



# ***Distributed License Management***

## **Installation Guide**

Release 4.4

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<http://frontline.compuware.com/nswsections/contact/15335.aspx>

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Doc. CWDLIX4E  
December 15, 2009

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# Preface

## Summary of Changes

This section summarizes the enhancements in Distributed License Management (DLM) Release 4.4.

### *Release 4.4 Changes*

This release offers the following enhancements:

- ◆ Ability to receive permanent licenses from Compuware when licensing within a virtual environment.



# Chapter 1

## Introduction

### About This Guide

The *Distributed License Management Licensing 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 Licensing 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 17 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:\*, *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.

<b>Key</b>	See license key.
<b>License object</b>	A license object contains one or more license keys.
<b>License file</b>	A license file is an XML based file that contains a single license object.
<b>License</b>	See license key.
<b>License service</b>	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.
<b>Node</b>	A node is a single workstation. Networks consist of one or more nodes.
<b>License server</b>	A license server is a single networked node that hosts the Compuware License Service.
<b>Served key</b>	A served key is any licensed key that is loaded into the Compuware License Service database for networked licensing.
<b>Concurrent key</b>	See Counted key.
<b>Counted key</b>	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 Compuware License Service and its clients.
<b>Uncounted key</b>	An uncounted key is any key associated with a product whereby usage of the product is not dependent on a predetermined limit.
<b>Node-locked</b>	See uncounted key.
<b>License token</b>	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 Compuware License Service when the licensed product no longer needs it.
<b>Floating key</b>	See Counted key.

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

## Documentation

Distributed License Management comes with both an installation guide and online help.

The installation guide is in PDF format and is available from the product CD and from C:\Program Files\Common Files\Compuware.

The online help covers how to use the following DLM licensing components:

- ◆ Distributed License Management application
- ◆ Distributed License Management Web Interface

There are several 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.
- ◆ From C:\Program Files\Common Files\Compuware

## 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**

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One Campus Martius  
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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 Distributed License Management (DLM) application on each target machine. On UNIX, use the Distributed License Management - Command Line Version (DLMCV) 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 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:

- ◆ **Distributed License Management (DLM) Application**– A Windows-based administration tool that can display all Compuware product license information available on both the client and server environments. The DLM application is also used for license configuration. On systems where the Compuware License Service is installed, the user-definable attributes of a license server can be changed.
- ◆ **Compuware License Service (cpwr.exe)** – An application (invoked by the DLM application or executed from the command line) that manages and services requests for the license(s) of your Compuware product(s). The Compuware License Service can be installed on Windows and UNIX platforms. In many cases, it is recommended that you co-locate the Compuware 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.
- ◆ **Distributed License Management (DLM) Web Interface** – 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 24.

### **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 23.

## 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 75.). 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 71.). 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/>  
< abcwec0/>  
< abcddg0/>  
</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 abcwec0 and abcddg0." 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 number of servers. To read more about how redundant servers work, see [“Redundant License Servers”](#) on page 24.

## 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 login ID and is allowed to run on one machine per network. The set of defined users is based on a registration process whereby the Compuware

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, [“Configuring the License”](#) on page 34.
- ◆ For UNIX, [“Installation for UNIX Clients”](#) on page 50.

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 unless you are running redundant servers (see [“Redundant License Servers”](#) on page 24).

The Distributed License Management (DLM) application, for Windows only, provides an interface to configure the Compuware License Service. The DLM application 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, DLM will automatically install, start, and configure the Compuware License Service with the default settings.

On non-Windows platforms, the administrator must view the license to determine if the Compuware License Service is necessary. In general, the Compuware License Service should be started for all counted licenses. As

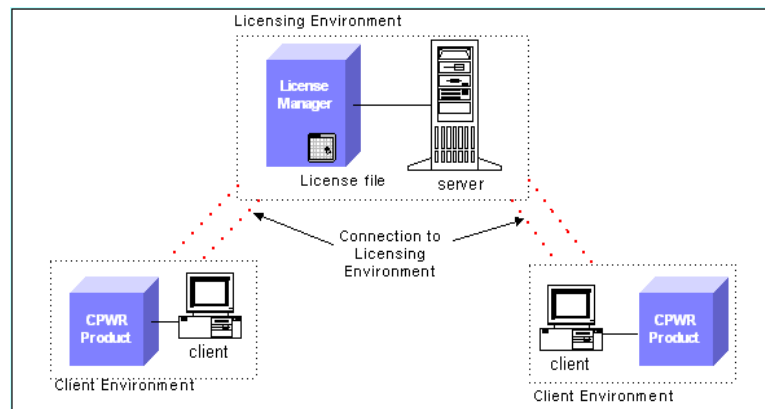
mentioned earlier, any license containing a “<count>” tag is a counted-concurrent license. On non-Windows platforms, the Compuware License Service can be administered using the Distributed License Management - Command Line Version (DLMCV).

## 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



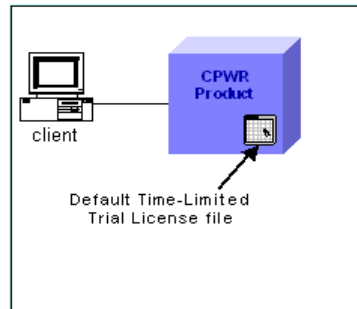
The Compuware License Service must be running on a computer or server that is always available to all clients needing access to the product.

- ◆ For Windows, see [Chapter 3, “License Installation and Configuration for Windows”](#).
- ◆ For UNIX, see [Chapter 5, “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 straightforward using one of the following options:

- ◆ You can install the license directly on the end-user desktop, in which case you do not need the Compuware License Service.
- ◆ You can install the Compuware 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 Compuware 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 a subset of the license servers), the subset of remaining servers is able to maintain a temporary state of license support for a predetermined amount of time while the initial state is restored. Refer to the online help for more information on redundant servers.

## Request a License from Compuware

*Tip: You can also contact your Compuware sales representative.*

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](mailto:license_mgt@compuware.com) or determine the host informa-



tion using the Distributed License Management application 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 B](#), “[License Files](#)” 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
Windows: <ul style="list-style-type: none"><li>• NT 4.0</li><li>• 2000</li><li>• Server 2000</li><li>• Server 2003 Standard/Enterprise/Web Editions (32-bit/x64)</li><li>• Server 2003 R2 Standard/Enterprise/Web Editions (32-bit/x64)</li><li>• Server 2008 Standard/Enterprise/Web Editions (32-bit/x64)</li><li>• XP, up to and including SP3 (32-bit/x64)</li><li>• Vista, up to and including SP1 (32-bit/x64)</li><li>• Windows CE 4.2 and 5.0</li></ul>
AIX (32-/64-bit): <ul style="list-style-type: none"><li>• 5L 5.2 and 5.3</li><li>• 6L 6.1</li></ul>
AS/400: <ul style="list-style-type: none"><li>• V5R3</li><li>• V5R4</li><li>• IBMi V6R1</li></ul>
Open VMS Alpha: <ul style="list-style-type: none"><li>• V7.2</li><li>• V7.3</li><li>• V7.3-2</li><li>• V8.2</li><li>• V8.3</li></ul>
Open VMS Itanium: <ul style="list-style-type: none"><li>• V8.2</li><li>• V8.3</li></ul>
HP-UX PA-RISC 11i 1.0 (32-/64-bit)
HP-UX Itanium 11i (32-/64-bit): <ul style="list-style-type: none"><li>• 2.0</li><li>• 3.0</li></ul>
Tru64 UNIX V5.1b

Table 2-1. Supported Platforms

Platforms
Solaris (32-/64-bit): <ul style="list-style-type: none"><li>• 8</li><li>• 9</li><li>• 10</li></ul>
Red Hat Enterprise Linux ES (32-/64-bit): <ul style="list-style-type: none"><li>• 2.1</li><li>• 3.0</li><li>• 4.0</li><li>• 5.0</li></ul>
Red Hat Enterprise Linux ES zSeries (31-/64-bit) <ul style="list-style-type: none"><li>• 4.4</li><li>• 5.0</li></ul>
Asian UX 32-bit (Redflag 4.1)
SuSE Linux ES (32-/64-bit) <ul style="list-style-type: none"><li>• 8</li><li>• 9</li><li>• 10</li></ul>
SuSE Linux ES zSeries (31-/64-bit) <ul style="list-style-type: none"><li>• 9</li><li>• 10</li></ul>

## Impact to System Performance

The following table identifies the impact on a system due to the Compu-ware License Service running on a machine.

Table 2-2. Impact to System Performance

Service	File Name	Memory	Space
License Server	cpwr.exe	4.3 MB	1 MB

## Getting Started

The remaining chapters in this manual discuss installing and configuring the Distributed License Management (DLM) application, Compuware License Service, and Distributed License Management Web Interface.

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:

- Determine the type of license model you have (node-locked or concurrent). See [“License Models”](#) on page 19.
- See [“Determine if You Need the Compuware License Service”](#) on page 22.
- If you are required to install the Compuware License Service, see the [“Installing the Compuware License Service”](#) checklist below.
- If you have a node-locked license and do not require DLM, install the Compuware product.

### Installing the Compuware License Service

- Select the platform (Windows or UNIX) on which the Compuware License Service may run.
  - For Windows, see [“License Installation and Configuration for Windows”](#) on page 31.
  - For UNIX, see [“License Installation and Configuration for UNIX”](#) on page 47.
- Use the Distributed License Management application to perform one of the following:
  - Configure the license.
  - Assign the license file to the Compuware License Service.

- Have end-users add the license service source to their license environment using either the Distributed License Management application (Windows only) or the Distributed License Management - Command Line Version. See [“Installing on Windows Clients”](#) on page 35.
- If license borrowing is enabled (for concurrent licenses only):
  - For administrators, see the [“License Borrowing for Administrators”](#) checklist.
  - For clients, see the [“Using the Distributed License Management Web Interface”](#) checklist.
- If you are using the Distributed License Management Web Interface, see the [“Using the Distributed License Management Web Interface”](#) checklist.
- If the tag <Umanage> is in your license files, See [“Umanage”](#) on page 75.

## License Borrowing for Administrators

- Check that you have a concurrent license, which is required in order to use license borrowing.
- If your license file has the <borrow> tag, see [Chapter 7, “License Borrowing”](#).

## Using the Distributed License Management Web Interface

- See [“Overview of Distributed License Management Web Interface”](#) on page 61.



## 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.

### Installing the Compuware License Service

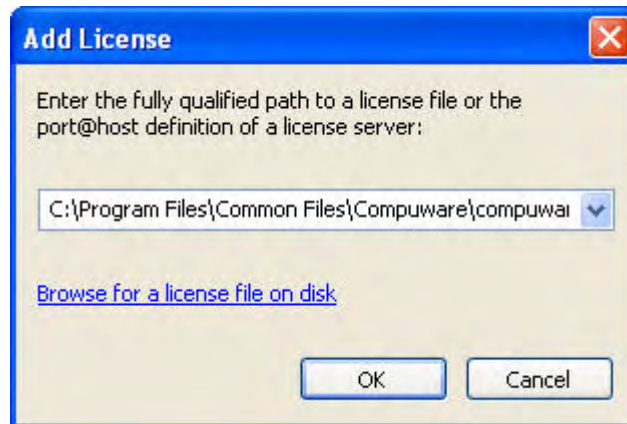
*Tip: If you are on a client that may be a server, see “Installing on Windows Clients” on page 35 to install the Compuware License Service and bypass the following steps.*

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

- 1 From your Compuware product installation media, select **Install (Compuware) License Service**. This starts the InstallShield Wizard for the Compuware 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 From the **Start** menu, choose **Programs>Compuware>Distributed License Management** to implement your Compuware license.

- 5 Click **Add** to specify the location of the served license and click **OK**. DLM will verify that the license is valid and install and start the Compuware License Service.

Figure 3-1. Add License Dialog Box



## Configuring the Compuware License Service

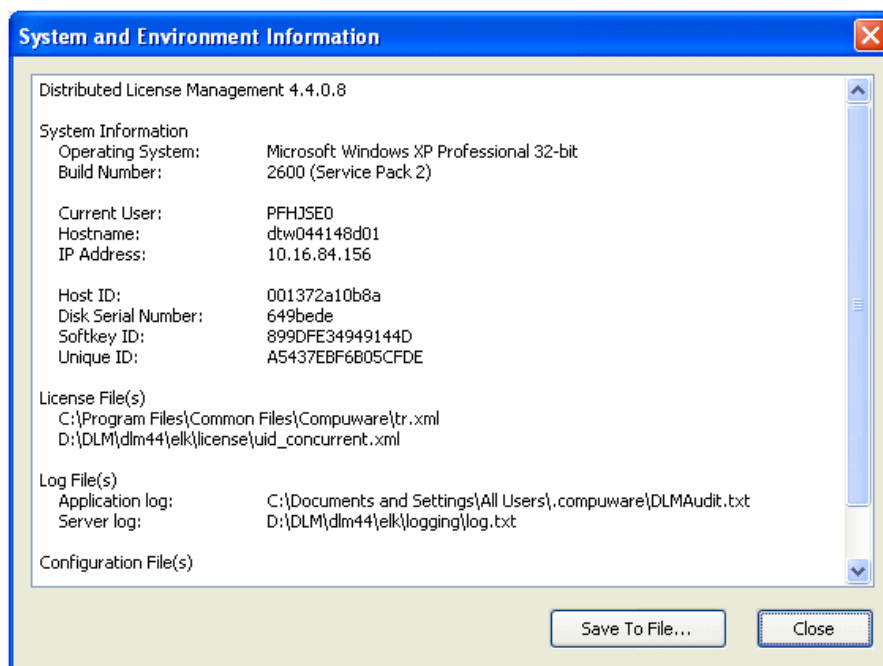
*Tip:* For further instructions when installing to a Windows virtual environment, see “Installing to a Windows Virtual Environment” on page 36

Before you can start the Compuware License Service, you must supply Compuware with the host ID of the node on which you plan to run the Compuware License Service. In return, Compuware will send you a license file. Complete the following steps to request a license file, install the license, start the license server, and launch DLM:



- 1 From the **Start** menu, select **(All) Programs>Compuware>Distributed License Management**.
- 2 Click **Show System Information**. The **System and Environment Information** dialog box appears.

Figure 3-1. System and Environment Information dialog box



- 3 Click **Save To File** and save the text file.
- 4 Email the text file to Compuware at [License\\_Mgt@Compuware.com](mailto:License_Mgt@Compuware.com). Compuware then sends back a license file.
- 5 Copy the license file you receive from Compuware to `C:\Program Files\Common Files\Compuware\License`.

---

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

---

---

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

---

- 6 Start the license server by double-clicking the `cpwr.exe` file in the installation directory (`C:\Program Files\Common Files\Compuware`).

- 7 To launch DLM, from the **Start** menu, select **Programs>Compuware>Distributed License Management**.

## Configuring the License

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 (for example, port@host). In either case, the license source must authorize the system and the Compuware products for which it is deployed.

The DLM application simplifies this process by providing an identical method for configuring both client and server systems. It 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 DLM when a valid server license is presented to DLM.

In addition to the registration, configuration, and activation of the Compuware License Service, DLM 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 DLM. For more information on license borrowing, see [Chapter 7, “License Borrowing”](#).

### Node-locked License

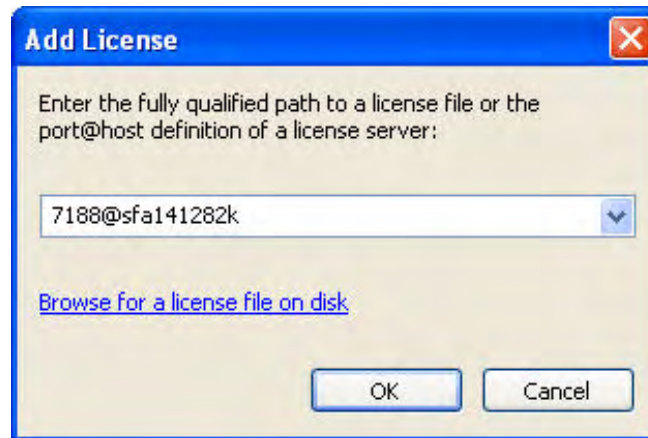
In the case of a node-locked license model, only the system designated in the license file is authorized to run the specified Compuware applications. DLM only accepts a node-locked license on the system that it authorizes.

## Installing on Windows Clients

Follow the steps below to define a local license environment by adding a license source.

- 1 Start DLM.
- 2 Click the **Local Environment** tab.
- 3 Click **Add** to open the **Add License** dialog box.

Figure 3-1. DLM: Add License Dialog Box



*Tip:* The port number is typically 7188.

- 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 DLM application. If this concurrent license is borrow-enabled, it will add the Borrow License Server tab to the DLM application, as well.

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

- 6 If using redundant servers, repeat step 4 and 5 on each client.
- 7 To initialize the redundancy policy, launch the product that uses DLM from one client.

## What To Do When a Server Fails

If redundant servers have been set up and a server(s) goes down, you can continue to operate Compuware products without interruption for the failsafe duration as long as you do not fall below the failsafe count. No action is necessary after bringing up the downed server(s).

## Installing to a Windows Virtual Environment

In order to obtain a license key to run in a virtual environment, a unique identifier must first be generated using the dlmInfo.exe application.

The dlmInfo.exe generates a unique identifier using the Ethernet address and the network name on which the virtual environment image resides.

If the Compuware product is already installed, the dlmInfo.exe application is located in the Windows Common Files directory (the default location is C:\Program Files\Common Files\Compuware\dlmInfo.exe). Otherwise, the dlmInfo.exe application can be obtained by downloading it from Frontline (<http://frontline.compuware.com>).

Once the results are obtained, they should be submitted to Compuware as specified in “[Configuring the Compuware License Service](#)” on page 32. An example output is shown in [Figure 3-2](#).

Figure 3-2. Example dlmInfo.exe output

```
dlmInfo - Copyright (C) 2009 Compuware Corporation
-----
System Information
Platform      : Microsoft Windows
Byte format   : Little-endian

Current User: PFHCFD0
Hostname     : dtw014848d01
IP Address   : 10.16.84.154

Host ID      : 001372a10b8a
Disk Serial  : 649bde
Softkey ID   : 899DPE34949144D
Unique ID    : A5437EBF6B05CFDE

License File(s)
C:\Program Files\Common Files\Compuware\tr.xml
D:\DLM\dlm44\license\uid_concurrent.xml

Log file(s)
Server log   : D:\DLM\dlm44\logging\log.txt

Configuration file(s)
Client      : C:\Documents and Settings\All Users\compuware\config.xml
Server     : D:\DLM\dlm44\config\config.xml

*****
* System Information has been written to this file:
*
* C:\Documents and Settings\All Users\compuware\system_info.txt
*
* Send the file to Compuware at license_support@compuware.com.
*****
```

## Supported Virtual Environments

- ◆ VMware
  - ◇ Workstation
  - ◇ ESX Server
  - ◇ Lab Manager
- ◆ Microsoft
  - ◇ Hyper-v
  - ◇ Virtual Server



## Chapter 4

# License Installation and Configuration for Windows CE Based Mobile Products

### Overview

DLM provides license support for Windows CE based mobile products. The mobile implementation supports both single-user and, to a limited extent, concurrent license models.

### Compuware LicenseSync - The Synchronization Tool

Compuware LicenseSync is a desktop synchronization tool that provides license support for mobile devices by facilitating the transfer (i.e., synchronization) of license keys through a dialog-based user interface. It supports the communication protocols currently supported by Microsoft ActiveSync.

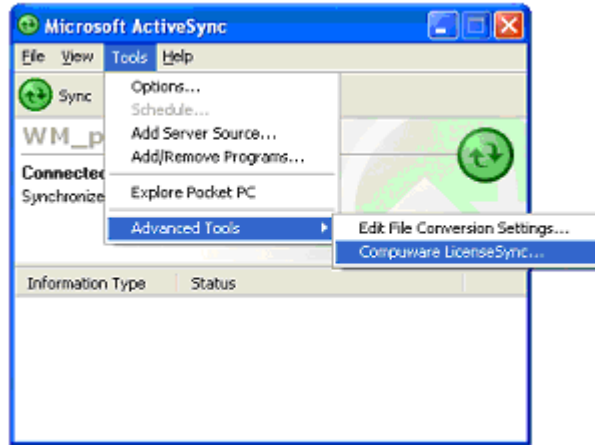
LicenseSync enables end users to transfer both concurrent (borrow-enabled) transactions and single-user license keys between a desktop computer and an attached mobile device. Both single-user license keys and borrow transactions are transferable (i.e., can be synchronized) between a mobile device and any desktop that supports the DLM runtime. For license borrowing, connectivity must exist between the License Server and the hosting desktop.

### *Access LicenseSync through Microsoft ActiveSync*

Compuware LicenseSync is accessible through Microsoft ActiveSync as a Tools menu item labeled “Compuware LicenseSync...” The following

graphic is for ActiveSync 3.8. The location of this shortcut varies in other versions of ActiveSync, but it is available.

Figure 4-1. Compuware LicenseSync is a Tools menu item in Microsoft ActiveSync



## ***The CE Client Runtime***

Due to the nature of mobile devices (the uncertainty of persistent network connectivity), concurrent licensing is limited to explicit borrowing. This requires that all concurrent keys designated for mobile device access be borrow-enabled.

## ***Installation***

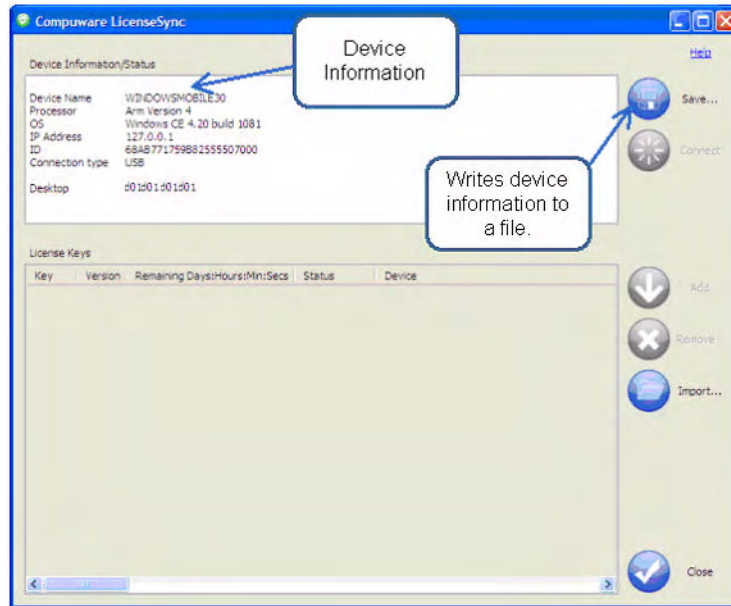
This installation occurs automatically during the product's mobile installation.



## Saving Device Information/Status

To save the device information/status, click **Save**. LicenseSync writes the device information to a file.

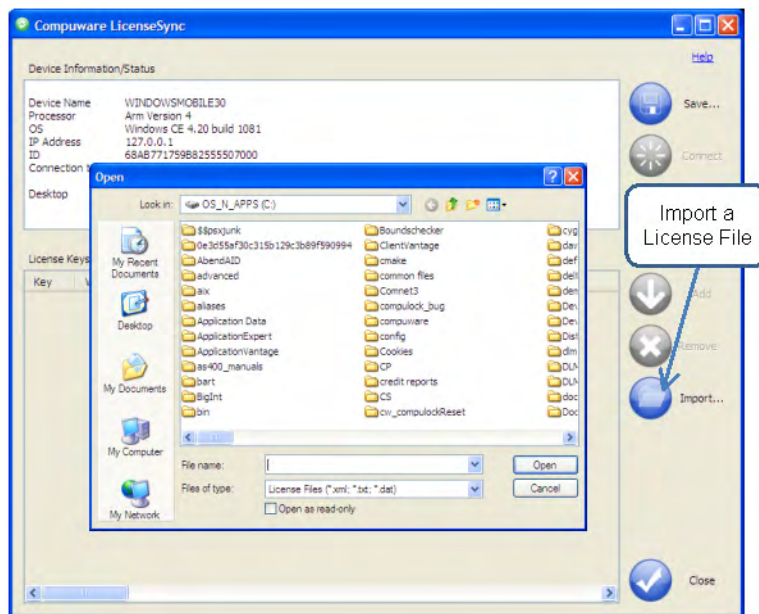
Figure 4-2. Device Information/Status



## Importing a License

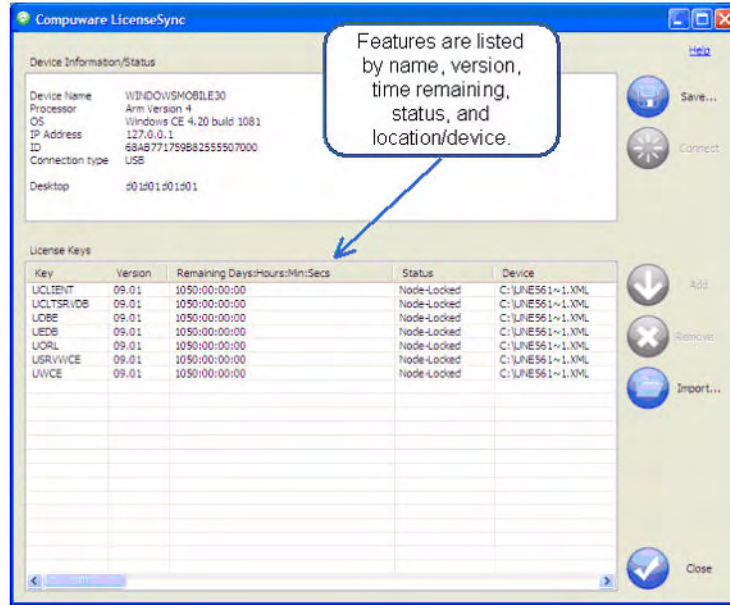
### 1 Click Import a License File.

Figure 4-3. Selecting a License to import



- 2 Select the desired file in the **Open** dialog box and click **Open**. The license keys contained in the license file will be displayed.

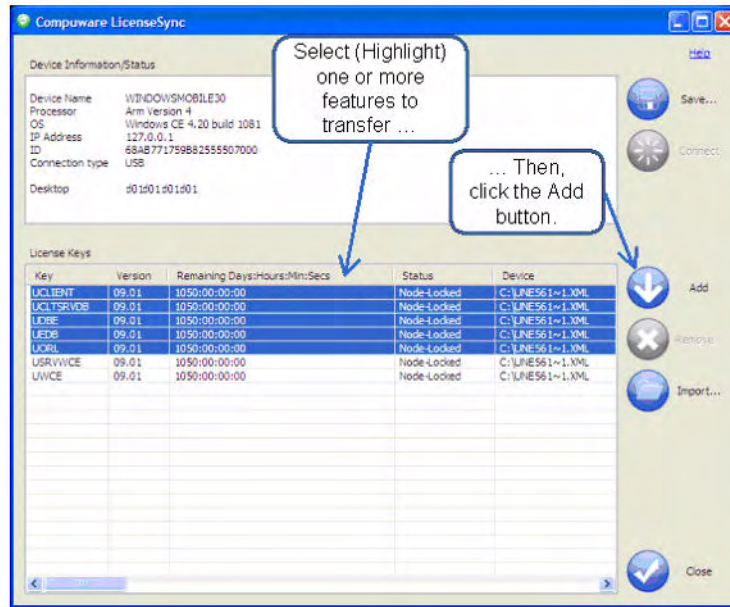
Figure 4-4. List of Imported Keys



## Transferring License Keys to a Device

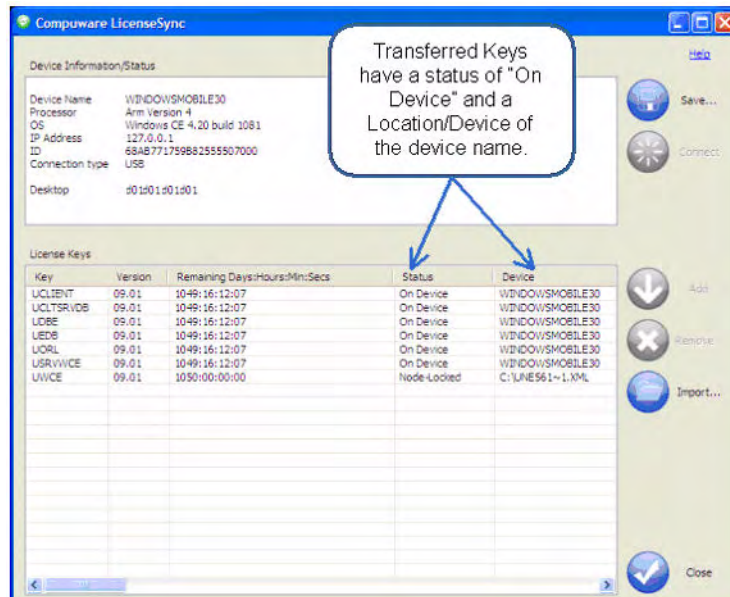
- 1 Select (highlight) the key(s) to be transferred.

Figure 4-5. Transferring License Keys to a Device



- 2 Click Add. The status of the transferred key(s) will change to "On Device" and the location/device will change to the device name.

Figure 4-6. License Keys Transferred to a Device



## Using Borrowed Keys

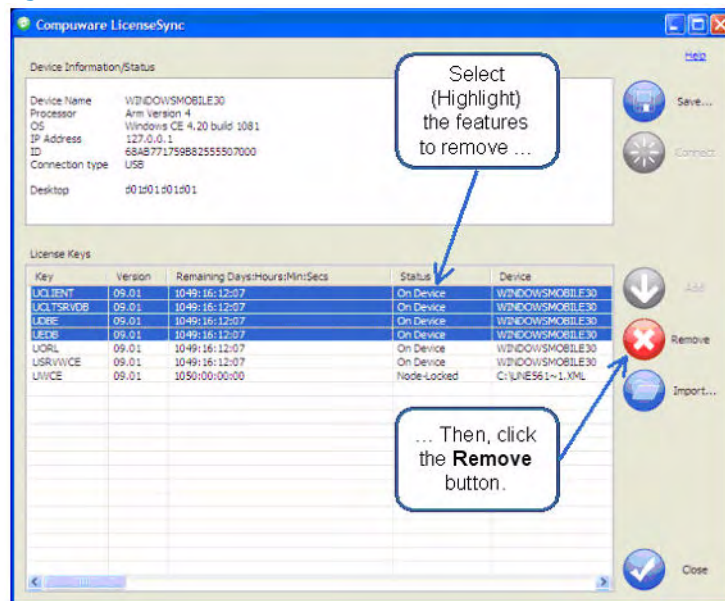
Before borrowed keys can be transferred to a device they must first be borrowed using the DLM properties dialog (See [Chapter 2, “Overview of Licensing”](#)). Compuware LicenseSync checks periodically for borrowed keys and automatically imports them for transfer. Once imported, borrowed keys are selected for synchronization just as normally imported keys are.

Borrowed keys that are transferred to a device cannot be returned to the hosting computer (i.e. the computer to which the mobile device is attached). Instead, borrowed transactions are returned directly to the server for which they were initially borrowed.

## Removing License Keys from a Device

- 1 Select (highlight) the features to be removed from among the keys with a status of “On Device.”
- 2 Click **Remove**.

Figure 4-7. Removing License Keys from a Device





## Chapter 5

# 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 the Compuware 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 47. 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 50.
- 2 Configure the Compuware License Service to start. See [“Configuring the Compuware License Service”](#) on page 48.
- 3 Configure each client to access the Compuware License Service. See [“Installation for UNIX Clients”](#) on page 50.

### Installing the Compuware License Service for UNIX

Follow the steps below to install the Compuware License Service.

- 1 Load the installation media 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 installation media that contains the Compuware License Service installation files. See the product documentation for the specific Compuware product for the location of the license installation component.
- 4 To install the Compuware 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/compuware/dlm (Root access may be required to create the directory.). If you do specify a target, the Compuware License Service files will be installed directly into the target directory.

Figure 5-1. Install the Compuware License Service

```
DLM Installer (install.sh) - Copyright (c) 2006, Compuware Corporation
All rights reserved

Installing build 04.01.05
sensing platform and OS version...
  using HP-UX B.11.00

extracting supporting binaries from dlm-2006-26-Jul.....
  extracting setup script
  extracting 32 bit support...
  extracting 64 bit support...

verifying installation.....
  OK

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

To complete the install you will need to append the following
environment variable(s):
SHLIB_PATH with /home/abcwec0/4001/distribution/dlm,HP-UX/HP-UX/32 for 32-bit applications
LD_LIBRARY_PATH with /home/abcwec0/4001/distribution/dlm,HP-UX/HP-UX/64 for 64-bit applications

done
<abcwec0@svbldhp1-HP-UX> ?
```

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

## Configuring the Compuware License Service

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





- 4 Do one of the following:
  - ◇ To start the Compuware License Service manually (required each time the server reboots), type:
 

```
cpwr.sh -start
```
  - ◇ To start the Compuware License Service automatically each time the server reboots, follow the suggested procedure below for the appropriate platform:

**Table 5-1.** Suggested Automatic Startup Per Platform (UNIX)

Platform	Action
AIX	In <code>etc/rc.local</code> , type the following command on one line: <code>/target/cpwr.sh -start</code>
HP-UX	In <code>/sbin/rc3.d</code> , create a file named <code>s95cw1m.server</code> and add the following command to the file: <code>/target/cpwr.sh -start</code>
Linux	In <code>/etc/rc.d/rc2.d</code> , create a file named <code>s95cw1m.server</code> and add the following command to the file: <code>/target/cpwr.sh -start</code>
Sun Solaris	In <code>/etc/rc2.d</code> , create a file named <code>s95cw1m.server</code> and add the following command to the file: <code>/target/cpwr.sh -start</code>

## Installation for UNIX Clients

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

The Distributed License Management - Command Line Version (DLMCV) is the command line version of the Windows GUI-based Distributed License Management application. While limited in functionality, the DLMCV mirrors most of the functionality provided by its GUI-based counterpart, DLM. The purpose of DLMCV 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 DLMCV 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 DLM application, type:

```
d1mcv.sh
```

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

Figure 5-3. DLMCV Main Menu

```
d1mcv - Copyright (C) 2006, Compuware Corporation.  
All rights reserved  
  
---DLMCV 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.  
d1mcv>
```

To add a license to the Client environment:

- 1 Access the Client menu by typing either:  
c or client

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

Figure 5-4. 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.  
dlmcy>?
```

2 Select the license path by typing: 1

Figure 5-5. 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.  
dlmcy>
```

- 3 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 5-6. 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.
dlmcr> r

Enter a license source to delete: sfa141282k
```

**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 DLM application's Online Help.

- 4 If you are using redundant servers, repeat step 3 on each client.
- 5 To initialize the redundancy policy, launch the product that uses DLM from one client.

## What To Do When a Server Fails

If redundant servers have been set up and a server(s) goes down, you can continue to operate Compuware products without interruption for the failsafe duration as long as you do not fall below the failsafe count. No action is necessary after bringing up the downed server(s).

## UNIX Components

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

- [Readme](#) Additional Compuware License Service information.
- [/bin](#) For Compuware use only.

<code>/config</code>	Directory containing server configuration file <code>config.xml</code> .
<code>cpwr.sh</code>	Compuware License Service.
<code>dlminfo.sh</code>	System information.
<code>install.log</code>	Contains data from the installation process.
<code>dlmclv.sh</code>	Distributed License Management - Command Line Version.
<code>libdlm32.so</code>	Runtime library used by clients.
<code>libdlm64.so</code>	Runtime library used by clients.
<code>/license</code>	Directory containing license files.
<code>os</code>	Multi-platform support.
<code>vlog.sh</code>	Compuware License Service log file.

## Troubleshooting

### Comparing Compuware License Service Versions

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

- 1 Determine the version number already on the license server:
  - a Navigate to the directory on the server where the Compuware License Service is located.
  - b Type:
 

```
cat /target/dlm_version
```

 Make note of the Compuware License Service version number located in the response message.
- 2 Determine the version number on the product installation media:
  - a Insert the product installation media, open a command prompt, and navigate to the directory of the installation media containing the install bundle.
  - b To display the version information, type:
 

```
cat dlm_version
```
- 3 If the installation media has a newer version, see [“Installing the Compuware License Service for UNIX”](#) on page 47.

## Chapter 6

# Environment Consistency between ISeries and UNIX

### Overview

On UNIX platforms, DLM determines the location on a system by using relative paths based on the executable being launched. This allows users to install DLM to any location. However, on AS/400 systems, the relative path concept is not available. In order to get around this problem temporarily, DLM was installed to a fixed location. Starting with DLM 4.2, the AS/400 implementation is more consistent with the UNIX implementation.

### DLM Data Configuration Files

As with Windows and UNIX, administrators have the option to define globally the licensed client environment for all end users on a system. In a global environment, all users share a central “.compuware” folder in which the licensed client’s environment is stored. On UNIX, the global configuration folder is located in the root directory of the system; on Windows, it is located in the “\Documents and Settings\All Users” directory. The global configuration folder “.compuware” for the AS/400 is stored under the directory defined by the DLM\_ROOT data area. In addition, as with other supported platforms, end users can have a local configuration, which overrides a global configuration. On UNIX and Windows, the presence of a “.compuware” folder in a user’s login directory identifies a local configuration. On the AS/400, not every user has a login directory, since login directories are not required. To provide similar functionality, an administrator can define data areas within DLM.LIB, naming them after user login names that contain the parent directory locations in which local configuration folders reside. During application startup, the DLM runtime will check for a local configuration by checking for the presence of a username-based data area within the DLM.LIB library object. If the data area exists, the client environment is

loaded from the directory defined in the user's data area. If a matching data area is not found, the DLM runtime loads the client environment from `/.compuware/config.xml`. DLM does not provide a user interface to add user data areas, since the AS/400 already provides APIs and commands to perform this task.

The following diagrams illustrate the DLM.LIB library object and the DLM root folder in which configuration information is stored.

Figure 6-1. DLM.LIB library object on the QSYS.LIB file system.

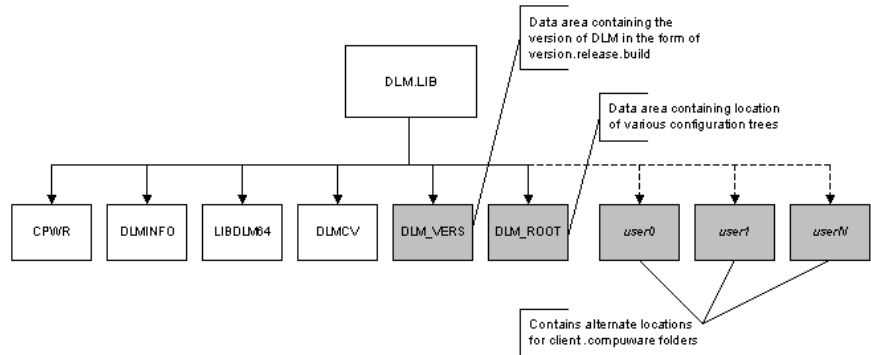
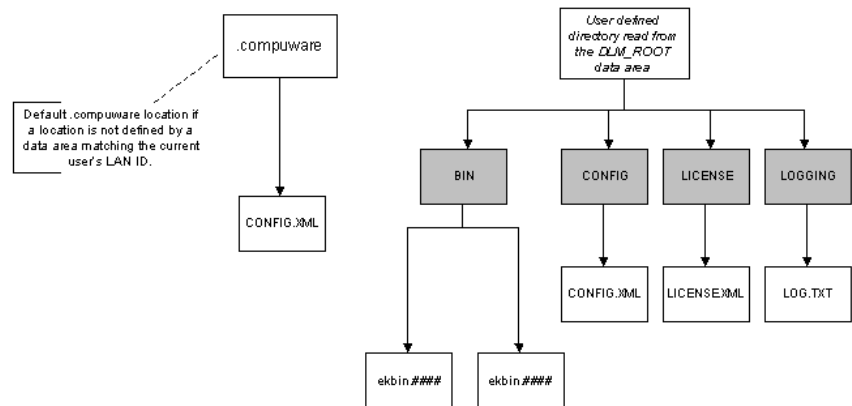


Figure 6-2. DLM data files, on the root file system



AS/400 administrators can set up local client configurations by using the following series of commands:

```

CRTDTAARA DTAARA(DLM/USERNAME) TYPE(*CHAR) LEN(256)
VALUE('user directory')
  
```

**Note:** *USERNAME* refers to the login name of a user.



**Note:** The *user directory* refers to the parent directory where the .compuware folder resides.

**CPY OBJ**(‘/.compuware’) **TODIR**(‘user directory’) **SUBTREE**(\*ALL)

**Note:** The DLM root directory is a directory on the root file system that contains DLM configuration files.



# Chapter 7

## License Borrowing

### Overview

Configuration of the license borrowing components is handled automatically when a license is installed via the Distributed License Management (DLM) application on Windows. For UNIX, use the Distributed License Management - Command Line (DLMCV) application.

**Time Zone Effect on License Borrowing:** Borrowing across time zones can affect the actual amount of time your borrowed license is available for use. The start of the borrowing period is defined by the time zone of the licensed server from which the license is borrowed.

**Windows Only:** On client systems that reference licensed servers that support license borrowing, the Borrow License Client Tab is automatically configured and added to DLM. From this tab, you are 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 DLM. From this tab, the system administrator is able to manage the borrow features. The Borrow License Client Tab and the Borrow License Server Tab cannot coexist in DLM. DLM handles this issue and displays a message stating this restriction.



## Chapter 8

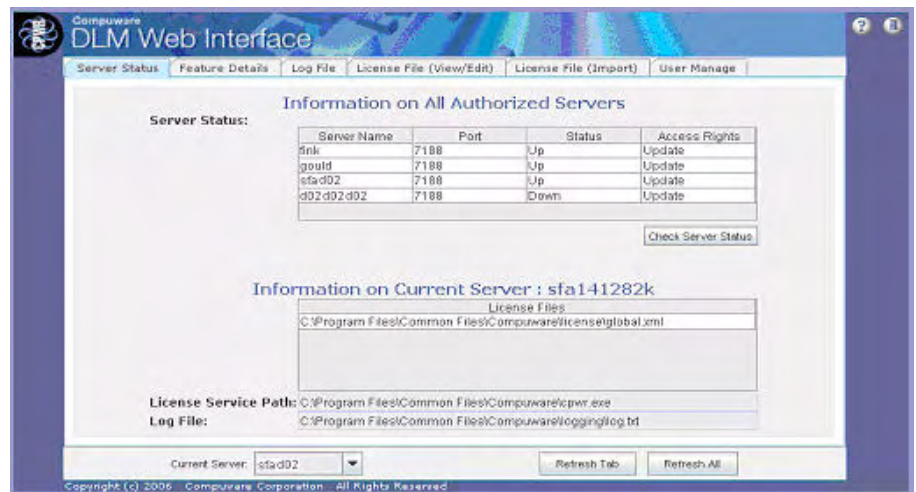
# Distributed License Management Web Interface

### Overview of Distributed License Management Web Interface

Compuware's Distributed License Management Web Interface provides a central point of license administration. It runs on an HTTP server and is configured and administered by using the `cpwrCGIAdmin.exe` file.

The DLM Web Interface 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 8-1. The DLM Web Interface



The DLM Web Interface consists of three components:

- ◆ Java applet (dml.jar)
- ◆ User configuration tool (cpwrCGIAdmin.exe)
- ◆ CGI (cpwrCgi.exe)

Unlike the applet portion of the DLM Web Interface, 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 DLM Web Interface 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 31.
  - ◇ For UNIX, see the section [“Installing the Compuware License Service for UNIX”](#) on page 47.
- 2 Install the DLM Web Interface and its components. See the section [“Installing the DLM Web Interface”](#) on page 63.
- 3 Create user accounts. See [“Creating User Accounts”](#) on page 64.
- 4 Define the Compuware License Service. See [“Defining the Compuware License Service”](#) on page 66.
- 5 Configure the DLM Web Interface. See the section [“Configuring the DLM Web Interface”](#) on page 67.
- 6 Start the DLM Web Interface. See the section [“Starting the DLM Web Interface”](#) on page 68.

## 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 DLM Web Interface was tested and works properly in the following environments:

### Web Servers

- ◆ IIS on Windows 2000 Server

### Browsers

- ◆ Internet Explorer 5.5, 6.0 and 7.0
- ◆ 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 DLM Web Interface can be installed, licensed and run. The table also shows the binary-to-platform relation of all binary components provided for the DLM Web Interface. An administrator with root access to the machine should perform installation and configuration of these components.

Table 8-1. 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 DLM Web Interface

Follow the instructions below to install the DLM Web Interface components.

### *Installing the DLM Web Interface*

---

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

---

- 1 From your Compuware product installation media, select and double-click the **Remote\_Licensing\_Tool** to start the InstallShield Wizard for the DLM Web Interface. If your installation media does not have this entry, contact Compuware support and request the DLM Web Interface tool. You need to navigate through several screens to

**Tip:** 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 DLM Web Interface.

proceed 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 DLM Web Interface.
  - ◇ 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 DLM Web Interface for Windows also apply to installing the DLM Web Interface 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 **cpwrCGIAdmin** component:

- 1 At the command prompt, type **cpwrCGIAdmin** to display the **cpwrCGIAdmin Main Menu** screen (see [Figure 8-2](#)).

**Figure 8-2.** cpwrCGIAdmin Main Menu Screen

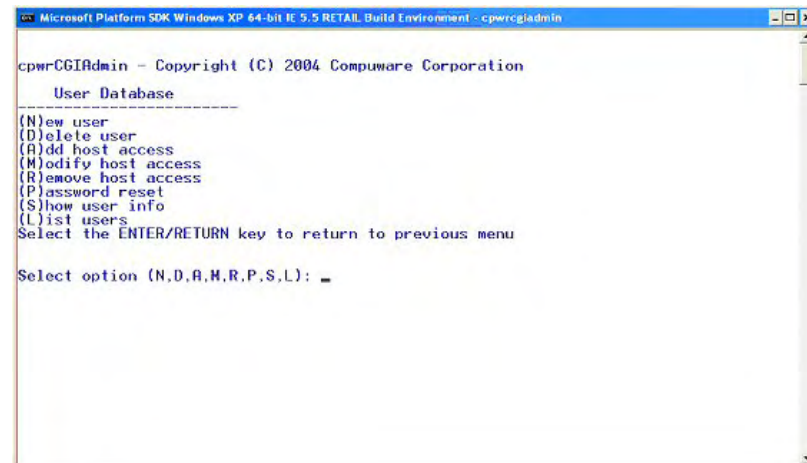


```
Microsoft Platform SDK Windows XP 64-bit IE 5.5 RETAIL Build Environment - cpwr.cgiadmin
cpwrCGIAdmin - Copyright (C) 2004 Compuware Corporation
-----
Main
(U)ser database
(H)ost database
(S)ave changes
(E)xit

Select option (U,H,S,E):
```

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

**Figure 8-3.** cpwrCGIAdmin User Database Menu Screen



```
Microsoft Platform SDK Windows XP 64-bit IE 5.5 RETAIL Build Environment - cpwr.cgiadmin
cpwrCGIAdmin - Copyright (C) 2004 Compuware Corporation
-----
User Database
(N)ew user
(D)ele user
(A)dd host access
(M)odify host access
(R)emove host access
(P)assword reset
(S)how user info
(L)ist users
Select the ENTER/RETURN key to return to previous menu

Select option (N,D,A,H,R,P,S,L):
```

- 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.

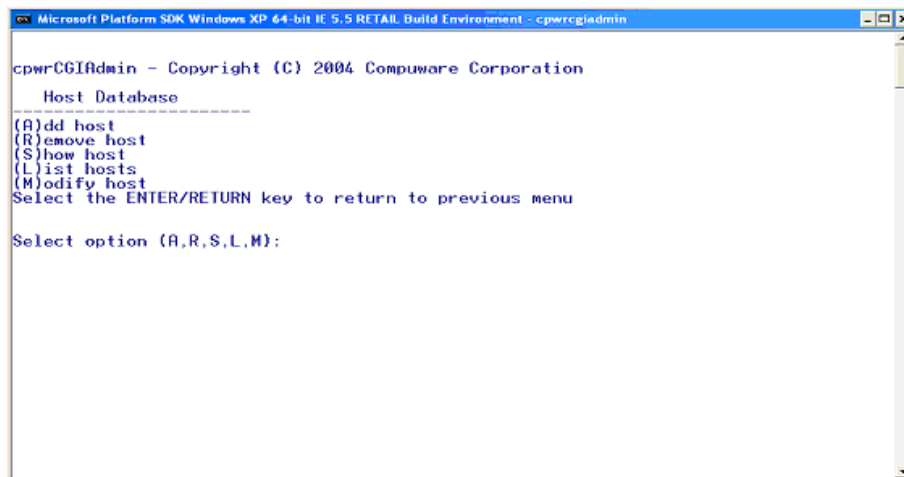
Only users with accounts can access the Compuware License Service. User accounts are added to the `d1m_password` file that is located in the `/etc` directory for UNIX platforms and the `C:\Windows` directory for Microsoft OS platforms.

## 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 Compuware License Service:

- 1 From the Main Menu of `cpwrCGIAdmin`, type **H** and press **Enter** to access the **Host Database Menu** screen (see [Figure 8-4](#)).

Figure 8-4. `cpwrCGIAdmin` Host Database Menu Screen



```
Microsoft Platform SDK Windows XP 64-bit IE 5.5 RETAIL Build Environment - cpwr.cgiadmin
cpwrCGIAdmin - Copyright (C) 2004 Compuware Corporation
Host Database
-----
(A)dd host
(R)emove host
(S)how host
(L)ist hosts
(M)odify host
Select the ENTER/RETURN key to return to previous menu
Select option (A,R,S,L,M):
```

- 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 Compuware 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 Compuware License Service. References to the Compuware 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 Compuware License Service.
- 5 Type the port number where the Compuware 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 DLM Web Interface

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 DLM Web Interface installation.

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

After the CGI has been configured, perform the steps below to set up the DLM Web Interface:

- 1 Go to the location where the InstallShield Wizard placed the DLM Web Interface.
- 2 Create a link from your intranet site to the DLM Web Interface.

Example: `http://sitename/d1mweb/d1m.html`

- 3 Open the `d1m.html` file.
- 4 Modify the `d1m.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 DLM Web Interface

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

- 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 DLM Web Interface, 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 DLM Web Interface, access the online help by clicking **Global Help** on the **Login** screen of the DLM Web Interface.

## 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 Compuware License Service is required, this is the server machine. You need to supply Compuware with the Host Name and Host ID of the server on which the Compuware License Service will run, not the Host IDs of all of your clients. If no Compuware License Service 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 Distributed License Management (DLM) application.
	2	Click the <b>System Information</b> link to view the host information.
	<b>To save the host information:</b>	
	1	Click <b>Save As</b> to open the <b>Save As</b> dialog box.
	2	In the <b>Save in</b> drop down list, select a directory and type the name of the text file (usually hostinfo.txt) in the <b>File name</b> field.
	3	Click <b>Save</b> .
	4	Send the file via e-mail to Compuware's Worldwide License Management department at <a href="mailto:license_mgt@compuware.com">license_mgt@compuware.com</a> .
UNIX	1	Navigate to the directory in which the Compuware License Service is located (for example, /opt/compuware/cpwr_4.0).
	2	Type <b>dlminfo.sh</b> A message like the following is displayed:  <i>Byte format : Little-endian</i>  <i>Current user: fhcwl</i> <i>Hostname : stizus</i> <i>Ip Address : 172.16.18.66</i> <i>Host id : 18f6ce29</i>
	3	Provide the Host Name and Host ID information to Compuware's Worldwide License Management department at <a href="mailto:license_mgt@compuware.com">license_mgt@compuware.com</a> .

# 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 limita-

tion for the product authorized by the key. A license key can consist of thirteen or more possible parameters/sub-objects.

Figure B-1. License Key Format

```
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 administrator 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 where 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 Compuware 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 B-1.** Host ID types

<code>Eth</code>	A system's MAC address
<code>Softkey_id</code>	A system's softkey ID (softkey is defined in DLM 4.1)
<code>Serial_no</code>	A system's disk serial number (Windows platforms only)
<code>Ip</code>	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 Compuware 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 Compuware License Service, the `Count+1`th user is denied. User registration is session independent; users remain registered until they are physically removed from the user-registration file. This file is located in the server's config directory named `Usrs`. `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 the Compuware 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 80.).

## 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 Compuware 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 Distributed License Management (Windows only) and/or DLM - Command Line Version 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 (for Windows XP and below), “windows\_root\_drive:\users\public” (for Windows Vista and above) 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

Figure C-1. 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 Compuware 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 the Compuware 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 Compuware License Service to make a license request, it uses the port number of the Compuware License Service's source definition, `port@host`, to define the outgoing stream for data sent to the Compuware License Service. The OS on the client chooses a return port to provide to the Compuware 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 Compuware 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 Compuware License Service's output stream. This port number can be the same or different from the port number specified on the system where the Compuware License Service resides; however, if the client and the Compuware 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 Compuware 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 Compuware License Service in the case were the client resides on the same system as the Compuware 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 instructions the client on how its information is to be broadcast to the Compuware 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 Compuware License Service's configuration file (See **Pools**.).

## **Server Configuration File**

License keys that contain the Count parameter can only be accessed through a Compuware License Service. A served key that contains a Count parameter is defined as a concurrent-counted key. As with license files, the Compuware 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 Compuware 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 Compuware License Service will automatically re-load the configuration file if changes are detected. Hence, the modification of the



configuration file does not require the Compuware License Service to be restarted.

Figure C-2. Server Section

```
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 Compuware License Service's configuration. In the server section, the following parameters are defined:

### port

The port number identifies the port number that the Compuware 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 Compuware 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 Compuware License Service at any given time.

### connection\_timeout

The connection\_timeout parameter specifies, to the Compuware 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 Compuware 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.

### **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 one or more license keys. A configuration file can contain a single license parameter or multiple license parameters.

If no licenses are defined in the Compuware License Service's configuration file, the Compuware 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 Deployment requires the user to identify the location of each license source to the Compuware License Service via the configuration file. If changes are detected in the license files defined in the configuration file or the license repository, the Compuware 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 Compuware License Service to pick up, simplifying the administration of new license files.

### **net\_security**

The Compuware 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 Compuware 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 Compuware 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 Compuware License Service will close the connection immediately without committing additional resources to process the message. There are three possible configurations for the `net_security` option.

**Configuration 1:** Under Configuration 1, the Compuware 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 Compuware 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 Compuware License Service's config directory.

**Configuration 3:** In many cases, the identity of the client machines that will be communicating with the Compuware License Service are already known. Users can identify systems to the Compuware 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 Compuware 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 Compuware License Service.

Figure C-3. Client Machine IP address

```
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 Compuware 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 Compuware License Service restart before the changes take effect.

## user\_management

Figure C-4. user\_management parameters

```
<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:

Figure C-5. Users with access to application

```
<fileAid>
  <everyone/>
  <abcwec0/>
  <abcddg0/>
</fileAid>
```

In the above example, the keyword “everyone” instructs the Compuware 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 Compuware License Service as excluded from the set of “everyone”. Hence, the above example would read “allow everyone to use the key fileAid except abcwec0 and abcddg0.” 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

Figure C-6. Pools parameters

```
<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:

Figure C-7. Multiple users of pool ids

```
<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

Figure C-8. Borrow/Concurrent parameters

```
<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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