_id0>
      <pool_id0>max token count</pool_id0>
      <pool_id0>max token count</pool_id0>
                     .
                     .
      <pool_idN>max token count</pool_idN>
   </application>
</pools>
```

A license pool is a pool of license tokens defined by a concurrent-counted license key. The number of license tokens available in a license pool is dependent on the number of tokens authorized by the corresponding key (See Count under the License File description.). By default, a license pool exists for each concurrent-counted license key. The pools entry allows a license administrator to manage the distribution of license tokens by using virtual pools that set limits on token dispersal. Pools are not a feature of the license key; therefore, any concurrent-counted key can support pools. Once a pool is defined for a particular key/application, all clients that use that key or application must be provided with a pool id. Clients that are not assigned pool ids are denied access to the key/application. Each application pool identifier is assigned a count limit "max token count" by the license administrator. The total of all imposed limits can exceed the Count limit set by the license key since denial will always occur when Count+1 tokens are in use. Multiple users can share the same pool id. Users that share defined pool ids are collectively limited by both the pool limit and the key-count. Example:

```
<pools>
   <fileAid>
      <UofD>100</ UofD >
      <OldKent >50</ OldKent >
      <NBD>500</ NBD >
   </fileAid>
</pools>
```

In the above example, there are three virtual pools defined for FileAID. Clients/users that have a pool id of UofD are limited to the usage of 100 copies of FileAID. Therefore, all users that identify themselves as belonging to UofD are restricted to 100 tokens as a group.

Borrow/Concurrent

```
<borrow>
  <application0>
     <count>max token count</count>
     <max_days>maximum number of days can borrow</max_days>
  </application0>
  <application1>
     <count>max token count</count>
     <max_days>maximum number of days can borrow</max_days>
  </application1>
  <application2>
     <count>max token count</count>
     <max_days>maximum number of days can borrow</max_days>
  </application2>
</borrow>

<concurrent>
  <application0>
     <count>max token count</count>
  </application0>
  <application1>
     <count>max token count</count>
  </application1>
  <application2>
     <count>max token count</count>
  </application2>
</concurrent>
```

Borrow

The **borrow** keyword can be used to restrict the maximum number of license tokens and the maximum number of days that a particular key/application can be borrowed. Since borrowing is an extension of concurrency, only current keys can be borrowed.

Concurrent

The **concurrent** keyword allows an administrator to limit the use of concurrent licenses.

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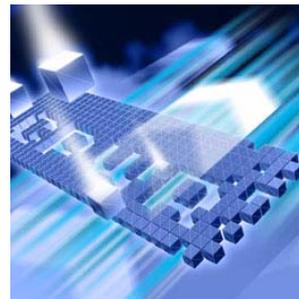
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